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SUSTAINABILITY OF RURAL AREAS IN PRACTICE

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SURAP

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INTRODUCTION

In OECD countries, predominantly rural regions account for one fourth of total population and more than 80% of the area. Rural areas are considered to be less developed and marginal from an economic point of view. There is a variety of approaches to tackle this underdevelopment and marginality. New rural paradigm, set out in 2006, embraces more strategies with a focus on spatial context. It focuses on and encourages investments, partnership-based and multi-stakeholder approaches. It is important to develop these areas with respect to sustainability in economic, ecological, cultural and political points of view. Information about strategies development and possibilities, respecting scientific knowledge and formulation of challenges for regional and government policymakers is needed. There is lack of transfer of innovative scientific results in the area of rural development into practice and policy making process in the Slovak Republic and other Central and Eastern European countries. This is why the SURAP conference www.surap.eu, held in Nitra (Slovakia) in December 2015, was aimed at sustainable development of rural areas in practice.

Conference papers were presented in three sessions: “New approaches to revitalization of rural economy and rural communities”, “New environmental approaches in management of rural landscape” and “Agriculture, agricultural land and spatial planning”. Following areas of scientific interest were included: increasing incomes of rural population, creating jobs in rural areas, diversification of rural economy, diversification of agricultural activities, rural tourism, use of local resources, social aspects of rural community development, green growth, biodiversity, soil and water issues, development and support of environmental services, possession of agricultural land, protection of agricultural land.

Conference took place in premises of the Slovak University of Agriculture www.uniag.sk/en/ which is a unique educational institution focusing on comprehensive development of rural areas for over 60 years.

Totally 131 participants from 20 countries took part in the conference. Together 11 key papers, 39 papers and 22 posters were presented.

Editors

CONTENT

PLENARY SESSION

DESIGNED STRATEGIC RE-DEPLOYMENT OF PERENNIAL COVER IN NORTH AMERICAN FARM LANDSCAPES

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Abstract
This paper integrates prior research into designed spatial strategies for re-deploying perennial cover – as crops or non-farmed area – within agricultural landscapes of central North America. Focusing on two intensively-farmed regions in Canada and the USA, a multi-disciplinary cross-section of published research is used to frame and develop landscape-specific strategies for perennial cover establishment. Examples of re-deployed perennial cover in farm landscapes are illustrated and conflicts or compromises identified. Perennial cover proportions have fallen to historically low levels, and spatial strategies are largely missing from policies for farm landscape stewardship. Re-deploying perennial cover in categories of farm production or ecosystem service provision requires targeting of landscape positions such as toes of slopes, adjacencies to biologically-diverse or high-quality habitats and surface waters, or distant from sources of competition or predation. Strategic attributes including type, size, location, and timing are explored within the context of a disproportionate benefits hypothesis. Spatial strategies for re-deploying perennial cover show how farmland could improve consequences for water and soil quality, biodiversity and habitat, agronomy, and other cultural attributes. Locations, types (including new perennial approaches), shapes, numbers, and temporal sequences are suggested as worthy of continuing investigation to achieve more-sustainable agricultural landscapes in diverse agricultural regions.

Keywords: Ontario, Iowa, row-crops, perennialization, cropping intensity.

JEL Codes: Q51, O38, O13

Introduction

Central to North America is some of the most productive and intensively-managed agricultural landscapes on the continent. Most crops grown here (e.g., corn, wheat and other cereals, soybeans, canola/rapeseed) are summer annuals, grown in rows typically between 18 cm and 90 cm apart, promoted with chemical fertilizers and protected with pesticides (Potter et al. 2010). Within the farms of central USA and southern Canada there are perennial agricultural land covers and non-farmed land cover types. These include pasture and hay, remnant prairies, woodlands, wetlands, and other covers such as fencerows, ponds or reservoirs, and roadsides or access laneways. On whole the landscape of production agriculture in central North America is approximately 80% annual cover and 20% perennial vegetation (Figure 1). Recent research from several disciplines and a novel proposal suggest that perennial cover ought to be much more extensive and thoughtfully deployed in agricultural landscapes. This paper describes a rationale and spatial strategy for increasing perennial cover in high-intensity farm landscapes.

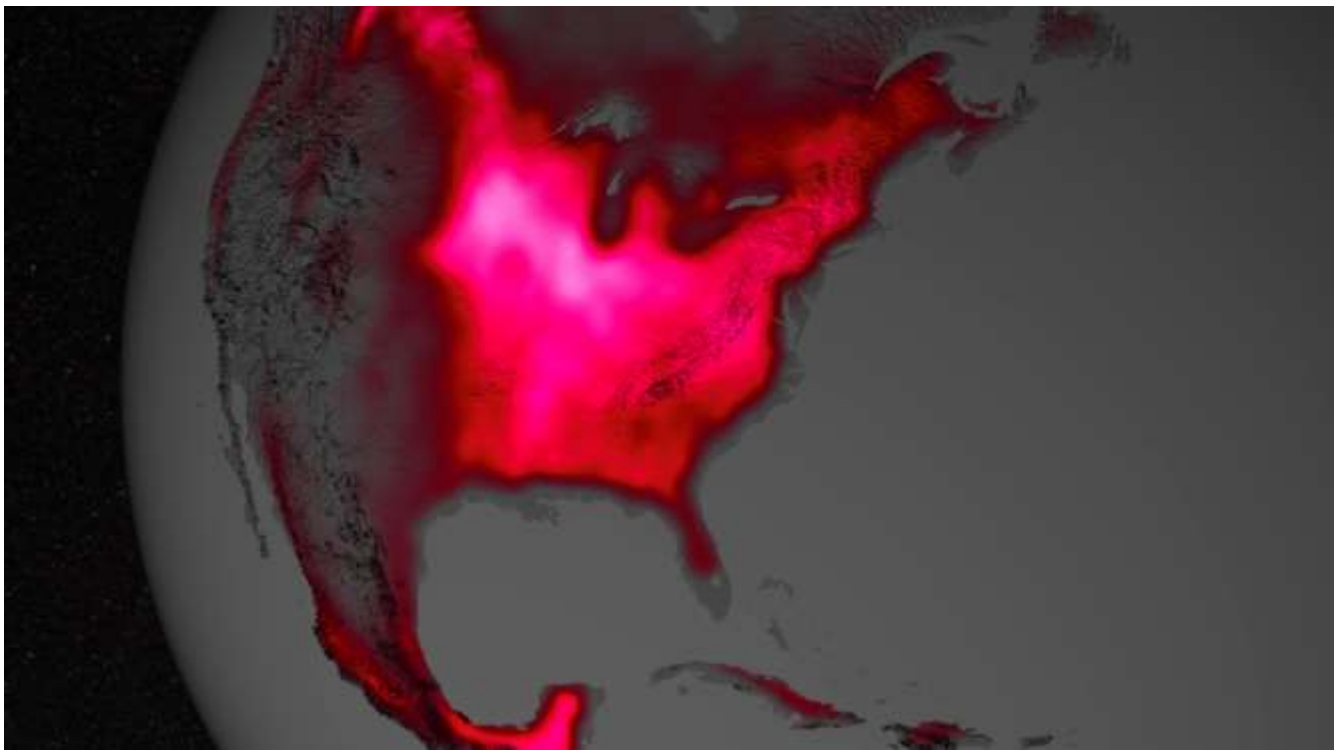

Figure 1. Sun-induced chlorophyll fluorescence in Central North America, image from NASA Goddard Space Center, USA. Colours become lighter and more intense as chlorophyll activity increases. Central North America is the global peak for sun-induced chlorophyll fluorescence – a result of intensive cropping (Guanter et al. 2014).
Source: Own processing based on own data collection

Background
In agricultural lands the distinction between annual and perennial cover is rather blunt, but captures much of the variation in cropping. While some plants are winter annuals, growing from fall to spring (e.g., "winter" wheat), and others are planted as relay cover (overlapping a pre-harvest period of one with the establishment period of the next), the vast majority of farmed area in central North America falls neatly into categories of perennial or annual vegetation.
In the mid-continent, two regions are instructive for how annual and perennial proportions have changed, especially since the end of the Second World War and widespread adoption of chemical fertilizers and pest controls. The USA "Corn Belt" and southern Ontario, Canada are two areas – approximately equal in area – that epitomize some of the best agricultural land and most intensive production techniques in the two nations. Changes in annual and perennial proportions for these regions have been documented (Corry 2013), notably that since the 1950s the counties in these regions have farms that exceed an average of 90% annual cover as perennial cover has diminished.

Even as farm landscapes have become increasingly dominated by annual cover, a consistent outcome from decades of farm land stewardship programs and research is that – compared to annual cover – perennial cover provides better soil and water quality, less nutrient loss, reduced need for pesticides, greater resilience to drought or excess moisture, better habitat and biodiversity, improved recreation and amenity values (Glover et al. 2010; Williams et al. 2013). Many of these benefits continue in seasons after the perennial vegetation has been replaced with annual crops. Alternatively, intensive harvesting of productive perennial cover such as hay and pasture cover is linked to declines in grassland birds, especially those associated with former prairie and marsh cover in central North America.

Perennial cover in farmlands can be described as either a productive part of the farm operation, or as providing an ecosystem service (e.g., interception of rain water and surface flows) (Schulte et al. 2006). As with the blunt perennial/annual division this is an approximation because perennial cover in farmlands can provide simultaneous ecosystem services and productive functions (e.g., maple syrup production in

woodlots; floodplain grazing lands that provide water storage), yet the principal function of a land cover is usually clear. Where perennial cover proportions have diminished in central North American farmlands, re-deploying perennials might mean categorizing them for productive or ecosystem service roles. Productive roles historically included grazing lands and forage (hay) production, associated with livestock such as cattle, sheep, horses, and goats. However, grazing animals have declined across Southern Ontario and the Corn Belt by as much as half since the 1950s (Corry 2016; Stuart and Gillon 2013; Sulc and Tracy 2007).

New perennial cover types for productivity in farmlands include crops for cellulosic ethanol production. The USA's Renewable Fuel Standard national legislation mandates blends of ethanol into gasoline, including up to 57 billion litres of cellulosic-derived ethanol by 2030 (Schnepf and Yacobucci 2012). Sterile *Miscanthus* and native *Panicum virgatum* perennial grasses, and prairie polycultures have been examined for their potential to supply cellulosic digesters (Tilman et al. 2009; Voigt et al. 2013). A provocative concept, the "Buffalo Commons", suggests broad perennial grasslands across sparsely-populated parts of central USA (Rees 2005). Some of these perennial crops have other potential uses like bio-plastics and livestock bedding.

Deploying new perennial cover for targeted ecosystem services has been part of agricultural land stewardship policies and incentives for decades (Steiner 1990). In the years after the 1930s Dust Bowl, Canadian and American farmers received incentives for windbreaks, shelterbelts, and increasing perennial cover on erodible soils. The USA's Conservation Reserve Program is a leading example of incentives for perennial cover (herbaceous or woody) on highly-erodible soils across much of the USA (Dunn et al. 1993; Ribaudo 1989; Riffell et al. 2010). At one point more than 14 million hectares of American farmland was enrolled in the Conservation Reserve Program. Inherent to the CRP was a strategy to apply perennial cover to highly-erodible lands, up to one-quarter of croplands in a county (to avoid negative economic impact on rural commerce), for a period of ten years, after which management of the farmlands would promote conservation and avoid future soil erosion. This is a unique example of strategic perennial cover deployed at a national scale (Corry 2016).

Habitat provision from perennial cover is part of new farmland incentives in Ontario and the USA. Programs supporting grassland habitats and species-at-risk seek to re-deploy perennial cover primarily to supply an ecosystem service of habitat. Some incentives, such as delayed hay harvesting or pasturing until grassland birds have fledged, provide for ecosystem services first, followed by productive farm uses (e.g., Ontario's "*Grassland Habitat*" initiative; USA's "*Environmental Quality Improvement Program*"). These programs strategically target regions where grassland benefits would accrue most rapidly.

Aim & Methods

Landscape patterns are consequential to desired soil, water, and habitat quality (among others) attributes, and farmland is the most-extensive cover type in central North America. Society has placed value on environmental quality through policies, agreements, and incentives that promote clean air and water, healthy soils and foods, and species diversity (Mangan et al. 2011; Milne 1998; Tilman et al. 1999). Because of these values, a strategy is needed to identify what, where, and when perennial types might occur in order to achieve desirable consequences. This paper describes the evidence for targeting perennial cover proportions, types (including their management), location, and timing as a strategy to re-deploy perennial cover across intensive farmlands.

The strategy is based on empirical and experimental research from several disciplines for how different perennial cover attributes affect ecological and some social outcomes, especially related to biodiversity, habitat, and soil and water quality. Using evidence from peer-reviewed research in the Corn Belt and southern Ontario, the evidence suggests how perennial cover types can lead to more desirable outcomes from agricultural landscapes *if deployed strategically*. Suggestions are illustrated in an agricultural landscape of Southern Ontario. Strategies for Iowa – not solely focused on perennial cover – have been explored and illustrated in previous work (as an example, see Nassauer et al. 2007a).

Results

Proportions of Perennial Cover

Annual crop cover is increasing in Corn Belt and Ontario farmlands at the expense of perennial cover. When perennials are either extensive or nearly absent from landscapes, it matters little where they occur. At mid-level proportions of perennial cover, their location can be strategic or non-strategic. The disproportionate benefits hypothesis (Asbjornsen et al. 2013) states that with a strategy comes increased ecological and socio-cultural benefits. The benefits include soil and water quality and improved habitat, but also enhanced recreation and amenity value (Figure 2).

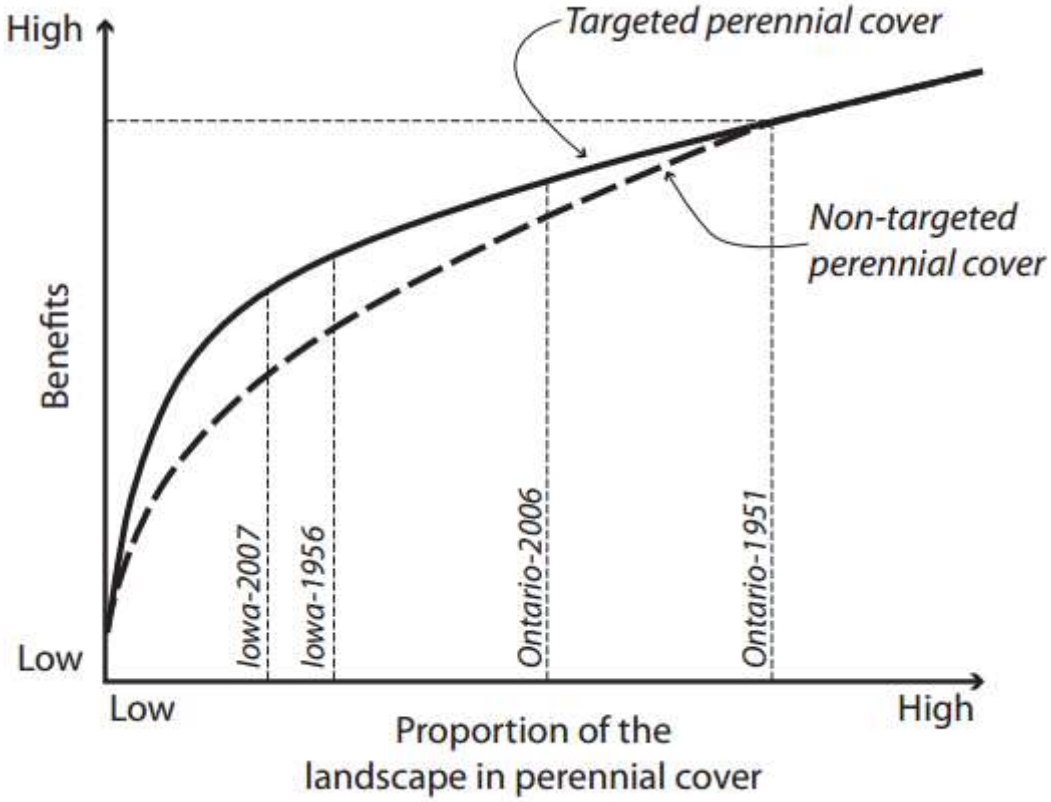

Figure 2. The disproportionate benefits hypothesis, stated by Asbjornsen et al. (2013) states that strategically targeted perennial cover provides benefits disproportionate to its area in agricultural landscapes. Intercepts are approximated for Iowa, USA and Ontario, Canada at times just after the second World War and from recent census data.
Source: Own processing based on own data collection

Given that the proportions of perennial cover in the farms of Iowa, USA's counties ranged from 51-96% (2007) with a statewide average of 16%, and Ontario, Canada's counties ranged from 9-90% (2006) with a regional average of 53% (see intercepts on Figure 2), the disproportionate benefits hypothesis suggests that a strategy would be useful to enhancing the consequences of perennial cover. Conversely, a strategy for locating annual cover in the most-suitable landscape positions might avoid environmental and societal costs.

While land and water stewardship priorities might seek to increase perennial proportions this is a reversal of the trend of at least the past 70 years in agricultural landscape change (Corry 2013). The area of perennial cover on Iowa farms in 1956 averaged 26%; in Ontario in 1951 it averaged 71% (Figure 2). The USA "Farm Bill" legislates food production and access and farmland conservation in a five-year policy cycle, but a long-term farm bill has been proposed with a target for perennial cover, mostly as a conservation strategy that relates to the disproportionate benefits hypothesis:

> *Perennialization of the 70 percent of cropland now growing grains has potential to extend the productive life of our soils from the current tens or hundreds of years to thousands or*

tens of thousands.
Excerpt from "A 50-Year Farm Bill", The Land Institute, Salina, Kansas, USA, 2009.

Farmland policies and other mechanisms can be instrumental to changing perennial and annual cover proportions (Corry 2016). If perennial proportions remain low in Corn Belt Iowa and are widely variable but decreasing in Southern Ontario (Figure 2), developing a strategy for location, timing, and types of perennial cover in farmlands is necessary to enhancing benefits.

Locations of Perennial Cover
Research for prioritizing locations where perennial cover provides increased environmental benefits yields diverse findings depending on the ecosystem services being sought. For a range of habitat and ecological functions, auspicious locations for perennial cover differ. What might be optimum for water quality buffers near riparian woodlands, for example, might challenge habitat for grassland wildlife because of competition or predation from woodland fauna. In this section I summarize the findings of peer-reviewed research (numbered below) about where different perennial cover types provide desirable ecological outcomes, moving from abiotic to biotic.
(i) Surface water quality and soil erosion control is improved when perennial cover is extensive and dispersed. Dense cover of grasses and forbs are best for removing sediment from surface water flow, yet multi-stage perennial buffers with herbaceous, shrub, and tree cover can provide multiple benefits (Isenhart et al. 1995). Erosion control is best when perennial cover is prioritized for the most erodible soils, yet when erosion arises from wind or water forces, extensive perennial cover tends to decrease fetch and provide water quality benefits (Robinson et al. 1996). Perennial cover cannot provide significant reduction of water-borne sediment from concentrated flows like those within swales or hollows (Hernandez-Santana et al. 2013), so targeting perennials to sources of sediment and nutrient loss might be required.

(ii) Perennial strip vegetation research amid annual row crops in Iowa finds that receiving waters are best protected from nutrient and sediment runoff when herbaceous, native perennials (i.e., prairie vegetation) are as little as 10% of the watershed area and placed at the toe of a slope. Perennials at these locations reduce runoff volume by as much as 46% compared to basins without perennials, sediment loss is reduced up to 90%, and nitrogen leakage can be reduced by up to 85% (Hernandez-Santana et al. 2013; Iqbal et al. 2015; Zhou et al. 2014). While surface water quality broadly is enhanced when perennial cover is extensive, for receiving waters a strategy would apply perennial cover in small areal proportions to the lowest parts of the slope, trapping sediment, nutrients, and runoff volumes before entering streams.

(iii) Soil health is a construct that emphasizes tilth, structure, and life in soils that are resilient to drought, erosion, and degradation (Ontario Ministry of Agriculture Food and Rural Affairs 2009; Sparrow 1984). Healthy soils are those that are not compacted by heavy machinery or concentrated livestock, with adequate pore space and moisture-holding capacity, and a vibrant biological community. Across intensive annual croplands, interim cover crops and rotations with perennial cover remain important to achieving healthier soils (Munkholm et al. 2013). Research has investigated herbaceous perennials such as forage or legume cover crops for their contributions to soil health, and while there is no indication of when or where to apply perennial cover differentially for improved soil health across the landscape, perennial cover in rotations have been shown to have lasting effects in Ontario and the Corn Belt (Munkholm et al. 2013; Syswerda et al. 2012).

(iv) Arthropod (e.g., insects and spiders) richness is positively related to the diversity of perennial landcover types within a distance of 1.5 km^2 in central North America (Kevan et al. 1990; Landis and Haas 1992; Landis et al. 2000). Landcover diversity and perennial proportions need not be ecosystem service providers only – all types provide this benefit. Strategically, agricultural landscapes with perennial cover within every 1.5 km^2 promote arthropod species that provide pest control and pollination services while increasing biodiversity (Corbet 1995).

(v) Small mammals (e.g., mice, voles, chipmunks, squirrels, ermine, mink, weasels, and the like) benefit most when perennial cover is provided as networks and circuits through the farm landscape (Fryxell et al. 1998). A network with multiple nodes provides diverse and rich small mammal populations (Danielson and Anderson 1999; Merriam and Lanoue 1990). In Ontario this might equate to a network of woody plants

(shrubs and small trees) along field interstices – colloquially referred to as “hedgerows”. In Corn Belt Iowa this would be verges of field and road margins and drainageways, typically dominated by grasses and forbs (less woody vegetation than found in Ontario).

(vi) The dominant primeval cover of the Corn Belt is prairie and wetland vegetation: in Southern Ontario the dominant primeval cover is woodlands, with wetlands and some prairies. The distinction is important because woodland birds require large patches of woody vegetation that are well-connected similar to a primeval intact forest (Best et al. 1995; Freemark and Csizy 1997; Herkert 1994; Riffell et al. 2010; Van Dorp and Opdam 1987; Wiens 1995). Grassland birds, including legally-recognized at-risk species like *Sturnella magna* (eastern meadowlark) and *Dolichonyx oryzivorus* (bobolink), benefit most when grasslands are large but distant (>200 m) from woodlands and in open landscapes (not more than one side adjacent to a woodland).

(vii) Integrating strips of diverse herbaceous prairie vegetation into annual row crops has shown benefits for birds even when perennials are in low proportions. Number of birds, bird species, and diversity was markedly higher in fields with even small proportions of perennial cover (up to 20%) compared to simple annual row crop fields (Schulte et al. 2016). Species were not rare or threatened, but were typically absent from annual crop fields.

Taken together, the findings summarized above imply that perennial cover should be extensive and dispersed throughout the landscape at a scale of 1.5km^2. It should be adjacent to surface waters to reduce sediments, nutrients, and runoff from entering streams. When the cover is woodlands, they should be large and connected with a thoroughly-circuited network of vegetation as corridors. If the perennial cover is herbaceous it should be large and separate from woodlands (ideally by 200m or more) for grassland fauna, complemented with a network of narrow strips amid fields, roads, and surface waters.

Timing of Perennial Cover

Less well understood (compared to location), is the timing of perennial cover. Perennial forages and hay crops in parts of Ontario and Iowa are rotated with annual row crops in an agronomic sequence. For example, the destruction of a perennial cover of alfalfa (*Medicago sativa*) dominated hay is typically followed by a season of corn cropping to take advantage of nitrogen and soil tilth provided by the legume (alfalfa) and grasses. This is then followed by soybeans, and sometimes wheat or other cereals before the rotation begins again (Figure 3).

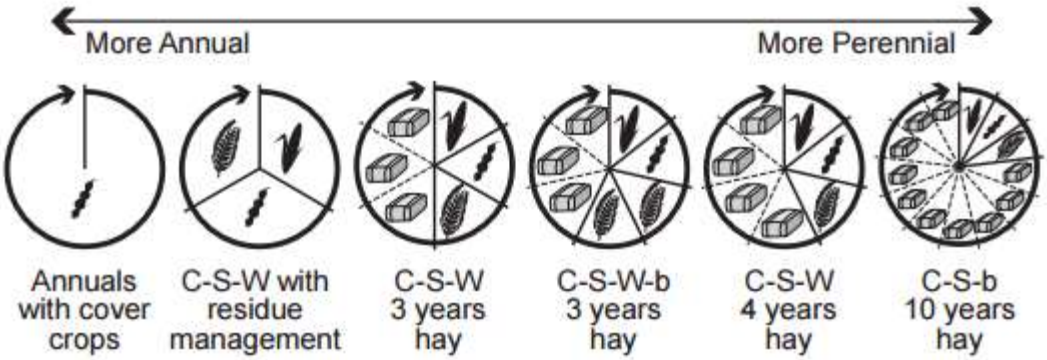

Figure 3. Crop rotation cycles reported in a questionnaire of some Ontario farmers (Corry 2013). Letters indicate: C-corn; S-soybeans; W-wheat; b-barley; divisions in the rotation circle indicate an annual break; hatched lines indicate that the previous crop is not destroyed; solid lines indicate harvest, destruction, and planting of the subsequent crop.
Source: Own processing based on own data collection

Choosing when or how often a perennial cover should fit into the landscape can be challenging. For perennials to provide resilience to excess or intensive rainfall or periods of drought requires predictability of weather and climate. However, knowing the duration of the beneficial effects of perennials as part of the landscape composition can provide guidance to sequential timing. Forage and hay perennials (productive part of a farm operation) do not survive indefinitely because of harvesting impacts on durability and

vulnerability to pest outbreaks (like alfalfa weevil, anthracnose). At some point they need to be re-established or re-vitalized through seeding. When perennials are part of farm production the sequence and how often they are part of the farm operation might make up part of a strategy for perennials (e.g., two consecutive years of perennials followed by three consecutive years of annual crops).

Research has established that following the destruction of perennial vegetation, subsequent annual crop yields tend to increase, even with reduced supplemental nutrient requirements (Huggins et al. 2001; Randall et al. 1997). The duration of this effect is variable yet has been shown to last for a period of years in some cases (Bennett et al. 2012). If a typical rotation is corn-soybeans (e.g., Iowa), or corn-soybeans-wheat (Ontario), having perennials as part of more-diverse rotations could lead to better long-term yields even as the environmental benefits of perennials accrue (Liebman and Schulte 2015; Munkholm et al. 2013).

If perennial cover is fit into typical annual crop rotations, the landscape composition begins to change. Two years (an approximate minimum)(Liebman and Schulte 2015) of alfalfa hay followed by three years of row crops would yield perennial proportions of 40% over a five year period in any land area unit (e.g., field, farm, watershed). In Figure 3 the minimum duration of hay crop reported was three years in a six-year rotation, or 50% for that land unit. Cover or relay cropping of perennials such as red clover (*Trifolium pratense*) within cereal crops would increase this proportion further. The 50-Year Farm Bill proposal (The Land Institute, Kansas – see inset) calls for farm landscapes to be 80% perennial. At least half of that goal could be quickly achieved simply through strategic sequencing of perennial and annual vegetation, even without considering ecosystem service providing perennial cover like woodlands and wetlands.

Types and Management of Perennial Cover

Root depths, species diversity, tolerance to excess or inadequate moisture regimes, habitat potential, management regimes (especially inputs and disturbances), and appearance of perennial systems – among other attributes – can provide guidance to their strategic amount, location, and sequencing in the landscape. A landscape design process includes assessing suitability for different landcover types based on their composition and management. For example, strategies for increasing perennial cover in working lands generally promote herbaceous vegetation because it can be easy to establish, flexible to manage (e.g., can be driven through with farm equipment), and is quickly convertible to annual cover if desired. In the CRP the vast majority of land cover grown for the period of the contract was herbaceous – typically grasses and legumes (Ogg et al. 1989).

Perennial cover in farm landscapes – according to the Schulte et al. (2006) typology – is a productive part of the farm enterprise or an ecosystem service provider. Across the perennial types in the Corn Belt and southern Ontario, woodlands, prairies, and wetlands tend to be remnants, biologically diverse, and are not highly disturbed by human activities. At the other extreme, forage crops and pasture lands can include low vegetative diversity (including monoculture stands of alfalfa) and frequently disturbed by management activities (e.g., monthly harvesting through the growing season, manure or fertilizer applications) (Table 1). Given the continuum of diversity and disturbance among existing and prospective perennial types, a strategic pattern for them can use this information to identify auspicious locations and sequencing in the landscape.

Using perennial cover as a boundary transition between diverse remnant habitats such as prairies and woodlands and adjacent annual crops might mean selecting types with low disturbance or high diversity, including cellulosic ethanol plantings of native switchgrass or prairie vegetation that are harvested only once per year. At the toe of slopes within crop fields, perennial cover could be more frequently disturbed and less diverse, like alfalfa hay or forage production harvested 3-5 times through the growing season. Patches of perennial cover distant from woodlands could be late-season hay or pasture, allowing birds to fledge their nests before harvesting. New types of perennial cover could emerge for Ontario and Iowa, including wildflower strips for conservation of fauna (e.g., Monarch butterflies; *Danaus plexippus*) which might fit next to high-quality habitats, grassland habitats for species-at-risk (e.g., badgers [*Taxidea taxus*] or meadowlarks in Ontario), or intentional plantings for carbon sequestration (e.g., in carbon-trading or offset marketing schemes).

Table 1. A hypothesized continuum of common perennial vegetation types found in agricultural landscapes of Iowa, USA, and southern Ontario, Canada, arranged according to their ecological value based on composition, disturbance, and complexity.

Perennial Cover Type	Description
Alfalfa hay	Simple, Monotypic, and
Alfalfa-grass hay blend	Frequently Disturbed
Pasture (intensive grazing)	
Farmstead (building clusters)	
Drainage ditches	
Rotational pasture	
Delayed haying (late-season hay)	
Cellulosic ethanol crops	
Windbreaks (trees, shrubs)	
Plantation forests	
Streams and floodplains	
Shrublands and early succession	Complex, Polytypic, and
Natural woodlands, wetlands, prairies	Infrequently Disturbed

Source: Own processing based on own data collection

Strategic Application

Increasing perennial cover through strategic approaches has been suggested and illustrated for parts of Corn Belt Iowa. Concepts for perennialization include retirement of areas of low productivity or relatively poor soil quality (Larsen et al. 2015), or increasing the benefits of agriculture across the Corn Belt (Jordan et al. 2007). Using normative scenarios, research has tested different imperatives for US farm bill with illustrated solutions (Nassauer et al. 2007b) that include arrays of perennial cover as working lands or ecosystem service providers in a designed and targeted approach.

Imagining how re-deployment of perennial cover might change landscape composition and configuration in Ontario, the outcomes of multi-disciplinary research (above) are synthesized into a photographic simulation from a southern Ontario farm landscape. An aerial view of a several square kilometres of farmland, complete with foreground farmsteads, roads, powerline corridors, and remnant woodland patches amid productive cropland is visible in Figure 4.

This landscape begins with a diversity of perennial cover types (ecosystem service providers and working lands) such as woodlands and fields of hay already existing at the scale of 1.5 km^2 (Figure 4a). For arthropod diversity, more perennials across the landscape are not critically required. For water quality, though, perennial cover might not be extensive enough, or placed to ideal locations. In the foreground of the photo the drainage of the field points to toes of slopes (a, in Figure 4a) where perennial cover can improve water quality by mitigating sediment transport, runoff volume, and nitrogen leakage from the annual crop.

The farm landscape has a series of sparsely-wooded field boundaries that can act as a basis for a network of narrow corridors that could support small mammals (b, Figure 4a). Extending this network with more perennial vegetation and diversity and stronger nodes would enhance small mammal populations.

Woodland species requiring large and connected tree cover are fragmented in the agricultural landscape of the photo. Connectivity and woodland expansion can be fit to logical landscape locations (like roadsides, field edges, or where production is marginal) to support woodland species (c, in Figure 4a). These locations also support the network of corridors for small mammals.

Additional perennial cover, farther from woodlands or adjacent to them on only one side, would support grassland-nesting birds. In Figure 4a (d) shows opportune field shapes and locations for establishing alfalfa and grasslands that could be managed to provide nesting cover for desired species. In the foreground of the figure (a/d) the location could support both grassland birds while enhancing water quality. These also provide extensive woodlands suggested to support surface water quality.

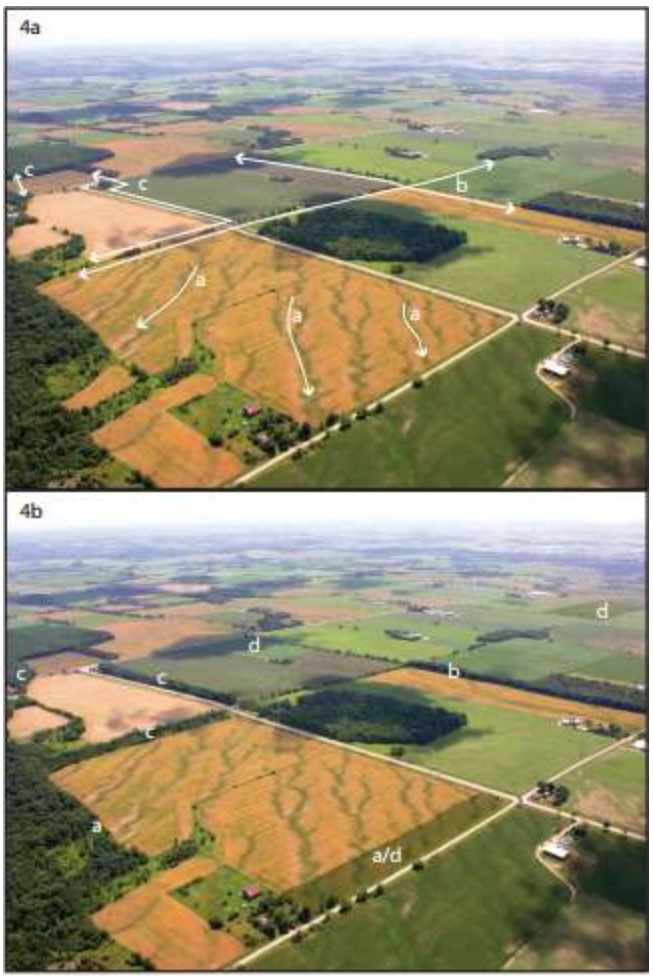

Figure 4. Aerial photograph of southern Ontario agriculture showing settlement patterns, remnant woodlands, road system, farmsteads, and crop fields. Figure 4a (top) shows (a) surface drainage towards foreground; (b) field boundary vegetation and potential connections; and (c) potential woodland expansion and connections next to farm fields. Figure 4b (bottom) shows that (a) surface drainage is intercepted by small strips of perennial vegetation at toes of slopes; (b) field boundary perennial vegetation establishes a network of connectivity for small mammals; (c) woodlands are expanded and connected within common field shapes; and (d) new grasslands for habitat are placed distant from woodlands. Foreground perennial cover serves both (a) and (d) purposes.
Source: Own processing based on own data collection

Applying perennial cover as ecosystem service providers (b and c in Figure 4a) or working lands (a and d in Figure 4a) results in a landscape with re-deployed perennial cover (Figure 4b). The differences are relatively modest and intended to fit into the agronomic practices of the landscape – consistent and functional field shapes and sizes, for example. Perennial cover in these patterns is supported by the research evidence and targets perennial cover to strategic locations to provide disproportionate benefits. As the sequence changes through time, some locations remain highly stable (e.g., woodland connections or toes of slopes), while others might change through the landscape (e.g., fields of hay that support grassland species) even as they keep consistent proportions of perennial cover.

Conclusion

The strategic benefits hypothesis presented by Asbjornsen et al. (2013) provides encouragement for seeking how to achieve these benefits through design. Yet clear guidance on development and application of the strategy requires strong evidence as part of landscape design and planning (Brown and Corry 2011). A few explorations of re-introducing perennials to the Corn Belt landscape have been illustrated, yet the development of these strategies based on diverse research findings is rare (e.g., see Nassauer et al. 2002). Emerging research continues to identify rationales for deploying perennials in particular shapes, sizes, locations, types, and at particular times in the agricultural landscape, and in different typologies that imply

management inputs and intensity of use. New perennial covers are emerging for agricultural landscapes, particularly those associated with cellulosic ethanol, endangered or threatened species, or carbon sequestration approaches. Fitting the myriad perennial pieces into the agricultural landscape amid annual crop production requires thoughtful examination of existing knowledge, consideration of agronomic practices, and creative integration of space, time, and culture. Only then will disproportionate benefits associated with perennial cover accrue.

Acknowledgements
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SOCIAL INNOVATION IN RURAL AREAS: SUPPORTING SOCIAL SUSTAINABILITY

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Abstract
Social sustainability is a multi-facet concept that has been mainly neglected in the wider debate on sustainability. The paper focuses on the social aspects of sustainability trying to better define and classify the concept in the space of agriculture and rural areas and to reflect on possible pathways of change. Social sustainability in rural areas is also the space for the mobilization of unexpected resources by the way of processes based on social innovation and multi-stakeholders mobilization. Based on a long research-action on social development in rural areas and social farming run in different territories at Italian and EU level last about 15 years the paper reflect on the case of social farming and civic food. Some key principle like co-production, subsidiarity and civic economy are introduced in order to rethink the way rural policies could address new path of rural sustainability in the long term.

Key words: social innovation, social sustainability, social farm, civic food, co-production, subsidiarity, civic economy.

JEL Codes: Q01, O35

Introduction
Rural areas are facing a crucial transition phase driven by the economic, environmental and social changes. In particular, the climate change issue is progressively modifying the political agenda in many countries. The environmental crisis is a crucial challenge that deeply affects land management and agricultural production and demands innovative solutions from a technical, social and organisational point of view. The current economic regime seems to de-institutionalize and de-socialize the production models (Touraine 2002) as it increasingly extracts values from local resources, people and nature. In the last ten years, the Gini index is worsening in both western and emerging economies (OECD, 2011, 2013). In the meanwhile, public policies are less able to redistribute the richness among the population, also due to the increasing concentration of the economic resources in fewer hands and in the fiscal paradises. The fiscal crisis of the States is reducing the public welfare expenditure and is negatively the living conditions, health and social mobility for an increasing part of world population (Stiglitz, 2013; Picketty, 2014**)**. This is particularly true for rural areas where the provision of health and social services is more difficult to organise due to the limited economy of scale and the different needs of local population that will migrate increasingly to urban areas. Therefore, while an increasing amount of world population will strongly demand fair living conditions, and the limits to economic growth and the natural constraints can be partially addressed producing more with less, it seems useful a wider reflection about innovative pathways able to achieve a prosperous world. According with Jackson (2009) prosperity is based on a fairer access to economic, environmental and social resources. Prosperity can be achieved through a green growth, but also downshifting the individual model of consumption and revaluing the access to environmental resources and social goods. To enhance people capabilities (Sen, 1987), business as usual is not anymore a suitable answer and even radical innovations should be designed and implemented, also to support social needs.

In such a complex scenario, in our paper we want to reflect on the social pillar of sustainability. To do this we want to consider social innovation as possible tools to design transitional paths. By starting from the Italian social farming case study we will discuss key supportive principles to achieve social sustainability in agriculture and in rural areas.

Aim and methods
Social sustainability (SS) is considered the third pillar of sustainability. Differently from the debate on environmental sustainability the theme has received prominence belatedly from the 1990s (Colantonio 2007, 2008, Murphy, 2012; Noorbakhsh, 1996; Sachs, 1999**),** also thanks to pronouncements by international organizations (UNCED, 1992; UN, 2001; EC, 2005, EP, 2007, UNDP 2013). As a matter of facts,

the topic has been partially neglected in terms of analysis and scientific debate until today. The object of our paper is to analyse SS according with the existing literature on SS and on specific aspects that can be related to SS and to draw up a comprehensive framework in relation with agriculture and rural areas, making a distinction between a *territorial*, *practical-procedural* and *relational* SS.

According with the final conclusions of the EU conference on Poverty and Social Inclusion in Rural Areas (EC 2008) we will explore the links between SS in agriculture and rural areas and the concept of social innovation. Social innovation has been adopted by the EU2020 strategy (EC, 2010) in order to achieve a smart, inclusive and sustainable growth and to mobilize unexpected resources in order to support emerging contemporary needs.

The organisation of more socially sustainable societies is demanding in terms of solutions, collaborations, renewed solidarity along the agro-food system and shared perspectives between urban and rural dwellers.
As we have seen, in time of economic, social and environmental crisis, in order to address SS, both in urban and rural areas, new principles and tools are required. Beside the State and the firms a diverse mobilization of citizens in collaboration with institutions and public services might be activated in order to improve the quality of life. According with EU2020 Strategy this is considered the space for social innovation (SI) (Murrayet al 2010, Phills et al 2008). SI is able to define new solutions and tools able to face economic crisis and global dilemmas like climate change, resources scarcity, wealth and inequalities (EC, 2011), and a key element to face rural crisis (Conclusions EU-Budapest Conference on poverty and rural exclusion in rural areas, 2009). Schumpeter (1934) focused on SI in order to innovate in the social cultural and political realm. SI is considered as a path allowing people to define in a collective way new attitudes, norms and procedures transforming communities and institutions (Moulaert & Nussbaumer, 2005) and facilitating transition (Loorbach et al, 2006, 2009). SI can be designed in order to breaks traditional divides among non profit, public, profit by the way of knowledge brokerage (Phills et al 2008). The aim is to organise Community alliances able to solve emerging needs by mobilizing local resource in an innovative way and to answer to contemporary demands. According with such definitions SI can be adopted in order to increase SS in agriculture and rural areas, also in connection with urban ones. Along the process of social innovation research itself can paly an active role by participating to the local initiative towards research action methods.
After discussing on SS in agriculture and rural areas and starting from a long research action implemented since 1999 by our research group at the Pisa University we present and discuss the case of Social Farming in order to reflect on some key principle and path able to support social sustainability in agriculture and in rural areas.

Results
In this paragraph the concept of SS is explored starting from the main literature on the theme and a specific effort is done in order to better understand SS in relation with agriculture and rural areas, but also trying to give some evidence on the existing nexus with urban SS. In order to offer some evidence to the discussion and to better understand the possible paths to develop SS towards social innovation initiatives the discussion of social farming (SF) initiatives is presented with a specific focus on Italian situation in order to offer some elements for the final discussion and for the conclusive remarks.

Social sustainability

Social sustainability refers to the possibility among current (intra-generational equity) and future (inter-generational equity) generations to have equal access to social resources (Metzner, 2000, Baines et al, 2004; Bramley et al, 2006). As indicated in table 1 SS collects many traditional and emerging elements that should be positively and contemporary addressed.

Table 1 Traditional and emerging elements in SS (Source our elaboration on Colantonio 2008)

TRADITIONAL ELEMENTS IN SS	EMERGING ELEMENTS IN SS
basic resources - water, food, a safe place to live (housing and environment), work,	the ability to overcome disadvantages for people with disabilities,
equity between people and generations (in support of civil society),	the development of social responsibility,
education and skills	construction and reinforcement of social capital,
employment	tolerance and acceptance of diversity,
Human rights and gender	the development of co-operative attitudes, social justice (in terms of equitable distribution of resources and accessibility for people in society)
	Empowerment, participation and access
	demographic stability / instability (aging, migration, mobility, social mixing),
	identity, sense of place and culture of belonging,
	cohesion and participation in social networks, in social and political life,
	Health and safety
	Well being, happiness and Quality of life

The debate on SS was firstly link with the concept of urban development as cities were seen as a place where social problems emerge clearly affecting the development of social values. As stated by Colantonio (Colantonio, 2008, page 6): *"social sustainability concerns how individuals, communities and societies live with each other and set out to achieve the objectives of development models, which they have chosen for themselves taking also into account the physical boundaries of their places and planet earth as a whole. At a more operational level, social sustainability stems from actions in key thematic areas encompassing the social realm of individuals and societies, ranging from capacity building and skills development to environmental and spatial inequalities.*"

SS applied to the urban environment emphasizes the growing tensions between a more unequal economic development and progressive social disintegration (Polese and Stren, 2000). To revitalize the urban project in a phase of growing contradictions new paths and methods should be designed to revitalize urban communities (Colantonio, 2008, Berkeley Group, 2012) through participation, strengthening of social capital and the responsible behaviour of businesses. At the core of the urban project there are the strengthening of welfare and the management of the efficient use of resources, through the use of waste as a resource, the good quality of the environment, and the promotion of adequate systems of planning and management (Dixon, 2012; GRVD, 2004; Colontonio, 2007). In the urban application of SS, cities are called on to ensure SS (equity, inclusion, adaptability and security), by working on the way we live and work, building the collective identity of places, the way people learn, live and play, and managing the mobility of people (GVRD, 2004).
From another perspective, Vallance (2011) addresses SS by looking to the social components of environmental sustainability and distinguishes between:

- *development SS* which addresses access to basic needs, justice, poverty, inequity and social capital as pre-condition for environmental sustainability;
- *bridge SS* with its concerns about changes in the habits of people and communities to achieve new social behaviours (they may be transformative and radical, or rather non-transformative and incremental) and bio-physical environmental goals;
- *maintenance SS* which refers to the preservation of socio-cultural patterns and practices in the context of social and economic change which can lead to the effort in preserving the environment or the trend to maintain inappropriate consumptions attitudes and routines.

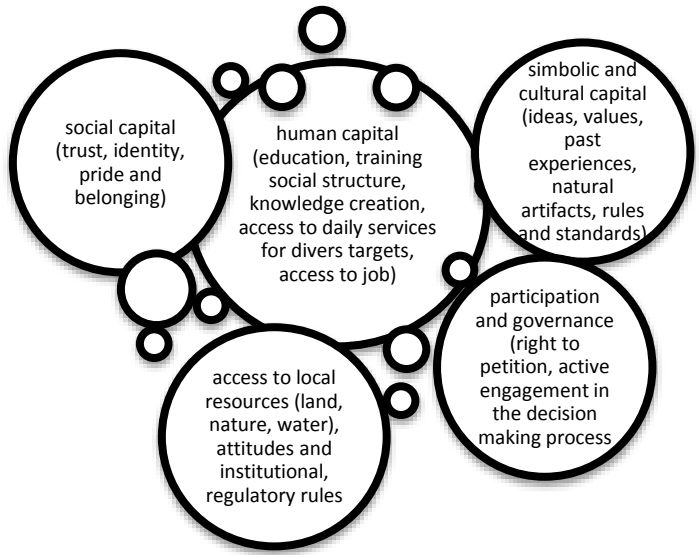
In both cases SS in rural areas is not specifically addressed although some of the basic resources for SS in urban ones – like access to food, health, identity and nature – are mainly provided in connection with agricultural processes and rural areas. According with FAO the future of cities in a more urbanised world will be strongly depending on the organisation of innovative links with rural areas and especially the closest ones. Thus SS in rural area and in agricultural processes should be better understood. However, the separate analysis of SS in urban or rural areas produces exclusions/separations between areas, limiting the

understanding of the way in which, thanks to the relations between actors and territories, SS conditions are generated, and thus disorienting intervention and policies.

Social sustainability in agriculture and rural areas

During the phase of modernisation, agriculture has been mainly considered and supported by policies to boost a more specialised food production. The debate on multifunctional agriculture, that has followed the phase of agricultural modernisation, re-introduced the attention on – positive and negative – externalities linked to the agricultural processes. Most of them are related to environmental aspects. Others, often neglected, include also health and social outcomes. The discussion on environmental (positive) externalities was mainly linked to the discussion on public policies able to support the provision of non-commodity outcomes. But this was not the case for the social externalities. They were included in the domain of social/health policies and they were not always recognized as possible public goods provided by agriculture.

Figure 1 A conceptual framework of Territorial social sustainability (Source Author)



Currently the debate around social externalities is deeply changing due to different elements like: the reduction in public expenditure, particularly for welfare, which problematizes the access to health/educational and social services especially in rural areas; the increasing need for a better management of natural resources that is depending from the human presence in rural areas; the need to share and co-produce a common project among urban and rural citizens to achieve the sustainable development of the local system – rural and urban. As a result SS in agriculture and rural areas can be organised around three dimensions named: territorial, procedural and relational (Di Iacovo 2014).

Territorial SS is a prerequisite to ensure key tangible and intangible resources to people and communities that are involved in the management of agricultural processes and live in rural areas. The territorial SS allows the reproduction of human, social[1], and cultural capital[2], local governance and social aspects regulating the access to local resources. All these aspects contribute to the so-called "rural social fabric" and affect the achievement of adequate stability, quality of life and well-being. The organisation of a coherent social frame reinforces the stability of the rural communities and their capability to face challenges and shocks. Reduction in some of the components of territorial SS, and the benchmark with other territories and paths might reduce the interest to remain in rural areas and to overlap personal perspectives with the future of the area thus increasing rural exodus. By the time rural communities organised themselves around different coherent models (traditional rural communities, modernized and professionalized agricultural communities, rural areas which rediscover the values of the locality, examples of civic agriculture communities). The formation of *human capital* evolves as a function of: *social structures, education, training and knowledge creation, access to daily support services*. *Social capital*

[1] Social Capital concerns the form and type of relationships that develop in the community (Putnam, 1985; Granovetter, 1985) between known members of a group - friendship, family, professional - (bonding capital or strong ties) or between groups and distant actors – also geographically - and with different memberships (bridging capital or weak ties). Social capital is a gauge of the stability and collaboration capabilities of an area, although closure problems have been underlined, where strong group relations lead to the exclusion of non homogeneous or conflicting actors. To these first two forms, two more have been added: linking capital related to the connections between hierarchically ordered social strata; and contested capital, which concerns the relations that are activated during the protest regarding access to certain resources (Woolcock 2001).

[2] Cultural capital defines the way of life of a community and the sharing of ideas, values that are morally right/wrong and desirable, of knowledge and past experiences, standards and material dimensions (physical and natural artifacts including landscape and local products).

Figure 2 A conceptual framework of Procedural social sustainability (Source Author)

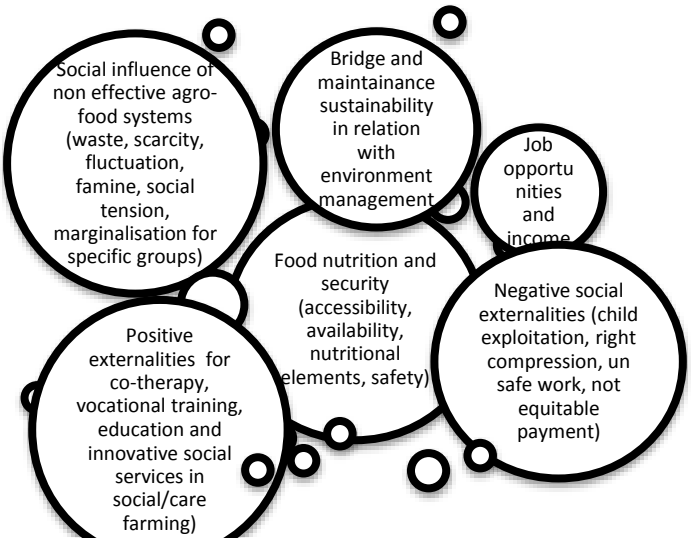
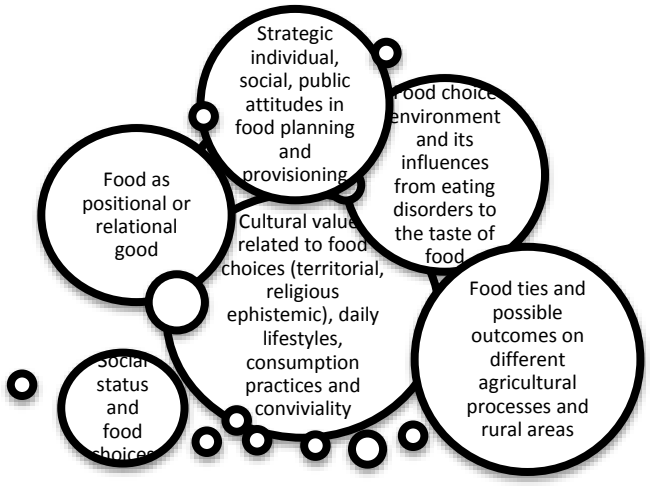


Figure 3 A conceptual framework of Relational social sustainability (Source Author)



regards aspects like through the social construction of aspects such as: trust, local identity, pride and belonging. *Cultural and symbolic capital* characterizes the place, marking its distance from others. The "terroir", the culture of a specific production (e.g. wine, grain), various symbolic artefacts of a local area (Brunori, 2006), are socially produced and generate both social and economic values. Participation to the local governance includes the right to petition, active participation in the decision-making processes in the local area (resource management, strategic planning the evaluation of policies available) and between areas. Social conditions that regulate access to tangible and intangible/symbolic resources of the community and their ability to be used and evaluated by the various members. Regulations of their use and access are often the result of social dynamics - related to the ownership structure, to widespread knowledge, and to the institutional rules and environmental governance adopted - which require adequate social conditions of employment, public and private participation formulas in the management and development of a environmental co-governance (Olstrom, 1996).

Practical-procedural SS (figure 2): which assesses the social implications (positive and negative externalities) of agro-food processes and products. There is an ever-increasing number of aspects of SS in the rural and urban environments that see agricultural processes and food, as a possible vector of social (un-) sustainability, depending on the way production, processing, logistics and trade are organized. The relationship with food affects people's daily lives and concerns the food nutrition and security for different social strata. A non-effective agro-food system might facilitate waste, shocks and famine, and/or possible social crises and tensions or social marginalisation (Koc et al, 1999; Cummins and MacIntyre, 2002). Agricultural processes might also have diverse (positive or negative) social externalities according with aspects like: productive models, technical choices, social and economic relations, the attitudes of the firms involved, and of consumer choices, including health contaminants and food borne diseases, the influence of food culture and information made available by the agro-food system. There is a growing nexus between agriculture and public health depending food borne diseases and un-healthy styles of consumption linked to the specific organisation of the agro-food systems (Hawkes et al, 2006). Agricultural activities create job opportunities and economic positive impacts on the local systems, but they might also be based on dark work and the compression of rights of the worker involved (child exploitation, unhealthy and unsafe work conditions, not equitable remuneration for worker as well as for self employed farmers). On the contrary, agricultural processes might have social positive externalities, as in the case of Social Farming (Di Iacovo et al, 2009, 2014 a, b,), when they include with co-therapeutic, vocational and educational activities less

empowered people at work and on farm (people with disabilities, with drugs addiction, ex prisoners, long term unoccupied, migrants, refugees). Thus, farms and households can provide social services for diverse target groups (children, families, elders) offering education, hospitality, knowledge, downshifting and recovery from stress, housing, daily support to neighbours and member of the rural communities.

Social aspects play also an important role to ensure the strengthening of the environmental sustainability of agricultural processes. As observed by Vaillace (2011) this is linked to the idea of "bridge" and "maintenance" of social sustainability. The bridge procedural of SS looks to the evolution of human, social and institutional capital, through appropriate transition programmes aimed at increasing environmental sustainability in the management of agricultural processes. This path is socially constructed and can regards: non-transformative processes (introduction of technologies with a lower impact on basically unchanged agricultural activities); transformative choices, aimed at substantially modifying visions, approaches and styles of conduct towards the reconstruction of a shared technical vision and of public-private co-governance of environmental resources. Maintenance of social sustainability looks at the behaviours that tend to ensure the stability of techniques and behaviours able to stabilise positive environmental outcomes (landscape, cultural) faced with the risks of transformation.

Relational SS (fig. 3): whose dynamic nature refers to the social relations - often beginning with food - established between different social groups, and which configure new topographies in the relationships between rural and urban areas. Food constitutes a plurality of cultural values and relationships, capable of highlighting religious and territorial affiliations (the food culture of a country or local area) or epistemic (vegetarians, vegans), daily lifestyles, consumption practices, and conviviality; but also new forms of exclusion/marginalization (Koc et al., 1999; Cummins and MacIntyre, 2002), linked to the economic crisis (Brunori and Guarino, 2012) such as psychological conditions (anorexia, bulimia, obesity and eating disorders), but also positive (the taste of food, quality of life and well-being). The possible relations with food influence people in terms of their access to a crucial resource for the daily life. Food can be a means of social positioning in the society (foods conferring status Hirsh) or, on the contrary, a means to establish new relationships, friendships and social groups (in the relations between consumers, consumers and producers, rural and urban areas). In food choices different types of ties are achieved. They might be strong or weak according to Granovetter (1985), which vary greatly depending on the social content (positive or negative of food) and might consequently affect the support to different agricultural processes able to influence procedural and/or territorial SS. Thus, there are:

- consumption patterns that reflect ecological citizenship (Dobson and Bell, 2006, Fonte, 2013, Seyfang, 2006), and therefore the principles of organic and universal solidarity, achieved through weak ties, mechanical and neo-communitarian achieved through new forms of direct relationship between producers and consumers. They can reinforce coherent pathways of development inside rural and agricultural communities and support a better territorial and procedural SS;
- the persistence of food utilitarianism through the unconscious (indifferent) purchasing of food with negative social externalities (perhaps in countries with less stringent social regulations) commercialized through conventional distribution channels, or, worse, conscious consumption (domineering) of food from processes that generate social exclusion (e.g. illegal hiring in some areas of agricultural production) and which regard relations of direct quasi-exploitation, sometimes, even with widespread social acceptance of the existence of unequal relations, or rather, justified by the need to ensure individual accessibility to food. They might negatively affect SS in general.

The transition from one approach to another, however, does not only concern the individual dimension of consumption as much as its collective vision, linked to the configuration of a specific agro-food system capable of designing the environment of choice[3] for consumers (Brunori et al, 2013). The construction of a food choice environment, therefore, is contestable, so that the creation of conditions for food democracy depends on building many opportunities to exercise food consumption choices in the field of social sustainability. Toward the strengthening of ties and relationships around food a different exchange in

[3] The environment of choice is defined by specific rules, structures, institutions, codes of communication, information content and standards, which are defined by actors exercising their own power in the agro-food system (Nestle, 2002; Thaler and Sunstein, 2008)

economic and social values can be organised, re-building trust, common identities, participation and governance, the provision of fairness and new services, a better and larger access to food and even environmental sustainability of agro-food processes.

Social sustainability and social innovation the analysis of the case of Social Farming in Italy

In this paragraph the case of social farming in Italy will be analysed in order to offer some element for further discussion on SS. Social farming in Italy is a bottom up innovation in which local actors – farmers, NGOs, Social cooperatives and public institutions - collaborate in order to provide innovative inclusive services (*territorial SS*) for less empowered people by mobilising agricultural and farms resources. The use of plants, animal, on farm resources is so activated in order to produce innovative social solutions and to contrast the reduction in public expenditure both in rural and peri-urban areas (*Procedural SS*). Social farming was introduced in the Italian debate in 2002 after a research action in Tuscany on innovative social services in rural areas. In 2015 Social farming was formally recognised by the Italian law, but, differently from the North European countries, social farming is not financially supported by the Italian State. Most of the social innovation process takes place among the actors involved in order to re-shape the existing sectorial knowledge into a new collective one and to define new principle and rules besides State intervention. Local public health services are responsible for the health of the citizens but, in agreement with other local actors, they can organise the formal and the un-formal social nets in order to increase social inclusion. SF can provide many different services, from co-therapy, education and vocational training, to innovative social services in rural and peri-urban areas for diverse target groups or participants. The organisation of SF initiatives has relevance in terms of SS and innovation, at different level like: farms, in the local arena where the new knowledge is organised, at project level where collaborative attitudes and new principles are defined; for the participants to the initiatives; at consumers level; at level of the locality where new answers are organised.

- At *farm level*, social farming initiatives are decided on a voluntary base and without direct economic incentives. Farmers are introduced in a new and more open social environment closest to the community, to the urban dwellers and to the consumers. The involvement in alternative networks increases their visibility, and social recognition in front of the society (*territorial SS*). The agricultural processes are open to new members of the society and the multifunctional use of agriculture produces positive social externalities (*procedural SS*). Along such arrangements farmers re-embed their agricultural and economic activities in the society besides the market. The organisation of ethical market in connection with consumers (quite often urban ones) offers an economic recognition to their engagement in the society (*relational SS*). Such innovative components do normally attract younger farmers that became more interested in agricultural activities and processes (*territorial SS*).
- In the *local arenas*, to mobilize local agricultural resources in the provision of innovative services different actors start to share and to create the new knowledge needed by discussing and elaborating innovative paths, rules and practices. Towards active participation and the co-design among actors innovative technical, organisational and institutional solutions are defined (*territorial SS*). The new services are based on: a deep level of subsidiarity among diverse - public, private, NGOs, citizens – actors at community level; the co-production of economic and social values; the co-provision of public and private goods. By the way of the innovative nets among sectors new flows of resources –policies, competences, markets, human resources- can circulate organising win-win solutions for the actors involved.
- At *project level*, the need to complement agricultural and social knowledge activates collaborative solutions in the management of the everyday practices and the new services (territorial SS). This is key to produce and distribute different economic and social values among actors and participants and to share competences and responsibilities. Differently from the State/market divide, production and distribution of both economic and social outcomes happen in the same time. The ethic of production is based on civic economy where the ethic is not for profit but for project. The actors involved try to maximize the social outcomes under the lean of economic sustainability. The

participation of less empowered people in the SF initiatives increases social mixing, health, and social inclusion of diverse targets of participants (*territorial SS*).

- *Participants* might be both urban and rural dwellers. In any case the provision of new and innovative services increases their level of health, social inclusion and social mixing, as well as the degree of local SS (*territorial SS* in rural areas). Among local participants there are also local -urban and rural- consumers. They might rethink food choices giving attention to those farmers and projects able to provided ethical and social results. By entering in alternative food networks consumers might build new ties in the community and to support the less empowered components in the society. The Might also increase their food and nutrition security by giving support to the local provision of fresh and healthy food (*relational SS and access to basic needs in urban SS*). The community engagement allows to support local social farming initiatives and to increase local SS.
- At *local level* the organisation of innovative social safety nets allows to enlarge the outcomes on a broader scale re-designing parts of the local system in the provision of both economic and social results. Different kind of services for local citizens might be offered in the perspective of increasing SS. The organisation and the consolidation of new institutional arrangements, of new knowledge and shared values reinforce local governance and the local capability to face the future (*territorial and relational SS*). At the same time new nets around the co-production of economic and social values produces an innovative artefact called civic food able to overlap divers aspect of SS (territorial, procedural and relational) according with new civic economic models.

Conclusion

Modern societies are experiencing tensions that are difficult to be addressed with usual solutions. The increasing separation between globalised economic processes and the local societies reduces public resources and the provision of –environmental and social- public goods. In such respect the achievement of sustainability in the long run is demanding in terms of indicators for development, governance mechanisms, and value creation. The normal economic indicators seem not completely able to ensure the right diagnosis and decisions in order to ensure the change. In the field of environmental sustainability there is an increasing debate on green growth and the definition of innovative paths wishing to reduce the footprints on nature. The theme of SS has been less explored and analysed until now, especially with regards to agriculture and rural areas. Actual and forecasted migratory trends from rural to urban areas offer a clear indicator about the existing and potential social fragility in both territories. In our view, the concept of SS in agriculture and rural areas can be analysed from three diverse aspects named: territorial, procedural and relational SS. The three dimensions classify relevant aspects that should be addressed in order to achieve SS in agriculture and rural areas and give the chance to design appropriate policies and tools.

The achievement of higher standards in SS is demanding in terms of innovative solution. From this view the organisation of social innovation paths might contribute to the definition of new governance mechanisms toward the transversal collaboration with most of the local actors. As outcomes of our research action we have explored social farming as a case where SS is achieved in both agriculture and rural areas in connection with urban ones. SF provides innovative and inclusive services (territorial SS) and new relationships between economic processes and local communities by promoting the social positive externalities of agriculture (procedural SS). It offers also new relationship between consumers with ethical concerns and responsible firms. The key principles in the Italian model of SF can summarize in three elements like: the organisation of a deep level of subsidiarity among the State and other private actors and NGOs. They co-produce economic and social values, private and public goods, by the way of innovative collaborative attitudes and ventures, but also the definition of diverse attitudes among firms, third sector and consumers in the frame of civic economy. Differently from the principle of the State/market divide in case of civic economy the production and the distribution of the produced values happen in parallel and inside the local communities. The lesson learnt form the Italian SF case is that agriculture, rural and urban areas, public and private actors, consumers and producers should co produce the new collective knowledge where civicness, responsibility, solidarity and ethical concern might became again the focus for contemporary sustainable communities. In order to achieve such innovative paths social innovation processes should be facilitate in order to support actors and their competencies towards new paths of

change able to achieve future prosperity and sustainability. In such respect civil food became a collective cultural artefact able to connect territorial, procedural and relational social sustainability in agriculture and rural areas and to cope to an increasing SS in urban ones.

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FOSTERING GREEN GROWTH IN AGRICULTURE: ISSUES AND CHALLENGES FOR POLICY

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Abstract
Green growth – the pursuit of economic growth and development, while sustaining the natural assets base that provides the resources and environmental services on which well-being relies - has become a key policy objective in several countries, and economic sectors are being scrutinised as to the extent to which they offer growth potential that is both environmentally benign and socially beneficial. The agricultural sector faces challenges in adapting to an economic environment oriented towards green growth. With demand expected to grow strongly, agriculture has to continue to increase productivity, improve efficiency in the use of increasingly scarce natural resources and adapt to climate change. At the same time, it needs to be able to contribute to improving environmental quality. The following questions are addressed: Why is there a need for green growth in agriculture? What are the characteristics of a green growth trajectory for agriculture? Which policies OECD countries are taking to foster green growth in agriculture?

Keywords: Green growth; agriculture; agricultural policies, OECD countries

JEL Codes: Q51, O38, O13

Green growth: what it is and why we need it?
"Green" and "growth" must go hand-in-hand[1]
Green growth, which is defined as fostering economic growth and development, while sustaining the natural assets base, has recently become an overarching policy objective in several OECD countries (Box 1). It focuses on the interface between the environment and the economy, and new sources of economic growth that are consistent with resilient ecosystems. By explicitly accounting for the environment and the value of natural assets, green growth expands traditional definitions of wealth to include well-being, and the quality of growth and development.
Responding partly to the global economic downturn and partly in recognition of the increasingly apparent biophysical limits to growth, including energy costs, the green growth agenda represents a renewed focus on the fundamental drivers of growth, including the re-examination of the use of factors of production, environmental innovation, and the removal of policy distortions. In contrast to the previous environment-development rhetoric embodied, for example, in the "environmental Kuznets curve" message of grow first and make environmental investments later, the green growth model suggests that going green can be compatible with growth and environmental improvement and can be a source of growth.

Box 1 The OECD Green Growth Strategy

In 2009, OECD ministers agreed to strengthen efforts to pursue green growth as part of response measures to the financial crisis, recognizing the dangers of a return to "business as usual" post-crisis. They asked the OECD to develop a Green Growth Strategy to help the governments of OECD countries and partner economies alike achieve economic recovery along with environmentally and socially sustainable growth. The 2011 Green Growth Strategy responded to this mandate (OECD, 2011a, 2011b). It sets an analytical framework and policy options to boost economic growth for governments to foster economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services vital to human well-being. There are now 42 signatories to the Declaration on green growth (OECD and non-OECD countries – Lithuania, Costa Rica, Colombia, Croatia, Latvia, Morocco, Tunisia).

Source. http://www.oecd.org/greengrowth/

[1] The article is based on the OECD's work on green growth and agriculture. The usual caveats are in order. The views expressed in this paper do not necessarily reflect those of the OECD or its member countries.

Water scarcity, natural resource bottlenecks, greater pollution, climate change and biodiversity loss can undermine growth. Reconciling development with environmental protection and sustainable natural resource management is critical to avoid natural capital depletion, climate change and social insecurity. This is particularly true for rural areas in many countries because of their acute exposure and vulnerability to environmental risks such as air, water and soil pollution and climate change, as well as their reliance on natural resources for economic growth.

Integrating economic and environmental policies is challenging, requiring co-operation across ministries and levels of government. And it involves understanding how trade-offs in the short term need to be managed and reconciled with the long-term benefits that are being aimed for. Policies for greening growth will differ across countries, according to local environmental and economic conditions, institutional settings and stages of development. Governments should use the full range of policy options, but in all cases they need to: (i) Integrate the natural resource base into the same dynamics and decisions that drive growth; (ii) Develop ways of creating economic payoffs which more fully reflect the value of the natural resource base of the economy; and (iii) Focus on mutually reinforcing aspects of economic and environmental policy.

What does green growth imply in addressing the challenges facing the agricultural sector?

Business as usual is not an option

A green growth strategy for agriculture aims to ensure that enough food is provided, efficiently and sustainably, for a growing population. This means increasing output while managing scarce natural resources; reducing the carbon intensity and adverse environmental impacts throughout the food chain; enhancing the provision of environmental services such as carbon sequestration, flood and drought control; and conserving biodiversity.

In the short-term green growth, by placing a premium on environmental protection, may decrease agricultural outcomes – with implications for food security. However, in the longer term green growth for agriculture can be mutually-reinforcing in so far as the natural resources on which future growth depends are better managed and conserved.

By 2030, it is projected that global agriculture will need to increase output by more than 30% in order to feed a population more than 27% larger and roughly 83% wealthier than in 2005 (FAO, 2006). The pressures on natural from that change will be very high in the absence of appropriate policies and actions. Land for agricultural use will have to increase by 9% - not including bio-energy - and yields will need to grow by 40%.

There will be greater pressure on water and energy, and farming will have to adjust to climate change. Agriculture already currently consumes 70% of total water and water demand is projected to rise by 55% globally between 2000 and 2050 (OECD, 2012b). Without new policy action, more than 40% of the world's population (around 4 billion people) is expected to live in water scarce areas by 2050 – an increase of around 1 billion from 2005 levels. More than 240 million people (most of them in rural areas) are expected to be without access to an improved water source by 2050. This will potentially constrain growth and, limit the health and wellbeing of a huge number of people. 10% of the global disease burden is linked to inadequate water and sanitation services. Growth in agricultural production is expected to lead to further pressures on biodiversity through land-use changes. Global biodiversity loss to 2050 (as measured by losses in mean species abundances) will be driven mainly by land-use change and management (e.g. conversion of natural ecosystems for producing food and bioenergy crops and livestock) (OECD, 2012b).

Green growth policy tool kit for agriculture

Moving towards green growth in the agricultural sector will require a wide range of policy measures, some of which are sector specific, some regional- or economy-wide. A green growth strategy needs to establish productivity and environmental performance priorities for agriculture, address constraints to delivering improvements, and foster policies and management practices that can achieve green growth objectives (OECD, 2013).

Best approaches are those where both economic and environmental objectives are attained. But even in those cases where the objectives are not always *complementary*, ensuring that the different elements of the policy package do not *conflict* is an essential part of any approach to green growth. Policy options need to be assessed from the perspectives of effectiveness and efficiency, as well as their distributional implications.

Focusing on improving productivity in a sustainable manner is a *sine qua non* of a green growth strategy for agriculture – from R&D, innovation to uptake by farmers. Green growth can provide a new paradigm for agricultural research, placing the emphasis simultaneously on environmental and economic requirements, with the aim of enhancing productivity without compromising the natural resource capital. Farm practices and technologies that can contribute to an economically efficient farm sector and provide financial viability for farmers, while at the same time improving environmental performance in a way that is acceptable to society, will provide "*triple dividends*" to green growth. The main challenges are therefore to strengthen research, foster innovation and the use of new technologies in production, and encourage the creation of markets. The green growth agenda encourages a shift towards an innovation system approach - *R* for *D* rather than *R&D* – in which institutions, multi-stakeholder involvement, including partnerships and networks for learning and acquiring knowledge play a central role.

While many of the policy needs for achieving green growth in agriculture are domestic in nature, there are important international dimensions For example, many environmental challenges such as climate change or preserving biodiversity are global in nature, and globalisation will continue to deepen the connection between economies. This means that applying green growth principles in the domestic policy framework alone is not sufficient and trans-boundary and multilateral measures need to also be considered. This includes policies impacting on trade, investment, knowledge transfer and multilateral environmental agreements. It means ensuring compatibility between green growth policies, trade and environmental regulations.

Another dimension of constructing policy packages is the often multiple levels of governments that are involved. Local governments can offer the knowledge required to make policies work "on the ground" where the trade-offs between economic and environmental concerns are most strongly experienced. National-level policies can undermine the regional level when there is a lack of information about the existence of conflicting rules or practices. On the other hand, regional initiatives that focus on stand-alone projects without regard to where these projects fit within national policy frameworks risk falling short of their promise.

Policies implemented by OECD countries

Most countries have some policies in place that relate to the concept of green growth, although the degree of ambition shows considerable variation (OECD, 2013) (**Table 1**). Overarching green growth strategies in agriculture have been developed and implemented by only two OECD countries: Denmark and Korea. A wide range of instruments and a variety of "policy mixes" are currently applied across OECD countries, with the majority of countries appearing to have strategic objectives covering areas related to green growth, particularly in improving energy efficiency (e.g. increasing the share of renewable energy, reducing energy use) and reducing the carbon footprint of agriculture. It is worth noting that these objectives are driven primarily by international agreements (e.g. the Kyoto protocol), or regional-wide strategic goals (e.g. EU energy policy).

Table 1 Examples of green growth policies in agriculture in the OECD countries

Country	Policy
Australia	National Enabling Technologies Strategy
Austria	The Resource Efficiency Action Plan
Belgium	Marshall Plan 2 - Green
Canada	Growing Forward Policy Frameworks
Denmark	Green Growth Strategy
European Union	Resource Efficiency Initiative
	European Innovation Partnership on Agricultural Productivity and Sustainability
France	Energy Performance Plan for Farms
	Grenelle de l'Environnement and the ECOPHYTO plan on pesticides
Ireland	Food Harvest 2020
	Origin Green Programme
Japan	Strategy for the Re-birth of Japan
	Biomass Industrialisation Strategy
Korea	Low-Carbon Green Growth Strategy
Mexico	Sustainability of Natural Resources Programme
New Zealand	Primary Growth Partnership
	Emissions Trading Scheme
	Pastoral Greenhouse Gas Research Consortium
Netherlands	Green Deals
	The Dutch Enterprise Policy : Top-sector Approach
Switzerland	Action Plan on the Green Economy
United Kingdom	The Green Food Project
	Advice and Incentives for Farmers Project
United States	Renewable energy policies related to agriculture (e.g. programmes to support production of second and third generation biofuels)
	Sustainable Agriculture Research and Education Program

Source: OECD (2013), *Policy Instruments to Support Green Growth in Agriculture, OECD Green Growth Studies*, OECD Publishing. http://dx.doi.org/10.1787/9789264203525-en

Agricultural policy reform in OECD countries has been progressing, but the sector is still a trade-protected sector

The level of farm support is following a downward trend and shift towards public goods (e.g. environment) and other objectives (e.g. rural development). There is less emphasis on which commodities farmers can produce, but more restrictions on how they produce them (e.g. cross compliance) (OECD, 2010). In 2012-14, about one-sixth of farm receipts, on average, in the OECD area was due to public policies that support farmers (Figure 1), or EUR 190 billion, compared with 30% (or EUR 205 billion) in 1995-97.

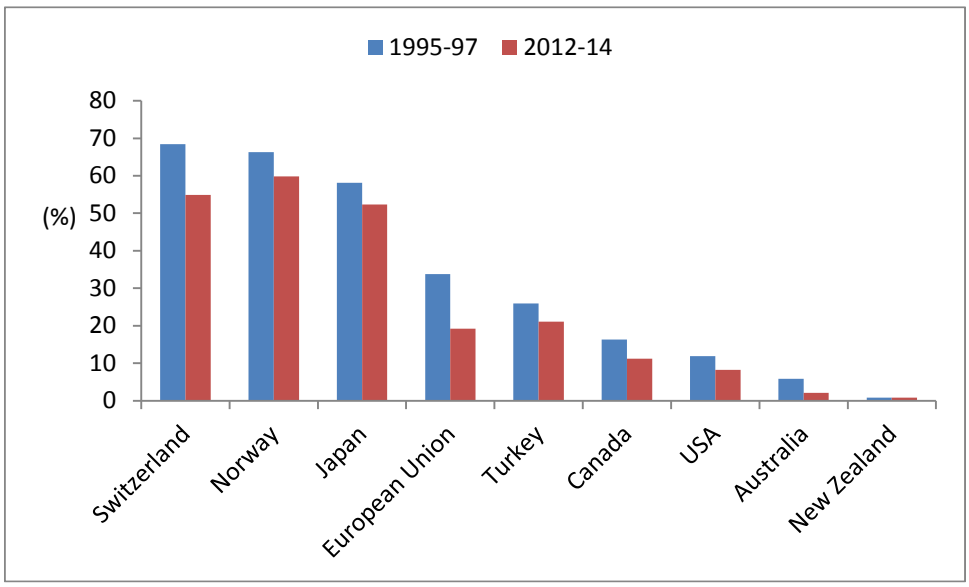

Figure 1 Producer support estimates
Source: OECD PSE/CSE Database, 2015

OECD countries have made concerted efforts to reduce the most environmentally harmful types of agricultural support – those based on using inputs and commodity output without constraints. Yet, support that is potentially most environmentally beneficial accounts for only 6% of total support accorded to farmers (Figure 2). Data for the OECD countries also suggest some modest improvements have been made in "decoupling" of environmental pressures associated with agricultural activities since the early 1990s, driven by factors such as changes in relative prices of inputs and outputs, implementation of farm management practices with green growth potentials and policy reforms (OECD, 2014).

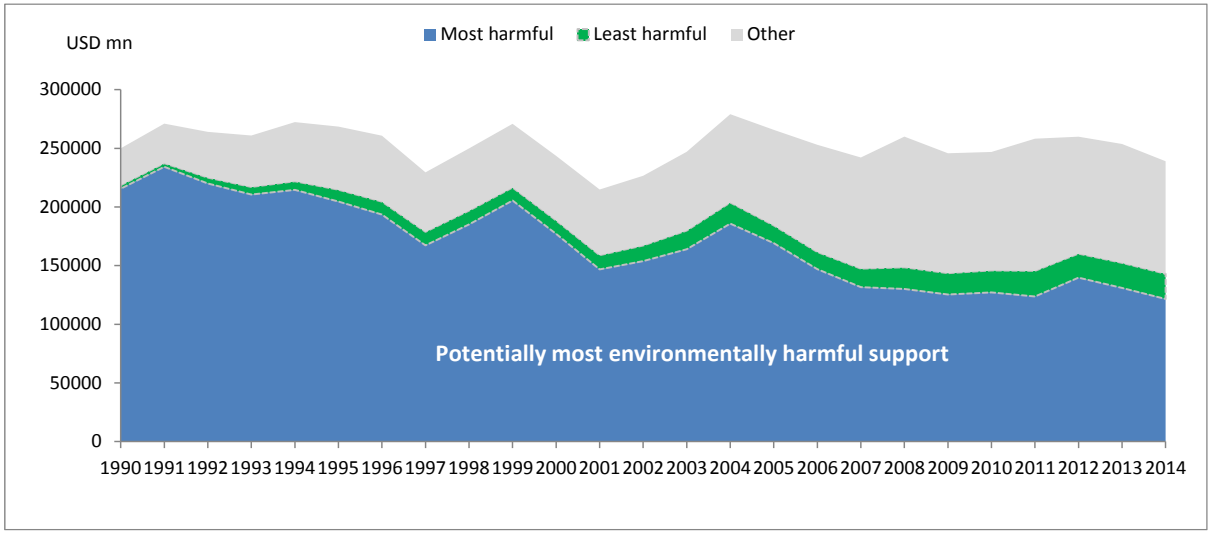

Figure 2 Evolution of producer support in OECD countries by potential environmental impact
Source: Own processing based on own data collection

Investing in knowledge - advisory, extension and training services
Agricultural advisory services, training and extension initiatives play an important role in supporting green growth in agriculture and enabling farmers to meet new challenges, such as adopting environmentally sustainable farming practices and improving their competitiveness (OECD, 2015). At present, there is renewed interest in agricultural advisory services in many countries. Changes at the national and global levels have led to significant changes in the orientation of advisory services, how these are organised, their methods of intervention and financing. Evidence from certain countries (Australia, England and Wales, New

Zealand) suggests that advisory services increase investment returns and productivity, and can help improve the environment. Despite the awareness of their vital role, evaluation of their overall effectiveness and efficiency is scare. However, assessment of the impacts is challenging, and there are no general one-size-fits-all evaluation methodologies (Box 2).

Box 2 The role of training, advisor and services and extension initiatives in fostering green growth- Policy recommendations

- Advisory services, training and extension measures should be targeted and have clear objectives regarding their role within the policy mix.
- The key ingredients for persuading farmers and enabling farmers to adopt green growth practices are credible, relevant and up-to-date business-acumen advice, training and extension.
- Both public and private funding of initiatives have a role to play and will reflect government policies and resources, the nature of the issues, the type of provider, and the purpose of the measure.
- Agencies that deliver advice, training and extension services to support agri-environmental management will need to be well co-ordinated, effective in reaching different groups of farms and types of farming, and capable of delivering a full range of services.
- There are no general one-size-fits-all evaluation methodologies and approaches. Evaluation of impacts should take into account all actors involved in their provision.

Source: OECD (2015), Fostering Green Growth in Agriculture: The Role of Training, Advisory Services and Extension, Initiatives, OECD Green Growth Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264232198-en

Farm management practices and innovation

The strong growth in agricultural productivity experienced since the post-war period has been driven largely by technological advances and the rapid adoption and diffusion of new technologies. Scientific developments in agriculture brought about rapidly rising productivity growth, the development of new crop varieties, and increased yields in many countries through the "Green Revolution".

Adoption of environmentally-friendly technologies and improved management of resources have important roles to play in achieving green growth in agriculture (Box 3). Both the public and private sectors need to be active in these areas and in helping to facilitate innovation that will contribute to the greening of agriculture and the food system (OECD, 2016).

Box 3 Farm management practices to foster green growth - Policy recommendations

- Design and implement agricultural policy that is characterised by flexibility to allow for different practices or combinations of practices to apply in the most suitable environments.
- Ensure that the various environmental externalities - both positive and negative - arising from farming systems are internalised, so that farmers can make decisions as to the most appropriate system to adopt to produce or avoid those externalities.
- Ensure that policies to facilitate adoption of farm management practices with green growth potential are coherent with other policies aiming at increasing productivity in a sustainable manner.
- Facilitate the creation and dissemination of credible, science-based information on farmer- and science-led farm management practices to both farmers and the general public.
- Improve the monitoring and assessment of the economic, environmental and social effects of farm-management practices with green growth potential to improve understanding of the benefits and the risks involved and to inform policy decisions, as well as maximise their contribution to green growth.
- Identify factors that would prevent the uptake of farm-management practices with green growth potential.

- Support international initiatives aimed at designing common guidelines on the definition of Integrated Pest management (IPM) and on principles that establish the benchmarks by which to measure its uptake and impact.
- Increase research in farm management practices with green growth potential, reduce regulatory burdens, encourage private-public partnerships and establish the regulatory frameworks necessary to ensure that they meet acceptable bio-safety and environmental standards.

Source: OECD (2016), *Farm Management Practices to Foster Green Growth*, OECD Green Growth Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264238657-en

Estimates of the rates of return to agricultural R&D suggest a very high social value of agricultural R&D, indicating considerable under-investment in agricultural research systems. Public investment in basic and long-term research plays an important role in innovation. Such research has a public-goods character and is therefore unlikely to be undertaken by the private sector. Yet, even though government funding for R&D is permitted under international trade agreements, it accounts for just a small share of total support to agriculture − around 4% in the OECD area in 2012-14 (Figure 3). Public spending on agricultural research as a proportion of total support to agriculture is, however, very high in Australia and New Zealand only (32% and 35% in 2012-14, respectively).

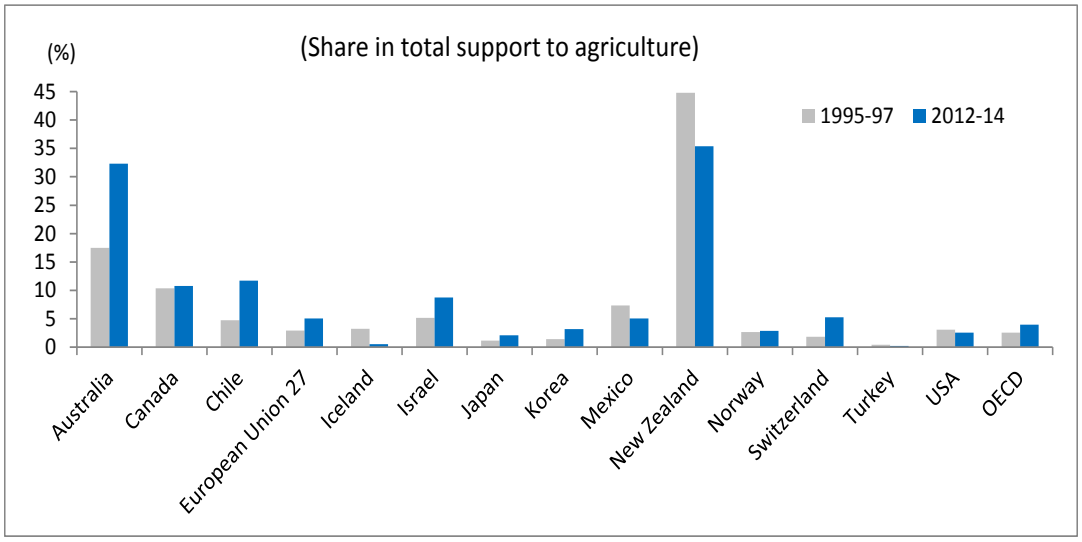

Figure 3 Agricultural knowledge and innovation system in OECD countries
Source: OECD PSE/CSE Database, 2015

Conclusions

The agricultural sector has been successful in providing for growing global demand over a long period of time. However, the outlook may not be as positive as the past and a scenario of a "business as usual" pathway is not one that can be comfortably presumed as sustainable in coming decades.

A green growth strategy for agriculture requires a well-targeted, co-ordinated and coherent set of policies to avoid conflicting policy signals. In this context, economy-wide environmental, social welfare and rural development policies have a role to play. But here is neither a silver bullet nor a unique "one-size-fits-all" policy solution. Three priority areas for policy attention stand out, in particular: increasing productivity in a sustainable manner by according a higher priority to research, development, innovation, education, extension services and information; ensuring that well-functioning markets provide the right signals, and in particular that prices reflect the scarcity value of natural resources as well as the positive and negative environmental impacts of their use; and establishing and enforcing well defined property rights, so as to ensure sustainable resource use.

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IS THE SUSTAINABLE INTENSIFICATION OF AGRICULTURE COMPATIBLE WITH THE SUSTAINABLE MANAGEMENT OF LANDSCAPES OF HIGH NATURE VALUE?

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Abstract
The concept of 'sustainable intensification (SI)' is being widely used to express the desire to address issues of both food security and environmental degradation by increasing both food production and environmental quality. The purpose of this paper is to examine whether SI is compatible with the kind of sustainable landscape management that will be needed to maintain High Nature Value (HNV) landscapes into the future. The general concept can indeed apply, because it allows for specialisation of areas within a region to concentrate on food production, and others on the delivery of ecosystem services; increasing food production on some areas, and enhancing the environmental quality of HNV areas can be considered. However, the concept of SI is not very useful in these areas, partly because the economic and regulatory drivers to encourage SI may have little traction among the decision makers in HNV landscapes, and partly because the societal demands on ecosystem services in these areas are dynamic, and so may not be well served by the rather deterministic approach to land management that SI implies.

Keywords: Ecosystem services, multifunctional landscapes, agro-ecology, cultural services

JEL Codes: Q56, O55, Q25

Introduction

The sustainable intensification of agriculture (SI) expresses the ambition of producing more food from the land with a more benign environmental impact [1]. The concept stems from the recognition that there is a global need for increased food production in response to rising populations [2], and also a global need to avoid further environmental degradation [3]. The basic idea is not dependent on spatial or temporal scale, and so while it may seem most appropriate to the whole farm scale over periods of a few years, it can be adapted to landscape scales and above by recognising that balancing agricultural production and delivering ecosystem services is best achieved by some form of partitioning of land use depending on the characteristics of different landscape elements [4]. One can imagine that SI can be achieved by selectively managing different parcels of land to enhance different combinations of food production and delivery of other ecosystem services, so that both types of outputs are increased across the landscape as a whole. Thus some areas may be best managed for intensive agriculture, ensuring that overall levels of pollution are controlled, while others may be best managed for some environmental benefit (e.g. for biodiversity or flood management) [5]. "Intensification" will therefore take different forms across the landscape, taking the form of increasing food production in some areas, and enhancing other ecosystem services in other areas, delivering overall increases both in food production and environmental quality (Fig 1), thereby delivering sustainable intensification. At first sight, therefore, the concept of SI embraces sustainable landscape management, if applied at the correct scale, and vice versa.

The purpose of this paper is to examine whether the concepts really are interchangeable when landscapes include areas of high natural and cultural value. We argue that this will indeed be the case if the conceptual model shown in Fig 1 is an accurate representation of the social, agricultural and ecological processes involved. There are several assumptions in this model shown in Fig 1. They are that

1. it is possible to construct this kind of graph in the first place, that appropriate data are available, can be integrated in an appropriate way, and there exists a genuine functional relationship between agricultural production and delivery of ecosystem services; if this is not true, the concept of SI cannot be operationalised;
2. that there are drivers of behavioural change that can influence land managers to adjust their management strategies to fit in with larger scale objectives; if this is not true, SI cannot be achieved through any form of policy and

3. that the requirements for (and hence values of) different ecosystem services are relatively static; if this is not true, SI may achieve transient changes to ecosystem service delivery only.

The functional relationship between agricultural production and generation of other ecosystem services

Fig 1 pictures the relationship between agricultural production and other ecosystem services as being inverse. There are certainly many such relationships between agricultural production and non-crop biodiversity, which is unsurprising given that agriculture involves diverting primary production for harvest and use by people, reducing the energy available to non-crop organisms [6] [7]. Such negative relationships can be seen in competition between weeds and crops, for example [8]. Moreover, evidence suggests that production is indeed inversely correlated with the delivery of other ecosystem services in typical grassland production systems in Western Europe [9], and there is also a widespread perception, dating back to the 1950s [10], that highly productive agriculture is more polluting, and associated with a poorer environment [11].

However, the model of SI is best considered a conceptual model, rather than a model that can be parameterised. The first problem is that it assumes that different forms of ecosystem services can be brought together to form a single variable. This is the common assumption of much environmental economics, and assumes that the value of different ecosystem services is essentially stable over time and space, which is clearly not the case. Secondly, relationships between agriculture and ecosystem services are not constant, but rather depend on the farm landscape and the choice of farming practices used. Structurally complex landscapes, including organic farming, increases local biodiversity [12] and may enhance at least some ecosystem services [13], but these are generalisations. New approaches to farming can enhance environmental quality without sacrificing food production, compared with many current systems. Biodiversity can be enhanced at the edges of crops without loss of yield [14], while precision application of fertilizers and livestock feed inevitably reduces waste and therefore pollution to air and water.

The situation becomes more complex in high nature value farming areas. This is because relationships between agricultural production and socio-economic ecosystem services (such as employment, recreation, cultural and spiritual value) are even less consistent, and vary strongly with context, when they are understood at all. It is widely assumed that these services are maximised at low levels of agricultural production, maintaining biodiversity, landscape quality and social cohesion through the continuation of traditional land management regimes. Yet the situations are not so clear cut. Thus, land abandonment leads to biodiversity loss, yet this loss may be delayed for example recent studies in Romania suggest that plant species richness can remain high in the years after land abandonment [15]. Moreover, the value of agricultural production from high nature value areas is not simply a function of yield; the value may be very low, if there is no access to market, or very high, if the food has a niche market. Or, the value may be very hard to estimate, if the food is used within the home and village. Data collection to parameterise Fig 1 becomes almost impossible in many high nature farming systems, where even basic data on food production is not gathered, never mind less tangible ecosystem services such as spiritual or existence values.

We therefore propose that the model of SI is easiest to apply to large-scale, commercial farming as practiced in Western Europe, where both food production and other ecosystem services can be evaluated in a reasonably consistent way [16]. It is very difficult to place and individual farm within the SI spectrum. However, the concept of SI is still useful if it used to focus on potential impacts of particular changes in farm and landscape management. For many management actions, potential impacts on food production and other ecosystem services can be forecast, in general if not absolute terms (though trade-offs between ecosystem services remain poorly understood [17]). In other words, it is possible to develop land use plans that prioritise particular ecosystem services in different locations (e.g. locations of buffer strips, wildlife corridors, more intensive food production); perhaps the goal of SI at the landscape scale is to achieve multifunctional landscape management [18] !

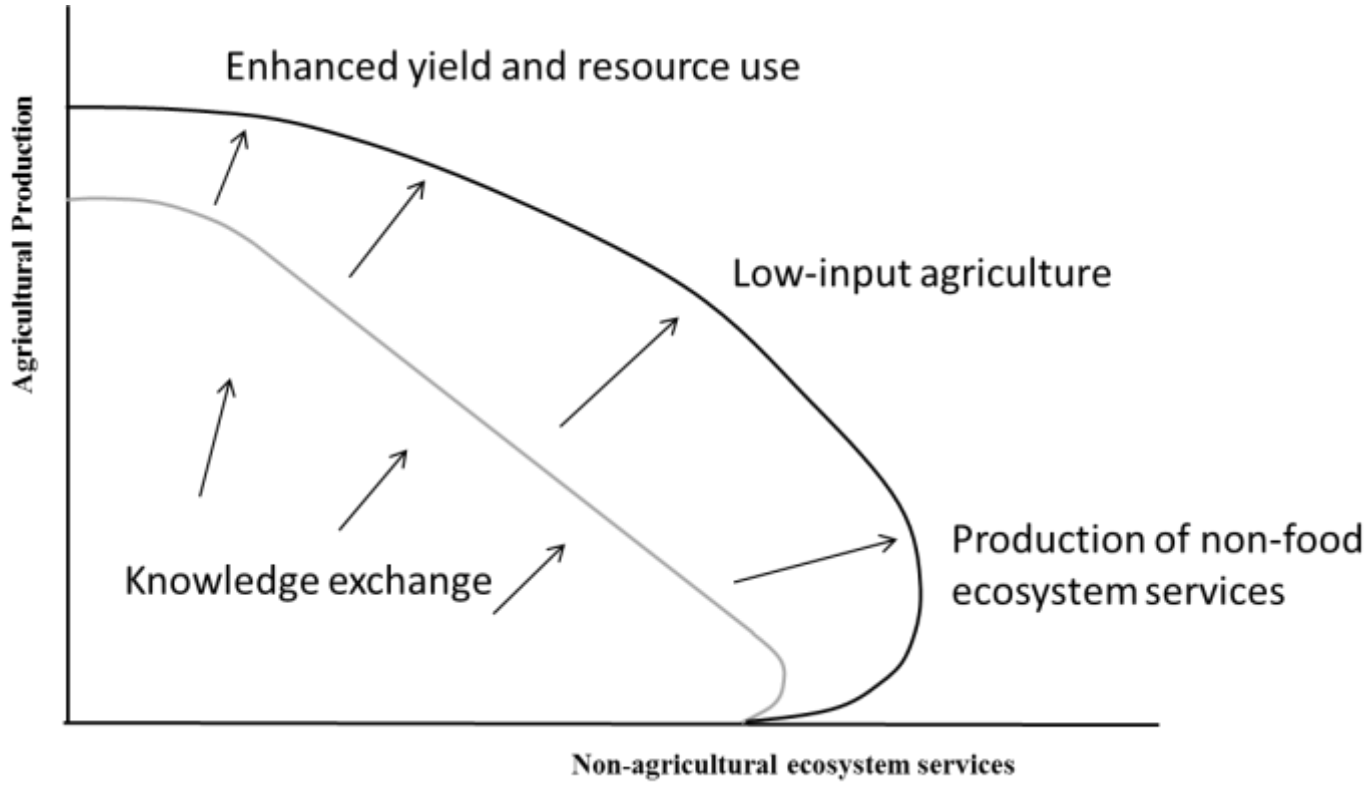
The potential for incentivising farmers and land managers

We argue that SI is only a useful concept if incentives are available to encourage changes to a more productive and environmentally more benign state.

Such incentives do exist. The Common Agricultural Policy is predicated on supporting both food production and environmental enhancement through a mixture of support and regulation. The supply chain can also play an important part; one of the UK farms that demonstrated sustainable intensification has been incentivised by a contract with a food company that required improvements in greenhouse gas emissions [16]. However, some aspects of farming are more amenable to incentivisation than others. Thus in the UK, improvements in technology, increases in nutrient pricing and increased regulation of water quality have resulted in a reduction in diffuse pollution from farming in recent years [19]. Agri-environment payments have supported targeted schemes that have resulted in local increases in some farmland birds. However, overall farmland bird numbers have continued to fall. Perhaps reductions in pollution make sense in the business models of many farmers, whereas improvements in biodiversity are often seen as a cost, to be supported externally.

However, many small farmers in High Nature Farming areas are not working to maximise profits. Farms in Eastern Europe show a bimodal size structure, with a few very large farms and many very small ones, which often have little or no connection with the market [20]. The smaller farmers may have no interest in business expansion; they have little time to navigate the complex bureaucracy involved in drawing down payments. Rather they are seeking to produce food within a limited allocation of resources and time, for the same of personal rather than financial objectives [21], and so need different forms of support. For example, in Romania, EcoRuralis is a group of small, family farmers who practice traditional and organic farming, representing the interests of smaller farmers, helping them benefit from local market schemes, and assisting with the bureaucracy and awareness of their rights and duties.

Figure 1 SI implies an increase of food production and / or other ecosystem services, with at worst no reduction in either, at an appropriate scale. At the landscape scale, this overall increase may be visualised as a lifting of the production possibility frontier, which represents the maximum levels of outputs currently possible, by using different strategies according to the qualities of the land parcels. The slight reduction in ecosystem service outputs at zero agricultural production is because some forms of biodiversity require a low level of agricultural production. From [5]



Source: Firbank, 2012

How static are the requirements for ecosystem services?

Much of the current debates about sustainable land use assumes that societal needs for ecosystem services are essentially constant, and the challenge is how best to maintain the delivery of these services under changing circumstances [13]. Such a view is consistent with the model for SI. However, if that assumption is wrong, then SI risks supporting changes in land management that may appear sustainable in the short term, but actually are not appropriate over longer time frames.

Rural areas are not fixed, but are dynamic, both socially (e.g. [22]) and physically [23], as do the requirements for ecosystem services from the local environment. Local needs for food may fall, as dependence grows on global food supply chains. Local needs for water management may change, as new urban developments are created, and weather becomes more extreme. All of these changes make long term planning more difficult, especially for decisions that are hard to reverse, notably urbanisation and the development of new transport routes.

Conclusion

The paradigm of SI involves the deliberate enhancement of the production of food and other ecosystem services at an appropriate scale. This approach has value for many commercial farming systems around the world, that can incentivised to improve both productivity and environmental performance through markets, regulation, technological innovation and knowledge exchange. However, the approach seems much less useful when the ecosystem services themselves are more complex and fluid (especially cultural services), and when decisions are best influenced by locally-based systems.

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ADOPTION OF TECHNOLOGIES FOR SUSTAINABLE WATER USE AMONG SMALLHOLDER FARMERS IN AFRICA

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Abstract
The adoption of appropriate technologies for sustainable water use in small-scale farming is very important in order to cope with the effects of climate change and variability in Africa. This paper describes some appropriate technologies for sustainable water use suitable for the changing climatic conditions at two pairs of sites matched for rainfall, but differing in temperature, in semi-arid and sub-humid regions of Kenya. The pairs were also subsequently matched to form cool and warm regions. The study was conducted using participatory methods consisting of 20 focus-group discussions and data from 722 randomly sampled households from the two regions.
The descriptive and inferential results show that there was a high level of awareness of appropriate technologies but low rates of adoption in the semi-arid and sub-humid regions, as well as in the cool and warm regions. Even though gender did not influence awareness of the technologies, it has a positive correlation with adoption of the technologies. There was a difference in adoption of appropriate technologies between male-headed households and female-headed households at a 1% level of significance. Technology knowledge and use were higher in the semi-arid and warm regions than in the sub-humid and cool regions with farmer-to-farmer learning being the most prominent source of information. There was a difference in the use of technologies, which have a positive impact in regions with high temperatures at a 1% level of significance. A higher percentage of farmers used water harvesting, reduced tillage, crop rotation, green manure and used mulches in the warm regions compared to cool regions. The trend in awareness and adoption assumed a gender and an ecological dimension in favour of males, semi-arid regions and warm regions.

Keywords: Climate change and variability, appropriate technology, adoption, gender, semi-arid region, sub-humid region

JEL Code: O25, Q01, O55

Introduction

Smallholder agricultural production systems are the main source of food and income for most of the world's poorest people (GSCCSA, 2011), and especially so in African countries. Agriculture is resposnsible for more than half of the world's food supply, and operates around 80% of farmland in sub-Saharan Africa and Asia (Grainger-Jones, 2011). In Kenya, smallholder farmers account for 75% of the total agricultural output and 70% of marketed agricultural produce (GoK, 2010). In addition, smallholder farming creates opportunities for women, who provide 60–80% of labour in the agriculture sector (GoK, 2010). Therefore, the effects of Climate Change and Variability (CC & V) on the world's 500 million smallholder farmers (IFAD, 2011) cannot be overlooked.

Smallholder farmers are one of the most vulnerable groups to CC & V as it adds pressure to their already stressed ecosystems (Grainger-Jones, 2011). Consequently, investment aimed at reducing the impacts of CC & V on small-scale farmers is critical in attaining the objective of global poverty reduction and food security (Wiggins, 2009). However, responding to the effects of CC & V requires continuous development of new techniques and improvement of the existing ones and, more importantly, their widespread adoption by farmers. In order to build the adaptive capacity of smallholder farmers, knowledge management is important (Campbell et al. 2010). Smallholder farmers need training on how and why to use technologies and appropriate incentives to adopt them. This will require, as a matter of necessity, government support through the formulation of policies that provide incentives either directly or through the markets (Grainger-Jones, 2011).

The global challenges caused by CC & V are increasing the value of climate-related information (GSCCSA, 2011). However, a survey done in Kenya assessing farmers' needs showed that the most important information required by farmers, such as chemical application rates, control of late blight in potatoes, accessing certified seed and identifying the most appropriate crop varieties for a given location, among others, were not adequately addressed (Rees et al., 2000). It has also been noticed that research work is not often tailored to solve the needs of the farmers (Orotho, 1990). In addition, very little is known concerning the specific needs of smallholder farmers in different agro-ecological zones with regard to farmers' ongoing adaptation to CC & V and how that might be affected by factors such as their resource base and gender.

The agricultural extension systems work closely with farmers and are tasked with the responsibility of initiating and supporting the diffusion of innovations, as well as facilitating exchange of experience between farmers. Apart from extension workers, farmers use other sources of agricultural information such as radio and television or the observations of other farmers. However, the use of this information is determined by how the knowledge is passed on, how it works and its benefits to farmers (Muhammad and Garforth, 1995). This study therefore aims to examine the levels of awareness and adoption of selected appropriate technology and the modes of information dissemination amongst smallholders in two agro-ecological zones of Kenya. These are semi-arid and sub-humid regions of Kenya. The semi-arid zones are characterised by low, erratic rainfall averaging 300–600 mm per year with shallow and generally infertile soil (FAO, 1987). The sub-humid region of Kenya receives an average of between 1000–1500 mm of rain annually and the soils are red clay (Ibrahim and Olaloku 2000). This state if affairs shows that for sustainable water use is essential if crop production is to be upkept.

Methodology

Project area

The study was carried out in four important growing areas across Kenya, comprising cool and dry, cool and wet, warm and dry, and warm and wet growing conditions. The paired areas represent climate analogues that help people visualise what their climate and environment is likely to look like in the future (CCAFS, 2012)**.** The two paired sites have similar rainfall totals and patterns but with a mean annual difference in temperature of 1.5–3 ^{0}C. Detailed descriptions of climatic conditions for the paired sites are given in Table 1.

The study of the semi-arid region was carried out at five villages in Machakos district near KARI (Kenya Agricultural Research Institute) Katumani, which is the cool and dry site, and five villages in Makueni district near KARI Kambi ya Mawe representing the warm and dry site. For the sub-humid region, the study was carried out at five villages in Limuru district representing the cool and wet site, and five villages in Kikuyu district representing the warm and wet site. The differences in climate conditions may influence the agricultural practices that farmers adopt (Bryan et al. 2010). Due to these, different categories of agricultural technologies, which assist farmers in adapting rain-fed agriculture to CC & V, were considered. The selection of these technologies was based on studies of rain-fed agriculture that have consistently shown that soil conservation, rainwater harvesting and drought proofing are essential for adaptation to CC & V (Venkateswarlu et al. 2009). Studies show that technologies such as mulching with maize straw lower soil temperature, improve average water use efficiency and increase yields (Li, 2012). This is because mulching reduces soil evaporation and conserves the soil moisture, thus adjusting soil temperature. Soil temperature is an important component in plant growth as it determines nutrient requirement for plant growth. Temperature also has a direct effect on soil moisture as it influences soil evaporation (Brabson et al., 2011). The technologies were grouped into three categories, named "soil and water management", "soil fertility management" and "crop management practices". In addition, the social and economic characteristics of each household were also recorded.

Table 1 Climatic characteristics of the regions

Characteristics	Semi-arid region Analogue 1		Sub-humid region Analogue 2	
	Cool	Warm	Cool	Warm
	Machakos	Makueni	Limuru	Kikuyu
Average annual temperature (^{0}C)	19.2	20.8	15.9	18.2
Average annual rainfall (mm)	673	611	854	1114

Source: Own processing based on own data collection

Data collection methods

Two principle methods of data collection were used in this study: a household survey and Focus Group Discussions (FGDs). In addition, secondary data was obtained from reviews of literature. The study was implemented between July 2011 and June 2012.

Household interviews

Household interviews were conducted using structured and semi-structured questionnaires to record information on levels of awareness and adoption of technologies and their sources. For each study site, five villages were randomly selected, making a total of 20 villages with the same climatic characteristics as the study sites, which were represented by the village elders (Table 2). From the total of twenty randomly selected villages, 722 households were interviewed as shown in Table 2.

Table 2 Distribution of the interviewed households

Regions	Sites	Villages	Frequency (n = 722)
Semi-arid	Machakos District (cool/dry site)	Lower Kwa Kavoo	174
		Upper Kwa Kavoo	
		Upper Kaathi	
		Lower Kaathi	
		Mikuyuni	
	Makueni District (warm/dry)	Kathoka 1	180
		Kathoka 2	
		Kambi ya Mawe	
		Kyemole	
		Mulaani	
Sub-humid	Limuru District (cool/wet)	Karara-iti	190
		Maganjo	
		Gatina	
		Gitangu	
		Gatimu B1	
	Kikuyu District(warm/wet)	Mbomboini	178
		Marengeta	
		Kwangera	
		Thiranga	
		Wamoro	
	Total	20	722

Source: Own processing based on own data collection

Focus Group Discussions (FGD)
FGDs were conducted with separate groups for men and women with between 6–12 members per group and at the same villages where the household interviews were undertaken. A total of 102 men and 107 women participated. The FGDs were conducted using a checklist. The responses were recorded using an audio recorder and later transcribed to record the themes as they emerged in the discussions.

Data analysis
The data collected was analysed both qualitatively and quantitatively. Data from household interviews were entered, processed and analysed using two computer programs: Statistical Package for Social Science (SPSS) and Excel. In order to determine trends and patterns of awareness, adoption rate and sources of some agricultural technologies relating to CC & V, both descriptive and inferential statistics were used. Specifically, means and frequencies were used to establish trends and patterns while Cramer's V was used to determine the strength and type of association between gender, knowledge and adoption of the technologies (SAS, 1990). Data from FGDs were analysed using content analysis to understand the themes emerging in relation to the study objectives. This was deemed appropriate in establishing a consensus on particular aspects or themes of concern to the study from a wide range of communication, as recommended by Smith, 1992, so as to develop perception and understanding of the data (Cavanagh, 1997).

Results and discussions
Description of study sample
The sample was composed of 71.2% and 73.8% male-headed households in the semi-arid and sub-humid regions, respectively. The semi-arid region had a higher proportion of household heads (50.6%) with at least a primary level of education as compared to the sub-humid region with 48.5%. 27.8% of household heads reported having secondary education in the sub-humid region, compared to 26.3% in the semi-arid region. Fifty percent of household heads were aged 55 years and above with a significantly higher percentage of older people found in the semi-arid region.

Awareness and use of agricultural technologies
Technological expertise and its use in semi-arid and sub-humid regions
A summary of the agricultural technologies suitable for the sub humid, semi-arid, cool and warm regions is shown in Table 3. The analysis showed that there was no significant difference in the knowledge of technologies in the four regions. There was a difference in the adoption of technologies at a 1% level of significance between the sub-humid and semi-arid regions. Likewise, in the warm and cool regions, the difference is at a 5% level of significance. Soil and water management technologies were best known and used in the semi-arid and warm regions. This is despite the fact that the use of agricultural practices such as mulching and using compost manure are some of the recommended practices for adapting soil to climate change through C sequestration (Lal, 2011). Likewise, the knowledge and use of soil fertility management technologies were highest in the sub-humid and cool regions. This shows that soil moisture for crop production was not a problem in comparison to soil fertility in the cooler regions.

Table 3 Summary of knowledge of agricultural technologies in the regions

Knowledge of technologies	**Regions (% of farmers)**			
	Sub-humid	**Semi-arid**	**Cool**	**Warm**
Soil and water management	44.64	55.36	47.42	52.58
Soil and fertility management	47.94	52.06	50.11	49.89
Crop management	44.37	55.63	49.67	50.33

Source: Own processing based on own data collection

Table 4 Summary of adoption of agricultural technologies in the regions

Technologies adoption	Regions (% of farmers)			
	Sub-humid	Semi-arid	Cool	Warm
Soil and water management*** (sh,sa) ** (c,w)	29.89	70.11	43.2	56.79
Soil and fertility management**(regions)	44.74	55.26	57.09	42.91
Crop management** (regions)	41.08	58.92	49.28	50.71

Source: Own processing based on own data collection

The detailed data from the household interviews on knowledge and utilisation of technology are presented in Tables 5 and 6.

Table 5 Knowledge and utilization of climate change adaptation technology in the semi-arid and sub-humid regions

Technology	Semi-arid region (N = 354)		Sub-humid region (N = 368)	
	Knowledge (%)	Usage (%)	Knowledge (%)	Usage (%)
Soil and water management				
Terracing *** (region-usage)	100	95.5	92.9	16.1
Climate information ***(region-usage)	86.1	52.7	88.0	30.3
Reduced tillage ***(region-knowledge, usage)	81.3	53.3	58.5	35.5
Mulching **(region-knowledge, usage)	75.6	34.6	74.6	32.0
Water harvesting ***(region-usage) **(region-knowledge)	78.8	53.3	57.1	16.7
Tied ridges *** (region-knowledge, usage)	64.6	56.4	19.1	10.7
Soil fertility and management				
Animal manure	99.2	87.5	99.5	92.9
Chemical fertilizer *** (region-knowledge, usage)	94.6	29.5	98.6	35.5
Green manure ***(region)	54.4	30.6	25.7	12.0
Crop management				
Pest and disease control *** (region-usage), **(region-knowledge)	99.2	83.3	94.3	24.3
Row planting	97.5	92.6	100	98.6
Crop rotation *** (region-usage)	92.9	75.1	88.8	53.0
Seed priming***(region-usage, knowledge)	72.2	14.7	39.9	6.8
Herbicides***(region-usage, knowledge)	64.6	2.8	72.4	5.5

Note: **, *** Difference between regions, significant at 5% and 1% respectively (chi Square)
Source: Own processing based on own data collection

The data in Table 5 showed that there was generally a high level of awareness, with over 50% of the farmers familiar with all the technologies in the semi-arid region. In the sub-humid region, there were only three technologies (seed priming, tied ridges and green manure) of which less than 50% of farmers were aware. Apart from two technologies, row planting and animal manure, the farmers in semi-arid regions showed more awareness of technologies than those in the sub-humid region. This is evidenced by significant statistical differences between the levels awareness and adoption from the semi-arid to the sub humid region as shown in Table 5. There was also a lower level of awareness and adoption across the two regions for the comparatively more complex technologies that require more financial input and effort such as use of green manure, seed priming and herbicides. This was in line with findings elsewhere that suggest that simple and cheap technologies, such as use of modern maize varieties, are more acceptable (Doss and Morris, 2001), and for adoption of a technology to occur the farmers must be aware of it (Asiabaka et al, 2001; Agwu, 2001; Ajayi, 2002; and Ajayi and Solomon, 2010). From this study, simple technologies such as use of animal manure, row planting and terracing showed the highest awareness and adoption rate from both regions.

The results from the FGDs pointed to the fact that 90% and 84% of farmers from semi-arid and sub-humid regions respectively had less access to information about new agricultural technologies and innovations than indicated, 98% and 88% lacked capital, and 82% and 76% had limited access to extension services. It was also noted that farmers feared the heavy security presence at the entrances of the research centres in their regions. Due to safety reasons the heavy security presence is justifiable, especially where the nature of research requires quarantine to prevent the spread of diseases and avoid harm to human beings and the rest of the flora and fauna.

In the semi-arid region, there were high levels of awareness and adoption of terracing, with all of the farmers being aware of the benefits of terracing. However, only 16.1% of the farmers were practicing terracing in the sub-humid region. This may be attributed to the small areas used, averaging 0.6 hectares per household, and the intensive labour requirement of this technology. The farmers from the sub-humid region, especially from Limuru area, use Napier grass for soil and water conservation.

The level of awareness of row planting was 97.5% and that of both animal manure and pest and disease control 99.2% in the semi-arid region. This high awareness may be due to the promotion of these technologies by the Government of Kenya in the early 1980s (Karanja, 2006). It was encouraging to note that the high levels of awareness of these technologies were also translated into higher adoption rates. The farmers linked the use of the aforementioned agricultural practices to counteracting the increasing temperature ranges and unpredictable rainfall patterns. The higher adoption of pest and disease control linked to CC & V was similar to the trends observed in semi-arid regions of Tanzania (Mongi, 2010). The study showed that the emergence of new pests and diseases was associated with the increase in temperatures and number of dry spells, prompting the increase in the use of pest and disease control measures. Other major documented impacts of climate change and variability on agriculture in Tanzania are recurrent droughts, floods, increasing crop pests and diseases and seasonal shifts (URT, 2007).

Conversely, despite the fact that water harvesting technology has been promoted as an alternative to water scarcity in arid and semi-arid regions, the levels of awareness and use stood at 78.8% and 53.3% respectively and were relatively low as compared to levels of adoption of some other technologies (Table 5). Low adoption of other technologies that could be of benefit to farmers in semi-arid regions was also observed for mulching, tied ridges and reduced tillage. Technologies such as reduced tillage, no-till, direct drill, mulch, trash farming and strip tillage have been used for soil and water conservation in semi-arid regions (Hudson, 1987). The barrier to adoption of tied ridges was cited as being the fact that it is labour intensive and only suitable for small land parcels. The low adoption of mulching was associated with termite attacks, meaning the maize stalks are eaten.

The farmers in the sub-humid region showed differing patterns from those in the semi-arid region in awareness of the technologies, with all the farmers reporting awareness of row planting. The levels of awareness of other technologies were also high, with the use of animal manure being mentioned by 99.5% and the application of chemical fertilizer by 98.6% of the farmers. Unfortunately, the high awareness of chemical fertilizer did not translate to high usage with only 35.5% of the farmers reporting using it. This low usage may be due to high input costs (Waithaka et al., 2007). Farmers from the study sites preferred using animal manure since it is easily available. Due to the scorching effect of fertilizer on crops during periods of

low rainfall, farmers had a perception that the use of fertilizers hardened their farms. This can be linked to the hygroscopic behaviour of fertilizer (Sharma and Patel, 2000).

Generally, Table 5 demonstrates that technology knowledge and usage is higher in the semi-arid region than in the sub-humid region. This may be contributed to by the average size of land parcel and level of education in the sub-humid region, where the majority of farmers are squatters. The total average area of land per household in the semi-arid region is 2.67 hectares, as compared to 0.6 hectares in the sub-humid region. The area of land cultivated was different in the semi-arid the sub-humid regions at a 1% level of significance. The average area of cultivated land was 1.21 hectares for semi-arid region as compared to 0.4 hectares for sub-humid region. 80% of farmers rented the land to cultivate in the sub-humid region compared to 10% of farmers at semi-arid region. Land ownership was identified as the key factor in the adoption of conservation tillage practices in Morogoro District of Tanzania (Lubwana, 1999). In addition, a higher percentage of household heads (50.6%) in the semi-arid region had primary education as compared to 48.5% in the sub-humid region. A study done in Mozambique showed that where the household heads had an education, those families were more likely to adopt agricultural technologies (Uaiene, 2009). Weir and Knight (2000) also found out that early innovators in Ethiopia tended to be educated. The high levels of knowledge and utilisation of appropriate technology in the semi-arid region is a welcome idea since there is increasing evidence that shows that CC & V will strongly affect drier regions (Adger et al., 2007; Kurukulasuriya et al., 2006).

There is a moderate association between the experience of the effects of CC & V and utilisation of the climate information (Cramer's V = 0.34). In this study, rainfall, sunny intervals and temperature were the only climate information considered. From Table 5, 86.1% and 88% of farmers are aware of climate information in the semi-arid and sub-humid regions respectively. More interestingly, use of climatic information is high in the semi-arid region with 52.7%, as compared to 30.3% in the sub-humid region. The farmers usually use the weather updates on the radio and TV for agricultural planning, so as to reduce the risk associated with crop failure. The higher percentage of farmers using climatic information in the semi-arid region may be attributed to the variability in rainfall and drought spells witnessed over the last few years. During FGDs, farmers confirmed that climatic information was useful in choosing the type of crops to plant and at what date. However, the percentage of the farmers making use of climatic information is still low despite a lot of talk of CC & V in high-level meetings of policymakers, but this has not trickled down to the farmers.

Table 6 gives a summary of results from the cool and warm regions. A higher percentage of farmers from the warm region practiced water harvesting, reduced tillage, crop rotation, mulching, application of green manure and used climatic information for their agricultural production as compared to farmers from the cool region (Table 6). Use of these specific technologies is different between the cool and warm regions at 1% level of significance. Technologies such as mulching with straw were found to significantly increase soil moisture and lower soil temperatures (Rioba, 2002), and this is beneficial to crop production, especially to the warm regions. Higher temperatures have also been associated with increased incidences of pest and diseases and the use of crop rotation has been proven beneficial in reducing insect populations, thus increasing yields. Crop rotation also helps farmers to reduce problems associated with reduced tillage such as increased soil compaction and perennial weeds (Pennsylvania State University, 1996). Green manure was also found to conserve water by reducing water evaporation, as well as reducing the need for pesticides (Florentín, 2011).

Table 6 Knowledge and utilisation of climate change adaptation technology in the warm and cool regions

Technologies	Cool region		Warm region	
	Knowledge (%)	Usage (%)	Knowledge (%)	Usage (%)
Soil and water management				
Mulching	51.85	43.51	48.15	56.49
Terracing	48.77	46.72	51.23	53.28
Use of climate information***(region-usage)	48.08	40.74	51.92	59.26
Tied ridges	46.64	49.58	53.36	50.42
Water harvesting***(region-usage, knowledge)	45.59	33.73	54.41	66.27
Reduced tillage **(region-usage, knowledge)	43.31	41.19	56.69	58.81
Soil fertility and management				
Compost	50.39	54.55	49.61	45.45
Chemical fertilizer***(region-usage)	50.22	83.33	49.78	16.67
Animal manure	48.74	50.08	51.26	49.92
Green manure	46.85	40.13	53.15	59.87
Crop management				
Crop rotation***(region-usage)	52.68	60.35	47.32	39.65
Seed priming	51.62	57.14	48.38	42.86
Herbicides***(region-usage, knowledge)	51.52	83.33	48.48	16.67
Pest control	50.22	55.61	49.78	44.39
Row planting	48.17	47.09	51.83	52.91

Note: ***, ** Difference between regions, significant at 5% and 1% respectively (chi Square)
Source: Own processing based on own data collection

Appropriate technologies and gender

In the African context, the household head makes decisions on agricultural activities irrespective of whether or not they are present (KIHBS, 2006). Significantly, more male-headed households were aware of technologies than were female-headed households across the two regions (Table 7). The analysis revealed that gender as a whole didn't influence awareness of the technologies (Cramer's V = .0932, p< 0.000). This adoption of technologies was also significantly different between male-headed households and female-headed households at the 1% level of significance (Cramer's V=0.1308, p<0.000). Even though gender did not influence the awareness of the technologies, it has a positive correlation with adoption of the technologies. 73.07% and 74.68% of male-headed households from semi-arid and sub-humid regions respectively had adopted the technologies. This may have been contributed to by the fact that in most smallholder farms, technology is mostly at the disposal of men (Lubwana, 1999). In these villages, even in female-headed households, the older son or male relative makes the decisions for the family. If the woman is not the primary decision-maker in the households, her gender-specific needs may not be met (Wakhungu, 2010). Studies also show that women do not possess material assets, thus making it difficult for them to access credit facilities for buying inputs such as fertilizer and seeds. From the study, it was evident that the household head receives the highest percentage of the income accrued from farming. For instance, 68.8% of income accrued from the sale of crops goes to the household head, with the spouse receiving only 25.9%. Similarly, of the income accrued from the sale of livestock, the household head receives 78.7% with the spouse receiving 17.3%. This leaves the women with little income, thus reducing

their purchasing power. The ability to afford seed and fertilizer has already been identified as a key component of technology adoption (Wakhungu, 2010). Other factors influencing technology adoption include farm size, level of education, gender, access to extension services and credit facilities (Salasya et al., 2007).

Table 7 Awareness and adoption of climate change adaptation technologies in semi-arid and sub- humid regions

Gender of households	Semi-arid region		Sub-humid region	
	(% of farmers per gender)			
	Awareness	Adoption	Awareness	Adoption
Male	71.87	73.07	73.92	74.68
Female	28.13	26.93	26.08	25.32

Source: Own processing based on own data collection

Awareness and adoption of technologies in warm and cool regions were significantly different between male-headed and female-headed households at a 1% level of significance ($p<0.000$, Cramer's V = 0.3079) (Table 8). The analysis shows a positive correlation between gender and adoption of technologies in the warm and cool regions. 68.93 % and 78.43% of the male-headed households from cool and warm regions had adopted the technologies. This trend is similar to the semi-arid and sub-humid regions, where the adoption of technologies by male-headed households was higher.

Table 8 Awareness and adoption of climate change adaptation technologies in warm and cool regions

Gender of households	Warm region		Cool region	
	(% of farmers per gender)			
	Awareness	Adoption	Awareness	Adoption
Male	70.34	68.93	78.74	78.43
Female	24.26	31.07	24.27	21.57

Source: Own processing based on own data collection

Factors contributing to the large disparity in awareness and adoption of these technologies between the male and female-headed households were highlighted during the FGDs. These include heavy workloads as women perform both agricultural and domestic duties such as cooking, fetching water and taking care of children and the sick, among others. Due to this, they have little time to attend community meetings. They also do not have time to listen to the radio, (which is mostly a male possession), or watch TV. This division of roles, which burdens women more than men, is a socially accepted norm in the community. This grossly affects technology adoption by female-headed households. These cultural and traditional beliefs have been seen as a long-standing phenomenon that has negatively affected the adoption of most agricultural technologies (Lubwana, 1999). If women in Kenya are given the same opportunities as men, such as education, information and access to seeds and fertilizers, yields can be increased by 22% (Chelala, 2011) and total agricultural production in developing countries raised by 2.5–4%, as well as the number of hungry people in the world reduced by between 100–150 million (FAO, 2011). Empowering rural women and girls can be a solution to food security, poverty reduction and sustainable development (United Nations Economic and Social Council, 2011).

Main sources of information about agricultural technologies

There is a general belief that extension workers are the main channel for the adoption of new agricultural technologies and information (Margono and Sugimoto, 2011). On the contrary, the study showed that the most frequent source of information in the two regions was learning from other farmers who are already using these technologies, with the exception of climatic information (Table 9). The technologies learnt from other famers may not be new, but they are seen as new by the farmer (Baumüller, 2012). This is consistent with the results of other studies that showed that farmers with experienced neighbours were more likely to devote more land to new agricultural technologies (Abbas, 2003). During the FGDs, farmers confirmed that they imitated the use of technologies and crop varieties from neighbours whose crops were doing well. However, Omotayo et al. (1997) found out that 40–50% of those who had access to radio obtained information on improved farming practices from it. Nevertheless, the study did not show us the extent to which the information was translated into practice.

Farmers in the study signified the importance of electronic media by reporting radio and television as the main sources of information on CC & V. This is similar to a study done by Nzeadibe et al. (2011) whereby the mass media was the largest source of information on the phenomenon of climate change in the Niger Delta Region of Nigeria.

Table 9 Sources of information in the semi-arid and sub-humid regions

Technologies	**Government officer**		**NGO**		**Other farmer**		**Radio/TV**		**Demonstration/research station**		**School**	
	SA	**SH**	**SA**	**SH**	**SA**	**SH**	**SA**	**SH**	**SA**	**SH**	**SA**	**SH**
Tied ridges	5.0	7.0	2.0	1.0	74.5	61.5	0.5	12.5	10	14.5	6.5	4.0
Water harvesting	7.0	6.0	2.0	1.0	70.0	72.0	5.0	9.5	10.5	6.5	6.0	4.5
Reduced tillage	0.5	5.0	0.5	0.5	86.5	80.0	2.5	8.5	4.0	2.0	5	3.5
Terracing	11.0	12.5	2.5	0.5	67.5	68.0	1.0	4.0	11.0	4.5	6.5	11.0
Mulching	2.5	6.5	1.5	1.0	58.0	66.0	11.0	4.0	9.5	2.5	18	19.5
Animal manure	1.5	2.0	0.5	1.0	88.5	91.5	0.0	0.0	2.5	2.5	7.0	4.0
Green manure	9.5	10.5	4.5	5.0	54.5	37.5	10	18.0	8.0	13.5	12.5	15.5
Crop rotation	6.5	7.5	2.5	0.5	66.0	68.0	2.0	9.0	13.0	6.0	11.0	9.0
Chemical fertilizer	2.5	10.5	1.5	1.5	62.0	57.5	12.5	22.0	14.0	3.0	8.0	5.5
Row planting	2.0	4.5	1.0	0.0	81.5	89.5	2.5	2.0	7.0	1.5	6.5	2.5
Seed priming	0.5	6.0	0.5	0.5	92.5	78.5	2.0	6.5	2.5	3.0	3.0	5.0
Pest control	4.0	6.0	4.0	2.0	63.5	58.0	4.5	23.0	16.0	6.0	7.0	4.0
Herbicides	1.0	4.5	2.5	1.5	55.5	39.5	23	41.5	7.0	6.5	10.5	7.0
Use of climatic information	1.5	0.0	1.0	0.0	11.5	14.0	81.0	86	4.5	0.0	0.0	0.0

Source: Own processing based on own data collection

Note: SA (Semi-arid region), SH (Sub-humid region), NGO (Non-Governmental Organisation)

Sources of information and gender

A gender analysis of the sources of information showed that there was a difference in the use of all the sources of information between male and female-headed households at a 1% level of significance ($p,<0.000$, Cramer's V = 0.2177) in the semi-arid region, with the exception of information from

government officers, which was significant at a 5% level of significance (p<0.002) (Table 10). Government officers and learning from other farmers were the preferred source of information for female-headed households in both regions. This may be attributed to the fact that government officers, especially extension workers, visit farmers groups in their homes on rare occasions, when it is mostly women to whom they offer professional advice. Even though the women indicated that they did not have time for frequent meetings, they have regular women's groups which meet at predetermined intervals. The NGOs are the main source of information for all (100%) male-headed households in the semi-arid region, while school is the main source of information for male-headed households in the sub-humid region, at 86.26%. This may be due to the fact that men have more time to attend seminars and agricultural-based workshops organised by various organisations. Women attend such events when they are officially nominated and must go. 80% of men from the project site confirmed spending their evening time meeting other men, when they share information at male-dominated markets and hotels. The other 20% preferred helping with livestock-related chores. 32.4% and 27.30% of women mainly get information from their fellow women during women's groups, which are held after a certain period of time. These percentages seem low, but represent the most significant source of information. This means that they have less exposure time compared to their male counterparts. Extension workers offer professional advice to the women's groups on crop and livestock production. It has been established that women constitute up to 60–80% of food producers in sub-Saharan Africa. It therefore makes sense to expect that a corresponding percentage of agricultural extension and training services would be directed to women farmers (FAO, 1997). This empowers their families to adapt to agricultural technologies.

Table 10 Sources of information by gender in the semi-arid and sub-humid regions

Source of information	Semi-arid region (% of farmers)		Sub-humid region (% of farmers)	
	Female	Male	Female	Male
Government officer**(sa)***(sh)	45.16	54.84	32.77	67.23
NGO***(sa, sh)	15.52	84.48	00.00	100
Other farmers***(sa, sh)	32.40	67.60	27.30	72.70
Radio/TV***(sa, sh)	20.59	79.41	25.74	74.26
Demonstration/research ***(sa, sh)	16.96	83.04	12.70	87.30
School***(sa, sh)	13.74	86.26	23.40	76.60

Note: **, *** Difference between sa (semi-arid) and sh (sub-humid), significant at 5% and 1% respectively (chi Square)
Source: Own processing based on own data collection

There was difference in the sources of information used by male and female-headed households at a 1% level of significance (p<0.000) in the warm and cool regions (Table 11). Interestingly, there were similarities in the sources of information used by male-headed households in the warm region and the semi-arid region. For both regions, NGOs were the preferred source of information (Table 10 and 11). The similarity was also apparent between the cool and sub-humid region, with preferred source of information being school for male-headed households. This trend was also replicated between semi-arid, sub-humid, cool and warm regions for female-headed households with government officers and learning from other farmers being the main source of information.

Table 11 Sources of information by gender in the cool and warm regions

	Cool region (% of farmers)		Warm region (% of farmers)	
Source of information	Male	Female	Male	Female
Government officer	70.73	29.27	48.45	51.55
NGO	91.13	8.87	89.158	10.85
Other farmer	73.92	26.08	65.73	34.27
Radio/TV	80.35	19.65	74.25	25.75
Demonstration/research station	84.69	15.31	84.7	15.22
School	91.3	8.7	71	29

Source: Own processing based on own data collection

Conclusions and policy implications

In general, there was no significant difference in the knowledge of technologies between the four sites. However, the adoption of the technologies was higher in the semi-arid region and the warm region. Soil and water management technologies were the best known and used in the semi-arid regions and the warm region. Knowledge and utilisation of soil fertility management technologies was highest in the sub-humid region and the cool region. In this study, simple technologies such as use of animal manure, row planting and terracing enjoyed the highest awareness and adoption rates from both regions. The technologies that were more labour intensive such as terracing and the use of tied ridges had low adoption rates even though most farmers knew about them.

The male-headed households had higher technology adoption levels compared to the female-headed households in all the regions. It was also found that most farmers received information on technologies from other farmers and from electronic media. Therefore, the farmers are generally well informed about the technologies for sustainable water use, but have not adopted the technologies that would lead them to adapt to CC & V, especially soil fertility management in warm areas and soil and water management in humid areas. This may lead to low production rates and shows that action in this field is greatly needed, if agricultural production is to be upkept.

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THE MALLEABILITY OF EMPLOYMENT AND THE TURN TO AGRO-ECOLOGY

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Abstract
This paper argues that employment levels in agriculture are not a simple derivative of technological levels and prevailing market relations. Styles of farming, i.e. specific ways of organizing agricultural production, are also a very influential factor. This means that agricultural employment is malleable, both at the micro and at macro level. Over recent decades the growth of multifunctional farming has further increased this malleability. Mainstream agri-political discourse has, so far, largely ignored the prospects of such malleability. The current need to radically enhance the sustainability of farming (particularly to mitigate against the effects of global warming) should lead us to reconsider the malleability of agricultural employment. There are two key reasons for this: first because of the possibility of substituting the use of fossil fuels by other forms of energy, including human labour and, second, recognition that the emergence of labour-intensive, low external input (or low-cost) farming styles is perhaps the economically most robust response to market volatility. This implies that there is a concrete possibility to stabilize or even increase employment in European agriculture, thus reversing the process of agriculture shedding labour that has been ongoing for decades. The paper locates the starting point for such a trajectory in the style of low cost farming.

Keywords: agriculture, employment levels, sustainability, agro-ecology, styles of farming

JEL Codes: J50, O11, Q32

On energy
Whatever food (or fibre) one grows, farming always implies the combination, development. and use of different sources of energy. Following the increasingly urgent need to reduce the use of fossil fuels, such sources might be divided in two categories: fossil energy and non-fossil energy. The contents of these categories have been changing over history and their interrelation also is historically variable (Pimentel, 2009a; Gonzalez de Molina y Guzman Casado, 2006). Currently, fossil energy enters the farm in many different ways: as diesel, electricity, gas, but also indirectly as fertilizer (the energy content of which is very high, other inputs, machinery and buildings. Non-fossil energy enters as solar energy, but also as nutrient flows produced by soil biology. It is also embodied in human labour. Animal traction has nearly disappeared (at least in Europe) but the on-farm production of new forms of energy (wind turbines, solar panels, biogas production) is expanding quickly.
As suggested in an authoritative exposition by de Wit (1975, 1992), the overall relation between fossil and non-fossil energy can be represented by a substitution curve (see Figure 1). The overall position and inclination of this curve will evidently depend on resource endowments, resource quality, technological level and the design of farms and farm activities. Over time, these substitution curves will move. With increased skills they may move downwards: with new technologies they will mostly move upwards and/or to the left. Formally speaking, the position of farms on the curve depends on the relative costs of energy from fossil and non-fossil sources. When fossil energy becomes cheaper, farms will move towards an increased use of them and less use of non-fossil fuel energy. However, considerable differentiation is possible here because the assessment of opportunity costs for different types of non-fossil energy is subjective – it depends on the strategy of the producers.

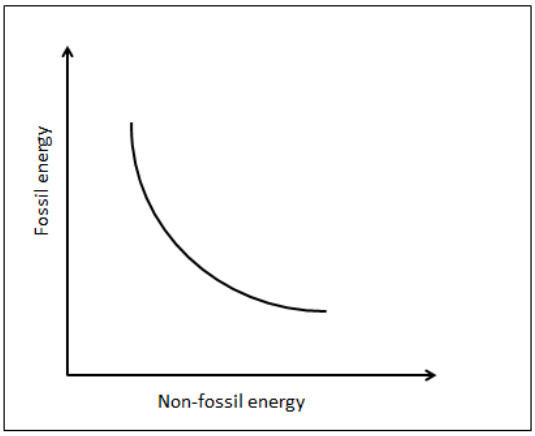


Figure 1 Substitution curve

Farming styles and energy use

Farmers operate different strategies in order to create a particular coherence between the many elements and relations that, together, compose the process of agricultural production. In this way different styles of farming are constructed[1]. These different styles can result in comparable levels of income as I demonstrate later in this paper. Figure 2 locates different farming styles in the space defined by intensity and scale of farming[2]. It is a summary of a range of farming styles studies realized during recent decades in the dairy farming sector in the Netherlands[3].

The style of farming intensively is grounded on the quantity, and especially the quality, of farm labour. Achieving high yields (notably a high milk yield per milking cow but also good grassland production and valuable offspring) is central to the style of farming intensively and this makes craftmanship decisive. The objects of labour (i.e. milking cows) are put centre stage in the organization of the production process. Individual attention and care, well-balanced feeding, skilful breeding and selection, adapted housing, etc., are all important. In practice people often refer to this style as that of the 'cowmen' ('cowmen' because everything centres on the milking cows). This is, in many respects, quite different from the style of the so-called 'machinemen'. Their farms are more large-scale and the production is more extensive in comparison to the 'cowmen'. They aim for the highest possible labour productivity. Milking as many cows as possible with the minimum labour is central to their strategy. Hence, the 'machine' emerges as the telling metaphor.

Low cost farming (or farming economically) is a style that aims to reduce the costs of external inputs as much as possible. It does so by combining and using the internally available resources in the best possible way. Farms developed along these lines tend to be far more self-provisioning than those of other styles: they produce their own feed and fodder (including the required concentrates), breed and select their own herd, work with their own (family) labour and knowledge, use the well-bred manure from their animals as fertilizer for their fields and are able to maintain and repair their machines – in short they try to master the

[1] A farming style is a distinctive way of ordering the many socio-material interrelations involved in farming. Each style can be seen as a distinctive way of equilibrating the many balances that link farming, the farming family and the outside world (Langthaler, 2012). Almost everywhere in the world one can find different, co-existing, farming styles. This reflects the fact that farming can be ordered (and organized and developed) in different, and often highly contrasting, ways (see for example Lasseur, 2005, Commandeur et al 2008, Sturaro et al 2009, O'Rourke et al 2012). Temporally, farming styles provide a degree of continuity (Garstenauer et al 2010; Langthaler et al 2012; Malaquín et al 2012). They are the outcome of the goal-oriented, knowledgeable and strategic behaviour of actors with different strategies reflecting the conditions under which they operate, their prospects and their plans for the future (van der Ploeg, 2003)

[2] Here intensity refers to the gross value of production per milking cow and scale to the number of milking cows per unit of labour force. Historical trend analysis (based on constant samples) shows a complex process of differentiation that is in contrast to an often assumed pattern of convergence (of all the remaining farms moving to the same intensity and scale levels). In this respect see van der Ploeg 2003.

[3] See for an overview and synthesis see van der Ploeg 2003: 104-141. Recent examples of farming styles research and analysis are provided in Oostindie et al., 2013 and Dirksen et al., 2013.

many internal cycles as well as possible. When it comes to farm development, they prefer step-by-step growth, relying preferably on their own savings (and family capital) instead of credit and loans. Often, this kind of farm engages in multifunctional activities (van der Ploeg, 2000).
Opposite to the low cost farming style is the high tech style of farming. These are farms that combine a large scale of farming with a high level of intensity. Both depend on (and are in a way a function of) the technology applied. This style is driven by a strategy inspired by the assumption that in the near future only a few 'vanguard farms' will survive. Therefore these farms engage in processes of ongoing expansion. Input levels and the debt/assets ratio are high. The origin of this style was aptly summarized by Rambaud: "among the schemes introduced in agriculture [....], one has been particularly significant. That is the scheme of ongoing growth, which associates with technological progress and development. Growth has become the key-word of these days" (1983:308).

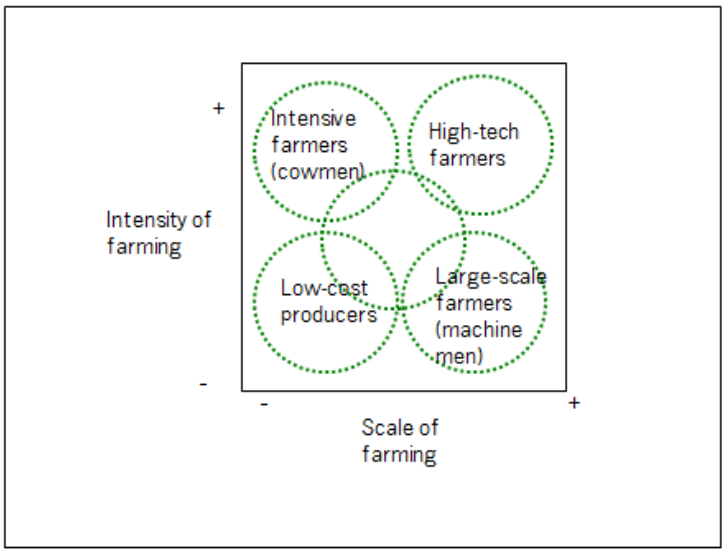


Figure 2 The agricultural 'landscape' as shaped by and through different farming styles

There are, of course many combinations of these styles, just as there is considerable overlap between them. Nonetheless, the farming styles concept is helpful in unravelling the complexities and differential trends that are hidden behind the data about the *average* situation and the *average* trends. This also applies to energy use.
Figure 3 is the outcome of a farming styles analysis applied to a sample of 300 well-documented dairy farms in the province of Friesland (1990). It shows different, style specific substitution curves. These curves refer to the amount of labour force (understood here as a proxy for non-fossil energy) and the total costs of mechanization (a proxy for fossil energy) needed to produce 500,000 kg of milk. Statistically, the substitution curves are significantly different[4]. In high-tech farming (line G) a relatively high level of mechanization combines with a relatively low level of labour input. In contrast with this, the style of farming intensively and the low cost style of farming (lines K and S) use far less mechanization and more labour in order to produce the same amount of milk. The 'machine men' (line T) are lowest of all in terms of labour input[5]. In short: energy-use, and especially the balance of fossil and non-fossil energy, are style dependent[6].

[4] See van der Ploeg 2003: 211 and especially note 10
[5] Figure 3 contains more lines than those discussed in the main text. These refer to specific combinations. For a full discussion see van der Ploeg, 2003:113-121.
[6] This can also be explained theoretically. In the style of farming intensively and in the low cost style of farming labour is considered to be the decisive factor of production. It is, in the case of farming intensively, the carrier of craftsmanship, skill, practical knowledge and fine-tuning needed to achieve high yield levels and the associated high margins per milking cow. In the low cost style, labour is needed to optimize the use of internal resources (in order to avoid external input use). By contrast, in the large scale style (of the 'machine men') farmers try to reduce labour input as much as possible. In the high-tech style, investment in new technologies is understood as a necessary investment in the future of the farm. Typically, high-tech farms will engage in summer feeding, and there is no

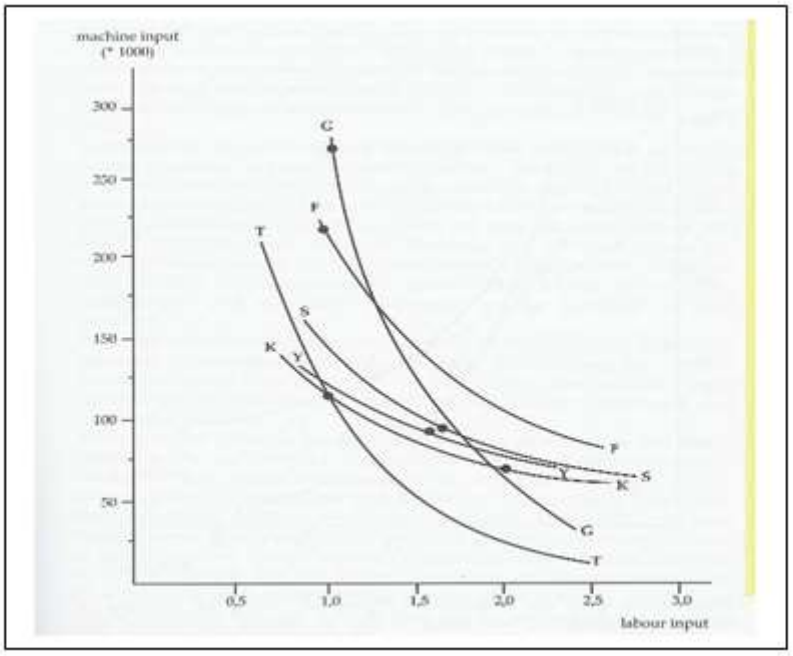


Figure 3 Substitution curve for different farming styles[7]

A pars pro toto: chemical fertilizer

One of the biggest 'containers' of fossil fuel energy used in today's agriculture is chemical fertilizers, especially nitrogen. It represents some 35% of all the energy used (Deike et al., 2008). Table 1 summarizes data on levels of nitrogen use in different farming styles in the Dutch dairy farm sector. The data refer to the year 2011 and are derived from Dirksen *et al*., 2013.

Table 1 Nitrogen use and efficiency in different farming styles (n=150)

	N in fertilizer/ha	N in concentrates/ha	N in manure/ha	Total N input per ha	N use efficiency	N surplus per ha.
Low cost farms	124	98	231	453	38%	144 kg
High tech farms	149	179	307	653	32%	227 kg
Intensive farms	139	190	298	627	35%	217 kg
Large scale farms	145	159	282	585	32%	210 kg

Source: Own processing based on own data collection

There is again a clear differentiation between the different styles. The largest difference is encountered between the style of low-cost farming and that of high-tech farming. Farms in the latter group use far more nitrogen, especially through the use of chemical fertilizer and in the concentrates used. Equally they add more nitrogen from animal manure to the soil. Their total N application per hectare is 653 kg/ha. This is 44% higher than total N application in the style of low-cost farming. Beyond this, the overall N use efficiency, for such farms, is lower: 32% as opposed to 38% on low cost farms. Together this implies that the N-surplus/ha is, in the case of the high-tech farms 56% higher than in the low-cost style of farming. It is

pasturing anymore (thus considerable fossil energy is needed for the daily mowing and transportation of grass). In the low cost style pasturing is the favoured option. Etc.

[7] The bold dot on the different curves refers to the style-specific average level of mechanization and labour input.

interesting to note that similar differences were found in farming styles studies undertaken more than 20 years earlier (van der Ploeg et al., 1992; Antuma et al., 1993). At that time the average levels per style were higher. In all styles considerable reductions in the N-surpluses/ha have been realized (due to different generations of agro-environmental policies). It is notable, though, that the difference between the two extremes (the high-tech and the low cost style) has grown over time: It was 32% in 1987 but grew to 56% in 2011. In other words, the style of farming economically, which was already realizing the lowest levels in the 1980s, has decreased its N-surplus/ha *more* than other styles. Secondly, it should be noted that similar differences and trends apply to other environmental indicators, such as the use of phosphate and energy (Pimentel 2009 a and b; Dirksen et al, 2013). The use of these per hectare (and/or per cow) as well as the use per 100 kg of milk also differs remarkably[8].

The differentiated nature of nitrogen use (and more generally: of fossil energy) is strongly correlated with levels of on-farm employment. Figure 4 gives a summary based on recent data that describes the 2007-2011 period: this is derived from a data-base containing 1,500 dairy farms (Oostindie et al., 2013). To produce 1 million kg of milk, farms that are structured according to the strategy of low-cost farming generate 2.7 Agricultural Work Units (AWU) per year. This is 80% more than the level in high-tech farms (1.49 AWU).

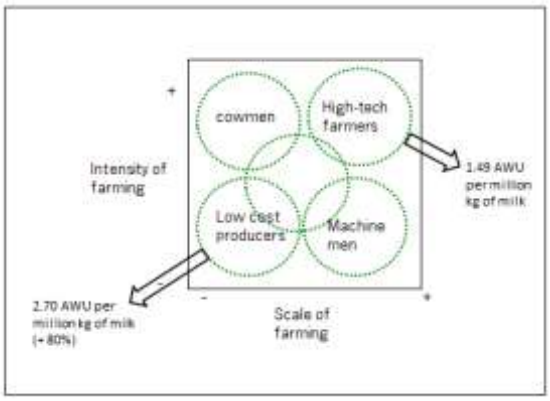


Figure 4 Differentiated employment levels (2011)

Thus, the possibility of a trade-off emerges. By reducing the use of fossil fuel energy at the farm level, and simultaneously augmenting the use of labour (or more generally: non-fossil fuel energy), agriculture as a whole can become far more sustainable, while at the same time stabilizing, if not increasing employment in the agricultural sector. In the next section the interrelations underlying such a trade-off are further scrutinized. After that I ask whether or not such an 'agro-ecological turn' comes with a price.

The dynamics of an 'agro-ecological turn'

In the province of Friesland, in the North of the Netherlands, a large group of farmers – all members of a territorial cooperative (see van der Ploeg, 2008) – decided to explore, in practice, the possibilities of orienting farm development along a new agro-ecological direction (reducing external input use and improving the use of internal resources (Altieri et al, 2011; Lucas, 2013). The farmers themselves do not use the word 'agro-ecology', but rather talk about re-grounding farming on natural cycles (which comes down to the same idea). One of the cycles they tried to optimize was the soil-plant-animal-manure cycle, shown in Figure 5. During the so-called modernization of agriculture this balance got into considerable disarray, which expressed itself in a nitrogen-use coefficient as low as 16%, low levels of longevity, and slurry that was increasingly harmful to soil life (Stuiver, 2008). These negative outcomes were due, it was thought, to having overloaded this cycle with nitrogen (and, consequently, with protein). In order to 'rebalance' this cycle they focused on the 'improvement' of manure. This improved manure (with a higher C/N ratio and less ammonia) turned out to improve soil biology, resulting in higher grassland production (at the same

[8] These empirical data on N, P2O5 and energy use per 100 kg of milk (which have been confirmed in a range of farming styles studies) strongly contradict the theory of 'optimal' farming at the highest levels of intensity and within the largest farms.

time the amount of applied fertilizer was strongly reduced). This was combined with a postponement of mowing which gave silage that had more structure and less protein. Further combined with reduced concentrate feeding, these factors led to the herds being less stressed and in improved levels of fat and protein in the milk. At the same time this adapted cattle feeding resulted in improved manure. Thus the cycle was closed and optimized (Sonneveld, 2004; Reijs, 2007), whilst a sharp decrease in N-surpluses and an increase in carbon-sequestration were achieved.

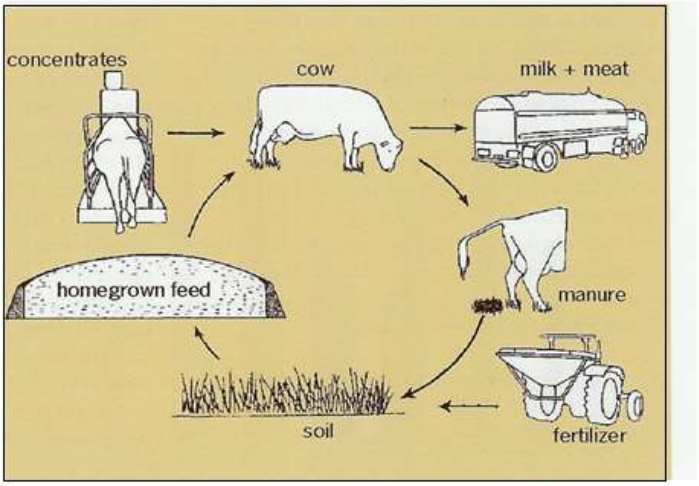


Figure 5 Fine-tuning the natural cycle

Three additional elements should be mentioned. First, this new approach required more labour at the level of the participating farms. Instead of bringing a large amount of slurry to the fields (in order to inject it into the subsoil) at one single moment, farmers now apply manure to their fields in smaller quantities and at different moments, carefully spread over the growing season. Turning excrement into improved manure also requires more labour. The reduction of concentrate use implies the same. A more diversified internal supply is needed which again requires more labour. Secondly, it turned out that the labour income per 100 kg. of milk went up as a consequence of this new approach (Groot *et al*., 2006). Thirdly, it was very clear that the new institutional framework (the territorial cooperative with its study clubs and its cooperation with the university) was indispensable in allowing for the learning-by-doing and on-farm experimentation that characterized this change towards agriculture grounded on natural cycles (Stuiver et al., 2003).

The economics of an agro-ecological turn

It is often argued that the very high cost of labour, especially in the north-west of Europe, means that the replacement of labour by new, energy consuming technologies and elevated input levels is unavoidable. Consequently, any turn to agro-ecology would come with a price that is probably far too high. Farmers' income levels would go down considerably and/or state budgets for supporting the reformed, more agro-ecological sector would have to be sky-high. At the level of economic handbooks this might be true. In the practice of farming, however, it might be different. Some styles contain benefit-cost relations that link low levels of external input use with improved efficiency in the use of internal resources (e.g. lowered fertilizer use goes together with a strongly improved soil biology (Goede et al, 2003)). As a consequence there are no negative effects on income whatsoever. The end result might even be positive. In other styles, though, such adaptations might be impossible (due to e.g. high levels of externalization, path-dependency and increased rigidity). Where this is the case, policies that impose a reduction on fertilizer use (and more generally: the use of fossil energy) will surely have negative *economic* effects.

Table 2 supports the hypothesis that lower levels of external input use (as realized for example in the style of low cost farming) might very well be accompanied by income levels that are comparable to those of farms with far higher levels of external input use (i.e. high tech farmers). The table distinguishes different levels of style specificity[9]. A highly articulated style specificity means that farms are very much structured

[9] These are based on the farm-specific factor scores, where different factors refer to different styles.

according to a particular strategy; they are, consequently, the most prominent examples of a particular style. Average style specificity describes cases where it is less pronounced.

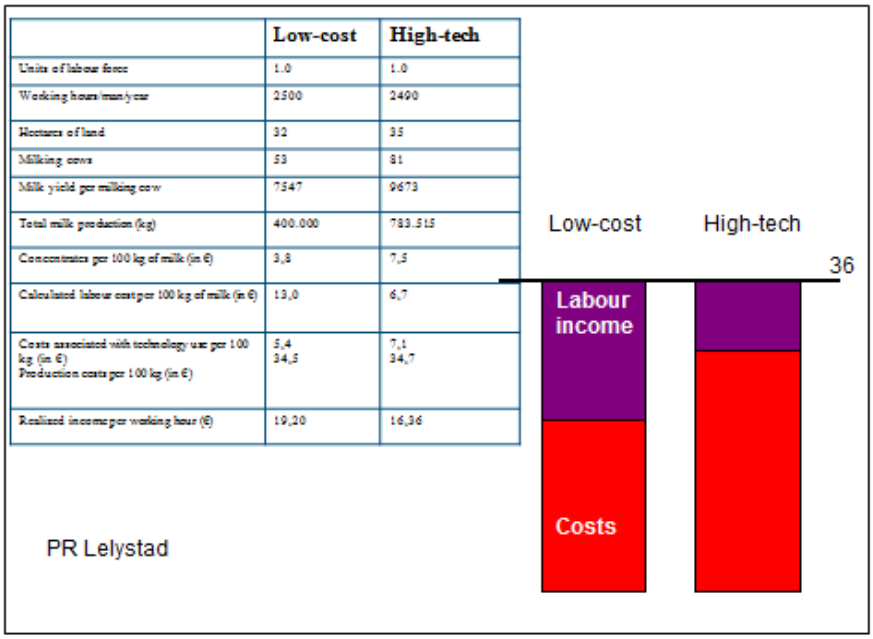
Table 2 Labour income per full-time labour unit (in Euro/year) for 2010 (Dirksen, 2013: table 4.1.)

	Average style specificity	Highly articulated style specificity
Low cost farmers	54,000	70,000
High tech farmers	57,500	61,750
Intensive farmers (cowmen)	56,800	68,050
Large-scale farmers (machine-men)	48,900	77,100

Source: Own processing based on own data collection

Dirksen et al. conclude "the comparison of economic results shows that it is possible to realize a good income in each of the different styles[10]. This is in line with previous farming styles research. But equally remarkable and possibly far more important is that the comparison [...] shows that becoming more style specific translates into higher incomes" (2013:14). Consequently, low-cost farming does *not* come 'with a price': *a strongly reduced use of external inputs as proposed in the agro-ecological programme could very well translate into higher incomes.* This conclusion is supported by the outcomes of a systematic comparison at the level of experimental farms.

In the beginning of the 1990s the findings of the first empirical inquiries into farming styles in the Netherlands provided the starting point for a multi-year research project at the State Research Centre for Dairy Farming in Lelystad in the Netherlands (PR- Proefstation Rundveehouderij). Two experimental farms were created: one following the style of low cost farming and one the style of high-tech farming. Each of these two farms was designed in such a way that one person could run the farm and that a similar level of income would be rendered. In order to meet these requirements the 'high-tech farm' had to produce 800,000 kg of milk per year – twice the volume of the 'low cost farm' (400,000 kg of milk per year) (Kamp and Haan, 2004; Evers *et al*., 2007; for a more general see discussion: Biala et al., 2008). The variable costs per 100 kg milk of the high-tech farm were twice as high as those of the low cost farm (see also Figure 6). This was due to automated milking; higher concentrate use, higher energy use, etc. Consequently, the margin was lower but the larger scale meant that a similar income could be realized.



	Low-cost	High-tech
Units of labour force	1.0	1.0
Working hours/man/year	2500	2490
Hectares of land	32	35
Milking cows	53	81
Milk yield per milking cow	7547	9673
Total milk production (kg)	400.000	783.515
Concentrates per 100 kg of milk (in €)	3,8	7,5
Calculated labour cost per 100 kg of milk (in €)	13,0	6,7
Costs associated with technology use per 100 kg (in €) Production costs per 100 kg (in €)	5,4 34,5	7,1 34,7
Realized income per working hour (€)	19,20	16,36

Figure 6 Comparing experimental farms
Source: Own processing based on own data collection

[10] This is remarkable especially since the farms of high-tech farmers are (in this sample) twice as big (in as far as quota are concerned) as the low-cost farms.

The comparison was continued for several years (which coincided with the last years of stable prices) and clearly demonstrated that the more sustainable and labour intensive style of low cost farming can very well result in income levels that are equal to those realized in far larger, less sustainable high-tech farms that generate less employment. This was the case under the protective conditions (a relatively high and stable milk price) that were provided by the previous Common Agricultural Policy. However, the shift towards a new market-regime (Winders, 2009) completely reshuffled these relations.

Farming in a new era

In the second half of 2008 and especially in the first half of 2009 the dairy farming sector witnessed a sharp drop in milk prices (from an average level of around 32 to 36 Euro per 100 kg of milk to a level as low as 24 Euro/100 kg). This was a first clear expression of price volatility that now characterizes the increasingly deregulated market.

The consequences differed considerably. The income levels of high-tech farmers, intensive farmers and large-scale farmers fell dramatically. Yet, the average income of low-cost producers fell far less (see Table 3) and was, on average, more than twice as high as that of the far larger high-tech farmers[11].

Table 3 Labour income per full-time labour unit (in Euro/year) for 2009 and 2010 (Dirksen, 2013: 18 table 4.3)[12]

	2009 (bad year)	2010 (good year)
Low-cost farmers	32,300	69,300
High-tech farmers	13,170	57,350
Intensive farmers	16,760	68,050
Large-scale farmers	15,500	74,110

Source: Own processing based on own data collection

Farms structured according to the low-cost style are far more able to face adverse circumstances than the more entrepreneurial ones –*in the new market regime they represent, resilience* (Darnhofer et al., 2010) whereas the far larger high-tech farms suddenly demonstrate increased vulnerability[13].

A similar conclusion can be drawn from another study (Oostindie *et al*., 2013) that covered a four-year period (2007-2010) and was based on a total of 1362 farms. Departing from the average net result in 2009, four income categories were distinguished. The category with a far below average net result per 100 kg milk[14] faced a dramatic situation. Their average net financial result amounted to – 9.70 Euro per 100 kg of milk. In other words they were experiencing a *negative cash-flow* and were no longer able to meet their financial obligations to the banks. It was only because the banks were, at that time, willing and still able to re-finance these farms that they were able to survive.

The politics of an agro-ecological turn

Even if the style of low-cost farming, which is relatively close to agro-ecology, performs economically well and conforms well with a range of emerging societal expectations, there are, at the same time, considerable obstacles that hinder a transition that would strengthen low-cost farming and make it more widespread. These obstacles partly reside in agricultural policies, both at the communitarian and national

[11] Such a result could have been predicted using the outcomes of the experimental farms discussed above. The introduction of a price level of say 24 Euros in the diagram immediately shows a meagre but still positive income in the low-cost farm and a negative cashflow in the high-tech one.

[12] Data for 2010 may differ slightly from those reported in Table 2. This is due to the fact that the sample size is a bit lower due to missing farms in 2009.

[14] This category showed the highest variable costs per 100 kg of milk. The same was true for depreciations and paid interests per 100kg of milk. In other words, this category resembled, far more than the others, the high-tech style of farming.

level. These policies still aim at and materially support the large-scale, intensive and quickly expanding high-tech farms. Even if payments are increasingly decoupled, income support still means that 80% of the agricultural budget goes to, roughly speaking, 20% of farmers. Agricultural policies play a key role in sustaining high-tech farming; not only materially but also symbolically (by putting the 'modern farm' centre stage). It is urgent that the guiding images are re-adapted to the new realities Europe is facing. What should be indicated these days is that 'high tech' farming is hopelessly 'traditional' and 'outdated'. The challenge is to focus on and support the far more knowledge intensive style of low-cost farming that is able to re-use natural resources and the natural cycles they are part of.

Agricultural research and development (R&D) also presents a number of obstacles to this transition. A considerable part of agricultural R&D is (still) oriented to developing technologies that require increased fossil energy use and reduce labour input. Agricultural education too is (still) far too much (and too exclusively) focussed on high-tech farming

Trading patterns are yet another major obstacle, as is the near absence of small and medium industries in the food industry.

Whether or not employment levels in agriculture and the rural economy will develop according to the new social needs and priorities that are being expressed crucially depends on political changes.

Additional steps

The malleability of employment levels in agriculture is not just limited to an agro-ecological restructuring of the processes of production. Changes towards the production of high-quality products, the introduction of new multifunctional activities (such as agro-tourism, the management of nature and landscape, energy production, care activities, water retention, etc.) and the development of new, nested markets (Polman *et al*., 2010) are also likely to result in higher employment levels in agriculture and the rural economy (Heijman *et al*., 2002).[15] The potential of such changes is illustrated here by referring to the production of Parmesan cheese (*Parmiggiano-Reggiano*) in the Italian Emilia-Romagna region and comparing it to the bulk-oriented dairy production in Friesland in the Netherlands (see for an extended discussion Broekhuizen and van der Ploeg, 1999). A similar amount of milk is produced in both areas (see Figure 7).

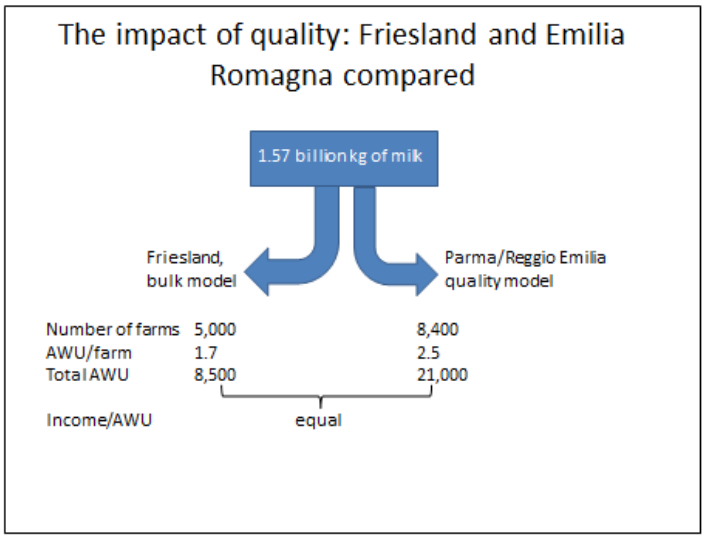


Figure 7 Friesland and Emilia Romagna compared (year of reference 1990)
Source: Own processing based on own data collection

This study shows that, in Friesland, the production of 1.57 billion kg of milk generated a total employment level of 8,500 AWUs (in primary production). In the Italian production area of Parmesan cheese (where the

[15] Interestingly, the 'programme' of most agro-ecological movements include such changes.

making of good cheese milk requires far more labour at farm level) this was far higher[16]. Nonetheless, the income levels per unit of labour force are, on average, the same in each area.

Conclusion

The malleability of employment levels in agriculture and the rural economy

The comparison of different styles of farming clearly shows that employment levels are, to a degree, malleable. They are effectively shaped and re-shaped by farmers who translate, in knowledgeable and goal-oriented ways, their strategies into differentiated practices. The same comparison also shows that different employment levels might well go together with equal levels of income *per unit of labour force*. Higher levels of employment do not necessarily translate in 'sharing poverty'. All this has been confirmed by the multi-year comparison of a high-tech and a low-cost approach in experimental farms. The employment levels can be further enlarged through quality-production, multifunctionality and the construction of new markets.

The malleability of employment levels is associated with sustainability. The use of fossil energy (especially, but not only, chemical fertilizer) can be reduced (and carbon sequestrated through the application of 'improved manure'), through the application of more labour. These are not mere technical changes; they are aspects of a comprehensive change in the style of farming.

When the principles of learning-together and learning-by-doing are systematically applied within new institutional frameworks (such as the territorial cooperatives[17]) such a comprehensive change becomes more feasible and can contribute to an increase in income levels.

Europe is currently facing wide spread unemployment (often most accentuated in rural areas). At the same time Europe has to meet the new climate objectives and, therefore, has to strongly reduce its use of fossil energy. A turn towards agro-ecology has huge promise in helping meet both of these challenges. It can stabilize or even increase employment levels, it can strongly contribute to the mitigation of climate change and, finally, it makes agriculture more resilient. What we urgently need are new, adequate policy instruments to make these promises come true.

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[16] De Roest (2000) demonstrates the same by comparing the Parmesan cheese production area with the production of consumption milk.

[17] Or the CUMA (small cooperatives for mechanical services) in France (Lucas et al, to be published)

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SOIL ECOSYSTEM SERVICES: A REVIEW OF THE BIODIVERSITY EFFECTS AND THREATS

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Abstract
Biodiversity in soils represents a rich and diverse collection of millions of species globally that provide a large array of ecosystem services. While these processes occur at small scales, they are emergent and influential on some key global processes including nitrogen and carbon cycling. Soil biodiversity services include: transforming raw elements and releasing nutrients into the soil, catabolizing soil organic matter into a form useful to plants, carbon storage, water infiltration and storage, degradation of pesticides and other chemicals, erosion resistance, assisting plants in nutrient uptake, and suppression of pathogenic micro-organisms. Control of these services is both top down and bottom up, resulting in large part from quality of litter, water availability, and co-evolved relationships between plant species and soil organisms. As with all biodiversity, numerous causes are resulting in global reductions including land-use change, pollution, invasive species, climate change, erosion, and extensive fastwood forest plantation. Loss of soil biodiversity has implications for ecosystem productivity and ultimately for human survival. Perhaps the greatest threat to soil biodiversity is the lack of awareness of the importance of soil processes among terrestrial ecosystem managers, including farmers and foresters.

Keywords: soil biodiversity, soil processes, ecosystem services, soil microbes, water, microfauna

JEL Codes: Q24, H40, Q20

Introduction

While many land managers still consider biodiversity to be a species list and something to maintain in protected areas, in fact, biodiversity underpins and provides most ecosystem services, both in forests and from agricultural lands (e.g., Diaz et al. 2005). The importance of the functional role that biodiversity plays in ecosystems cannot be overstated and the loss of biodiversity through improper management results in the loss of valued services and national impoverishment, especially in rural communities (TEEB 2010). There is beginning to be a global recognition of the importance of biodiversity to human survival, although the translation of the scientific knowledge into resource development and other policies still seems problematic and lags well-behind our understanding (Solan et al. 2009, Perrings et al. 2011, Thompson et al. 2011), despite some opposite concerns (e.g., Silvertown 2015). While a good understanding is accumulating for the role of biodiversity in many ecosystems, generally less well known are the services and functions provided by biodiversity in soils (Harris 2009, Wall et al. 2012). While a few good summaries are available (e.g., Parker 2010, Wall et al. 2012), authors do not hesitate to point out how poorly understood soil ecology is and yet how fundamentally important soils are to human existence.

Soil biota is immensely diverse and yet still largely undescribed. One estimate of soil biota suggested that there are more than 1.6 million soil-dwelling species globally (Moreira et al. 2008) but this is certainly an underestimate, given that 1.5 million species have already been described, of which about 360,000 are animals, mostly insects (Deceans et al. 2006). Further, Brassard et al. (1997) have suggested that only 10% of soil protozoans and 5% of the mites have likely been identified. Deceans et al. (2006) have provided a more probable estimate of nearly 8 million species, excluding bacteria and viruses, most of which are fungi, beetles, mites, and nematodes. Soil species range in size from small mammals to viruses and bacteria and are arranged in communities and functional groups, both vertically within the soil profile and horizontally across a landscape, in response to soil composition, chemistry, moisture, and vegetation (Parker 2010, Bottinelli et al. 2015). Globally, soil species richness peaks in the temperate zones especially for bacteria and nematodes, but is limited in equatorial areas by acidic soils and to the north by cold temperatures (Parker 2010), providing a different pattern that that for above-ground species richness.

Species rich soil communities deliver a suite of ecosystem services that people rarely think about, but without them terrestrial productivity would be exceedingly low. Soil ecosystem services act at small scales but have emergent ecosystem properties such as contributing to primary production at local and broad

scales. Soil biodiversity plays a key role in global biogeochemical cycling for example (Wall et al. 2010, Ollivier et al. 2011). Land management can severely alter the quality of soils by reducing soil microorganism abundance and species (Defries et al. 2004, Rudisser et al. 2015). This paper briefly discusses the services delivered by soil organisms, as well as some of the threats, most of which are rarely considered by resource managers or conservation biologists.

Biodiversity and ecosystem services

Since John Lawton asked the provocative question "what do species do in ecosystems?" in 1994, the scientific understanding of the role of species in ecosystem functioning has advanced considerably, including from the Millennium Ecosystem Assessment (MEA) that elucidated this relationship (Diaz et al. 2005). The MEA considered services from biodiversity in four classes: provisioning, regulating, supporting, and cultural. Biodiversity promotes functioning via three primary mechanisms, which are both intuitive and well-supported by empirical evidence. The first of these is resource or niche complementarity (Loreau et al. 2001), whereby different species use different resources (or the same resources in different ways), such that diverse assemblages compete less and more fully use available resources than do assemblages containing few species. This mechanism (and the positive effect of biodiversity) becomes stronger when a diverse array of resources is available (Tylianakis et al. 2008) and over large spatial and temporal scales, because species can partition resources in space or time (Harrison et al. 2006, Zhang et al. 2011). Complementarity depends by definition on species performing functions in different ways, thus, the strongest increase in functioning is observed when species show diverse forms or functional traits (Diaz et al. 2001, Fontaine et al. 2006, Hoehn et al. 2008).

The second biodiversity mechanism is facilitation, whereby species provide resources or alter the environment, enabling other species to perform better (Cardinale et al. 2002, Kelty 2006). For example, legumes fix nitrogen in soil, which promotes the growth of other plant species. Similarly, nitrogen-fixing soil bacteria play a key role in soil fertility and many examples of symbioses and mutualisms occur between plants and soil organisms, as a result of millions of years of co-evolution. A final mechanism through which biodiversity benefits ecosystem functioning is through a sampling effect (or over-yielding), which has been observed extensively across biodiversity experiments (Cardinale et al 2006). Diverse assemblages have a greater probability of containing a particularly high-performing species, and this can result higher average function rates in more diverse systems. Thus, individual species effects are highly important (e.g., Diaz et al. 2001, Kelty 2006). Many studies in grassland systems have shown, for example, that soil nitrogen and carbon levels are related to the plant species richness (Fornara and Tilman 2008, Lange et al. 2015). Lange et al. (2015) was able to also demonstrate that a key mechanism for this result was the increase in microbial species and their activity related to plant species richness. Fornara and Tilman (2008) and De Deyn et al. (2009) also showed that the accumulation of soil C and N was related to plant species functional composition. Therefore, soil carbon in those soils was limited by the capacity (metabolic activity) of soil organisms to integrate new carbon and indicating that the accumulation of nutrients is a top-down and bottom-up process governed by species richness and functionality both above and below ground.

Ecosystem processes and services can be reduced or lost as a result of disturbances (mostly anthropogenic), through a series of hierarchical and nested effects that reflect species declines at various trophic levels (e.g., Dobson et al. 2006). Species at high trophic levels (predators) are usually uncommon species and are often lost first, and there is little or no redundancy in most ecosystems at that level (e.g., Davies et al. 2000, Terborgh et al. 2001, Estes et al. 2011). Often losses of predators can have large consequences for ecosystems owing to a decline in the regulation of key herbivores (predator release), or disease-causing agents such as soil fungi (Estes et al. 2011, Sylvain and Wall 2011). Lower trophic levels, such as decomposers and primary producers, usually have greater redundancy than do higher trophic levels (Walker 1992, Diaz and Cabido 2001) and so some losses of species at those levels are not necessarily catastrophic to ecosystem functioning. Nevertheless, sufficient species loss at any level, especially of keystone species, will result in change in the ecosystem state (e.g., Groffman et al. 2006). While soil communities are generally species rich, this 'insurance hypothesis' maybe a less useful theory in soil systems than first thought. An improved understanding of soil-plant interactions has revealed a strong inter-dependency of individual plant species with specific soil organisms for nutrient uptake, decomposition, and disease protection (Parker 2010, Sylvain and Wall 2011, Eisenhauer et al. 2010, 2012, Lange et al. 2015). Such co-evolved relationships result in communities with clear conservation

implications. In disturbed landscapes (e.g., forest converted to pasture or agricultural field), maintaining even small areas in a natural state, sufficiently large to avoid edge effects, will assist in maintaining locally-adapted soil biota. On the other hand, some experiments have documented little effects of reductions of soil microorganisms and on certain soil processes including carbon mineralization and denitrification, indicating redundancy for certain processes at least (Wertz et al. 2006, Rousk et al. 2009). Nevertheless, redundancy is generally a stabilizing feature in biological communities resulting from high levels of biodiversity.

Ecosystem resilience

Resilience is the capacity of an ecosystem to recover following disturbance. Biodiversity confers resilience on an ecosystem through functions at genetic, species and landscape levels (Thompson et al. 2009). For example, biodiversity can provide buffering against environmental change through functional redundancy among species (Walker 1992, Lavorel 1999, Yachi and Loreau 1999) or genotypes (Hughes and Stachowicz 2004), and thereby help to maintain ecosystem functioning in the face of perturbation (e.g., Elmqvist et al. 2003). The strength of this buffering capacity depends on the plasticity in the responses of individual species to environmental fluctuation and on the specific nature of their responses (i.e., Yachi and Loreau 1999, Elmqvist et al. 2003, Winfree and Kremen 2009). It is likely that functional diversity, not solely species richness, is of key relevance to ecosystem resilience (i.e., recovery after a major disturbance) (Diaz and Cabido 2001, Fitter et al. 2005, Laliberté et al. 2010), as it is for ecosystem function rates. Buffering capacity is further affected by the condition of the ecosystem (Thompson et al. 2009). For example, degraded systems are often less stable, have lower functional diversity among species, and so have lower resistance to disturbances than systems with greater integrity. Capacity of ecosystems to recover often reflects the severity and time period of disturbances.

Recovery to former condition often follows a different path than degradation and results in a different ecosystem and in soils depends strongly on vegetation type and the accumulation of litter.. In Soils, the organic matter component is especially important for resilience. The loss of organic matter in the conversion from forest to agriculture and back again may result in a different soil ecosystem for the restored forest, and any recovery may take many decades (Foote and Grogan 2010). In tropical systems there is a massive loss of organic matter in forest conversion that may be impossible to recover (Chruchman et al. 2010). Studies often suggest limited or no relationship between diversity and resistance (e.g., DeClerck et al. 2006) but a strong positive relationship between diversity and ecosystem resilience (Pfisterer and Schmid 2002, Griffen et al. 2009, van Ruijven and Berendse 2010). Nevertheless, in soils this generality with respect to resistance may not hold because of the strong linkages between levels of biodiversity and suppression of disease-causing agents (Parker 2010, Sylvain and Wall 2011), suggesting that, in soil systems, resistance to diseases (of plants) depends considerably on species richness.

Ecosystem services from soil biodiversity

In answer to the question about what species do in ecosystems, for soil organisms the functional roles are many and include the following:

- transforming raw elements and releasing nutrients into the soil: nitrogen, phosphorus, sulphur, iron, and others;
- catabolizing soil organic matter into a form useful to plants, i.e., increasing soil fertility by increasing nutrient availability;
- carbon storage;
- water infiltration and storage;
- degradation of pesticides and other chemicals;
- erosion resistance;
- assisting plants in nutrient uptake; and
- suppression of pathogenic micro-organisms (mostly fungi).

These services and functions have a critical role in planetary processes and cycling, without which terrestrial ecosystems would rapidly collapse. Microorganisms are especially important in nitrogen and carbon cycling, but also for many other elements including iron, phosphorus, and potassium. Decomposition is a process that is crucial to primary productivity and 60-90% of primary production is

eventually decomposed by soil organisms (Giller 1996). As a result, the vast majority of soil nutrients come from decomposition of organic matter by soil organisms. Soil organic matter quality and stability depends on quantity, quality, and mixed species nature of the litter as well as microbial residues, although there is conflicting evidence about which is most important and under what conditions (Castellano et al. 2015). Regardless, low microbial diversity and low plant diversity results in low carbon in soils and an instability in the system. Further, there is accumulating evidence of individualistic relationships between plant species and species of soil microorganisms (Hattenschwiler and Gasser 2005, Eisenhaeuer et al. 2010, van der Puttan et al. 2013), further indicating that both top down and bottom up controls operate in soil nutrient cycling, with consequent effects on ecosystem productivity. At the same time, there does appear to be many generalist detritivore and decomposer species found under a range of plant associations, and these species are uncorrelated to above ground plant species (Bastow 2012). The quality of litter matters however to the species array of detritivores, with more recalcitrant litters reducing the rate and abundance of nutrient input into soils.

Recently, the importance of soil organisms in suppressing diseases, especially of plant roots has become much more apparent (e.g., Sylvain and Wall 2011). Disease suppression is now considered a fourth major mechanism by which biodiversity promotes ecosystem functioning, by playing a key role in increasing ecosystem production (de Kroon et al. 2012). Clearly then, soil biodiversity confers resilience in soil ecosystems just as it does to above-ground systems. Hence, from a conservation perspective, it is important to pay attention to actions that are detrimental to soil biota to maintain the suite of soil functions that enable the full potential productivity from ecosystems. Re-establishing soil communities and recovering plant communities on disturbed lands where the ecosystem state has been changed, may require inoculation of soil microorganisms from sources elsewhere (Harris 2009, Lemanceau et al. 2015).

Soil engineers

A key functional group of organisms is the so-called soil engineers. These species, mostly earthworms, termites, ants and to a lesser extent millipedes and beetles, play a significant role in many ecosystems by creating macro-pores in the upper layer of soil that enables water to penetrate, facilitates gaseous exchanges, and facilitates plant rooting (Bottinelli et al. 2015). Water retention in soils is essential for soil processes because many organisms are actually aquatic – bacteria for example, and because rapid percolation of water reduces its availability to plants. These engineer species also play a role in soil nutrient enrichment. In tropical ecosystems, dung beetles play an essential role by burying nutrient rich dung that then helps to improve soil quality and inoculates soil with bacteria. Dung beetles are especially prone to extirpation as a result of logging, resulting in negative effects on soil richness (Lewis 2009). Soil engineers also produce soil aggregates that appear to contribute to soil stability (e.g., Lavelle 1997) and lock carbon by making it inaccessible to organisms (Lavelle et al. 2006). Although this group of organisms is widespread, there is still insufficient information available to fully understand their importance to ecosystem processes.

Threats to soil biodiversity

As with all terrestrial biodiversity, global subterranean biodiversity is being lost through a variety of human-caused actions, including land use changes, pollution, and environmental changes. Many individual causes are clearly interrelated, such as conversion of forest to agricultural lands and the use of fertilisers and pesticides, as well as resultant soil compaction from vehicles. Soil erosion, as a consequence of poor land management practices results in the loss of between 7 and 11 Mg/ha of Earth's soil each year (Lal 2003), and from agricultural lands alone the global annual soil loss has been estimated to be 75 billion tons (Eswaran et al. 2002). Loss of soil results in a direct loss of the associated biodiversity. Soils can, like forested systems, become degraded and ISIRC in 1990 estimated about 17% of Earth's soils were in this category.

Land use change

It is well recognized that deforestation results in major losses in soil biodiversity (Wall et al. 2010) and/or a major change in soil organisms and a dramatic loss of nitrogen from soils (Chen et al. 2010, Ollivier et al. 2011); whether or not the two effects are linked, however, is unclear. Intensity of land use is related to the extent and amount of reduction the soil biodiversity, with some species such as earthworms becoming

more common in disturbed areas than in less modified sites, while many other species are reduced or lost (Olivier et al. 2011, de Vries et al. 2013). Especially intensive agriculture causes large shifts and declines in soil biodiversity owing to the use of chemicals (fertilizers and pesticides), the complete change in plant species, and land-use intensity is directly related to amount of soil biodiversity (de Vries et al. 2013, Kohl et al. 2014). Community responses to agricultural practices appear to differ by taxon and functional groups (Sylvain and Wall 2011). Mechanisms of loss include competitive exclusion and physical and chemical elimination. While nitrogen fertilization has substantially increased food production globally, it also has serious consequences for soil biodiversity and results in losses (Ollivier et al. 2011). Further, alteration of the native ground covers and elimination of species leads to the loss of erosion resistance (Berendse et al. 2015).

Pollution

Aside from the use of chemicals in agriculture, other chemicals applied to soils through industrial process, waste disposal, and from airborne pollutants can also have large negative effects on soil biodiversity. Heavy metal contamination can reduce soil biodiversity and even sterilize soils when concentrations become sufficiently high (Naveed et al. 2014, Op De Beeck et al. 2015). Similarly, hydrocarbon spills alter soil communities by directly killing many organisms and promoting certain bacteria species (Abed et al. 2015, Savin et al. 2015). Some studies have indicated a disproportionate impact of contamination on microbes that perform specialized, essential ecosystem functions, resulting in reduced services (Singh et al. 2014). Many other pollutants come from waste disposal, for example from the pharmaceutical industry (Barra et al. 2011) and landfill operations (Masoner and Cozzarelli 2015).

Climate change

Many of the factors that influence the abundance, community composition and distribution of soil animals, including plant community structure, moisture, and temperature, will be altered by climate change. Experimental studies have found changes in relative dominance among soil animals within communities, changes in abundances, altered community structure, and loss of species as a result of simulated changes in climate (e.g., Bakyoni et al. 2007, Briones et al. 2009, Evans and Wallenstein 2014, Haugwitz et al. 2014). See Ostie and Ward (2012) for a complete summary of climate impacts.

Invasive species

Soil biota can be affected indirectly by invasive plants and more directly by invasive soil organisms. Evidence suggests that invasive plants may result in an increase in soil biodiversity (Rysek et al. 2012), but effects on the ecosystem depended on the individual species of invading plants with both positive and negative effects observed. Little information exists on invasion of soils by organisms. The few studies of soil macrofauna have found large impacts on soil community structures and soil organic matter composition (Deceans et al. 2006), but effects on ecosystem processes are rarely studied. One of the most widespread soil organisms, however, is earthworms, and these species have dramatic effects on soil organic matter, soil animal community structure, plant species composition, and hence soil ecosystem services and above-ground community structure (Grenier et al. 2012, Burtis et al. 2014, Nuzzo et al. 2015). In a general assessment of the effects of invasive plants on soil processes, Pysek et al. (2012) found that there were about as many negative as positive cases for effects on abundance of resident biota, more often than not an increase in productivity by resident biota, an increase in mineral and nutrient content, and an increased rate of litter decomposition, but a reduction in soil water

Fastwood forestry and soil issues

Fastwood forestry is a term used to describe plantation forestry that uses tree species with rapid growth rates. Often these plantations are of exotic species including eucalypts, acacias, and pines, which provide a tree crop in less than 25 years, and as little 8 to 12 years (Brockerhoff et al. 2008). These are usually monocultures and are akin to planting a single crop species, such as wheat, repeatedly in the same location over time. Both these practices result in depletion of soil biodiversity and reduced litter, and as a consequence the depletion of soil nutrients follows (de Vries et al. 2013, Aslam et al. 2015). Loss of soil nutrients then results in the need for active fertilisation, which causes further suppression and loss of soil organisms (Lindberg and Persson 2006, Ollivier et al. 2011) and causes a locked-in requirement for the use

of fertilisers. Berhard-Reversat et al. (2001) reported that eucalypts produce a poor quality litter resulting in losses of soil biodiversity, from a study in the Congo. Similarly, Zhao et al. (2013) reported reduced soil microbial communities and lower nutrient under Eucalyptus plantation in China. The most common fastwood species, of the genera *Eucalyptus, Acacia* and *Pinus*, all produce recalcitrant, low quality litter with effects on the quality of soil organic matter. One important consequence of this poor litter in *Pinus* plantations is the rapid run-off of rainwater with consequent irregular stream flows and poor soil water retention (Lara et al 2009).

Cascading effects of biodiversity loss on soil ecosystem services

Because there are both top-down and bottom up processes that control ecosystem functioning, the loss of either above-ground or below-ground biodiversity can have implications for ecosystem production and on the services delivered to humans. For example, nutrient richness promotes mycorrhization and if plant species are lost and litter declines so to then do the mycorrhizal fungi (). Even the generalist detritivores will decline in the absence of good quality litter. Such losses can have a cascading response, either upwards in the case of the loss of soil biodiversity, or downwards if plant species are lost, and in either case effects result on soil quality, ecosystem health, ecosystem production, and other services (Figure 1).

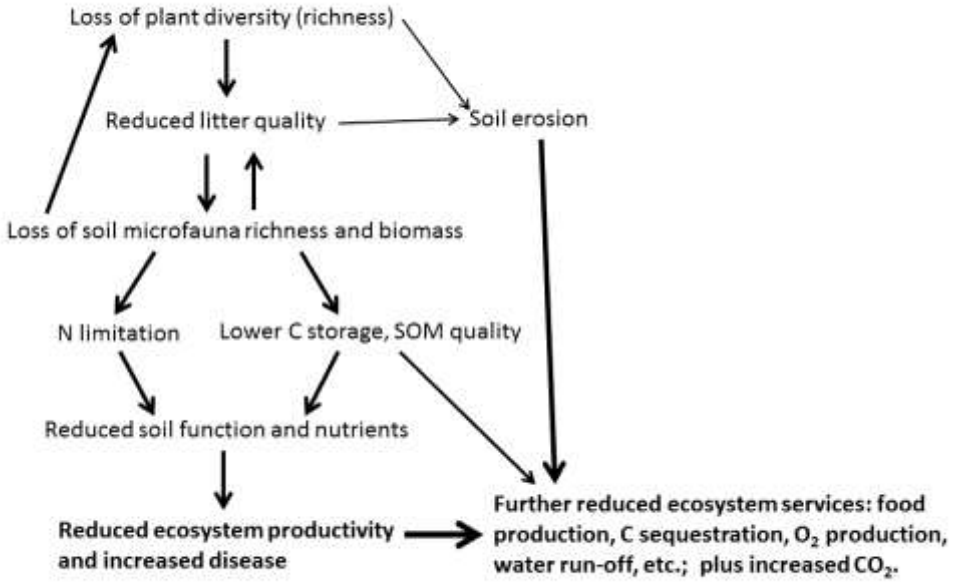

Figure 1 Linked and cascading effects of losing above- and/or below-ground biodiversity on ecosystem services. The width of arrows indicates strength of the linkage.
(SOM = soil organic matter)

Conclusions

Soil biodiversity is composed of a highly diverse group of organisms ranging in size from mammals to bacteria that perform and maintain an array of important ecosystem services influencing local and global processes, including nitrogen and carbon cycling. A detailed understanding of these processes is lacking but they are, nevertheless, as essential as water for human survival. At the same time the subterranean biota can have positive and negative effects on ecosystem productivity and because these biota are changing, as a consequence of human activities, it is important to understand how such changes may alter soil services, especially those emergent ecosystem processes (Wall et al. 2010). An aspect of soil processes that is becoming clearer, however, is the top-down and bottom-up controls exerted on plants by soil biota and on soil biota by plants and that related directly to system productivity through amount of nutrient availability and root diseases. Further, there appear to be far more individual species effects than had previously been thought, and perhaps as a result less redundancy as well.

Soil biodiversity can be lost by any of many improper land use practices including contamination, deforestation and excessive fertilization and more often through a combination of effects. However, perhaps the greatest threat to soil biodiversity, and hence ecosystem productivity and services, is the lack of awareness of the importance of soil processes among conservation biologists and terrestrial ecosystem managers, including farmers and foresters. Non-attention to soil processes has led to reduced production and the need to input nutrients, at a high cost and with cascading effects on soil health. Future management planning in forestry and agriculture needs to become more aware of the important roles that soil biodiversity performs within ecosystems and develop techniques and best practices to conserve it across scales.

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SUSTAINABLE AGRICULTURE IN SPATIAL PLANNING

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Abstract
Dutch governmental bodies explore the possible use of instruments of spatial planning, such as zoning plans – on behalf of a more sustainable agriculture. For the intensive rearing of pigs and poultry the issues of sustainability are environment (emissions of nitrogens, odour, soil protection), mineral cycles, animal health, animal welfare, transparency to the public, etc. For dairy farming issues like the degree of land-based farming, outside grazing etc. are added. The 'traditional' subjects of spatial planning cover issues like: the size of the built-up area, heights of buildings, shape of buildings, prohibitions of excavation and other non-agricultural use, but also – within the assignment "agriculture" - regulation of cultivation of maize, biological farming and use of pesticides. The paper gives an outline of developments and the legal issues at stake.

Keywords: sustainability, agriculture, spatial planning

JEL Codes: Q15, R14, R52

Introduction
The Act on Spatial Planning provides legal instruments for public bodies at three levels of government: state, provinces and municipalities. The legally binding Zoning Plan is the main instrument for municipalities to plan and regulate all kinds of use of land and buildings, and also for regulating agricultural uses. At provincial level the Regional Regulation on Zoning is becoming more and more important. In recent times the emphasis in zoning has been put on sustainable agriculture, of course additional to the more traditional subjects such as the designation of agricultural building blocks, the heights and volumes of agricultural buildings etc.
In general the problem for Dutch planners is rather complicated: a densely populated country of 42.000 km2 surface, with 17 million inhabitants, 12 mln pigs, 96 mln poultry, 4 mln. cows, 1,4 mln. sheep and other animals, how could this ever be sustainable? The answer is: it cannot, but it is always possible to take little steps towards sustainability.
There is a lot of legislation regarding agriculture, also aiming at problems of environment, such as the Manure Act, the Act on Nature Protection (Natura 2000), Odour Nuisance Act, Environment Protection Act and many others. Most of these acts are meant to implement European legislation, such as the Nitrate Directive, Habitat Directive and others.
Spatial planning is a typical national power, which comes with extra regulations for farming, and especially for animal breeding farms. In general one might state that there is a great density of regulations for farmers.

Municipalities
Zoning Plans provide for designations of all rural area. In general designations may be divided into: agricultural use (buildings), agricultural use (not buildings), agricultural use with values of nature and landscape, natural area with subsidiary agricultural use, nature area. Of course all kinds of variations exist. Agricultural building parcels are maximized in surface, regulations for maximum height are connected and also rules for the appearance of buildings, landscaping etc.

Often a distinction is made between the character of the farms. Because "intensive farming" has more impact on the environment, these types of farming are often more limited than land-based farming. More recently the designation "organic farming" has appeared (ABRS 15 april 2009, LJN B11102 (Den Briel)) and also the designation "gentechfree zone" (bestemmingsplan Ooyse Schependom (Nijmegen)), which goes far beyond the purposes spatial planning as to my opinion. The interference with farming itself does not stop at the given designations but also can imply:

- A planning permission is needed for crops, such as maize;
- Grazing for dairy cows compulsory;
- Non-spray zones compulsory(ABRS 2 maart 2011, LJN BP 6383
- Planning permission needed for plowing > 30 cm (ABRS 23 september 2015, ECLI:NL:RVS:2015:2982 (Breda).

These very detailed regulations in zoning plans could be and are criticized, and also are challenged in court. The Act on Spatial Planning only provides for a very open standard: all decisions should amount to "proper planning". This means that there is a wide space for governmental regulations and the courts assess the decisions of municipalities and provinces rather reluctantly, the standard consideration is court decisions being:
When establishing a zoning plan, the municipal council has discretion to designate destinations and to give rules that the municipal council considers necessary in the interests of proper planning. The Court will review this decision reluctant. This means that the Court will assess on the basis of the grounds of appeal or a reason for the view that the council cannot reasonably take the view that the plan extends the benefit of proper planning. Furthermore, the Court will assess on the basis of the grounds of appeal or the contested decision was otherwise prepared or taken in violation of the law.
There is thus a wide margin of appreciation. The regulations mentioned above all passed the courts. This does not mean that anything goes. Decisions may be annulled by the court for conflicting with the speciality principle (ABRS 21 January 2015, ECLI:NL:RVS:2015:84 (Reusel-De Mierden)), conflicting with regulations of higher level (Natura 2000 / Directive on Air Quality) or conflicting with general standards of administrative law, such as the diligence principle or the precautionary principle.

Provinces
In September 2011 the Commission Van Doorn issued the report "All the meat sustainable in 2020". Especially the intensive branches of farming were to produce in a more sustainable way and had to move forward on issues like animal health, animal welfare, public health, environment (emissions of nitrogen, phosphates), circular production etc. Complying to the common legal standards was, according to the commission, not enough to give farmers a 'public license to produce'. Public support for farming had evidently decreased in the last years. The province of Noord-Brabant picked up the ideas and transformed them into regulations. Noord-Brabant is the Dutch province with the highest density of pig and poultry farming. A provincial regulation on the basis of the Spatial Planning Act was issued in 2014 and put into force the same year.
In the provincial regulation all building blocks of farms were set on the actual building boundaries. Normally a farm was admitted a building block with some room for expansion, without the plan or regulation needing to be altered. By putting the building boundaries to the existing buildings – in fact a general prohibition to erect new buildings for animals - every extension needs a decision of municipality or province to adapt the regulations. And on the basis of that the province ruled that such a decision could not be positive if the applicant did not "score" a certain amount of points on the Brabant Sustainability Score. It is not enough that an applicant complies with standards in legislation, this give zero points. Points can be earned by obtaining existing certificates in the field of animal welfare, animal health and mineral management. Points can also be earned in the area of installations and environment (emissions of odour, odour impact, fine dust and endotoxins, ammonia, land based farming, biodiversity). A third possibility is a real innovation that does not fit in the other two schemes but contributes to sustainability according to an Innovation Expert Panel.
The result is a very elaborate and rather technical approach to permitting a farmer to extend his operations. It is supported by a software programme where all the data of a farm and the plans for extension can be introduced and the result of the earned point is directly visible.
The question is still: will this system stand up in court? There are authors that argue the system does not comply with the specialty principle, according to which the regulations must fit the purpose of the Spatial Planning Act (proper planning). Some of the issues (for instance animal welfare) are clearly not related to zoning and spatial planning. On the other hand we have seen that the courts give a wide margin to the governmental bodies. We will have to wait for jurisprudence on this issue.

Land-based farming
Spatial planning instruments are also used for forwarding land-based farming (see above). Due to the extinction of the milk quota, dairy farming increased considerably the last four years. Dutch government is afraid that dairy farming will become more and more intensive (like pigs and poultry did in the last forty years). National legislation is in preparation now to limit the possibilities for dairy farming to expand if they are not more or less land-based, that is if they cannot use the manure of the cows on their land according tot the standards of the Manure Act (which are based on the Nitrate Directive).

Conclusion
Dutch farming will be obliged to become more sustainable than normal legal standards provide for. It is expected that these legal standards will be raised in the future, but this should take place at European level.

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SOCIOECONOMIC CHARACTERISTICS OF CONTEMPORARY CZECH COUNTRYSIDE: WHO IS LIVING THERE?

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Abstract
The development of Czechoslovakian agriculture and the countryside was surpassed by the dramatic turning points related to the political and economic situation of the state. For Czechoslovakia, the post-war ordering of Europe meant annexation to the countries of the socialist bloc with strict orientation towards the Soviet Union. For that reason, at the end of the '40s, processes were started such as agricultural collectivisation, forcible displacement and resettlement of the rural population, structural strengthening of industrial regions and other steps leading to the building up and centralisation of large-scale socialist agriculture. At the same time, the educational system was reformed and Science was subordinated to the Marxist-Leninist worldview. This approach meant the abolition of Czechoslovakian sociology as well as rural and agricultural sociology. All research institutions, as well as university education in sociology, were liquidated. In subsequent years, there was a significant change in the appearance of the Czechoslovakian village. When the political practices were disengaged and sociological institutions were rebuilt at the beginning of the '60s, one of the first questions to be asked was: Who is actually living in the countryside? This year it is just 50 years since the publication of Prof. Tuber's book of the same title: "Who is Living in the Countryside?" Since 1989, a reversal of the changes has been on going, fortunately without violence. Collectivised farmland and properties have been restituted to the original owners. Some of these have started private farming. Others have sold their property and the farmland is either leased or used for entrepreneurship other than farming. Economic and social changes influence rural life as well as rural settlements. The reasons for these changes are currently considered as being varied. Nevertheless, the results are significant. The question: "Who is living in the countryside?" is again real.

Keywords: Czech countryside – social structure of rural population – economic and social change

JEL Code: R10, R23, O52

Czechoslovakian villages after World War II
Political agreements after the end of WW II divided Europe into the two rival blocks – capital and socialist. Czechoslovakia fell among the socialist countries, which fundamentally affected future development. The Communist Party assumed all the power, immediately initiating political processes and persecutions. Nationalisation of industry, business, transport and the banking system was imposed. After 1949, most private agricultural farms were gradually collectivised. At the same time, education and science were reformed to conform strictly to the Marxist-Leninist worldview. This meant the abolition of Czechoslovakian sociology, including rural sociology.
The 1950s may be described as the most dramatic years. The German population was displaced from the borderland, opponents were eliminated in political processes, and thousands of intellectuals left the Republic. Private farmers, especially landlords of bigger estates, were persecuted, imprisoned or displaced, often with their whole families, from villages where their ancestors had lived and farmed for centuries. Parts of deserted farmhouses deteriorated and were taken over by state farms. Other farmhouses were settled by newcomers, including emigrants recurring from Russia, Hungary, Bulgaria and Romania. Some of them were farmers, others had to learn farming. The lack of qualified specialists persists, especially on the managerial level.
The situation in the countryside gradually calmed down and was consolidated from the economic aspect. However, the face of the Czechoslovakian village changed significantly. When political practices changed to such a degree at the beginning of the '60s, and sociological institutions started research again, one of the first questions to be asked was: Who is actually living in the countryside?

In 2015, it was just 50 years since the publication of Prof. Tauber´s book of the same title: "Who is Living in the Countryside?"[22] Prof. Jan Tauber was the restorer of post-war rural sociology. The thoroughly prepared empirical research was based on the theoretical (above all, ideological) conceptualisation of economic and social life in the countryside. The situation of collectivised agricultural co-operatives was surveyed and the main indicators of the current changes were defined. Even over the course of 50 years, we can consider this research as a successful attempt to create the strategy of systematic research of the Czechoslovakian rural areas.

After the political turnaround in 1989, the reverse situation was repeated, fortunately without any violence. The collectivised land and property were returned to the original owners and privatised. Some started private farming, others sold the property and rented out the land, or carried out business in a different field. Economic and social changes are visible in village life, as well as in the village settlement structure. The reasons for the changes were different or opposite, but equally marked. The question of "Who exactly is living in the countryside?" is relevant again.

There is also a comprehensive comparison of the 50-year interval. Who is living in the countryside and what changes have there been in the lives of the rural population? It is not possible to compare all the variables surveyed at that time with the current data. Some of the characteristics vanished from rural life and so we cannot compare them. The comparison of others is pointless. Nevertheless, we can try to compare such factors of economic and social life, which influence the living standards, and lifestyle of contemporary rural inhabitants.

Basic thesis and buzzwords in 1965

The rhetoric of the post-war period was shaped by the political and economic situation in the country. Czechoslovakia was not hit by the bombing and infrastructural destruction, as were neighbouring countries in the East and West. Nevertheless, the post-war revival of the country was limited by some negative effects of industry, banking, transport and the nationalisation of other branches. The shortcomings caused by the collectivisation of agriculture persisted even into the '60s. A major problem in agriculture and industry was the lack of qualified specialists. Some of these perished during the war, others emigrated after the war and those labelled as enemies of the socialist Republic, were forbidden from working in their specialisations. They were permitted only to be employed in unqualified manual labour. This sometimes also affected family members, whose children could not study in tertiary institutions, only grammar school studies being allowed.

All public life had an ideological content. That is why the real reasons for the economic and social problems could not be described. The fictional problems, wishes and imaginings of the political elites of that era appear in the buzzwords. The stated target was "to raise agriculture to the level of industry" and "village life to the level of city life".

Pre-war private farming had several forms – a minority of modern and well-equipped big farms, then medium-sized farms up to 50 ha, and a majority of small farms, which could barely feed the owners. The big and medium-sized farms were collectivised; small farms were recruited into the co-operatives. During the violent collectivisation, wasteful treatment of dead-stock and livestock, as well as damage to property occurred. The results of communal farming were not positive until the first half of the '60s and small farmers were more likely to be discouraged. Managers of the collectivised farms (state farms as well as co-operatives) were all non-professionals without the knowledge of large-scale agriculture.

Collectivisation also broke down the hierarchical social ties, creating new ones based on ideological and political grounds. The most important tasks of post-war revival of the national economy were the launch of the development of large-scale enterprises and obtaining the political support of the rural inhabitants.

The biggest problems of large-scale socialist agriculture were the low economic performance of the socialist farms, lack of equipment and high-quality technology, as well as the imperfect organisation of farm management. Under those circumstances, Czechoslovakia was not food autarchic; most internal demand was not covered by the agricultural products[23].

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[22] Tauber, Jan a kolektiv: Kdo žije na vesnici. Sociologická rozprava. Nakladatelství České Budějovice, 1965. 5185/64/456-12. Stran 187.

[23] *Ibid*, information drawn from the chapter: Agriculture on the level of industry – village on the level of town (pp. 20 – 86). Particular chapters: Idea of socialist industrialisation of agriculture; Socialist industrialisation of South-Bohemian

For this reason, there were high expectations of the industrialisation of agriculture. The main items were concentration, specialisation and regionalisation of agriculture, with the exploitation of all the modern scientific knowledge of Mathematics, the chemical industry, development of new technologies and the utilisation of energy resources. Through technology, agriculture had to approach industry gradually. Even then, ideologists did not discount that the character of agricultural production is much more dependent on natural conditions than industry is. However, at the same time it was supposed that the significant division of labour in agriculture would continue and that educated managers would be able to plan and organise the complicated production processes which are influenced by natural conditions.

It was presumed that through the new technologies, increased mechanisation and improvement in the organisation of agricultural production, working conditions would be levelled. It was also presumed that social conditions (length of maternity leave, length of annual leave, social benefits, etc.) among the particular enterprises of state and co-operative sectors would decrease the mutual differences among agricultural enterprises.

Agricultural work had a low prestige and was underpaid. Only older people with low qualifications remained in agriculture, because they could not easily find better jobs. There was little interest of young people to work in agriculture and live in the countryside. The number of workers in the basic agricultural industry decreased. Their qualifications did not answer the demands of modern agriculture.

The solution of problems concerning the strength of labour remained at the level of political and ideological proclamations. Improvement of working conditions and the quality of life in the countryside depended on financial and material resources, which were lacking. The main demands of agricultural workers and their preferred values[24]emerged in sociological research: more culture in the country, more leisure time activities, more cultural buildings, aligning earnings to those of industrial workers, regularity of work, a higher degree of mechanisation, getting people from the cities to work in the country, intensive residential construction in villages with all the comforts of modern living, improved supply to villages, more sports fields and physical education, more parties and dances, better hygiene, better transport to cities, and a general improvement of services, better medical services, employment organisation similar to the organisation of employment in industry and other fields.

The solutions to these problems and demands were not achievable in the short term. That is why they were postponed for the future. Other, more important aspects of a socialist society, were stressed[25]. For example, changes in the class structure of villages, i.e. the reinforcement of workers' and peasants' rights and the suppression of exploitative class influence. The euphemism “suppression” meant a broad scale of sanctions, which included shifting to another working place (as a rule, manual), loss of employment, confiscation of property, deprivation of civic rights, as well as the ejection from the village and imprisonment. It is true, that in the '60s, when the sociological research was provided, collectivisation had ended and strict sanctions such as ejection or imprisonment almost did not occur. The "re-education" of the population and building the so-called" socialist democracy" were stressed all the more. This euphemism meant the leading role of the Communist Party and a preference for communist cadres on all levels of working and public life. The "brigades of socialist work" were an important tool.

Pre-war social organisations and clubs were dissolved and the newly formed ones strictly conformed to the unified central management, with their activities rigidly controlled[26]. The unification of thinking, and the suppression of any critical opinion or opposing activities was the goal.

It has not been the objective approach to highlight only the negative aspects of the '60s. Sociological research is the reflection of former thinking and possibilities – economic as well as social. The process of concentration, specialisation and industrialisation of agricultural production was also in progress in Western Europe. Without these steps, it was not possible to maintain agriculture as being profitable. However, the method of land and property concentration was based on the pressure of competition. The less efficient farmers were unsuccessful and had to give up their farms. The process was not enforceable.

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co-operatives; Economic problems of Czechoslovak agriculture; Backwardness of agriculture; Intensity and industrialisation of agriculture; Mathematics in agriculture; Deepening of social division of labour; Progressive forms of remuneration in agriculture; Levelling of co-operative incomes.

[24] Ibid, pp. 89 - 91

[25] Ibid, pp. 127 - 146

[26] Ibid, pp. 149 - 187

The government offered farmers requalification and other employment in the national economy. This was a good thing, but the loss of family property and independence was also a bitter and negative experience. Socialist large-scale agriculture was introduced step by step, arising from the biggest problems, even if often at the price of disproportionate costs and the generation of disproportion in the national economy. The socialist method of management proved uneconomical and unmaintainable in the long term in all of the socialist countries.

Comparison of the positives and negatives of socialist large-scale agriculture and rural development:

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• Gradual consolidation of agricultural production enterprises • Levelling of social consumption conditions between the state and cooperative sector • Assurance of food from their own supply • Raising living standards of farmers and rural population • Recovery and reconstruction of housing in village self-help • Growth of education of the rural population • Stopping the waves of migration from the countryside to cities	• Massive subsidising of agricultural enterprises, especially state farms • Organised seizure of managerial positions in agricultural enterprises • Erratic supply of the population with agricultural and industrial products • Economic stagnation of the national economy • Environmental degradation as a result of the industrialisation of agriculture • Decline in labour productivity and motivation to work • Increasing passivity and discontent of the population with state policy

The same optics may be used to investigate the positives and negatives of the rural population's public life. The centrally managed policy of enlightenment, culture and education contributed to the moderation of social inequalities on one hand; the equalisation of own possibilities held back the activities of the population. Compulsory or permitted activities did not create the space for personal development. The preference of private business (repairs of cottages, gardening, etc.) of the rural population was a certain answer to the idealisation of public life.

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• Effort to engage the rural population in the social activities in the form of supported campaigns (brigades, conservation of greenery, cultural events) • Support of children's and youth's cultural organisations and sports clubs • Decreasing social inequalities resulting from the material conditions of inhabitants • Spread of educational access	• Oppression of any other than official social events • Restriction of freedom of speech and meetings • Restriction of religion • Limited possibilities to travel abroad • Introduction of social inequalities resulting from political affiliation of the population • Restriction of possibility of decision-making on own destiny

Czechoslovakia ranked among the countries with the highest wage-levelling in Europe[27]; the society was homogenised in the sense of "compressing of socioeconomic position and living standards" towards the average. At the same time, during the socialist epoch, the logical connection between work results and wages was gradually eroded, as well as between work results and career. Socialism, the ideology as well as the state mechanism, also lost the support of those communist social groups which had profited from it. All the limitations of a centrally planned economy and oppression of free thinking were displayed by the

[27] Machonin, P., Tuček, M. a kol.: Česká společnost v transformaci. Sociologické nakladatelství, Praha 1966, str. 16

opening of the borders and the possibility of comparison with developed capitalist countries. Without any external or internal controls, corruption and nepotism could flourish undisturbed[28].

Fundamental changes after 1989

The change in political direction meant a turnaround in the economy, as well as in the public and social lives of the population, including the rural population. Society became able to differentiate. Retribution for past injustices was expected with interest. Collectivised land and property were returned to the original owners. The transformation of enterprises proceeded and the impacts of a market economy emerged, especially increasing unemployment. Employment and social certainties disappeared. New opportunities opened up for educated, experienced and motivated people. For others, the situation deteriorated, for objective as well as subjective reasons.

Only the effectively managed agricultural enterprises could survive the competition. That is why in the privatised, transformed enterprises, former managers of large-scale socialist state farms and co-operatives were often in leading positions. They had sufficient experience as well as important contacts from the past. Modernisation and intensification of agriculture continued with all the positive as well negative consequences.

Positive outcomes include the increase in work productivity, greater emphasis on the quality of agricultural products, preservation of the landscape, assertion of environmental principles, ecological farming, recycling and waste utilisation, etc.

Negative outcomes result from the poor responsibility on the part of agricultural producers concerning the natural environment. In an effort to obtain rapid profit, there is an exhaustion of natural resources, a neglect of land economy rules and rules of water resource control. Agricultural entrepreneurs and land leaseholders often have no relationship to the locality and its balanced development is not a priority for them.

The significant split in rural development was the membership of the Czech Republic in European Union and the subsequent support of agriculture, as well as the renewal of the countryside from EU structural funds. Less favoured areas, especially in the mountains, could eliminate the most important disadvantages of development in this way.

Czechoslovakia, and later the Czech Republic, is gradually approaching the main trends of developed Western European countries. The changes are visible from the socio-demographic data. Some of them are positive, others are negative. However, many effects can only be proven in the long-term, so are not possible to be evaluated unambiguously.

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• Significant decrease in number of abortions • Possibility of registered homosexual partnerships • Increase in living standards of the population • Increase of education • Support of requalification • Planning of parenthood	• Decrease in number of births • Ageing of population • Departure from classic model of marriage • Increase in age of men and women at the birth of the first child • Increase of proportion of children born outside marriage • Displacement of care of seniors to outside the family

Changes in consumption are significant and depend on the common increased living standards of the population, the offer of goods and services, open borders, possibilities of organisation of own life, as well as on contemporary fashionable trends in consumption.

[28] Majerová, V.: Sociologický pohled na změny v československém zemědělství po r. 1989. Sociologie venkova a zemědělství 1/1992, str. 32 - 33

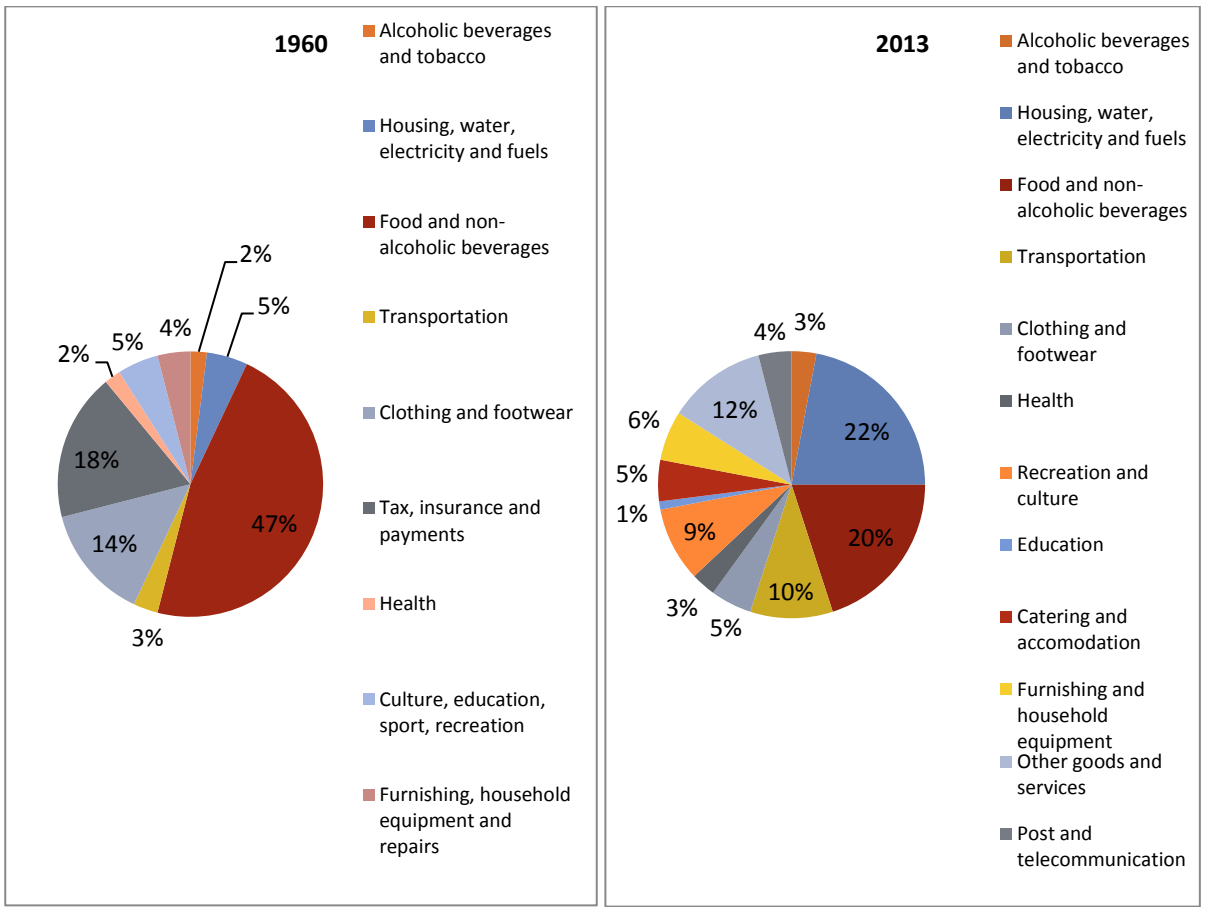

Figure 1 Changes in structure of consumption
Source: CSO, Household budget survey, 1960, 2013

At present, the items of consumption are rather different (i.e. taxes are not recorded separately). Nevertheless, the main trend of change can be seen. Fifty years ago, the biggest items of expenditure were on food and non-alcoholic beverages, with the cost of housing being relatively low. Education and healthcare were free of charge, the offer of goods and services was limited, travel abroad was difficult and recreation outside the home rather rare. At present, the cost structure is different. Housing costs have increased, as well as the cost of transport and services. The offer of goods is significantly higher, some services have shifted to the Internet and cell phone operators' spheres. Healthcare and education are partially paid for.

Who is living in the countryside in 2015?
If we ask the question, from a 50-year distance: "Who is living in the countryside in 2015?", we must admit that working and social lives have significantly changed, which also influence social groups in the countryside. The differentiation and variety of social groups is growing.
There were juridical and proprietary changes: inhabitants (not only rural) can beowners of agricultural enterprises, the leaseholders of employees. Unemployment is not punishable, people can remain unemployed and live on social benefits, pension, savings, annuity or income. Professional careers are not strictly bound to political affiliation, even if certain ties and connections undoubtedly remain in existence.
The rural population is traditionally less politically active, but election results regularly copy the nationwide political preferences. We cannot state that the rural population prefers the left-wing, right-wing or moderate parties. Much more important factors of their election preferences are e.g. age and education.
Education of the rural population is increasing. Higher education is not always available in the place of residence or close surroundings, the proportion of commuters is still high. The character of some professions and Internet coverage also allow for "working from home" (e.g. consultants, architects, informatics, translators, etc.).

The post-1989 employment rate is characterised by the growth of various forms of employment — part-time jobs, side-employment jobs, different kinds of supplementary and occasional jobs, cross-border employment and also the shadow economy (black labour with simultaneous social support payments).
There are several basic models of rural life according to lifestyle. The traditional rural lifestyle is in a modernised farmstead or family house on own plot, with own garden and employment in the village or neighbourhood. For another part of the rural population, the family home or house in the village is also an important value, but they commute to work to a bigger municipality or town, even if their social life takes place in the village.
There is a considerable group of people who purposefully avoid life in a town or bigger municipality, preferring the ecological approach to life and values of a natural environment. Among them are often families with young children, for whom they want to ensure healthy physical and mental development in harmony with Nature. However, when the children reach adolescence, this way of life is disadvantageous to them in competition with peers, who have easier access to better quality education, sporting and cultural facilities.
Residents of newly built suburban villages, which have arisen in proximity to big cities, have another relationship to village life. These residents commute to cities for work as well as for all their other activities (education, culture, sport, shopping, etc.). Their place of residence is a type of accommodation for them, without any relation to the rural population in the neighbourhood. The popularity of this kind of housing has diminished in recent years, due to the isolation and growing costs of all services situated outside the village.
Rural life approaches city life in many respects, the quality depending on the size of the municipality. Regional disparities persist in terms of employment possibilities and in terms of social organisation (organisationally efficient or inefficient municipal councils). The attractive components of rural life remain the non-anonymity, tradition, relation to locality, neighbourhood values, kinship and friendship.
Balancing the differences between town and village have a positive as well as negative sense. Some changes are included which are possibly ambiguous, but their meaning will be clear in the future.

+	-
• Increase in education of rural population • Increase of living standards in villages • Proximity of natural environment • Possibility of residing in own family house • High quality agricultural products from own garden and plot • Social values of neighbourhood, kinship and friendship in the village and surroundings	• Limited possibilities of employment in the village and surroundings • Necessity to commute to work • Additional workload in house repair, garden and plot • Lack of quality services in the village • Lack or decreased access to sporting and cultural facilities • Social segregation in solitary localities and suburban settlements

Finally, we can state that during the last 50 years, the Czech village has significantly changed. Some ideas of socialist ideology have been realised, even if in a different way. The countryside is approaching the city, however, some facilities are always inferior. Employment and personal opportunities are open to the rural population, but only some of them can exploit these offers, due to age, education, skills and personal characteristics. Rural areas are more traditional. Nevertheless, globalisation influences the whole of society and, in this aspect, rural stability is only relative.

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SESSION
NEW APPROACHES TO REVITALIZATION OF RURAL ECONOMY AND RURAL COMMUNITIES

A METHODOLOGY FOR THE FOUNDATION OF A CLLD PROGRAMME

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Abstract
The Community Led Local Development (CLLD) is a new tool of the EU for the planning period 2014-2020, and it is based on the LEADER initiative. Both the LEADER and the CLLD programmes put great emphasis on studying the basic situation, but there is no universal methodology provided for it, which means that there is little to no way to compare regions with each other. The aim of this study is to provide a way to compare the regional characteristics and indicators in the current planning period of the EU, which allows us to monitor the development path of the regions, and also the performance of regional development programmes. This study aims to investigate a smaller region to test our chosen method for later and larger investigations. The methodology includes and investigates the elements important during the CLLD, such as the indicators for life quality, organisational efficiency, sectorial performance and infrastructure. The output of the research is intended to be a useful material for decision makers to create plans and development concepts on both settlement and other local levels.

Keywords: methodology, local and economic development, monitoring, complexity

JEL Codes: R10, R11, R23

Introduction

The Community-led Local Development (CLLD) is not an entirely new direction for the EU development policies. It is derived from the LEADER approach, because CLLD is about local development strategies based on local needs and local decisions about fund allocation. However, previously, only the European Agricultural Fund for Rural Development (EAFRD) could be used for CLLD strategies, now, according to the regulation on the operation of different funds, financial resources can be used from multiple funds for implementing development strategies.

A new paradigm appeared in the 2014-2020 programming period of the EU: the theory of sustainable localization. The widespread utilization of the CLLD is capable of increasing efficiency, it supports complex integrated approaches (Multi-funding, Common Strategic Framework) and it also embraces the principal of one region – one strategy. Furthermore, it eases the rules due to less complicated cost-administration. One of the main pillars of the EU's integrated regional development (local development) policy is the multi-funding approach (planning based on multiple funds, which increases their efficiency). It also aims at expanding the LEADER concept, promoting the use of resources from multiple funds by local action groups and it can be characterised by the occurrence of multisectoral and integrated development ideas. It emphasises the local exploration of challenges on local levels and more efficient counter-actions as well.

Similarly, the planned regulation will recommend using a unified methodology in the future, which will allow the integrated application of funds for local development. Now it is the European Commission who needs to act, because this methodology does not exist yet. Furthermore, until the criteria are not elaborated on a member state level, strategies cannot be created. Time is short, because an actual bottom-up and integrated strategy takes much time to be worked out.

In this paper, we aim to present a methodology to compare regional characteristics and indicators. This study aims to investigate a smaller region to test our chosen method for later and larger investigations. The methodology includes and investigates the elements important during the CLLD, such as the indicators for life quality, organisational efficiency, sectorial performance and infrastructure. The output of the research is intended to be a useful material for decision makers to create plans and development concepts on both settlement and other local levels.

Partnership Agreement

The principles of the new programming period of the EU are based on a new paradigm (promoting sustainability and localization), and are organic elements of the Europe 2020 strategy. That is the reason why the Common Strategic Framework (CSF, based on a Multi-fund approach) was created, which reflects to the EU 2020 strategy through 11 common thematic objectives. Based on this, member states create Partnership Agreements, national documents for defining the usage of funds to reach the goals of the EU 20202 strategy. This document is the bases for operational programmes, in which they integrate the new paradigm.

The main goal of the integrated approach is to satisfy the specific needs of areas where the population faces the challenges of poverty and social exclusion.

While talking about the integrated place-based developments and the CLLD, it must be made very clear that there are no universal development models for all regions; therefore, they target specific sub-regional areas and it utilizes flexible development ideas. The legal regulation of the ITI (Integrált Területi Beruházás – Integrated Regional Investment) is very simple compared to the CLLD, it deals with larger areas, and its main focus is the sustainable and innovative city development (cities and their agglomerations as well). Both of them are tools based on the local level, utilizing a bottom-up approach, and another common element is that these are the only tools which can use multiple funds. However, it is the potential advantage of CLLD that it is a unique development method, which can bring positive results even in areas where sectoral development failed to do so (Jochen, 2014).

A new element of the development policy of the EU

But what is Community-led Local Development? Community-led Local Development (CLLD) is a specific tool used below regional levels to complement the other development subsidies. CLLD is capable of mobilizing and involving the local communities and organizations in order to encourage them to contribute to intelligent, sustainable and inclusive development (named in the Europe 2020 Strategy), to the spatial cohesion and to achieve the specific policy aims.

LEADER

The Community-led Local Development is not an entirely new tool for the EU development policies. It is derived from the LEADER approach, because CLLD is about local development strategies based on local needs and local decisions about fund allocation. The most successful rural development initiative of the European Union is more than a programme; it is a new kind of approach. Its elements are indicated in Figure 1.

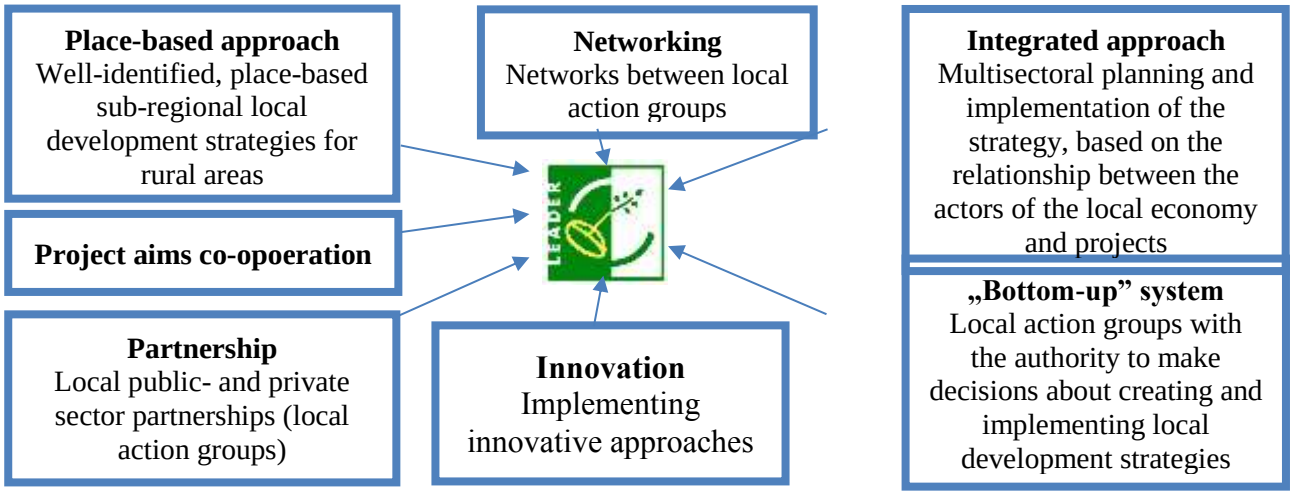

Figure 1 The LEADER approach
Source: Eperjes, 2013

CLLD

CLLD is the sum of actions (based on the LEADER principals), initiated by local communities, using the tools of the CSF and containing the detailed exploration of the situation.

CLLD focuses on sub-regional territories. It pursues the integrated and sustainable development of rural areas (local social work, strengthening local economies) and regions with towns (economic, including touristic developments, service relationships). This process is non-other than bringing the LEADER concept from the rurality to city space.

However, unlike the LEADER, which receives financial resources from only the European Agricultural Fund for Rural Development, the CLLD is financed by the CSF, which covers the European Regional Development Fund, European Social Fund, European Agricultural Fund for Rural Development, Cohesion Fund, European Maritime and Fisheries Fund (ERDF, ESF, EAFRD, CF, EMFF), which means that multiple funds can be used for the implementation of development strategies (European Committee, 2011).

It is important to know what the EU's aim is with the CLLD:

- encouraging local communities to create integrated, bottom-up strategies, by which they can react to territorial challenges,
- developing community capacities and encouraging innovation, including social innovation. Furthermore, improving entrepreneurial activities and the ability to adapt to changes. For this, the exploration of unexploited development opportunities of communities and regions is supported,
- supporting community leadership by increasing community participation,
- supporting multi-level governance for local communities, providing a structure through which they can take part in the formations of all EU policies on all the levels (Hajas, 2012).

The CLLD concentrates on specific, sub-regional levels for which the community-led, area-specific local economic strategies, representing the local interest and the socio-economic interest of the private sector, supported by local action groups, integrating more sectors . These strategies are based on local needs and opportunities and they include an innovative approach. Aside from that, the unified methodology required by the operational programmes makes it possible to use multiple funds in the same time during the implementation of the Local Development Strategies (LDS), and it also provides a structure for the local communities through which they can take part in realizing EU policies (European Committee, 2014).

The new elements regarding the CLLD can be summarized in the next points:

- an unified methodology must be used for CLLD in every funds and regions,
- the subsidies belonging to the Common Strategic Framework (CSF) funds will be unified and synchronized. This way it will be easier for the beneficiaries to create strategies using multiple funds, which strategies take the local needs and characteristics in consideration more. It has to be assured by the harmonized capacity development, selection, approval and financing of local development strategies and local development groups,
- in the CSF non-rural areas can form partnerships too and operate similarly to LEADER local action groups,
- preparation is supported too (training new groups, minor experimental projects, capacity building, training, networking),
- the strategies using multiple funds will be able to finance the operational and organizational costs of the Local Development Strategy from one (main) fund,
- in the case of operational programmes one whole priority will be implemented through the CLLD:
    - the maximum co-financing rate from ERDF and/or ESF will be increased by 10%,
    - in the case of EAFRD the maximum co-financing rate can be between 80% and 90%, depending on the situation,
    - in the case of European Maritime and Fisheries Fund, the maximum co-financing rate can be 75% (Hajas, 2012).

The financial resources of rural development are not sufficient to satisfy the development needs of rural areas; the financial resources for improving the rural economies are also not sufficient for generating

growth in these areas. However, successful settlement development can only be carried out within a complex approach. Based on the current situation, territorial problems can be solved in the most appropriate way by the tools of the CLLD.
During the LEADER-type development activities, the members of the action group visit the target group. They ensure that the project ideas, development goals are well-written, they initiate co-operation between the stakeholders. Most of the jointly formed projects are supported by the LEADER programme. In the case of success, a new product (innovation) and co-operation (networks) are created. It requires much more proper workforce, but it is the only way to initiate change in lagging behind areas.

The fields of application of the CLLD:

- where it is necessary to provide ever-fresh information and the actual presence of supporters;
- where motivation is important and the management activity cannot be substituted by centrally controlled automatism;
- where micro-enterprises and SMEs operate separately and do not form networks;
- where we can find significant social and employment problems;
- rural areas, where these problems occur simultaneously.

It must be emphasized however, that the LEADER approach cannot solve everything by itself. The appropriate ratio of sectoral and territorial programmes (including the CLLD/ITI) would be the most satisfactory way of development.

Aim and methods

Collecting the necessary data

We have used certain sub-databases from the Spatial Planning Information System (TeIR), such as the metadata searching platform, the Helyzet-Tér-Kép; IVS and ITS decision-support systems. We also acquired information from the databases of the Hungarian Central Statistical Bureau, the National Employment Service, the Hungarian website of the European Structural and Investment Fund and the National Election Office, besides collecting primary data as well.
During data processing we used the latest available data (most commonly from 2013). The exceptions are the data from the National Election Office (2014) and the data collected by us (2015). Data from the National Election Office were collected from 2014, because they are collected from election years, which was in 2014 last time in Hungary. Altogether we have analysed 75 indicators for 30 settlements, which means a total of 2250 data.

Resource Monitoring Analysis (RMA)

Local governments do not possess all the needed tools for economic development; therefore economics development methodologies based on facts, the true nature of the circumstances and mostly on indirect tools are gaining increasing importance.
Our methodology framework supports fact-based decisions for settlement level leaders both in establishing priorities for development areas and in designing economic development actions. This methodology is also an important tool for establishing a monitoring system for the CLLD, because it is based on analysing resource changes in a unified system.
The methodology contains indicators for describing external factors affecting the settlement, and a benchmark database. Using the indicators a possibility is provided to create an objective, numerical basis for the decisions. The benchmark database gives structured and accessible data for further analyses. It is an important advantage of the system that the database is representative in many ways.
The system breaks down the data in four fields – life quality, organisational efficiency, finance and innovation and it categorises them in 6 groups. This way, 24 types of data will be created for analysing resources on settlement level, which will be examined compared to the regional average and the benchmark values. At the end of the investigation, we categorise the settlements into three groups – above the average, average and below the average – and they results are illustrated on a map for easier visualisation.

The definition of the investigated region

The investigated area is situated in the South-Western part of the Central Transdanubia Region. The micro-region contains 30 settlements; its population number was 34,689 in the 1st January 2013. Its settlement structure is heterogeneous: it consists of small villages (with population numbers from 72 to 1238), one larger village and two towns. The largest settlement has approximately half of the micro-region's population. Population density is varying in different settlements (ranging from 3.68 people per km² to 63.46 people km²). The geographical situation of the area is quite advantageous, the fact that Lake Balaton is close to the micro-region provides a good opportunity for tourism for the Southern settlements. We can observe an above-the-average population loss in the micro-region, compared to the country-wide, most likely due to the rapid aging process. In the past decades we could observe a migration trend from the micro-region to other parts of the country, but in recent years this trend seemed to stop. It is also an important for the micro-region that the age group between 0 and 14 started to become more and more numerous since 2012 (even if this tendency is slower than on country- or county levels). The aging population forecasts a difficult situation for the micro-region, and it is one of the major challenges the area has to face.

Results

The part of our investigation dealing with life quality revealed a common political factor among the settlements, specifically the fact that a huge majority of the mayors were independent from political parties. Except for the centre of the micro-region all the settlements are governed by independent leaders. This is a very important factor when designing CLLD strategies, since the essence of such bottom-up programmes is community participation, which can be halted by political arguments.

The next three elements of the life quality pillar showed the highest scores from all the investigated factors. The indicators representing the economic, social and infrastructural characteristics of the inhabitants' life quality are satisfying. The annual net income per inhabitant was higher in 16 settlements from the 30 than the average and the rest of the settlements were just a little behind these ones. The unemployment rate was lower in 18 settlements than the micro-regional average, in 10 settlements the score was close to the average and only two settlements have lower scores than the national average. Based on our study we can establish that the investigated area is well-endowed with public services; we categorised 19 settlements as advantageous in regard to whether their inhabitants can reach the most important services within 30 minutes. The rest of the settlements have average scores or are little below the satisfying levels in this sense.

The amount of green areas per one inhabitant indicator was used to measure the environmental side of life quality. This indicator did not show relevancy, unfortunately, because there was no data about it in 12 settlements.

We considered the work of the local governments for the population average on a regional level. In spite of this, this has become one of the most important indicators of the study. The number of new self-government decrees and the number of decree modifications shows that the self-governments in the area are stable organisations, which carry out active and continuous work, however with average intensity. Larger settlements show higher scores than the others, but the obvious reasons behind this are their size and population number.

The investigation of the political factors is important also to examine the organisational efficiency of the settlements. Based on our calculations from local development documents 12 can be considered efficient in carrying out development projects. In the other 18 settlements however, these scores were negative, which means that investment and renovation costs were higher than previously planned.

Within measuring organisational efficiency the economic pillar represents that, compared to the growth rate of the country, how the growth rate of the local economy fared judging by the local tax payment intensity. The indicator (with an average value of 10.62) showed that the region produced 10.62 times the growth rate of the country, which seems to be a very good result. By observing the area, we could see that 14 settlements did worse than the national average GDP growth rate, but the other 16 were better, with 8 of them being significantly better than the others (which is a result of the low rates of the previous years).

The rate of long-term unemployment among unemployed people was 16.26%, which means that long-term unemployment is not as typical in the area as seasonal unemployment.

We examined the infrastructural conditions of organisational efficiency by observing the average age of IT equipment used in the settlement's institutions. The equipment of the self-governments of the micro-region is aging slowly, but steadily; the average age is 4.2 years. This indicator shows that the decision makers of the settlement can only use out-of-date tools and equipment for their work.
The expenses on environmental investments per 1000 people is approximately 61 million forints (~200 000 EUR) in the micro-region, which consists mostly of the spending of 11 settlements, since the other ones do not have data about this issue.
Based on the legal side of organisational efficiency all the settlements of the micro-region possess all the needed and obligatory strategic documents. It means that settlement development projects are based on stable strategies.
The first, political indicator of the economic pillar is the quotient of development subsidies earned by the settlement and country level development subsidies per one thousand inhabitants. The micro-regional average of this indicator is 31%; it means that the micro-region reaches only one-third of the development subsidies per capita rate of the country. Therefore, we can declare that the development activities of self-governments, enterprises and NGOs are not intensive (innovative) enough. This also means that they do not utilise the national financial resources for development sufficiently. It is worth noting that it might be due to the difficulties coming from gathering sufficient amounts of own contribution or by the lack of human resources and long-term vision for the settlements.
The gross value added per one enterprise is an important indicator of the economic pillar. It indicates how much profit the enterprises realise after selling their products. The regional average was around 1.2 million forints (~3 900 EUR), which was greatly affected by one of the settlements, where this value was 10 billion forints (~33 million EUR). Only a handful of settlements reach the micro-regional average, which means that highly productive enterprises are situated in a concentrated way in the micro-region.
The rate of tax paying population is 66.52% of the population in working age, therefore, we can establish that employment willingness (as a social indicator of the economics pillar) is high in the area, which means that compared to national tendencies the number of unemployed people is probably low. We observed that settlements below the average level are not lagging behind much in this sense. On the other hand, settlements with better results had significantly better scores. This is one of the reasons that – beside some of the indicators of the life quality pillar – this indicator was also included to the ones which hold good opportunities for the future of the micro-region.
During the investigation of the infrastructural endowment we wanted to see whether the micro-region and its settlements provide sufficient infrastructural/business environment for medium-sized and large enterprises (calculated per 1000 people), or not. We found that settlements differing from the average had significant differences, both to the negative and the positive direction. In order to improve this factor the changes in the number of enterprises per people and the quality of external and internal infrastructural elements must be observed and taken care of, as much as the self-government are capable of doing so.
Investigating the environment protection aspect was important to see the relationship between protected natural areas (as attractions) and the guest nights spent in the settlements; therefore, to see that how much the settlements can exploit the opportunities ecotourism offers.
Based on the results of the last, legal segment of the economic pillar we can establish that this indicator showed high scores. Regarding the local business tax (HIPA) the majority of the settlements overdid the average, which means that self-governments gathered more of this kind of tax than previously planned. This rate was twice as much, or sometimes even three times more than expected, and only few settlements performed weaker than the average.
The investigations regarding innovation point out the importance of indicators revealing opportunities in the micro-region. One of these indicators is the number of self-government representatives compared to the number of applicants to these seats, which represents the political activity of the settlements' inhabitants. It was found about the micro-region as a whole that political activity is strong. On one hand, in half of the settlements, the number of applicants willing to become representatives was significantly above the average, while the settlements with lower performance did not lag behind much.
The changes in the number of enterprises per 1000 people were investigated in order to analyse the willingness to entrepreneurship as the economic pillar of innovation. The lack of enterprises was found in 7 settlements, enterprises ceased in 10 of them, and in 13 settlements the number of enterprises grew. With these results the indicator belongs to the well-performing ones.

In the case of innovation the social aspect was investigated by measuring the number of NGOs per 1000 people, so we could observe the intensity of social participation and the strength of local communities. In two settlements there were no data in the micro-region about the presence of NGOs. In the other settlements we could see that the scores were mostly below the average (in the case of 18 settlements).
The number of broadband internet subscriptions refers most likely to the digitalisation level of the population. Therefore, it became the infrastructural indicator of the innovation pillar. Based on the results, this one was one of the lowest-performing indicator. In 15 settlements there were no data about it, while 14 settlements produced scores much below the average.
We examined the environmental dimension of the innovation pillar by investigating the ratio of selective waste compared to all the solid waste transported from the households. We wanted to see how environmentally aware is the population of the micro-region and how much they participate in activities aiming for the good of the society. It was found that there is selective waste collecting in all the settlements and in the case of 13 settlements the ratio is higher than average.
In order to get a picture about the legal aspect of innovation, it was important to analyse the rate of development subsidies earned by enterprises compared to the national average. This investigation also showed the behaviour patterns and opportunities of enterprises. From the settlements having lower than average, 22 had 0 as score. The enterprises of these settlements did not get any subsidies for development. On the other hand, the other settlements received 20 times more financing than the national average. Regardless of this result, the performance of the indicator investigating the financial resources of enterprises for development was one of the weakest.
The results of investigating the endowments of the micro-region are not easily interpreted, neither from social, nor from economic approaches. Taking the population number or the number of enterprises into consideration we cannot see obvious patterns in the dispersion of results.
Based on our study 5 settlements were found in the ’excellent’ group and 9 in the ’well-developed’ category. The group ’failing’ contains the rest of the settlements, with 5 of them being close to the average level and 11 others below that line (Figure 2).
Two geographic centres were found in the micro-region with high performance settlements: one in the Southern and one in the Northern edge. Our explanation is that the infrastructural level, geographical and environmental endowments, the development level of the enterprises and the number of services in the settlements in those areas contribute much to the fact that they have become economic centres within the micro-region.

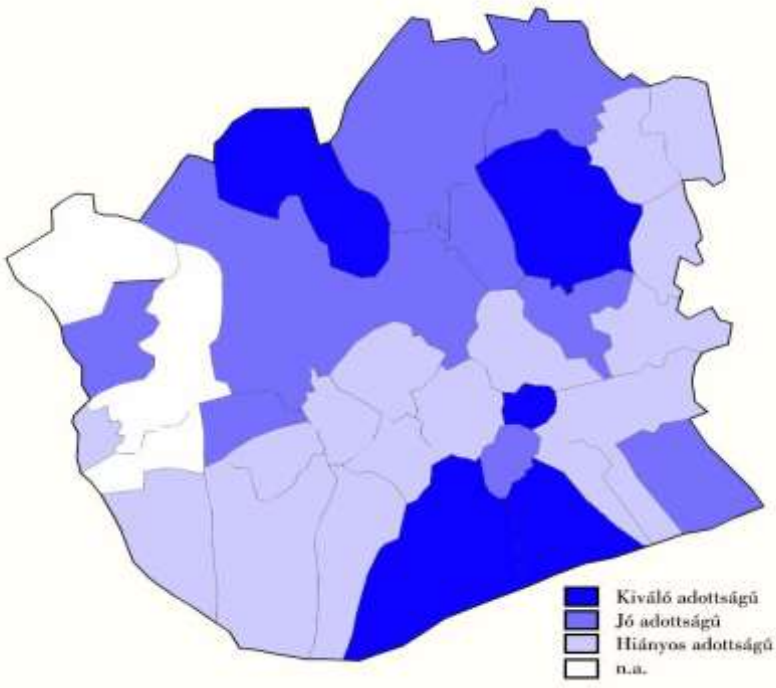

Figure 2 The result of the Resource Monitoring Analysis (RMA)
Source: Own processing based on own data collection

From the indicators, the ones describing the local life quality were the ones affecting the settlements' performance the most. The changes of annual net income per one inhabitant in the micro-region compared to the economic growth rate on national level were one of the most important indicators in this sense. The relative unemployment rate of the settlements (compared to the micro-regional level) and the number of available public services also contributed to the good result of the two highlighted areas. Beside the IT equipment (which is getting out of date slowly) the performance of the local government was established to be high. The high number of tax payers, the potential of the local business tax paid, the improving enterprise structure and the environmental awareness were success factors as well.
The challenges the settlements face must be mentioned as well. The amount of development subsidies, the number of environmental investments, the low rate of gross value added generated by enterprises, the number of NGOs and the number of guest nights spent in the micro regions all need to be addressed, either by the local government, or the local enterprises, NGOs, or by the national government.

Conclusions

As we mentioned at the beginning of our study, the proper set of tools required for economic development is not always available for local governments, thus a methodology based on factual data is highly important, since it can be a pillar of a development process aiming to realise CLLD projects.
We believe, and our opinion was supported by our study, our methodology framework supports fact-based decisions for settlement leaders for creating development priorities and for working out economic development actions as well. Furthermore, we consider our methodology an important tool for setting up a monitoring system for the CLLD, because it is based on a unified system capable of analysing resources. By carrying out examinations based on our methodology every year a settlement-level system can be developed for indicating changes in resources, and which is able to show the impacts of development activities in the settlement, providing information about the efficient utilisation of financial resources. We intend to create a more practical basis for this theory in the future; it means that similarly examinations will be carried out, but this time by using the earliest available data to find long-term trends.

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INTERACTIONS BETWEEN PERSONAL HEALTH AND JOB PERFORMANCE IN HUNGARY

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Abstract
In my study I present the examined interaction between personal health status, income status and performance of the work in the light of my questionnaire survey. Furthermore, I examine how the individual's can evaluate subjectively their own health state, lifestyle and the residence of the health care system. Similarly to the developed countries Hungary can be observed also significant regional disparities in the health care system, in terms of health status and income situation. Researches has shown that an individual's health condition significantly affects the labor supply, the labor market situation of people living in the same household, the rate of savings and education and specify the date of retirement. Healthy people work more efficiently because they spend less time on sick leave and this people are able to work till a later age than the one whose is worse his health. The overall health and life expectancy rises encourages individuals to gain more time and resources to devote their own education. Recently, the European Union is beginning to recognize the need for investment in health and looks to the good health of the population as a smart, sustainable and inclusive growth prerequisites.

Keywords: health inequality, job performance, learning performance, questionnaire survey

JEL Codes: I15, J64, O52

Introduction
There can be significant disparities between the health status of people living in different areas or belonging to different social segments, which disparities are determined by biological, lifestyle, environmental, socio-cultural and other unique factors. According to Elstad (2005) and Vitrai et al. (2010) some of these disparities in health can be derived to genetic reasons; which means they are independent from socio-economical processes. However, a majority of them are direct and indirect results of socio-economical inequalities. (in. Szilágyi-Uzzoli 2013) According to Mead – Earickson (2000) it is typical to more developed countries that the general health status of the popultion is determined – in a complex way – by lifestyle factors (43%), genetic characteristics (27%), environmental impacts (19%) and the accessibility and quality of the social healthcare system (11%). In the related literature the spatial disparities of health status are indicated by the expression 'health inequalities'. (in. Uzzoli et al., n.d.) The regional policy of the European Union has recognised this challenge and it has been trying to put more and more emphasis on pushing back these disparities, and it declares in its health policy that with sufficient and suitable interventions and preventions these challenges can be met. Furthermore, the EU considers the health level of its population as one of the basic factors of the intelligent, sustainable and inclusive growth. In 2001 the Commission on Macroeconomics and Health (CMH) published a report – as an assignment from the WHO – about the relationships of health and economic growth, and about the need for investment in health, pointing out both the micro- and macro level impacts.
In his model, Labonte (1993) illustrates the factors of the socio-economic determinants of subjective health very well. He found that life conditions (e.g. the level of income and education, work environment), lifestyle risks (e.g. harmful addictions), physical risks (e.g. sicknesses) and psycho-social risks (e.g. self-esteem problems) can be considered risk factors affecting one's health status. These pillars affect both directly and indirectly the health status.
From the first decade of the 21st century the analysis of the aspects of health status related to work has become one of the dominant research directions of health sociology. (Kovács 2009) It has been proven by research that individual health status greatly influences labour supply, the date of retiring, the employment status of those living in the same household, the levels of savings and education. Healthier people work more efficiently, spend less time on sick leave, are capable of working for longer than those with lower health status. An increase in the general health status and life expectancy encourages people to invest more in their own education (European Committee 2005). But what is health? Different science fields use

different concepts. According to WHO (2001): „ Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." From an economic approach: „…health is one of the special goods, which – by its characteristics – affects the efficiency of the economy." (Bognár 2011) It is a common point of different health definitions that they all agree that health can be transformed into direct and indirect economic advantages on individual, company and national levels. (Kollányi–Imecs 2007)

The economic impacts of health status

Compared to earlier generations, the citizens of the European Union nowadays live longer and healthier, but it is becoming a greater and greater challenge that there are huge differences between member states regarding health status, healthcare spendings, activity and the accessibility of newer and more expensive technologies (European Commission 2009). The general health status of the population effects the individual, company and national level performance through four main channels which are the following: labour market participation and productivity, education, accumulating/saving physical capital and demographic transition.

Parallel with the rapid decrease of deaths and births the number of active people grows within the society, which gives the economy momentum. Due to the decrease of infant mortality it will be increasingly important to raise children in better circumstances (regarding health and education), which will be followed by the quick and significant accumulation of human capital (Kollánnyi – Imecs 2007). Furthermore, besides investing in the active years, the old age long term care (in the form of savings) will become important, which contributes to the increasing volume of investments and to generating economic growth (Malmberg – Andersson 2006). To sum it up, there are many ways health and economic performance are connected to each other, both on individual and macro levels.

It is important to note the negative economic effects of low health status and sicknesses, which cause lead to serious problems on both individual and national levels nowadays. We can observe that healthcare spendings are increasing in both the European Union and Hungary. Ageing society and low health status brings about lower levels of income generation, which results lower healthcare contributions. And the vicious circle starts again as lower healthcare contributions lead to lower supply quality levels, and puts the population and healthcare situation into a difficult situation. Sicknesses have direct, indirect and intangible costs. Direct costs are the ones closely related to the curing procedure, the medicine and other expenses. These costs are basically paid by the National Health Insurance Fund of Hungary in Hungary. Indirect costs cover items which are realised as losses for the economy or the society due to the loss in working time caused by sicknesses plus the costs of National Health Insurance Fund. (Ács-Hécz et. al. 2011). In Europe, unlike in the African developing countries, the non-contagious sicknesses make up the majority of sickness-related costs. From this category the cardiovascular and psychic illnesses mean the greatest problem. The four most common risk factors are diabetes, obesity, smoking and alcohol consumption (European Commission, 2005).

Based on the abovementioned we can conclude that the relationship between health and economic performance is a highly complex research area. It is important to analyse the current situation and to determine possible intervention areas to alleviate negative processes and to create positive trends. I agree with Palócz and his co-authors (2006:14) in the next statement: „In Hungary it is of key importance today to increase the competitiveness of the country which can be achieved by – among others – raising the health status of the population".

Material and Methods

In the study I intended to present the relationship between individual health status, income levels and work performance, supported by the results of a questionnaire. I also present how the respondents evaluated their own subjective health status, lifestyle and the healthcare system in their place of residency. The central question of the study was whether a statistically confirmable spatially divergence can be indicated by the answers of the respondents, or not.

The online questionnaire investigation started on the 10th of October, 2015 and it concluded on the 29th of October. To evaluate the results I used the SPSS statistical programme. The sampling method was accidental sampling, the results are not representative. The sample consists of 81 people.

Results and Discussion

From the respondents 69% were women and 31% were men. The average age was 31, 22% lived in the capital, 11% lived in county seats, 37% lived in towns and 30% lived in villages. The majority of respondents deemed prevention in healthcare, physical training on a daily basis, healthy sleep, balanced food consumption and low-stress lifestyle important. However, especially in the case of men, respondents did not always considered regular screening tests and avoiding harmful habits important.

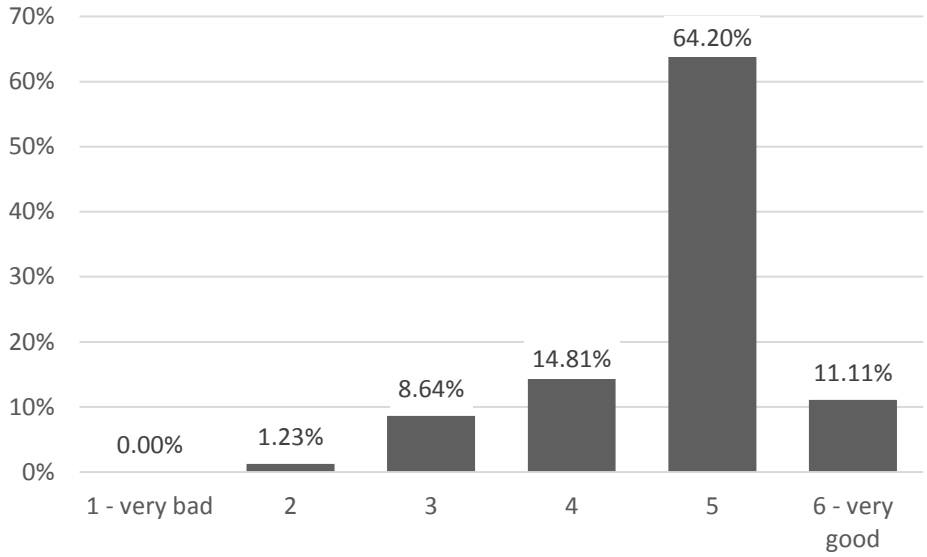

Figure 1 The subjective assessment of health status
Source: Based on own questionnaire 2015, n=81

In a health-related survey of the Hungarian Central Statistical Office (KSH) (2014) the huge majority of the population responded that they do attend screening tests regularly and they check their blood pressure, blood sugar and cholesterol levels usually.60% of the female respondents attended mammographic screening tests and 84% took part in cervical cancer screenings. Unhealthy lifestyle concerns a significant amount of people, and although the majority of the respondents were aware of that they are responsible for their health status, a great number of them have harmful habits. 29% smokes, 5.4% consider themselves heavy drinkers and 67% of them do not do any sports at all. 54% of the adult population faces overweight and obesity. According to the KSH survey 89% of the adult population of Hungary is satisfied with their health status. During my questionnaire I was led to a similar conclusion. 11.11% of the respondents considered their health level very good, while 64.20% thought their health level is good (Figure 1). There is a significant relationship between the subjective assessment of health status and the workplace/school performance. Those respondents who assessed their health status stated that they can work more efficiently and their superiors or teachers were more satisfied with their work. Furthermore their salaries or education grants have increased recently. The residents of county seats rated their health levels the highest, while the people living in towns are in the worst health status, according to the answers. The respondents spent approximately 5-6 days on sick leave annually. These elements indicate that higher health levels really contribute much to better performance.

Only 23.07% of respondents with long term health problems (e.g. visual impairment, diabetes, obesity, chronic disease) stated that their sicknesses significantly limit their abilities to find jobs or to get access to education (Figure 2.).

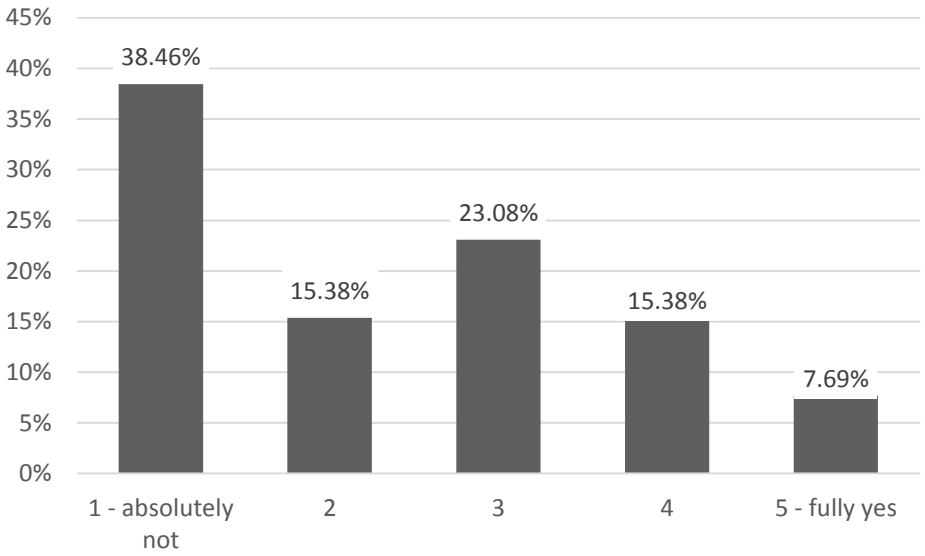

Figure 2 The long-term illness limitations rate in finding employment
Source: Based on own questionnaire 2015, n=81

On the other hand, it limits them in working and learning. According to the KSH survey, 9.2% of the population stated that they are seriously, and 20% are lightly hindered in their everyday life by their long term sicknesses. The survey points it out that in Hungary there is a huge number of people who have to live with serious sicknesses. 55% of the respondents stated that they have chronic diseases. The rate of those with blood sugar problems was very high (31%), but many of them had other, similarly serious problems, such as cardiovascular sicknesses, musculoskeletal diseases, especially back- and spine ache (21%), joint diseases (17%) and metabolism-related sicknesses (such as diabetes: 8 %). Mental sicknesses are also serious problems; depression is reported to affect 4%, according to the survey.
The so-called health preventive healthcare is not supported by the majority of the respondents' workplaces (62.96%). These respondents worked at smaller and larger companies, and were both physical and mental workers as well. This means that this type of morale from the employers is not limited to only certain types of workplaces. The respondents mentioned the following health-related support types: occupational physician, regular screening tests, providing monthly tickets for gyms, organising sports events, SZÉP card (a type of holiday voucher). One of the respondents stated that at his workplace there are regularly organised informational events about diseases and prevention, screening tests and possible ways of curing sicknesses. Another person said that at his workplace there is a serious attempt from the employer to give healthy food to the employees (for example, they can get fruits free of charge).
73.91% of the respondents pursue sports more than once weekly. Female respondents do significantly more sports than males, which may be a result of their more healthy lifestyles. (Figure 3).

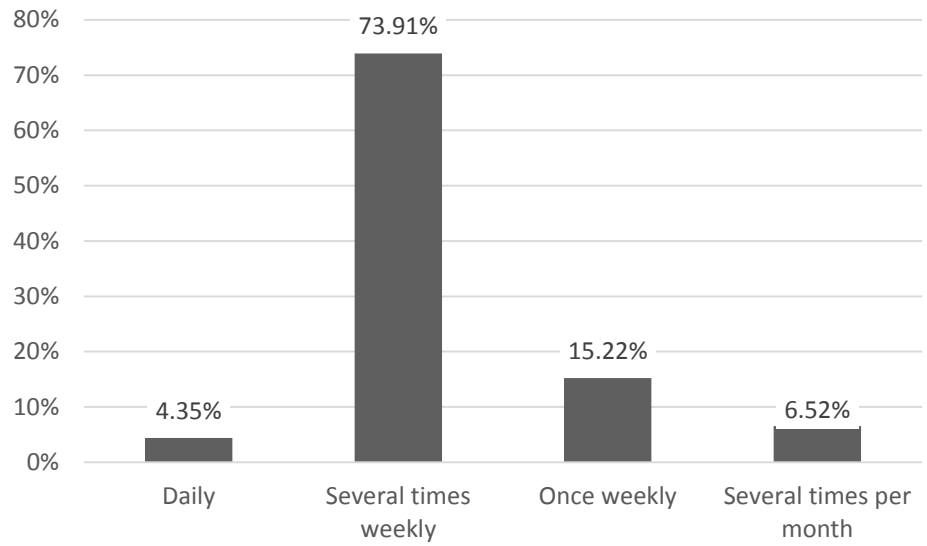

Figure 3 The frequency of doing sports
Source: Based on own questionnaire 2015, n=81

They reported that their stamina is now better, they can work better and more productively, they get sick less often, they can focus on tasks more easily and even their general mood is better due to the fact that they do sports, compared other people they know who do not do any regular sport activities.

Table 1 Interactions

By doing sports…	Average
my stamina increased.	5,35
my mood is better.	5,43
my work performance is better.	4,83
I get sick less often.	4,91
I can concentrate in my school/workplace.	4,93
Does your income situation affect your health status?	4,65
Does your health status affect your income situation?	4,14
1-Not at all…6-Definitely yes	

Source: Based on own questionnaire 2015, n=81

Based on the answers we can establish that income levels affect health status to a great extent. We can assume that people with higher income can afford more expensive and better quality food and food supplement; they have more time and money for recreation activities and can use higher quality healthcare services. On the other hand, health status does not affect their income levels as much, based on the answers (Table 1.).
The respondents were not entirely satisfied with the healthcare services in their residence area, but they had high opinions about the pharmacies. They mostly found specialist care and outpatient care lacking (Table 2.). They also indicated problems regarding to the long queues at non-emergency medical treatment.

Table 2 Perception of the health services by residence

Name of service	Average	Standard deviation
General practitioner	3,86	1,62
Emergency ambulance service	3,77	1,43
Dentist	3,96	1,60
Specialist and outpatient care	3,18	1,42
Pharmacy	**5,00**	1,20
1-I am not satisfied at all…6-I am completely satisfied		

Source: Based on own questionnaire 2015, n=81

Conclusions and Recommendations

Based on the results of the questionnaire we can establish that there is a correlation between subjective health and work/school performance. Currently, due to the low number of respondents (81), the differences based on the type of settlement could be observed only in a low number of cases, therefore further research is required to test my hypothesis and the present investigation will be carried out on a larger sample. My results shown many similarities with the abovementioned KSH survey (2014) about the health status of the population. In Hungary the high rate of people suffering in chronic diseases is a still a serious problem. Overweight and obesity are all too usual, just as unhealthy lifestyle and physical inactivity, and unfortunately the majority of workplaces do not support the so-called preventive healthcare and do not encourage employees to live a healthier lifestyle. Of course, there are exceptions and good examples as well. The respondents are not satisfied with healthcare services, mainly because of the long queue time. I consider screening tests highly important, because they can provide essential information for not only the diagnosis process, but also for creating and improving actions aiming to support healthcare-related prevention.

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RURAL ECONOMY STRUCTURAL ADJUSTMENTS AND SOCIAL CONCERNS IN SLOVAKIA

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Abstract

We investigated the Slovak regional economy structural adjustments over 1995-2012. Regional economic specialisation, economic sector geographic concentration, regional economy structure and weaknesses were identified, with a focus on the lagging Central and Eastern Slovakia regions. We used yearly data of national and regional (NUTS II) employment by economic activities and selected indicators of regional agriculture. We estimated regional employment multipliers using single region Input-Output (I-O) models and decomposed regional sectoral employment changes using shift share analysis. We found increasing regional economy diversification and geographic concentration of economic activities. Significant changes occurred in regional agriculture. Regional GAO fall down and their structure has changed in favour of crop production. A slowdown of the national economy growth due to global crises affected significantly Slovak regional labour market with unfavourable composition of regional economy. Dominant sectors in lagging Eastern Slovakia regions remained uncompetitive with high multiplier effects on job market. Relative position of agriculture and its competitiveness in these regions has been increasing. Relatively low regional employment multiplier effect of agriculture, together with remaining uncompetitive regional economic activities has been unable to absorb high regional unemployment.

Keywords: regional economy, employment, regional Input-Output, multiplier, Slovakia

JEL codes: R11, R23, O52

Introduction

The Slovak Republic (SR) belongs to the OECD countries with the highest and persistent unemployment. Regional differences in unemployment are high and rising. According to the OECD (2014), the main reason for the significant regional disparity is the combination of low job creation in the east and central part of the country and insufficient labour mobility to the west, in particular from low-skilled workers. Increasing growth in the central and eastern regions and completing the transport infrastructure network in Slovakia would address the jobs shortage.

Some Slovak regions suffered from both, weak growth and high unemployment already before the SR accession to the EU. The Slovak regions that were able to cope with unemployment, were those with more diversified economy or those able to change flexible their specialisation (Hapiot and Slim, 2004). Registered unemployment rate in the SR in 2014 reached 13.2% and was regionally unbalanced with a significant gap in between East and West regions. While there was a 6% rate of unemployment in Bratislava (capital) region, Eastern Slovakia displayed 16.6% registered unemployment rate. Regional unemployment differed also by gender, with prevailing women unemployment (Fig. 1). Structure of regional economy belongs to reasons of regional differences.

Most of research studies focusing on modelling of the Slovak economy structure and drivers of employment, are conducted on national level. Input-Output (I-O) and Social Accounting Matrix (SAM) modelling approaches, to assess multiplier effects of national economic activities with different aggregation levels were applied in e.g. Hajnovičová and Lapišáková (2002), Koronczi (2004), Lábaj et all. (2008), Domonkos and Štefánik (2011), Gylánik (2012), Lábaj (2013), Habrman (2013). However, regional I-O level analysis is rare and was conducted at highly aggregated level (Husár, 2005; Macák, 2007; Pavlovičová, 2010). In the EU regional study (Groeneveld and Heijman, 2013) authors estimated output multiplier effects using single region I-O models, covering the Slovak NUTS II regions.

Special attention to the Slovak agricultural sector multiplier effects was devoted in the study Božík et al. (2010). Božík et al. (2013) constructed NUTS III regional I-O models for 2008, using modified GRIT technique and estimated agricultural and food industry regional output and gross value added multipliers.

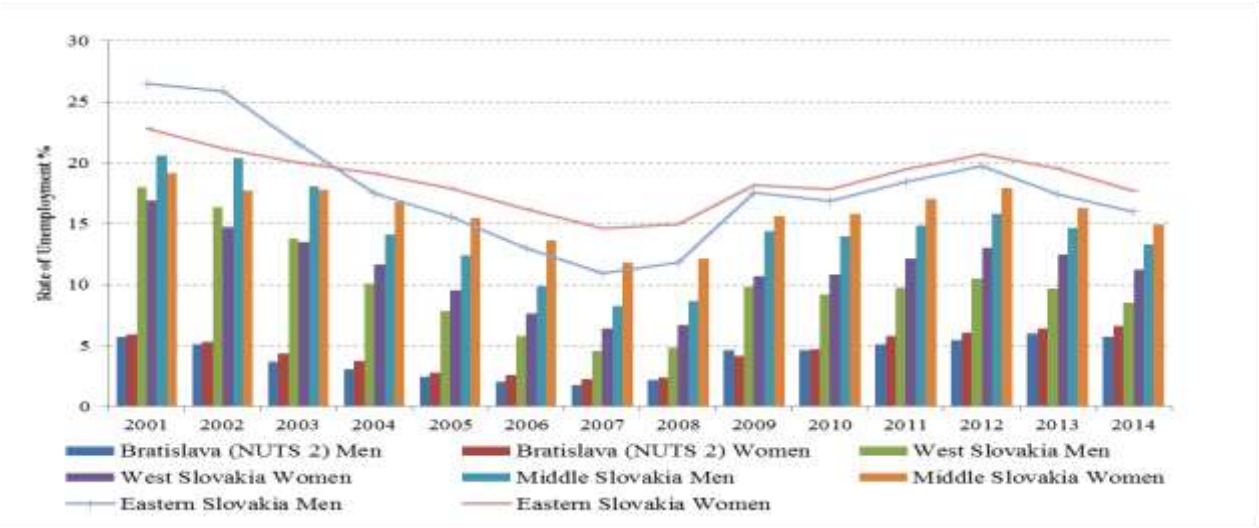

Figure 1 Regional Rate of Registered Unemployment in the SR by gender, 2001-2014 %

Source: own calculation, data from DataCube, SO SR (2015)

Aim and Methods

The aim of this paper was to identify the most important regional economy activities with the highest potential job creation effects in lagging Eastern and Central Slovakia regions over 1995-2012 and estimate regional sector employment multiplier effects. We expected negative effect of the global financial crisis on regional employment by economic activities.

We used the Slovak NUTS II and NUTS III regional sectoral data on employment in enterprises with more than 20 employees in 2006, 2010 and 2012, classified according to NACE (SO SR, 2014). In order to secure consistency of sectoral structure, data were aggregated into the following groups: 1. Agriculture, forestry and fishing; 2. Manufacturing; 3. Construction; 4. Transportation; 5. Market services; 6. Non-market services.

The Slovak economy specialisation, sector concentration we assessed by Herfindahl index, Entropy index, Location quotient.

The single region I-O models were used to quantify Ist type I-O employment multipliers. Four NUTS II single region I-O models for 2008 and 2011 were derived from the SR symmetric I-O table for 2008 and 2011 (Timmer, 2012) and sectoral employment data (NACE). For regional I-O construction we applied CHARM method (Cross-Hauling Adjusted Regionalization Method), developed by Kronenberg (2007).

Regional production in I-O model was expresses by Eq. 1, regional intermediate consumption by Eq. 2 and regional domestic final consumption by Eq.3.

Regional output of sector *i* $$x_i^R = \frac{L_i^R}{L_i^N} x_i^N \quad [1]$$

Regional transaction table $$Z_{ij}^R = a_{ij} * x_j^R \quad [2]$$

Regional domestic final consumption expenditure $$d_i^R = \frac{L^R}{L^N} * d_i^N \quad [3]$$

Where: x_i^R regional output of sector i; x_i^N output of sector i on national level; L_i^R number of employees in sector i of modelled region; L_i^N number of employees in sector i on national level. Z_{ij}^R regional transaction table; a_{ij} technical coefficients on national level; x_j^R regional production vector. d_i^R regional domestic final consumption; L^N number of employees in the whole economy; L^R number of employees in the modelled region; d_i^N national domestic final consumption.

1st type employment multipliers are a ratio of employment multiplier for sector j to the labour input coefficient of sector j.

$$E_j = \frac{E_j}{e_j} \quad [4]$$

where: E_j 1st type employment multiplier of sector *j;* E_j employment multiplier of sector *j;* e_j physical input coefficient of labour for sector j; $e_j = \frac{w_j}{s_j}$; w_j number of workers in sector j; s_j total output (supply) of sector j in money terms.

Total employment change in sectors of regional economies over years 2006 – 2010 and 2010 - 2012 we decomposed to three components: National share (Eq.5), Industry mix (structural component) (Eq. 6) and Differential component (regional relative competitiveness) (Eq.7), using the Shift-share approach.

National share $NS_{ij} = X_{ij}r$ [5]

Industry mix $IM_{ij} = X_{ij}(r_i - r)$ [6]

Differential component $DC_{ij} = X_{ij}(r_{ij} - r_i)$ [7]

where:

X'_{ij} employment in the final year of observed period in the sector *i* and region *j*; X_{ij} employment in the base year in sector *i* and region *j*; *r* employment growth rate of the national economy during the observed period; r_i employment growth rate in the sector *i* in the national economy during the observed period; r_{ij} employment growth rate in sector *i* and region *j* in the observed period.

National share change could reflect impact of the crisis on NUTS II regional employment and sector relative competitiveness is related to Differential component.

The most important sectors in the regional economy structure with the highest Potential job creation effects (*PJCE*) were identified by multiplying of Shift-Share Differential component and regional sector employment multiplier. Estimated potential regional job creation effects ($PJCE_{ij}$) following from Differential component, under assumption of no business cycle effect and elimination of national industry development effect (Eq. 8):

$RS_{ij} * E_{ij} = PJCE_{ij}$ [8]

Applied methods have limitation and deficiencies, e.g. comparative static approach, significant data needs, assumptions of constant returns to scale, fixed technical coefficients, etc. Nevertheless, regional I-O model and shift share approach provide a snapshot of regional economy structure, possibility to estimate regional multipliers, possibility to reveal importance of the economy sector.

Results

Diversification (Herfindahl index) of the Slovak economy was growing over period 1995-2010, while concentration of economic activities has been increasing. The most developed in Slovakia - Bratislava region however, had the most diversified regional economy, with growing specialization over time.

Agriculture in 2014 accounted for 4% of the Slovak GDP and employed about 3% of the labour force (down from 10.2% in 1994) (SO SR, 2015). Position of agriculture in regional economy employment at the NUTS III regions has been changing. In the pre-accession period the highest employment in agriculture were observed in regions with high land quality and favourable agricultural production conditions (southwest regions). After the SR accession to the EU, the West Slovakia regional economies went through structural adjustments. Share of agricultural employment declined and importance of agriculture in regional economies further fall down. In the period 1997-2012 regional crop production specialization significantly declined, while specialization of regional animal production increased. Regional animal production was more specialised and specialised regions became more dispersed across the country, compare to the regions with specialised crop production.

Regional employment over 2006 – 2010 decreased in many sectors at NUTS II regional level. The highest fall of employment was observed in agriculture, forestry and fishing sector in relative and in manufacturing sector in absolute terms. The emerging sectors with a positive impact on employment by number of jobs created and partial elimination of job destruction were market services and non-market services in all NUTS II Slovak regions.

Employment in the Slovak regions, but Bratislava, fall down. We analysed in what extent the global crisis contributed to this development. Employment changes by sectors over years 2006 – 2010 we decomposed to three components. Employment of all regional sectors was affected by slowdown of the national economy growth and global crisis (national share). Manufacturing, transportation and agriculture suffered in addition from their contraction at national level (industry mix). Positive was impact on regional job creation in all NUTS II regions of market services, non-market services and construction due to their

expansion at the national level. Different pattern of total employment change by regions was thus mainly caused by differences in regional sector composition (industry mix) and regional competitiveness (differential component) of particular sectors (Table 1).

A fall in employment over 2006 – 2010 by 7162 jobs in the Central Slovakia was caused by a negative impact of national economy development with a contribution of global crisis (-1729 jobs) and weak competitiveness of regional sectors (-5700 jobs). The highest number of labour was dismissed in manufacturing and agricultural sectors, although manufacturing, construction and transportation were competitive. They created insufficient number of jobs in order to absorb dismissed labour from uncompetitive agriculture, market services and non-market services.

In the Eastern Slovakia all regional sectors, but agriculture and market services, were uncompetitive. The highest negative impact on regional employment was caused by job destruction in manufacturing, followed by transportation and agricultural sectors. Regionally competitive agriculture and market services, with 17 % of regional employment in 2006, were not able to generate sufficient number of new jobs to moderate both, impact of the national economy slowdown and the other regional sectors low competitiveness. The Eastern Slovakia unfavourable regional economy structure would generate additional unemployment even under the national economy revival. Sector composition (industry mix) can create positive employment effects only by enhancement of their regional competitiveness.

The most competitive regional sectors reached the highest value of differential component in employment change decomposition (Table 1). By multiplication of differential component with the Ist type regional employment multiplier we calculated potential change of regional sector employment (Table 1).

Mainly uncompetitive sectors with high and low employment multipliers were located in the most disadvantaged Eastern Slovakia region. Domination of uncompetitive sectors in this regional economy generated the highest negative employment effect.

Under existing sectoral mix, relative sector competitiveness, relaxation of business cycle impact and absence of global crisis, regional economies of the Western Slovakia, Central Slovakia and the Eastern Slovakia with uncompetitive sectors would generate further fall of employment. If however, all regional sectors would be competitive, and regional sectoral structure stayed unchanged, then all regional economies would generate new job creation.

In the period 2010 - 2012 regional employment increased in all NUTS II regions of the SR (Table 1). According to Fidrmuc and Wörgötter (2014) the Slovak economy recovered as early as 2010 and returned almost to the pre-boom growth rates in 2010 and 2011 despite the fact that in the SR was observed a strong decline of GDP in 2009 (4.9%).

The highest employment growth was observed in Bratislava region, followed by the Western Slovakia. In the Eastern Slovakia manufacturing and construction, and in the Central Slovakia non-market services sectors, remained uncompetitive.

The Central Slovakia sector competitiveness and positive national economy growth exceeded negative effects of unfavourable structure of regional industry mix on employment. More than 54% of labour here worked in 2010 in market and non-market services. Created jobs in competitive market services and non-market services, exceeded number of destructed jobs.

In Bratislava region and in the Central Slovakia, the number of competitive sectors with high employment multipliers increased. In the Eastern Slovakia remained the highest number of uncompetitive sectors with high employment multipliers, even transportation sector became competitive.

The Eastern Slovakia with persisting high and further falling employment over both periods from 2006 to 2012 deserves policy attention. More detailed assessment of employment change over 2010 - 2012 at the NUTS III level revealed the most disadvantaged regional sector structure in Kosice NUTS III region, with uncompetitive manufacturing and construction sectors with high employment multipliers. All Prešov NUTS III regional economy sectors were competitive.

Table 1 Central and Eastern Slovakia (NUTS II) regional sector relative competitiveness, 2006-2010 and 2010-2012

	2006-2010				2010-2012				
NUTS II	Change of employment 2006-2010 No. of jobs	Differential component No. of jobs	1st type Regional employment multiplier 2008	Potential Regional Employment Change No. of jobs	Share on Employment in 2010	Change of employment 2010-2012 No. of jobs	Differential component No. of jobs	1st type Regional employment multiplier 2011	Potential Regional Employment Change No. of jobs
Central SK									
Agriculture, forestry & fishing	-2724	345	1.422	491	3	-640	-722	1.510	-1 089
Manufacturing	-11056	-234	1.552	-363	30	1536	1381	1.738	2400
Construction	4238	1633	2.121	3464	6	-1461	-1168	2.223	-2598
Transportation	-2525	-880	1.579	-1389	7	-1310	16824	1.680	28257
Market services	3398	2320	1.514	3512	14	13667	96	1.414	136
Non-market services	1507	-8884	1.127	-10009	39	-9396	-3653	1.167	-4265
Total	-7162	-5700		-4294	100	2396	12759		22842
Eastern Slov.									
Agriculture, forestry & fishing	-2215	602	1.421	855	3	950	873	1.526	1332
Manufacturing	-11606	-832	1.565	-1302	28	-1564	-1717	1.766	-3032
Construction	2159	-364	2.103	-766	4	-1388	-1141	2.254	-2572
Transportation	-3703	-1712	1.594	-2728	8	-1155	20250	1.704	34505
Market services	3610	2492	1.541	3839	14	14344	239	1.442	345
Non-market services	2009	-9778	1.129	-11040	42	-2477	4053	1.174	4757
Total	-9746	-9594		-11141	100	8710	22558		35336

Source: Own calculation

Conclusions

The Slovak economy (NUTS I) specialization has been slightly declining, while concentration of economic activities has been increasing in the period of 1995-2010. Position of Agriculture in regional employment declined in the West Slovakia diversified regions, although with the highest land quality and favourable conditions for agricultural production. Importance of agricultural employment increased in less developed Eastern and Central Slovakia regions.

All Slovak regional labour markets over 2006-2010 were highly affected by the global financial crisis. Employment decreased in all but Bratislava region.

A recovery in regional employment were observed after 2010. Dominant sectors in lagging Eastern and Central Slovakia however, remained uncompetitive. Lagging regions in the Central and Eastern Slovakia suffered from insufficient diversification of regional economy. Main share of employees in these regions worked in uncompetitive sectors (manufacturing, construction). These sectors displayed high regional employment multiplier effects. Relative position of agriculture and its competitiveness in these regions has been increasing. Regional agricultural and food value chains revealed low regional employment multipliers. Relatively low regional employment multiplier effect of agriculture, together with remaining uncompetitive regional economic activities has been unable to absorb high regional unemployment.

Policy measures applied in lagging Central and Eastern Slovakia regions should be better targeted, to support diversification of regional economy, to improve sectoral composition, to enhance competitiveness of regional sectors with the highest employment multiplier effects: in the Central Slovakia – market services, the Eastern Slovakia - manufacturing, construction, market services displaying the highest employment multiplier effects.

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ENTREPRENEURSHIP CONCENTRATION IN THE MAZOWIECKIE VOIVODESHIP AND THE LUBELSKIE VOIVODESHIP IN POLAND

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Abstract
The first part of the article presents theoretical aspects of entrepreneurship and describes the examined voivodeships. The second part shows the results of the author's own research which depict the concentrations of entrepreneurship in the examined districts of the Mazowieckie Voivodeship and the Lubelskie Voivodeship. The research was conducted for ten years (2004-2014), and the main statistical material consisted of the data obtained from the Local Data Bank of the Central Statistical Office.

Keywords: entrepreneurship, municipal-rural district, rural district, Mazowieckie, Lubelskie

JEL Codes: R12, R11, O52

Introduction

Entrepreneurship is a significant indicator of the political transformation processes in Central and Eastern Europe. It is a desired phenomenon in all economic entities regardless of the kind of ownership and their size. Yet it is a complex issue what forms entrepreneurship takes and how, through what mechanisms, its ideas are absorbed by organizational structures of existing entities (Janasz, 2004).
In Poland, entrepreneurship was noticed when the market economy foundations were created and the welfare state rules stopped existing. Then people who were creative, resourceful, open to innovativeness started running their own business in various fields. Entrepreneurship in the economy, at a state, regional, or global level, is of the utmost importance to social and economic progress. It is also a sophisticated process of organized activity based on many people's cooperation and accomplishment of their initiatives (Bieńkowska, 2013).
Entrepreneurship is a multifaceted category dependent on a set of various factors. In result, the scientists dealing with this issue have developed neither a uniform theory of entrepreneurship nor a general, cohesive definition of an entrepreneur. It is because particular research trends focus on different aspects of this issue.
The first part of the article presents theoretical aspects of entrepreneurship and describes the examined voivodeships. The second part shows the results of the author's own research which depict the concentrations of entrepreneurship in the examined districts of the Mazowieckie Voivodeship and the Lubelskie Voivodeship in Poland. In 2004-2012, the selected voivodeships together with the Wielkopolskie Voivodeship received 1/3 of all the funds which were assigned for agriculture and rural areas development in Poland (Baran, 2015).

Description of the examined voivodeships

The Mazowieckie Voivodeship is situated in the central-eastern part of Poland and it borders with the following voivodeships: Łódzkie, Kujawsko-Pomorskie, Warmińsko-Mazurskie, Podlaskie, Lubelskie, and Świętokrzyskie. At present it is the largest and the most populated voivodeship in Poland. It has the area of 35.6 thousand km^2, which amounts to 11.4% of Poland's territory, and the population of 5.08 m people, which, in turn, corresponds to the 13.5% share in the whole country's population. The majority of the people settled in towns (64%), where the Warsaw conurbation is the main centre. At the same time, the mazowieckie region has the largest population of rural people.
The Mazowieckie Voivodeship has the highest economic development in Poland as measured by GDP. The fact that Warsaw, with its significant economic potential, is situated in the centre of the region definitely contributes to the high rank of the voivodeship. It is in the capital city that the social-economic life is concentrated, and institutions of national and international importance are located.
The Mazowieckie Voivodeship is also a significant area for investors (both domestic and foreign ones) who want to locate their business in Poland. It is because this region has a good infrastructure and it is an

essential route for the European economy. Moreover, its economy has a considerably modern structure, which manifests itself (mainly because of the developing capital city) in taking up innovative activities in the field of services and industry. Figure 1 presents the location of the Mazowieckie Voivodeship.

Figure 1 The location of the Mazowieckie Voivodeship.
Source: the Central Statistical Office www.stat.gov.pl

The Lubelskie Voivodeship is the other one covered by the research. In contrast to the Mazowieckie Voivodeship, it is one of the poorest and the most backwards regions in the country.
The Lubelskie Voivodeship, with its area of 25,122 km^2, is the third largest voivodeship in Poland. Situated in the south-eastern part of the country, it is adjacent to the Podlaskie and Mazowieckie Voivodeships in the north, to the Świętokrzyskie Voivodeship in the west, and to the Podkarpackie Voivodeship in the south. Its eastern border with Belarus and Ukraine is also the eastern border of the European Union. It is divided into 213 districts and 20 poviats, where there are 4,116 villages and 41 towns, out of which four towns have poviat rights.
Lublin (population of 353,483) is the capital city of the Lubelskie Voivodeship and the largest city in eastern Poland. It is the administrative, economic, and cultural centre of the region. Academic potential and the developed scientific and research base are this region's greatest advantages. The group of large cities in this region includes: Biała Podlaska (population of 58,075), Zamość (population of 66,507), Chełm (population of 67,887), and Puławy (population of 49,755).
Agriculture plays the leading role in the Lubelskie region. The favourable conditions for agriculture (mainly crop production) result, first of all, from the good soil and climate, a high share of farmlands (1,387.8 thousand ha, which accounts for 9.5% of the country farmlands), and the highest in Poland share of farmlands in the overall area. The share of the Lubelskie Voivodeship in the country sown area is also significant: it accounts for 10.1% and means the third rank among all the voivodeships. The Lubelskie Voivodeship is, first of all, one of the largest and most important agricultural regions in Poland. Figure 2 presents the location of the Lubelskie Voivodeship.

Figure 2 The location of the Lubelskie Voivodeship.
Source: the Central Statistical Office www.stat.gov.pl

Theoretical aspects of entrepreneurship

Entrepreneurship is a multifaceted category dependent on a set of various factors. Entrepreneurial decisions and entrepreneurs' activities are determined by personal, organizational, political, economic, cultural, and education factors (Kraśnicka, 2002). Generalizing various forms and types of entrepreneurship, one can say that entrepreneurship is a special kind of people's activity, who work individually or within an organization, and it consists of taking chances which appear in the environment, and in carrying out undertakings which bring economic and non-economic effects to both their performers and the environment (Janasz, 2004).

In the economic theory, entrepreneurship is defined as a specific form of work or as the fourth (together with work, land, and capital) factor of production. On the other hand, the skill to see needs and improve ideas, the ability to take advantage of opportunities, and willingness to take risks are the main characteristics of entrepreneurs (Makieła, 2008).

Entrepreneurship is considered as the main determinant of social-economic development and the key factor of competitiveness growth in the whole economy. It is defined very widely and considered in many dimensions, i.e. psychology – as a set of personal and psychological characteristics of a human, sociology – as a special, creative way of behaviour and activity, management – as a new business undertaking which creates new micro and small enterprises, economy – as an existing sector of small and medium-sized enterprises (Klasik, 2006).

Thus it can be concluded that entrepreneurship is a phenomenon and economic process of multifaceted character, where the key importance, from the point of view of various regions, is attributed to the dimension in which entrepreneurship is perceived as an economic function, i.e., the ability to generate development processes (Pakulska, 2010).

Entrepreneurship is a process, the origins and development of which depend on numerous factors. It results from various determinants which are related to both internal abilities of particular people and external conditions which determine the development pace of newly established businesses (Moczydłowska, 2007). The development of entrepreneurship is at present a particularly desired phenomenon. It should be analysed both in micro and macro scale. It is the objective of individual businesses, as well as districts, voivodeships, political parties, and central institutions responsible for the current economic condition of the country (Moczydłowska, 2007).

A significant role in a local economic growth is attributed to the sector of small and medium-sized enterprises (SME). Enterprises boost the local market, create jobs, contribute to the state and district budget by paying taxes, and they increase the local society wealth. The SME sector allows on reducing unemployment and income disparity in the society efficiently, which contributes to eliminating poverty. In practice, there is a strict dependence between a given region's development and the sector of small and medium-sized private enterprises. They are most often created in the places of living of their founders, who use local resources, pay their taxes there, and they also create a climate for further investments, which in turn reduces regional development disparities (Sarr, 2011).

To sum up the discussion on entrepreneurship, it should be pointed out that creating an entrepreneurial society, a society in which entrepreneurship concerns its considerable part, is the basis for building a competitive economy. In this context, developing entrepreneurship refers to boosting private initiative, offering incentives to work out plans of economic undertakings, where resourcefulness and innovations are included (Kosała and Pichur, 2009).

Methods and research material

The empirical studies were carried out within ten years (2004-2014) in all the rural and municipal-rural districts of the Mazowieckie and Lubelskie Voivodeships in Poland. Two Polish voivodeships with completely different development characteristics were selected for the research. In the Mazowieckie Voivodeship, there are 50 municipal-rural districts, and 229 rural ones. On the other hand, in the Lubelskie Voivodeship, there are 23 municipal-rural districts, and 170 rural ones. The statistical figures for the research were obtained from the Local Data Bank of the Central Statistical Office.

The empirical research consisted in the assessment of the number concentration of companies in the examined districts. It was done by means of Gini coefficient. It is used as a parameter of concentration and it is also closely related to Lorenz curve, which is the coefficient graphic interpretation (in the literature, the coefficient is also called "Lorenz concentration coefficient"). It is mainly used as a measure of income disparities; however, in the empirical study, Gini coefficient was used to assess the level of differences in the number of companies divided between the examined districts. It was expressed by the following formula:

$$G = \frac{1}{2\mu n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} \left| x_i - x_j \right|$$

μ - number of businesses

n - number of districts in the sample Eq. (1)

Gini coefficient takes values from 0 (for an egalitarian distribution) to 1 in case of extreme disparities. The above formula indicates that it can be interpreted as a relation of a half of the absolute difference of the number of companies between all the districts to an average number of companies. This coefficient fulfils the postulate of Pigou-Dalton transfer, symmetry, homogeneity, and replica. Yet it does not fulfil the decomposition postulate (Lissowski et al., 2008).

Results and Discussion

The years 2004-2014 were the period of a fast growth of business number in the both examined voivodeships, which is presented in table 1.

Table 1 The enterprise number in the national economy, registered in REGON.

Year	The Mazowieckie Voivodeship	The Lubelskie Voivodeship
2004	161746	58198
2005	166214	57972
2006	169128	59581
2007	175745	61123
2008	184146	63153
2009	179000	63814
2010	191907	67965
2011	192874	67711
2012	199800	69685
2013	207013	72009
2014	211677	73756

Source: the author's own work based on the Local Data Bank of the Central Statistical Office.

In case of the Mazowieckie Voivodeship, the enterprise number grew by 31% and in the Lubelskie Voivodeship – by 27%. It was a continuous process with the exception of 2009, when due to the economic crisis, the Mazowieckie Voivodeship saw a decrease in the number of enterprises. These changes directly translate into the level of business concentration in the examined voivodeships' districts.

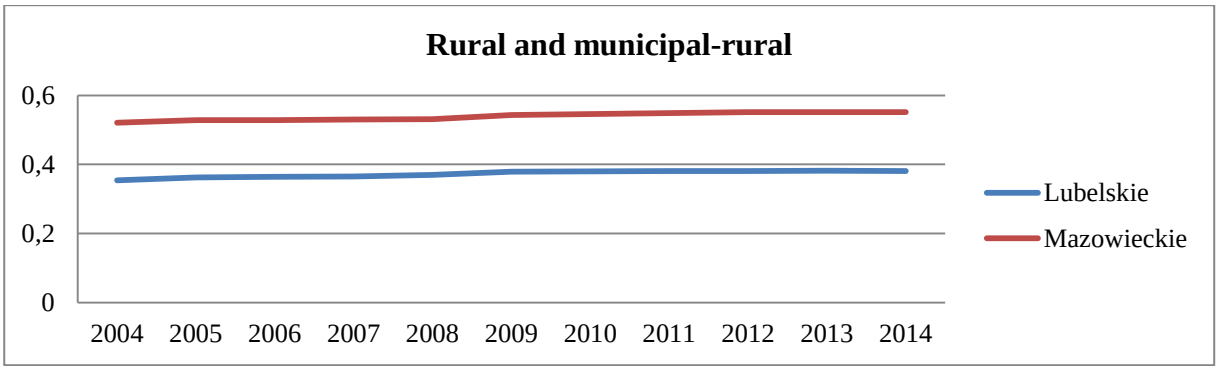

Figure 3 Gini coefficient for the number of companies in the rural and municipal-rural districts of the Lubelskie Voivodeship and the Mazowieckie Voivodeship
Source: the author's own work based on the Local Data Bank of the Central Statistical Office.

In the examined voivodeships, in 2004-2010, there was a slight but steady growth of Gini coefficient (in the Mazowieckie Voivodeship – from 0.52 to 0.55, and in the Lubelskie Voivodeship – from 0.35 to 0.38). Yet there is an extremely important observation coming out of the comparison of those two values. It is assumed that the values 0.2-0.3 show that a given characteristic is uniform, 0.3-0.45 prove medium differences, and over 0.45 – reveal a great diversity of a characteristic (Stawicka, 2012). In the Mazowieckie Voivodeship, enterprises are concentrated in certain districts while in the Lubelskie Voivodeship, the enterprise distribution is much more even. It seems that a generally high level of economic development in a voivodeship does not contribute to balancing the level of entrepreneurship in the districts of the whole voivodeship.
As rural districts and municipal-rural districts, by definition, differ from each other considerably, the further research was done by comparing districts within those two types. In case of rural districts, the observations were similar as before. The differences of enterprise number in the districts of the Mazowieckie Voivodeship are considerably larger than in the Lubelskie Voivodeship and they have a growing tendency (Figure 4).

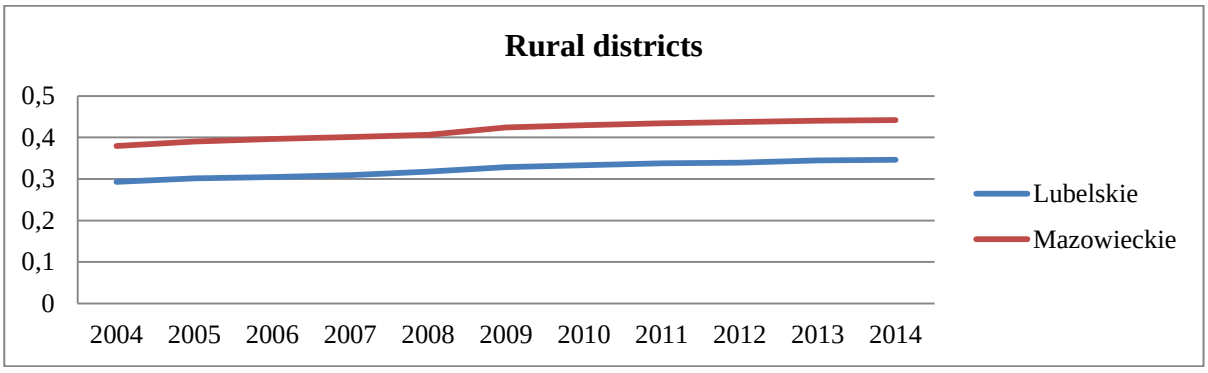

Figure 4 Gini coefficient for the number of companies in the rural districts of the Lubelskie Voivodeship and the Mazowieckie Voivodeship.
Source: the author's own work based on the Local Data Bank of the Central Statistical Office.

It is worth comparing Gini coefficient of rural districts and municipal-rural ones in the examined voivodeships. Municipal-rural districts in both voivodeships have much more diverse number of businesses than rural districts.

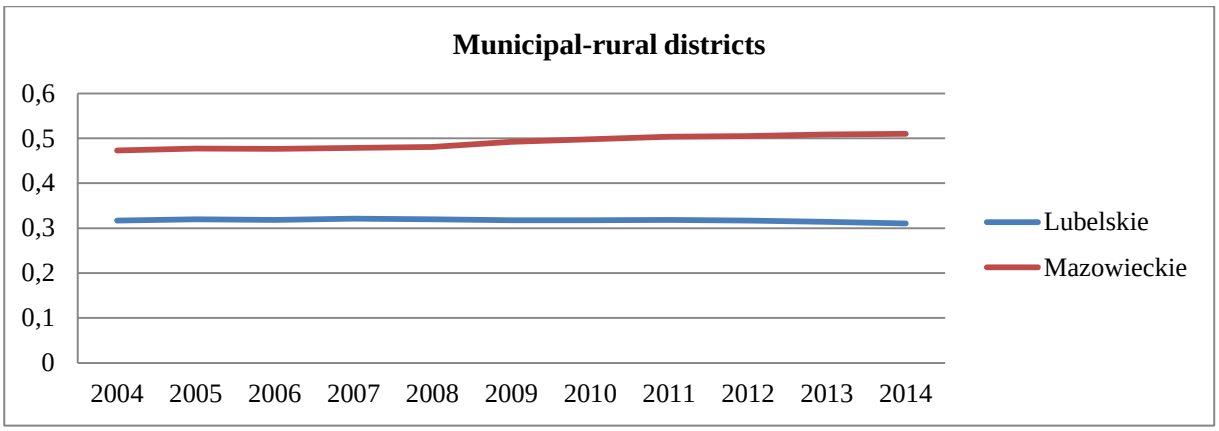

Figure 5 Gini coefficient for the number of companies in the municipal-rural districts of the Lubelskie Voivodeship and the Mazowieckie Voivodeship.
Source: the author's own work based on the Local Data Bank of the Central Statistical Office.

As it is in case of rural districts, Gini coefficient for the Mazowieckie Voivodeship is higher than for the Lubelskie Voivodeship. It is a huge difference of 0.2.

Conclusions

The presented research outcomes lead to the following conclusions:

1. Over ten years, the examined voivodeships saw an increase in the level of entrepreneurship. Yet it results in business concentration in particular districts of a voivodeship.
2. In the Lubelskie Voivodeship (having a lower level of economic development), the number of enterprises in particular districts is more balanced than in the Mazowieckie Voivodeship.
3. The disparities in the level of entrepreneurship are greater in municipal-rural districts than in rural ones.

The outcomes revealed by the research lead to alarming conclusions. Although Poland, since 2004, has been a member of the EU, where the role of reducing the differences between country regions is significant, those differences have not been decreasing. What is more, the growing Gini coefficient for the number of businesses in rural, municipal-rural districts proves that there are districts where entrepreneurship has much greater chances to develop than in other ones. Moreover, even a high level of economic development of a given region does not guarantee that entrepreneurship will develop evenly in all districts.

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NETWORK STRUCTURES AND THEIR IMPACT ON DESTINATION COMPETITIVENESS – A CASE STUDY OF VSACKO (CZECH REPUBLIC)

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Abstract
This paper aims at examining how network structures can influence rural tourism and the performance of a selected mountain tourist destination. The research investigates the interactions between tourism stakeholders and also reveals motives for involvement in such a type of collaborative relationship. The theoretical part is based on a literature review and summarizes current knowledge describing destination and network governance in terms of approaches and research findings. The case study research, conducted as part of current university research, gives an account of the experience of the most important stakeholders from the mountain resort of Vsacko – a destination located in the tourist region called East Moravia. The data was collected by means of in-depth interviews and structured questionnaires. Municipalities, restaurant owners and other tourism service providers, as well as the destination management organization, participated in this study. The findings focus on network-oriented motives of these stakeholders and the importance of mutual trust. The results underline the weakness of existing linkages and the insufficiently defined responsibility. It refers to the poor communication between stakeholders and confirms the immaturity of cooperation.

Keywords: cooperation, mountain region, network, partnership

JEL Codes: O18, D20, O52

Introduction

Tourism is generally viewed as a growing sector that influences a number of other sectors. For that reason, it could represent a significant potential for rural economic development and an opportunity for the diversification of rural economy. Tourism development in rural areas aims to solve key business objective and economic issues (Drăgulănescu and Druţu, 2012). The very essence of rural tourism is local cooperation and community involvement through appropriate forms of networking (Tinsley and Lynch, 2001). The cooperation and integration in a strategic network is one of the premises for more collaborative atmosphere and for achieving a competitive advantage in tourism (Baggio, 2008). This need for integration relates to minimizing the potential negative impacts, customer satisfaction and product creation. It also coheres with the interest in the sustainable development of region. The cooperation and building business networks allows for the increasing the chances of long-term sustainability and the attraction of investment into the area (Hall and Kirkpatrick, 2005).

Tourist destination management in form of networks can be considered one of the possible approaches to destination governance structures. The concept of destination governance can be introduced as a form of self-organization of a tourist destination (Pechlaner et al., 2012). The successful implementation of a new governance concept depends mainly on the structure of the organization and on the cooperation and interaction between actors (Holešinská and Novotná, 2014). It is also formed by the institutional context and the rules of the organization (Pechlaner et al., 2012). This concept is closely linked with the networks that affect communication, legitimacy and transfer. The network approach offers a way of studying stakeholders in a local tourist destination and their roles in coordinating their activities (Lemmetyinen, 2010). The suitability of this form results from the necessity of cooperation and partnership between the public and private sectors and the sharing of resources in the area (e.g. Sheehan and Ritchie, 2005; Nordin and Svensson, 2007; Timur and Getz, 2008). The networks are also vital for the regional development, increasing the productivity, performance and innovative capacity (Novelli et al., 2006).

In the contemporary competitive world, the importance of networks as facilitators to access knowledge, resources and markets, is crucial (Scott et al., 2008). The structural economic changes, as well as the dynamic changes on the demand side made pressure on the destination competitiveness. In this case, several researchers emphasize the need for cooperation and the importance of effective networking within

the tourism destination (e.g. Jamal and Getz, 1995; de Araujo and Bramwell, 2002; Grängsjö and Gummesson, 2006; Baggio, 2008; Lemmetyinen, 2010; Kylänen and Rusko, 2011; Beritelli, 2011). The fundamental idea is that the joining a network confers a benefit on all other participants in the network (Page and Lopatka, 1999). Dredge (2006) asserts that formal and informal relationship between the local government and entrepreneurs influences the positive benefits arising from such partnerships in many destinations. In this sense, networking can be considered as a good way to strengthen the society and improve the economic growth (Weiermair et al., 2008). The competitive advantages of the network can refer among others to knowledge transfer, communication, marketing, business development or engagement of stakeholders in destination development (Gibson and Lynch, 2007). From the functional point of view, the aim of network governance is to create a synergy between different competences and sources of knowledge (Dedeurwaerdere, 2005). The sustainability of these initiatives depends on the broader institutional environment in which networks operate (Dredge, 2006).

The aim of this paper is to illustrate the structure of destination network through the use of a case study. It should also reveal whether this network can be viewed as a loosely articulated group of independent suppliers linked together and whether it can represent patterns of cooperative linkages (Baggio et al., 2008). The findings focus on understanding why people are motivated to cooperate and reveal the factors of successful cooperation. The results indicate the extent to which the stakeholders interact with all other subjects. An analysis could provide useful information on the competitiveness of the destination. In addition, results are confronted with the data published by other authors.

Methodology

The research location

The case study focuses on tourism stakeholders acting in one of Czech tourism destinations. The mountain resort of Vsacko is located in the eastern part of the tourist region East Moravia, or more precisely, in the region of Wallachia (in Czech Valašsko), near the Slovakian border. The region of Wallachia is a part of the Beskids (in Czech Beskydy) protected landscape area. The whole Wallachia is typical of its traditional dialect, lifestyle and specific culture, mountain agriculture and traditional dishes. Vsacko represents an attractive and popular tourist resort, with more than 2,000 beds. Table 1 provides more statistical information about this region. The additional data concerning East Moravia are given for the purpose of comparison.

Table 1 Characteristics of East Moravia and Vsacko in 2014

	Bed places	Number of overnight stays in collective accommodation establishments	Population	Surface of area (ha)
East Moravia	25,767	1,851,323	585,261	396,389
Vsacko	2,197	147,609	15,596	27,499.8

Source: Czech Statistical Office (2015)

This resort was chosen for its tourism potential and rural characteristics. Its location within the tourist region East Moravia is also topic for the research. East Moravia is managed by one of the most developed regional destination management organizations (DMO) in the Czech Republic (Holešinská, 2012). The DMO headquartered in Zlín should coordinate cooperation among stakeholders and the development of tourism in the whole tourist area. As the map (Figure 1) demonstrates, the regional DMO headquarters is comparatively far from the local stakeholders (as the crow flies about 40 kilometres). Due to the lack of personal resources of DMO, there is no direct coordinator in the local resort, who could efficiently coordinate the activities in this resort and support the partnership.

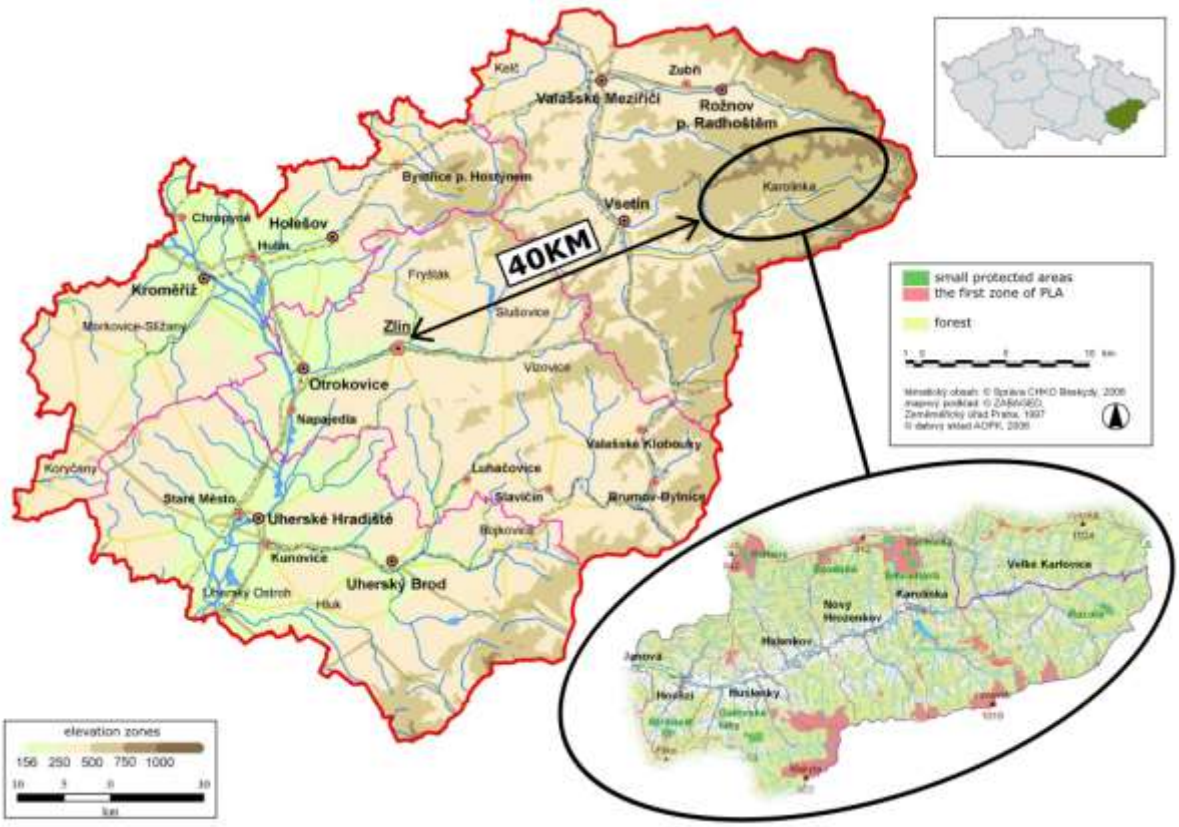


Figure 1 Map of East Moravia
Source: Czech Statistical Office and PLA Administration Beskydy, modified

Research process
This part of current university research was conducted during the year of 2015. The data collection for analysis was achieved by conducting in-depth interviews with three key stakeholders, who are also actively engaged in cooperation with the regional DMO. Consequently, the database of original stakeholders was obtained. This database contained 113 tourism service providers, who were identified by the DMO at the beginning of its functioning. Due to obsoleteness of all contacts, many of these accommodation establishments and restaurants were liquidated or are presently for sale. Despite the updating of the addresses and phone numbers according to the Internet, it was unable to contact many of the included stakeholders. Therefore, together 51 items were excluded from the research.
All potential respondents were asked to participate in the research. Firstly, the snowball sampling method was employed. The key stakeholders identified the other most important players and partners, who were contacted at earliest. Then, structured questionnaires were distributed to all respondents by e-mail. After the response deadline, these providers were also asked to fill in the questionnaire by phone. Only eight questionnaires were completed. In the second stage (summer 2015) the addressed tourism service providers were personally interviewed. The qualitative, face-to-face, in-depth interviews were conducted with those who responded or were interested in the research. However, some of those interested could not participate because they were busy in the summer season. Interviews with them will continue in the next stage of the research. Finally, for the purpose of this paper the research sample consisted of 27 items. Table 2 shows the distribution of the questionnaires and the responses for this presented stage of the research. The additional data were collected from other sources, such as web sites or statistical analysis.

Table 2 Summary of the research sample

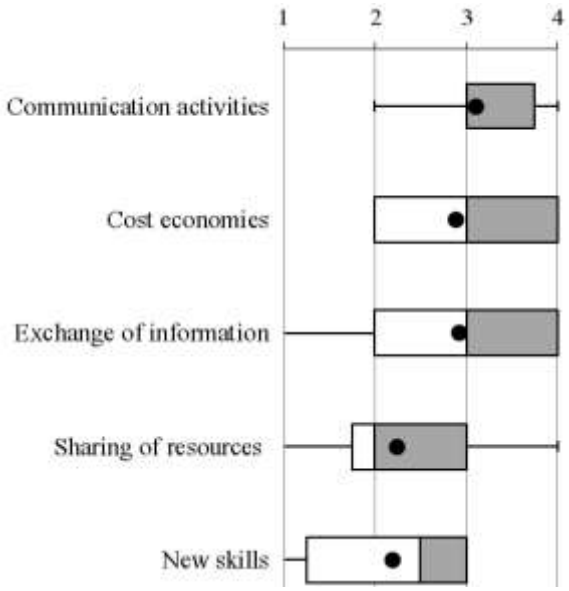
Number of respondents	Private sector	Public or non-profit sector	Number of interviewed - total	Structure (%)	Response (%)
1st part: preliminary research – together 3 key partners					
In-depth interviews	1	2	**3**	**2.59**	
2nd part: database of stakeholders – together 113 items					
Returned questionnaires					**41.5**
Structured questionnaires	7	1	**8**	**6.90**	
Field research	11	5	**16**	**13.79**	
Without response					
Busy (available later)	20	0	**20**	**17.24**	**58.5**
Uninterested	16	2	**18**	**15.52**	
Excluded					
Unable to contact	44	1	**45**	**38.79**	**0**
For sale	6	0	**6**	**5.17**	
TOTAL	105	11	**116**	100	100

Source: author, based on university research (2015)

As far as the methodology is concerned, the research applied the knowledge of the network theory (e.g. Beritelli et al., 2007; Wang and Xiang, 2007; Beritelli, 2011). The findings are schematically demonstrated at the networks, which were simulated in NodeXL program. Furthermore, the results are presented in a beam-shaped graph. The data were also processed into the form of box plot, where the line indicates a median line and the round indicates an arithmetic average.

Results and Discussion

The main aim of this section is to discover why organizations would enter the networks and what the main factors positively influencing the existing cooperation are. The motives for cooperation can be classified into various categories (Ancona, 2004; Gibson and Lynch, 2007; Wang and Fesenmaier, 2007; Wang and Xiang, 2007). According to Wang and Xiang (2007), organizations and businesses enter collaborative relationships with different motivation, ranging from social to economic to strategic. Figure 2 represents five selected motives, seen by the respondents as the most important. The analysis reveals that communication activities are the most important strategic reason for starting the cooperation. Similarly, an exchange of information represents a positive contribution of cooperation. Respondents are motivated, when the cooperation induces synergies associated with economies of scope, economies of scale, or cost optimization. As one of the major motives, sharing resources and new skills were also mentioned.



Note: 1 = insignificant; 4 = fundamental
Source: author, based on university research (2015)

The issue of minimizing the negative impacts of tourism is not considered as important motivation for the cooperation although the respondents claim that they care about image, promotion and the strategic development of the region. In addition to the development of the region, they especially cooperate in order to attract more tourists and to solve the problems of seasonality.
Collaborative activities can deliver a range of benefits to stakeholder and the region itself. For enhancing the relationship between partners, the factors of successful cooperation are crucial. These components are necessary for the quality of cooperation and the improvement of the competitiveness. From the stakeholders' perspective (Figure 3), the fundamental determinants influencing the success are common interest, trust, mutual communication, professionalism and simplicity of cooperation.

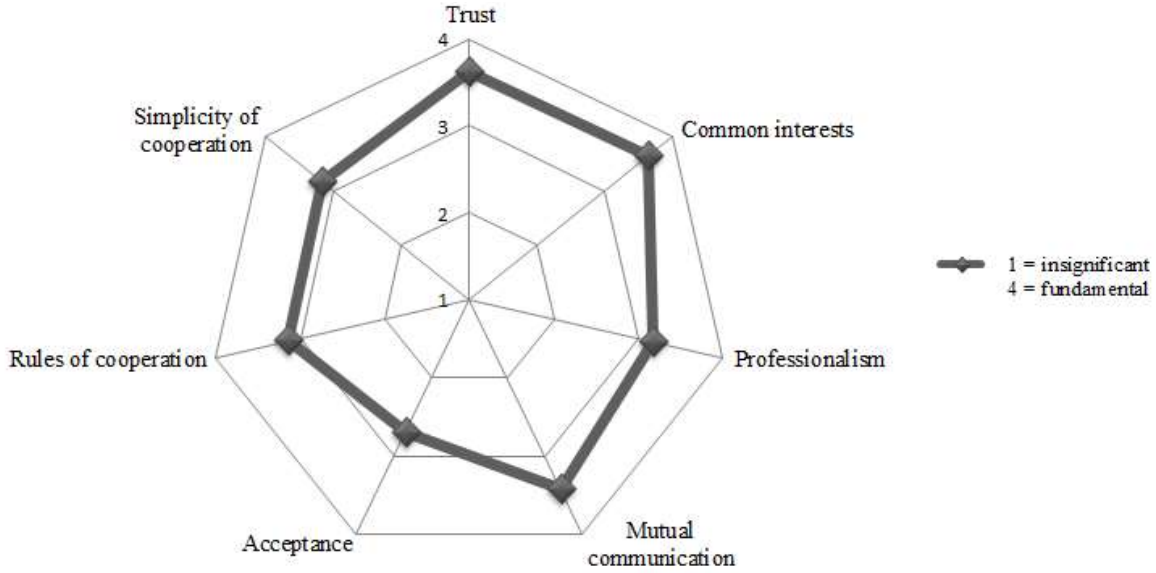


Figure 3 Factors of successful cooperation
Source: author, based on university research (2150)

Then the rules of cooperation follow, however, they are less important. Likewise, stakeholders are not very interested in whether their partnership is accepted from the external perspective. This reflects the immaturity of cooperation. The stakeholders should understand that the effectiveness of the network

could be significantly influenced by the insufficiently defined responsibility, mutual competition and poor communication (Dredge, 2006).

Tourism network characteristics have a considerable impact on cooperation and lead to greater efficiency through informal and faster communication (Bhat and Milne, 2008). Informal relationships related to trustworthiness are used in the preparation of formal relationships (Strobl and Peters, 2013). The relationship between stakeholders from public and private sectors acting in mountain resort Vsacko (Figure 4) and the relationship between the regional DMO and stakeholders (Figure 5) were analysed in the next part of the research. The analysis provides an important insight into the current structure of the network.

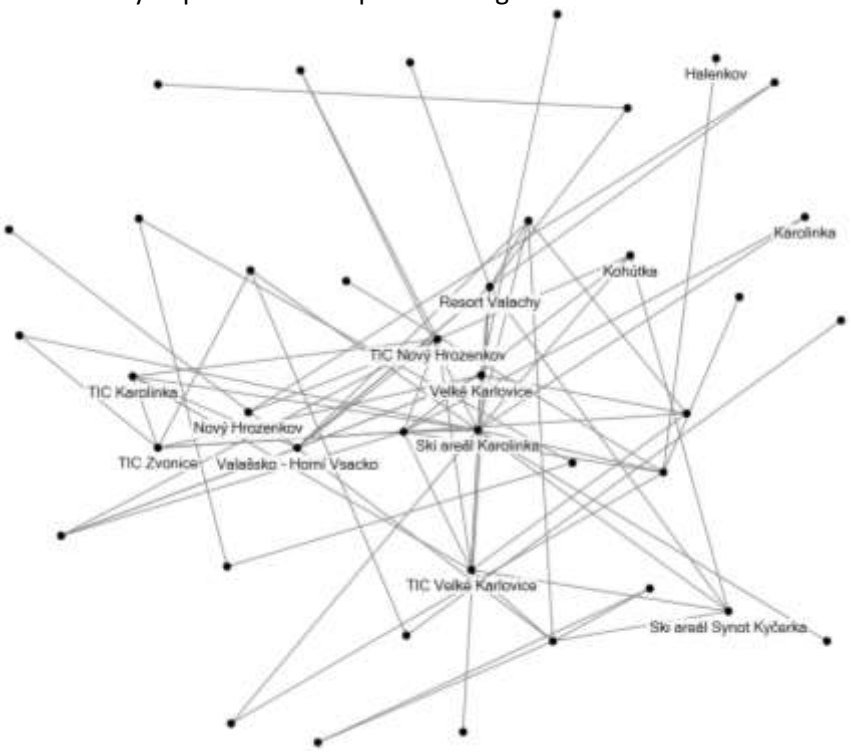


Figure 4 Model of the network in Vsacko
Source: author, based on university research (2015)

The model covers the respondents who cooperate. Outside the network there are mostly small business owners, who are not willing to cooperate and who are not aware of the synergies resulting from the partnership. For many of these stakeholders tourism does not constitute the main livelihood. Furthermore, they have other jobs. Some of the service providers have their residence outside the resort and they are not so closely connected with the territory. They are engaged in their own business and neglect the regional development. They do not consider that cooperation is essential to develop the sustainable development strategy (Ramayah et al., 2011). Moreover, they have a problem to trust each other. From the public organizations perspective, communication with other stakeholders and also with the regional DMO is more frequent, based on friendly informal relations and trust. On the other hand, the private sector is more critical and sceptical.

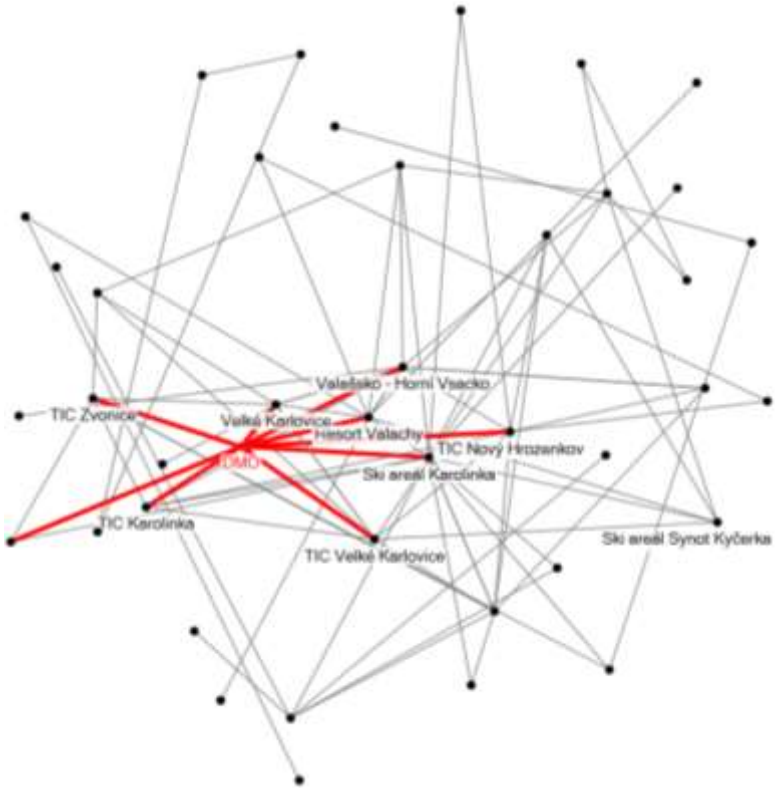


Figure 5 Linkages between the regional DMO and stakeholders of Vsacko
Source: author, based on university research (2015)

Destination management organizations have traditionally been the principal partners in destination marketing and development for a region, as they provide the key link with local organizations, government, and the community (Scott et al., 2008). Among many respondents from the resort Vsacko, the DMO is not known. Some of those who know the DMO do not consider its activities as appropriate and beneficial. For that reason, they are not willing to cooperate.

For a great number of actors involved in the research, building a destination brand and image is a cooperative important activity. Stakeholders tend to strongly prefer the local brand “Wallachia“, and are not identified with the brand “East Moravia”, which is supported by the DMO. The perception of the local brand and image coheres with their already mentioned care of promotion and the strategic regional development. A degree of rootedness with the region relates to the mentality of stakeholders and can play a role in the willingness to engage in collaborative activities.

Unfortunately, the research reveals that cooperative activities are still at unsatisfactory level. In general, the frequency of cooperation is very low. However, there is room for the improvement of cooperation and exploiting the full tourism potential. Several stakeholders are increasingly involved in the local projects that are initiated by one of the key players. Such a project is, for example, “Karlovský gastrofestival” which takes place in the municipality of Velké Karlovice and is focused on the Wallachian cuisine and regional products. This key player also organizes a series of attractive races called Valachy Tour. An important initiative for cooperation is presented by the interconnection of six ski resorts around the municipality of Velké Karlovice through a common ski pass. This is one of the effective ways of networking. The interconnection of service providers facilitates the product creation, increases visitor satisfaction and strengthens the image of the resort.

To coordinate all stakeholders with an interest in tourism requires having a strong leader (Pechlaner et al., 2014; Beritelli and Bieger, 2014). Similarly, respondents' replies show that a prerequisite for effective cooperation is the personality of a leader who is able to develop networks and partnerships with stakeholders and enhance rural tourism. For that reason, the leader should know the resort and its potential well. It should be a strong player who is generally acknowledged, not only in a mountain resort but also in the whole tourist region of East Moravia. This position could be facilitated through communication of stakeholders with the DMO. Such extensive cooperation among the tourism stakeholder

has a significant impact on their performance (Ramayah et al., 2011). On the other hand, there is no consensus on who should act as a leader. In addition to this unclear leadership, the main factors influencing the level of cooperation in the mountain resort and consequently, the destination competitiveness can be identified as follows:

- Distrust among the stakeholders;
- Insufficiently defined responsibility;
- Weak incentives for cooperation;
- Low awareness of the benefits of mutual cooperation.

Conclusion

The contribution of tourism to rural economy is important, especially if stakeholders are allowed to participate in its development (Drăgulănescu and Druţu, 2012). If sustainable development of tourism is supported by intensive cooperation of key stakeholders, it has an important contribution to future economic development (ibid.). In relation to cooperation and economic development, many studies emphasize the importance of interorganizational networks in destinations. The important presumption of such close collaboration is the identification of key partners with the regional brand and sharing of common interests (Baggio et al., 2008).

In the investigated tourist region of Vsacko, collaboration across the key service providers is rather occasional, focused especially on marketing activities. These findings confirm the foreign experience of Alpine destinations, where the tourism organizations began originally with cooperative marketing (Pechlaner and Tschurtschenthaler, 2003). Generally, these stakeholders are rather suspicious and interested in their own business. If they cooperate, the relationship is mainly informal and based on mutual trust. The aspect of professionalism plays an important role for them. Usually, strong market players are more interested in participating. They believe that the cooperation can produce positive benefits and influence the competitiveness of their region.

According to the results of this survey, the stakeholders perceive the image of the region and they are strongly identified with the local brand Walachia. Mostly, they do not accept the brand East Moravia, which has been created by the DMO for the whole tourist region. Due to the long distance and lack of field staff, the DMO of the investigated region face the problem of legitimacy, particularly from the perspective of the private sector. However, the accepted leader can stimulate trust among stakeholders and motivate them to join the partnership which would have a significant impact on their performance.

Acknowledgment

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THE CATEGORIZATION DIFFICULTIES OF DISADVANTAGED REGIONS

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Abstract
From 2007 the categories created by the government to investigate the development level of micro-regions (especially in the case of the most disadvantageous micro-regions and micro-regions supported by complex programme) served a good field of research. In the 1st of January, 2013, by the creation of districts the methods had to be changed, and in the beginning of 2015 the list of beneficiary districts was unveiled. The situation of the country had not improved much between 2007 and 2015; therefore the number of disadvantageous areas exceeded the number from 8 years ago. Furthermore, there were new disadvantageous areas in previously more developed territories. During our research we investigated if there is an obligatory methodology to create categories, and if so, what elements it consists of, what factors does it take into account. We examined if there is a difference between the ways of defining micro-regions and districts. After that we investigated if there is a correlation between the values of the centrally used indicators.

Keywords: disadvantageous, develeopment, differences, methodology

JEL Codes: R11, R19

Introduction

The socio-economic development in certain regions in Hungary is on varying development levels, due to their different geographical positions, internal resources and external endowments. Certain regions, settlements are not able to tackle with the challenges of globalisation and territorial competition by themselves. There are a significant number of regions which, without government intervention, would lag even further behind. The task of determining the principals of regional development subsidies and decentralisation, and establishing the criteria-system for classifying beneficiary regions belongs to the Parliament. By law, categorising beneficiary regions is the task of the Government (Act XXI.,1996).
In 2007, a regulation made it compulsory to establish the development level of micro-regions as well. During the categorisation of micro-regions according to their development levels– with the exception of micro-regions where cities with county rights can be found – a complex index based on economic, infrastructural, employment and two kind of social indicators (five index groups) has to be used (Parliament Resolution, 24/2001).
Beneficiary micro-regions consist of disadvantageous micro-regions, including the most disadvantageous micro-regions. Micro-regions are disadvantageous micro-regions, if their complex index values are lower than the average of all the micro-regions' complex index value. In this category, we call the most disadvantageous micro-regions those areas, which have the lowest values and contain 15% of the population the country (Government Regulation, 64/2004).
A complex programme – based mainly on European Union funds – is needed to be created to support and promote those most disadvantageous micro-regions, which have the lowest complex index values and where 10% of the population of Hungary lives, and the implementation should be supported with special consideration (Act CVII., 2004).
In the case of dynamic indicators data from the last available years are used to define beneficiary micro-regions. In the case of static indicators, the newest available indicators are used.
In order for the complex indicator system to take the changes of socio-economic situation into special consideration, and to ensure that the actual needs are included into the system, besides the economic, infrastructural and employment indicators, two groups of social indicators are used, too (Government Regulation, 244/2003).
In the new system the social factors are more highlighted than before, but in the same time the economic, infrastructural and employment factors become less important. The four-index consisting of 19 indicators

will be changed to a system with five groups (31 indicators), by which the situation of micro-regions can be observed in a wider spectrum (Act CVII., 2007).
The data and the reference years for calculating the complex indicator system for measuring the development level of micro-regions are the following (Government Regulation, 311/2007 and Parliament Resolution, 67/2007):

I. Economic indicators

1. The number of operating business organisations per 1000 inhabitants, number, 2004
2. Number of guest nights spent in business and private accommodations per 1000 inhabitants, nights, 2005
3. Number of retail establishments per 1000 inhabitants, number, 2005
4. The rate of people working in agriculture within the employment structure, %, 2001
5. The rate of people working in the service sector within the employment structure, %, 2001
6. The change of the number of operating business organisation, %, 1999–2004
7. Local tax revenues of local governments per one inhabitant, Ft, 2005
8. The number of academic researchers and developers per 1000 inhabitants, number, 2005

II. Infrastructural indicators

1. The percentage of houses connected to the water system, %, 2005
2. The length of sewage system per one km of water pipeline system, meter, 2005
3. The percentage of households consuming gas from the gas network within the whole house stock, %, 2005
4. The percentage of houses included in regular waste collection, %, 2005
5. The indicator of everyday accessibility, minute, 2007
6. Number of telephone stations (including ISDN) per 1000 inhabitants, number, 2005
7. The number of cable television subscribers per 1000 inhabitants, number, 2005
8. The number of broadband internet subscribers per 1000 inhabitants, number, 2006
9. Accessibility indicator of high-speed roads, minute, 2007

III. Social indicators/1

1. The percentage of flats with 3 or more rooms from the house stock by the end of the observed time period, %, 2000–2005
2. The number of cars per 1000 inhabitants, weighted by the cars' age, number, 2005
3. Balance of migration at the middle of the observed time period, annual average per 1000 inhabitants, number of people, 2000–2005
4. Mortality rate (the number of deaths per one thousand inhabitants), number, 2005
5. Income (after which the person pays personal income tax) per one inhabitant, Ft, 2005
6. The index of urbanity/rurality (what percentage of the micro region's population lives in a settlement with a population density of 120 people/km^2, %, 2007

IV. Social indicators/2

1. Rejuvenation index (the percentage of inhabitants below the age of 15 per the inhabitants above the age of 60), %, 2005
2. The percentage of households without employed people, %, 2001
3. The percentage of people in the age of 18 or above with secondary education, %, 2001
4. The annual average number of inhabitants receiving regular social support from the local government per 1000 inhabitants, number of people, 2005
5. The percentage of inhabitants receiving regular child protection support from the age group between 0–24 years, %, 2005

V. Employment indicators

1. The percentage of registered job seekers from the working age population, %, the average of 2006
2. The percentage of long-term – for at least 12 months – registered job seekers from the working-age population, %, the average of 2006
3. Activity rate, %, 2001

The average value of the indicator groups provided the index of the economic, social, infrastructural and employment situation. The average of the five indicator groups became the common index of underdevelopment, the so-called complex development index in those micro-regions, where there are no cities with county rights. In the case of micro-regions with cities with county rights the complex indicator calculated with and without the seat of the micro region was the basis of classification (HCSO, 2007).
94 micro-regions were below the average (2.90) value; these are considered to be lagging behind micro-regions. The population number of the 94 lagging behind micro-regions (Firure 1) in the 1st of January, 2007 was 3.152 million, which is 31.3% of the population of Hungary (HCSO, 2008).

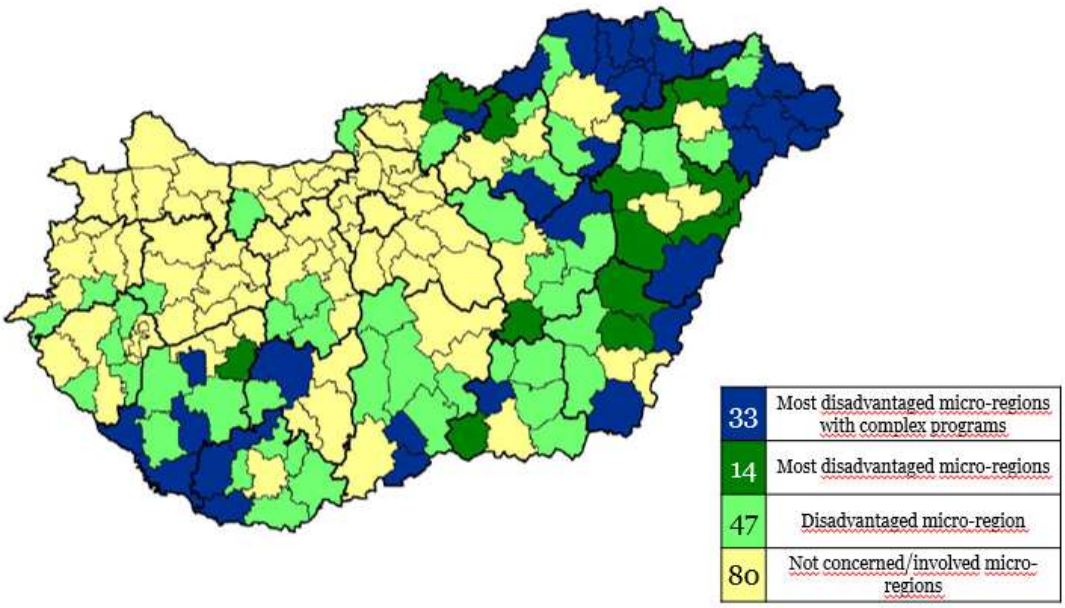

Figure 1 The beneficiary micro-regions, 2007
Source: The report of the Hungarian Central Statistics Office about the most disadvantageous micro-regions, 2007

During the categorisation of districts in 2015 a complex index consisting of social, demographic, housing and life circumstances, local economic and employment, infrastructural and environmental indicators was taken into account (Government Regulation, 290/2014).
According to the regulation:

- *Districts in need for development*: districts characterised by the lowest complex indicator values with 15% of the population number of the country,
- *Beneficiary districts*: those districts, which have lower complex indicator value than the average of all the districts,
- *Districts in need for complex development programs*: these areas are the lowest performers with 10% of the population number of the country.

I. Indicators for social and demographic situation:

1. The index of urbanity/rurality (what percentage of the micro region's population lives in a settlement with a population density of 120 people/km^2, %
2. Mortality rate (the number of deaths per one thousand inhabitants) (the average value of the last five years), ‰
3. Balance of migration per one thousand inhabitants (the average value of the last five years), number of people
4. The number of places in day care centres per ten thousand 0-2 years old, number of places
5. Percentage of inhabitants receiving regular child protection support per the age group of 0-24 years old, %

6. The number of inhabitants receiving social support per one thousand inhabitants, number of people

II. Indicators of housing and life circumstances:

1. Average prices of used flats, Ft
2. The percentage houses built in the last five years from the whole housing stock at the end of the year, %
3. The percentage of substandard occupied houses from all the occupied houses, %
4. Income (after which the person pays personal income tax) per one inhabitant, thousand Ft
5. Cars operated by natural person, weighted by age of the cars per one thousand inhabitants, number of cars
6. Life expectancy at birth, - men, years
7. Life expectancy at birth, - women, years

III. Local economic and employment indicators:

1. The percentage of people in the age of 18 or above with secondary education, %
2. The percentage of registered job seekers from the working age population, (annual average), %
3. The percentage of long-term – for at least 12 months – registered job seekers from the working age population, %
4. The percentage of registered job seekers with only primary education, %
5. The number of operating businesses per one thousand inhabitants, number
6. Number of retail establishments per one thousand inhabitants, number
7. The percentage of local tax revenues of the local government from the annual revenues, %

IV. Infrastructural and environmental indicators:

1. The percentage of houses connected to the sewage system, %
2. The percentage of houses included in regular waste collection, %
3. The number of broadband internet subscribers per 1000 inhabitants, number
4. The percentage of built roads from all the roads within the authority of the local government, %

The methodology of calculating the complex index does not differ from the one established in 2007 to categorise micro-regions. The basic indicators were transformed to scales of identical length by a normalisation process by the following formula:

$$\mathrm{fa_{i,j}} = \frac{\mathrm{fa_{i,j}} - \min \mathrm{fa(_{i,j})}}{\max(\mathrm{fa_{i,j}}) - \min(\mathrm{fa_{i,j}})} * 100, \text{where}$$

$fa_{i,j}$: normalised basic indicator, $min(fa_{i,j})$: the minimum value of the basic indicator, $max(fa_{i,j})$: the maximum value of the basic indicator

The average value of the basic indicators gives the value of the group indicators. Its formula is the following:

$$\mathrm{fa_i} = \frac{1}{\mathrm{n}} \sum_{\mathrm{j=1}}^{\mathrm{n}} \mathrm{fa_{i,j}}\ , \text{where}$$

fa_i: group indicator, $fa_{i,j}$: normalised basic indicator, *n:* the number of indicators withing the group

The value of the final complex indicator, which is the value of the development level complex indicator, comes from the average values of the four group indicators bby the following formula:

$$\mathrm{fi} = \frac{1}{\mathrm{m}} \sum_{\mathrm{i=m}}^{\mathrm{m}} \mathrm{fa_i}\ , \text{where}$$

fa_i : group indicator, *fi* : complex indicator, *m* : number of group indicators

The identification of districts based on the complex index is presented on Figure 2.

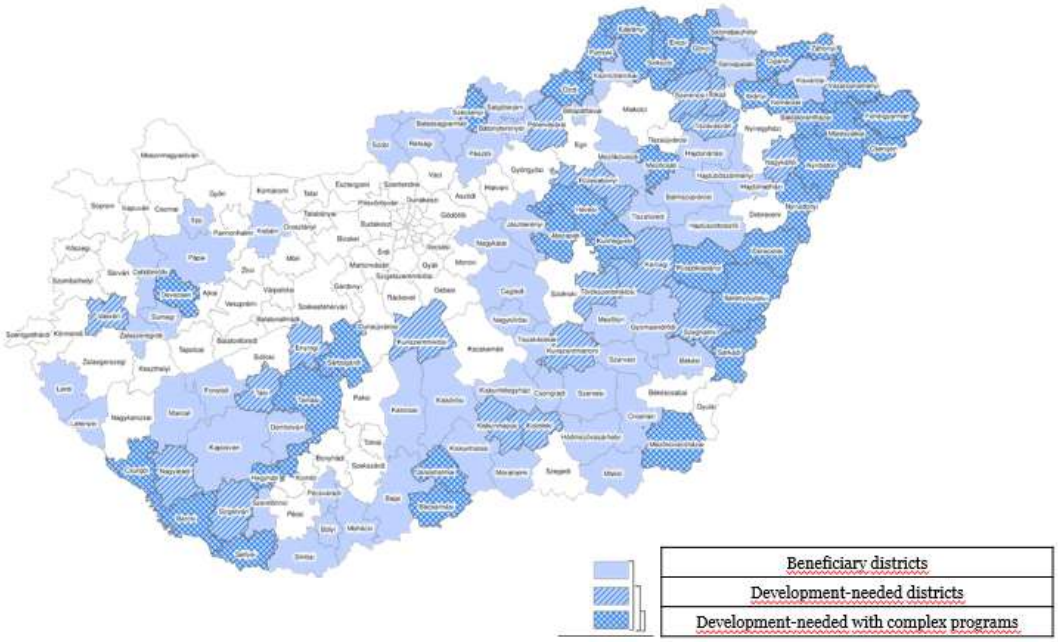

Figure 1 Beneficiary districts, 2015
Source: www.terport.hu, 2015

Materials and methods

We were intrigued to find out if the data used for forming the complex index show the actual situation; in order words, if it is possible that wrong data were chosen, thus the results are wrong. We chose the *income (after which the person pays personal income tax) per one inhabitant* local economic indicator from the classification from 2015.

Since this data is not available in proper form, we chose the *annual income from employment* from 2013 indicator and we calculated with *settlement population number* (The source of the data is the National Tax and Customs Administration, and are from 2013, collected by the National Regional Development Information sysem (TeIR), and the database of the Hungarian Central Statistics Office (KSH)). In order to give a more detailted description we created another indicator, the *income received from employment of relative working age per one person* (the expected value is higher than the value of the whole population), which indicates the amount of income of one working age person.

I wanted to find out if the category of a district depends on the income levels or not. To this end we categorise the districts according to their development levels:

1. Districts in need for complex programme,
2. Districts in need for development,
3. Beneficiary districts,
4. Non-beneficiary districts.

We also created income categories, calculated for one person and for one relative working age inhabitant.

Income from employment per one person:

1. Less than 500,000 Ft,
2. 500,001 – 800,000 Ft,
3. 800,001 – 1,000,000 Ft,
4. Above 1,000,000 Ft.

Income received from employment of relative working age per one person:

1. Less than 1,000,000 Ft,
2. 1,000,001 – 1,200,000 Ft,
3. 1,200,001 – 1,400,000 Ft,
4. Above 1,400,000 Ft

From these data we did three types of research with the help of the SPSS programme.

First we did a crosstable analysis between the district level categories and the income groups. Then we conducted a correlation analysis (Spearman's rank correlation coefficient). By this calculation we established the strength of correlation between the two variables, if there is a relationship whatsoever. Finally, we conducted a variance analysis to see the effects of the development levels of districts on the incomes. In all three cases we investigated the income received from employment of relative working age per one person as well.

Results and Discussion

Figure 3 shows well that the lowest incomes are concentrated in the districts in need for complex programmes, while 94% of people with less income than 500,000 Ft are in the most disadvantageous districts. The two highest income categories occurred mostly in the beneficiary and non-beneficiary districts, which means that in the less disadvantageous areas the income per capita is higher. The distribution of the 500,000-800,000 Ft category shows the most diverse results, because this category can be found in all four development levels, but its value is „only" high in the beneficiary districts (41.7%).

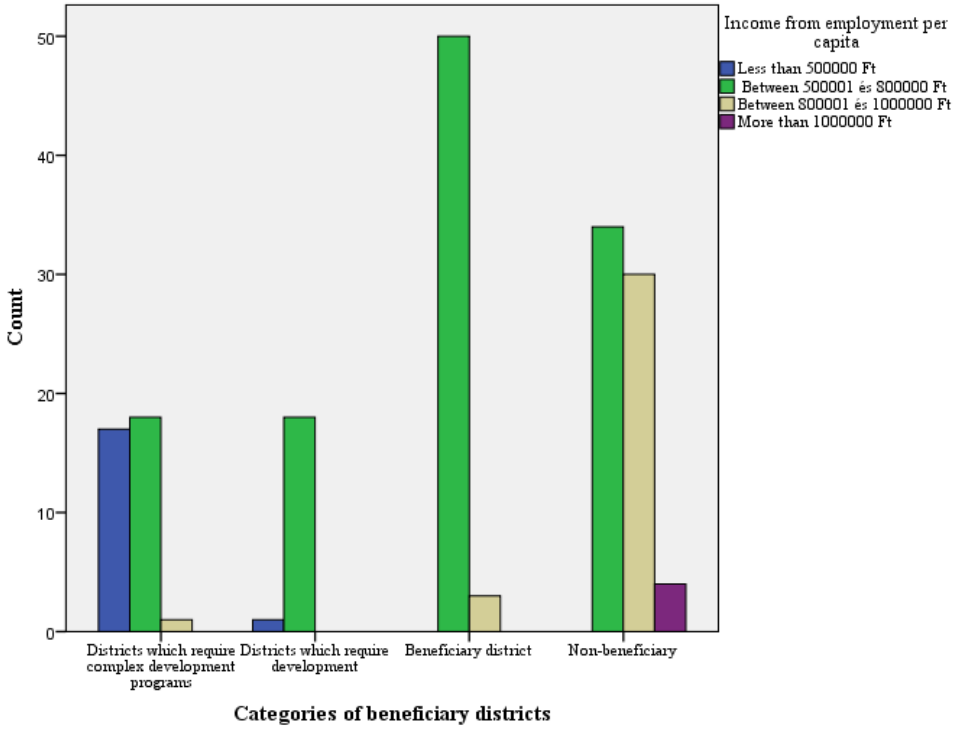

Figure 3 Distribution of income in different district categories
Source: The author's own editing based on TeIR data, processed by the SPSS programme, 2015.

The Spearman's rank correlation coefficient shows (Figure 4) that there is a medium strong positive relationship between the income levels per capita and the development levels of the districts.

Correlations

			Categories of beneficiary districts	Income from employment per capita
Spearman's rho	Categories of beneficiary districts	Correlation Coefficient	1,000	,630**
		Sig. (2-tailed)	.	,000
		N	176	176
	Income from employment per capita	Correlation Coefficient	,630**	1,000
		Sig. (2-tailed)	,000	.
		N	176	176

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 2 Correlation between the development level and the income per capita
Source: The author's own editing based on TeIR data, processed by the SPSS programme, 2015.

Conclusions

Based on the results of the analysis there is a correlation between the development level of certain regions and their population's income levels.

The crosstable analysis supported the theory that there is a relationship between the income per capita and the development levels of districts, because the lowest incomes were found in the most disadvantageous districts, while the highest ones mostly occurred in the beneficiary areas. The Spearman correlation proved that the relationship exists and it is strong positive by nature, and the variance analysis indicated that the category type of the region influences the average incomes.

To sum it up, from the indicators used to categorise districts the income levels are one of the best ones to show the development levels; it means that the districts in need for complex programmes the lower, and in the non-beneficiary districts the higher incomes are more usual.

The crosstable analysis also showed that there is a high amount of incomes between 500,000 and 800,000 Ft in the beneficiary district. It may be an interesting question that what happens if these values start getting lower; probably many districts will move down to a lower category, while statistically they will effectively stay on the same level.

The occurance of significant correlation does not mean there are no special cases. For example, the Hajdúszoboszló and Nagykáta districts are shown as disadvantageous in the 2015 methodology, while in reality the two areas (both having famous and popular spas) give no reason for that.

Recommendations

Based on the findings it is advisable to investigate the correlation of indicators deeper. It might prove useful to investigate the relationship between i*ncome (after which the person pays personal income tax) per one inhabitant* and *the balance of migration,* or the *percentage of inhabitants with at least secondary education*, To see if there is a relationship between them, and if so, how strong it is? If the income levels are higher less people leaves the area? And there they average education is level is higher perhaps?

The other elements of our recommendations refer to the indicator system. During the investigation it was expectable that there will be correlation between the factors. Therefore it would be useful to conduct an analysis to see if there is multiple correlation between the indicators. If the indicators move together statistically too closely, then the involvement of new data is recommended to the methodology.

During the establishment and rethinking of the indicator system it was a usual problem to represent certain segments (economy, society, infrastructure and environment).By the investigation of the methodology from this direction it would be easier to control the real weight of certain groups and the indicators belonging to the categories should be selected more effectively.

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ANALYSIS OF PREFERENCES TO BECOME AN ENTREPRENEUR IN RURAL AREAS

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Abstract
Entrepreneurship is an important factor of economic development. Using econometric model, this article identifies and analyses preferences of subjects to become an entrepreneur in rural areas of European Union. Resulting from our analysis, the most important factors that modify decision of subjects to become an entrepreneur in rural areas are as follows: young age, previous experiences with entrepreneurial activities and fact whether the subjects dispose with relevant information on financial and administrative support of entrepreneurial community. Our results indicate factors which have to be taken into account in respective policy frameworks as well as possible supporting interventions.

Keywords: rural regions, entrepreneurial community, preferences, interventions

JEL Codes: R30, R12

Introduction

The business sector is an important component of the economy of rural regions by helping to job creation, skills development and in integrating the unemployed and disadvantaged people into society and the labour market. Entrepreneurs and their innovative business activities are the key to the development and competitiveness of the European Union [European Commission, 2015]. Business and the community of entrepreneurs can be regarded as a driver for local and national economic development with contribution to raising the standard of living. The business community is a source for creating new jobs, and also contributes to strengthening the competitiveness of the country. Creation of new business activities supports economic growth. The positive relationship between entrepreneurship and economic growth has been empirically confirmed in many studies [e.g. Mueller, 2005; Fritsch, Mueller, 2004; Audretsch, Keilbach, 2004; Scarpetta, 2003]. Entrepreneurs have the important role in the implementation of development strategies that are accepted at the local, regional, national or European level. The business sector is the object of ambitious plans aimed at promoting economic growth in Europe. This statement is also proved by key areas of support for the new programming period of the European Union, for example. Program for the new skills and jobs, Industrial Policy for the Globalisation Era, Innovation in the European Union and many other [Europe 2020 Strategy, 2014]. Business support is also declared on the national level by Member States of the European Union. According to European Commission analysis [2004], small and medium-sized enterprises are undoubtedly a pillar of the European economy. They create 99% of the total number of business entities in Europe. Particularly important position has business entities in rural areas which due to economic development in the post-crisis period can be characterized by decline of economic dynamics and stagnation of local development. Again, the role of business entities can be highlighted in the context of fulfilling the calls which rural areas have to face - economic, social, environmental calls [DG AGRI, 2015]. The importance of business community and the efforts leading to its support do not have complex potential to achieve set objectives.

The important role has preferences of beneficiary who want to become entrepreneurs. The decision to start a business always bears the risk [Harris, 2006]. Currently, status of the entrepreneur is perceived from different perspectives. Socio-economic or political environment created in countries of the European Union is not always exemplary contribution to the support of the business community.

Objective and methods

The objective of the paper is to evaluate preferences to become an entrepreneur in rural areas and to create space for discussion in the field of taking into account preferences of subjects to become entrepreneurs within the support mechanisms that are designed to promote entrepreneurship. In our analysis, we used the data from the survey *"Entrepreneurship in the EU and beyond,"* which was carried out under the initiative of the European Commission [European Commission, 2009-2012]. The initial research

included more than 42,000 questionnaires. For the needs of our analysis we have used only questionnaires answered by respondents coming from 27 countries of the European Union. As an additional criterion in the selection of the questionnaires, we determined the rurality of the region, i.e. we included to the analysis only those questionnaires in which respondents mentioned that they come from rural area. The final sample used in the analysis has a frequency of 7151 questionnaires. The data obtained from the questionnaires were further evaluated and processed through programs SPSS and R. For the purpose of research of determinants of business preferences we decided to use the logit model which is appropriate in the case of binary dependent variable. Unlike linear regression, the logit model is not limited by the requirements of normal distribution and homoscedasticity. The dependent variable entering into model is binary variable reaching value 0 or 1 and expresses preference of business (y = 1) or absence of this preference (y = 0). Dependent variable was able to express through expressions of respondents, if they would prefer to be entrepreneur or employee in case of the option of choice. The selection of independent variables was based on the knowledge from already mage studies on enterprises in rural areas [e.g. Figueroa-Armijos, Johnson, 2013; Rijkers Costa, 2012]. The first of the variables entering into the model is the variable region. Despite the fact that research included only answers of respondents coming from rural areas, all regions have additionally divided by economic levels into four groups according to the typology ESPON, namely (1) regions with above-average GDP and below-average unemployment, (2) transition regions with below-average GDP (3) transition regions with above-average unemployment and (4) regions with below-average GDP and the above-average unemployment. This division of regions allows examining different approach to preference to do business in regions with different economic level, while economic level is considered as an important attribute in policy making of business support appropriate to the particular needs and problems of each region. The following variables characterize respondents in terms of their gender, age, educational level and current employment. These characteristics are an important element of examination of business preferences and have already been examined many times [e.i. Meccheri, Pelloni, 2006; Pyysiäinen et al., 2006]. Other variables represent respondents' attitude towards individual elements of business ecosystem such as financial barriers, administrative barriers and barriers in the field of know-how, attitude to entrepreneurship in society and the importance of education in the field of entrepreneurship. In the above variables, respondents were asked to express approval, respectively disapproval with specific claims. An overview of all independent variables is presented in Table 1.

Testing the independence of variables did not show the presence of multicollinearity, so econometric model could be compiled with all independent variables. Table 2 presents the results of the model and the results of multicollinearity testing and verification of the model through McFadden pseudocoefficient of determination. Based on the obtained values, the model can be considered as an appropriate model.

Table 1 Independent variables input into model

Variable	Description	Value
Region (*reg*)	Regions reaching above-average GDP per capita and a lower-average unemployment *	0
	Transition regions reaching below-average GDP per capita *	1
	Transition regions with above-average unemployment *	2
	Regions reaching lower-average GDP per capita and above-average unemployment *	3
Gender (*gen*)	Man	0
	Woman	1
Age (*age*)	Age group 15-24 years	0
	Age group 25 – 39 years	1
	Age group 40- 54 years	2
	Age group > 55 years	3
Age of completed education (*edu_age*)	The educational process is completed under the age of 15 years	0
	The educational process is completed in the age 16-20 years	1
	The educational process is completed in the age over 20 years	2
	The educational process is still on-going	3
Actual occupation (*actual_occup*)	Entrepreneur	0
	Employee working physically	1
	Employee working mentally	2
	Student	3
	Not working – looking for job	4
	Not working – other reasons	5
Importance of schoold education (*school_edu*)	Disagreement with the statement that school education has contributed to the interest in entrepreneurship	0
	Agreement with the statement that school education has contributed to the interest in entrepreneurship	1
	Without answer	9
Enterpreneur image (*entrep_image*)	Disagreement with the statement that entrepreneurs contribute to job creation in the economy	0
	Agreement with the statement that entrepreneurs contribute to job creation in the economy	1
	Without answer	9
Financial barriers (*fin*)	Disagreement with the statement that it is difficult to start a business due to lack financial resources	0
	Agreement with the statement that it is difficult to start a business due to lack financial resources	1
	Without answer	9
Administrative barriers (*adm*)	Disagreement with the statement that it is difficult to start a business due to significant administrative barriers	0
	Agreement with the statement that it is difficult to start a business due to significant administrative barriers	1
	Without answer	9
Barriers in the field of know-how (*kh*)	Disagreement with the statement that it is difficult to obtain the information necessary to start up a business	0
	Agreement with the statement that it is difficult to obtain the information necessary to start up a business	1
	Without answer	9

* Compared to the average of regions following the methodology EPSON (ESPON2013Programme, 2010),
Source: own proceeding

Table 2 The results of the econometric model

Variable	Estimate	Pr (>|z|)	GVIF	Coefficient
REG (1)	-0.0103	0.8772	1.0866	0.9898
REG (2)	0.0329	0.8112	-	1.0334
REG (3)	-0.0296	0.6310	-	0.9709
GEN (1)	-0.3075	$6.57.10^{-09}$ ***	1.0676	**0.7353**
AGE (1)	-0.2748	0.0581**.**	3.1111	**0.7597**
AGE (2)	-0.3088	0.0289*	-	**0.7343**
AGE (3)	-0.4818	0.0008***	-	**0.6177**
EDU_AGE (1)	-0.1299	0.0597**.**	3.0844	0.8782
EDU_AGE (2)	-0.0138	0.8685	-	0.9863
EDU_AGE (3)	0.0251	0.8788	-	1.0254
ACTUAL_OCCUP (1)	-1.4640	$< 2.10^{-16}$ ***	4.0387	**0.2313**
ACTUAL_OCCUP (2)	-1.3980	$< 2.10^{-16}$ ***	-	**0.2471**
ACTUAL_OCCUP (3)	-1.1430	$3.52.10^{-07}$ ***	-	**0.3189**
ACTUAL_OCCUP (4)	-1.2110	$< 2.10^{-16}$ ***	-	**0.2979**
ACTUAL_OCCUP (5)	-1.3307	$< 2.10^{-16}$ ***	-	**0.2643**
SCHOOL_EDU (1)	0.4495	$< 2.10^{-16}$ ***	1.0902	**1.5675**
SCHOOL_EDU (9)	-0.2635	0.0958	-	0.7684
ENTREP_IMAGE (1)	0.3206	0.0002 ***	1.0463	**1.3779**
ENTREP_IMAGE (9)	-0.0621	0.7406	-	0.9398
FIN (1)	-0.2489	0.0019 **	1.4891	**0.8826**
FIN (9)	-0.0276	0.8386	-	0.9728
ADMIN (1)	-0.2980	$1.65.10^{-05}$ ***	1.6463	**0.7423**
ADMIN 9)	-0.4129	0.0335 *	-	0.6617
KH (1)	0.1251	0.0008 ***	1.6054	**1.1332**
KH (9)	-0.1657	0.0963	-	0.8473
Codes of significance:	0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1			
McFadden pseudo R^2:	0.2024			

Source: own proceeding

Results

The results of the econometric model allowed evaluating the studied variables. From the overall amount of 10 variables in the model were 8 variables statistically significant. Based on results of the model insignificant variables are region and the age of completion of education. The irrelevance of the variable region in the model indicates the consideration about specificities of rural areas as a whole [e. g. Figueroa-Armijos, Johnson, 2013], and points to the need to creation of specific entrepreneurship policy for rural areas. The first of the important variables is the variable gender. Based on the results of the model we can evaluate that the chance of the entrepreneur´s preference is higher by more than 26% if the respondent is a man. Another variable that the model proved to be significant is the variable age. Based on the results of the model, we can evaluate that the preference of entrepreneurship decreases with increasing age. At the age group 15-24 years is reported the highest preference of entrepreneurship. At the age group 25 - 39 years the preference of entrepreneurship is lower by 24%, at the age group 40 - 54 years the preference of entrepreneurship is lower by 27% and at the age group over 55 years it is lower by more than 38%. These results related to gender and age correspond to the results of previously conducted studies (cited in the introduction of the paper) and contribute to confirmation of the need to support entrepreneurship mainly among young people. The following examined variable was the current employment of respondents. The model showed that if the respondent is not an entrepreneur, the preference of entrepreneurship is significantly lower, ranging from 68% if the respondent is student up to more than 77% if the respondent works manually. An interesting result is the fact that even if the respondent is unemployed, his preference

of entrepreneurship is significantly low. This result reflects the fact that rural areas still suffer from a lack of support for entrepreneurship and the lack of comparative advantages compared to urbanized regions. The last group of variables is given to examining the relationship between a preference for entrepreneurship and perception of individual elements of the business ecosystem, particularly financial barriers, administrative barriers, barriers in access to know-how, entrepreneurial attitudes in society and importance of education in the field of entrepreneurship. All examined variables were proved as statistically significant. If the respondent agrees with the statement that school education has contributed to the interest in the entrepreneurship, there is a chance that preferences of entrepreneurship is increased by almost 60%. If the respondent agrees with the statement that entrepreneurs contribute to job creation in the economy, there is a chance that he prefers entrepreneurship increased by almost 38%. In case the respondent agree with the statement that it is difficult to start a business due to lack of financial resources, i.e. If the respondent does not consider the lack of financial resources as a barrier to starting a business, there is a chance preferences of entrepreneurship increased by almost 12%. If the respondent does not agree that it is difficult to start a business due to administrative barriers, i.e. if administrative barriers are not considered as an obstacle to starting a business, there is a chance preference increased by almost 26%. In case of variable know-how, based on results of the model, there is the chance of preference of entrepreneurship higher by more than 13% if the respondent does not agree that it is difficult to obtain the necessary know-how to start a business. This means that in policies of support of entrepreneurship is necessary to set up adequate mechanism for distribution of information, easy access and general knowledge on business opportunities. This would help to the potential candidate to make his decision based on sufficient information received from the primary sources. Administrative barriers have long been considered to be lack of business. However, based on the adoption of the Directive of EP and Council/2006/123 on services in the internal market were created single contact place in member states with the agenda supporting free movement of services and the dissemination of information for potential applicants - these tools significantly saved entrepreneurship from the administrative point of view. The results resulting from our analysis corresponds with the current state of knowledge in the field of business support and have important implications for practice, which emphasize the necessity of removing administrative barriers and increasing availability of financial resources and training in entrepreneurship, particularly in rural areas, which are already disadvantaged in terms of localisation factors.

Conclusion

Results of the evaluation of preferences to become entrepreneur in rural area indicate possible intervention and innovation of policies aimed at promoting entrepreneurship implemented at European level but also at national level. The specificity of rural areas undoubtedly influences the preferences of subjects to become entrepreneurs. Based on the results of the model, framework partial modification of policies to encourage entrepreneurship can be proposed. This modification of policies can be grouped according to different classification criteria. This fact is showed by results of variable age where it shows lower preference to do business with increasing age. Based on the grouping of bodies under these criteria, the way of communication with selected groups, appropriateness of aid instruments and support schemes can be adapted. The model shows that preferences to become an entrepreneur decline in individuals who are at present employed and are not entrepreneurs, especially in the case of the unemployed respondents. Among the non-entrepreneurs the highest preference was expressed by students, which corresponds to the result of the variable describing the age group. Based on this result and the current status of the European Union, which faces the challenge of reducing the number of unemployed graduates it is obvious that the creation of support policy should be taken into account in this category and particularly given the current trends it would also be given due attention. The result of such portfolio may be more effective instruments to promote entrepreneurship of graduates. Based on other indicators it can be concluded that respondents who do not think it is difficult to start a business in relation to the availability of financial resources or due to administrative barriers, have a higher preference to start a business. The results of our analysis highlight the necessity of removing administrative barriers and increasing the availability of financial resources and education in the field of entrepreneurship in rural areas. For econometric modelling it is necessary to take into account certain restrictions. Model cannot be regarded as comprehensive and versatile because preference of entrepreneurship is dependent on a number of other factors that were not considered in the analysis, such as the features and capabilities of the individual respondents or

opportunity factor versus the need to start a business. Motives for starting a business yet represent an interesting field of observation, which is appropriate to deal with in other researches. Subject of discussion, however, remains that support with the requirements of potential adepts are crucial in business.

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CATCHING UP OR LAGGING BEHIND?
THE CASE OF A HUNGARIAN SUB-REGION AT THE SLOVAKIAN BORDER: THE SZÉCSÉNY SUB-REGION

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Abstract
The peripheral areas of Hungary – mainly those at the northern and eastern Hungarian borders – are struggling with several economic and social challenges. Since the socio-economic transition in the 1990s, these regions are constantly lagging behind the more developed regions of the country, and of the European Union. Nógrád, which is located near to the Slovakian border – and within this, the Szécsény sub-region – had belonged to the moderate to advance shires, nowadays has the lowest ranking among shires in GDP per capita, equivalent to the poorest Albanian regions. This study examines how a small Nógrád town, Szécsény, has changed since joining the EU in 2004. The main problems that bear crucial importance in respect of the region's development are: the deteriorating demographical situation, the high rate of unemployment, the slowly exhausting real estate market, and the peripheral disadvantages. Municipalities have stepped forth in infrastructural developments, mainly in the tourism sector. The assessment has used the data of the Central Statistical Office, and of own research as well. By using these data, answers can be provided to the question of whether the previous years' developments could have reached the results that had been targeted by local agents. In the sub-region there can be detected new trends, unknown to the previous tendencies. For the future it could be useful to target the examination of these trends in other regions as well; since this kind of examination may identify key issues and contribute to find proper solutions to them. Within this framework, the authors aim at elaborating an assessment tool for developments in the sub-regions.

Keywords: sub-regional developments, peripheral areas, social quest

JEL Codes: R11, R19

Introduction
There is a Hungarian sub-region in the Western part of Nógrád shire alongside the river Ipoly, of about 278 km², density of 69 capita/km² (KSH, 2013). The population has decreased by 6% over ten years, from 20,261 in 2003 to 19,096 in 2013[1]. A town (Szécsény) and 12 villages belong to the sub-region. After a similar decrease over the past ten years, the town counts 5,983 inhabitants in 2013. Out of the 12 villages, six have less than 1,000 inhabitants, and the other six villages have less than 2,000[2].
Szécsény and its region lost a lot during the socio-economic transition in the 1990s, mainly due to the traditionally rigid structure of the economy and the social environment that adhered to this structure. Its development is hindered by the unfavourable geographical location and the underdeveloped transportation infrastructure. A further problem comes from the relatively unfavourable demographic indices. There is no capital inflow into the region; therefore the local agents – especially municipalities – are trying to bid on tenders. The economy is based on agriculture, with some exceptions in the regional centre, Szécsény. The significance of the region is depicted by the fact that its proportion of export sales revenues stayed below 1% in 2012 (Top 50 Nógrád Shire, 2013, p. 20).
The development of the sub-region is hindered by its unfavourable location (due to its belonging to the Northern Hungarian Region, and within, Nógrád shire). The small town's region, Nógrád, is one of the poorest domestically, and the lowest ranking among shires in GDP per capita (see Table 1) The development lag has increased not only relative to other shires, but also to other EU regions since the country's join to the European Union, and now is equivalent to the poorest Bulgarian and Romanian regions

[1] The sub-region counted 22,273 inhabitants in 1980.
[2] Year 2011 Territorial census, Nógrád shire, 2013.

(see Table 2). At the time of the EU accession the neighbouring Slovakian region was set among the poorest, whilst to nowadays it has improved from the bottom (Eurostat, 2015.).[3]

Table 1 Main figures about the economic development stage of Nógrád

Title	Unit	Sum or quantity	Nógrád's ranking among shires
GDP in 2013	HUF bn	257,703	20.
GDP/capita (2013)	HUF th	1,291	20.
Net income from employment/month (2013)	HUF	117,722	17.
Public employment ratio (2014)	%	4.84	17.
Contribution to the country's industrial output (2014)	%	2.7%	20.
CAPEX/capita (2013)*	HUF	170,377	20.
CAPEX growth ratio (2014)	%	0.8	20.
Enterprises with foreign direct investment (2013)	number of enterprises	113	20.
R&D expenditures/GDP (2014)	%	0.2	20.
Growth of population (2014)	capita th	-12.5	20.

Source: Central Statistical Office in Hungary

Table 2 The 20 poorest regions within the EU in 2013, by regional GDP per capita (purchasing power parity, EU 28 average = 100)

Ranking	Region	Country	GDP in the % of the EU average*
1.	Mayotte	FR	**27** (n.a)
	Nógrád shire	HU	29 (34)*
2.	Severozapaden	BG	**30** (27)
3.	Severen tsentralen	BG	**31** (27)
4.	Yuzhen tsentralen	BG	**32** (27)
5.	Nord-Est	RO	**34** (23)
6.	Yugoiztochen	BG	**37** (32)
7.	Severoiztochen	BG	**35** (31)
8.	Northern Hungary	HU	**40** (41)
9.	Sud-Vest Oltenia	RO	**41** (28)
9.	Sud-Muntenia	RO	**41** (29)
11.	Northern Hungarian Plain	HU	**42** (41)
12.	Southern Transdanubia	HU	**45** (44)
12.	Southern Hungarian Plain	HU	**45** (45)
12.	Sud-Est	RO	**45** (31)
15.	Nord-Vest	RO	**47** (32)
16.	Lubelskie	PL	**48** (35)
16.	Podkarpackie	PL	**48** (35)
16.	Warmińsko-Mazurskie	PL	**48** (39)
19.	Podlaskie	PL	**49** (38)
19.	Swietokrzyskie	PL	**49** (39)

Source: Eurostat, [2015.] Regional GDP - GDP per capita in the EU in 2013;
* in brackets are the comparative data for 2004

[3] GDP per capita in PPS, Index (EU28 = 100) Data from 1st of June 2015.
http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00114

Unfavourable geographic conditions

The Szécsény sub-region – that amounts to approximately 19 thousand people – is located between two cities, Balassagyarmat and Salgótarján, and those cities struggle with similar challenges like Szécsény.

Szécsény is near to the Slovakian border, but is unable to utilise the advantages of this. There are no vivid economic and social relationships with the neighbouring country these days. The transportation infrastructure is very poor. Because of the relatively undeveloped train network, road transportation is characterised by non-business heavy traffic.

The town belongs to the Balassagyarmat-Ipolytarnóc railway line, and only 3 out of the sub-region's villages have train connection through Balassagyarmat. There is speed limit through the whole line, and it takes three to four hours to reach the capital by train (by comparison, it takes 1.5 hours by car). To put it simple, in the times of the 19th century train transportation was faster.

The industrial area in Szécsény had been established in the 1990s with respect to the proximity of the railway. However, railway lines have not been built in the area since then. There has not been substantial development in road transportation, either.

Following the Schengen Agreement, there have been prospective economic cross-border relations, but these hopes did not materialise. The rebuilding of the Katalin bridge at Pösty énpuszta (from the EU funds of about 3 million euros), followed by the building of another bridge within 15 kilometres, did not increase the number of tourists. The number of visitors to Szécsény and Hollókő remain low, and only a few per cent of them are coming from Slovakia. Ipolytarnóc, which is famous about its nature reservation area, has only about some hundred visitors per year from Slovakia (Engelberth, 2012, p. 287). The building of near-by bridges raises the question whether it was worth improving the accessibility of borderline towns from limited EU funds, whilst the quality of transportation corridors remains insufficient within the country.

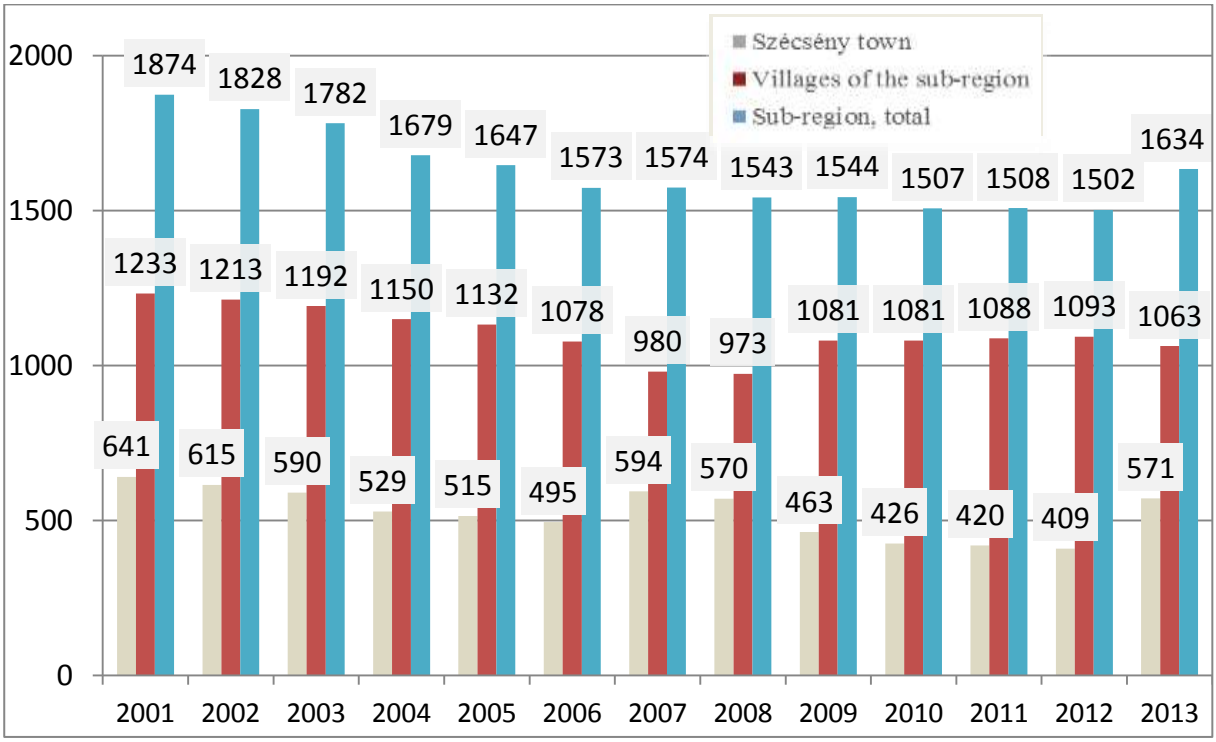
The above-mentioned bridges rather promote the flow of tourism out of the country. The aqua park in Dolná Strehová and the thermal pool in Rapovce are preferred destinations, even by Hungarians. There are doubts if the Hollókő-Szécsény-Ipolytarnóc area is able to benefit from the wake of nearby tourism soon.

Graph 1 The location of the Hollókő-Szécsény-Ipolytarnóc touristic area
Source: own

Demographic situation

The utmost threat to sustainability in Szécsény is the unfavourable demographic situation: the decrease in the number of population, the aging population and the migration. The situation is even more severe in the central town than in the villages of the sub-region. In 2013, the number of inhabitants decreased by about 5.5% in smaller villages, and by 6.4% in the town (altogether by 5.8% during the respective time period) (Central Statistical Office, 2014). The town was less able to keep its inhabitants than the villages. The reason is that the town's inhabitants – due to their profession, mentality and age – are more mobile and able to find jobs in other areas. Migration is mostly concerned among young, active, educated professionals, whose destination is the capital, or in some instances, abroad.

The sub-region is therefore desolating, as it is proved by school education data. There has been a constant decrease in the number of primary school students since the turn of the century of about 20% till 2012. However, data diverged in the town and in the villages, since the decrease has been 36% in Szécsény, and 11% in the villages, respectively. In 2013 the number of primary school students increased, but only due to administrative reasons: a new 12-year school was established and began to provide educational services for secondary school students as well.



Graph 2 The number of primary school students in Szécsény sub-region between 2001-2013
Source: Database of the Central Statistical Office 'KSH Tájékoztatási Adatbázis' [2015]

The peripheral areas are lagging behind in innovation and information flow. For the sake of the sustainable local society and economy, emphasis should be placed on education, training, and on a shift in thinking.

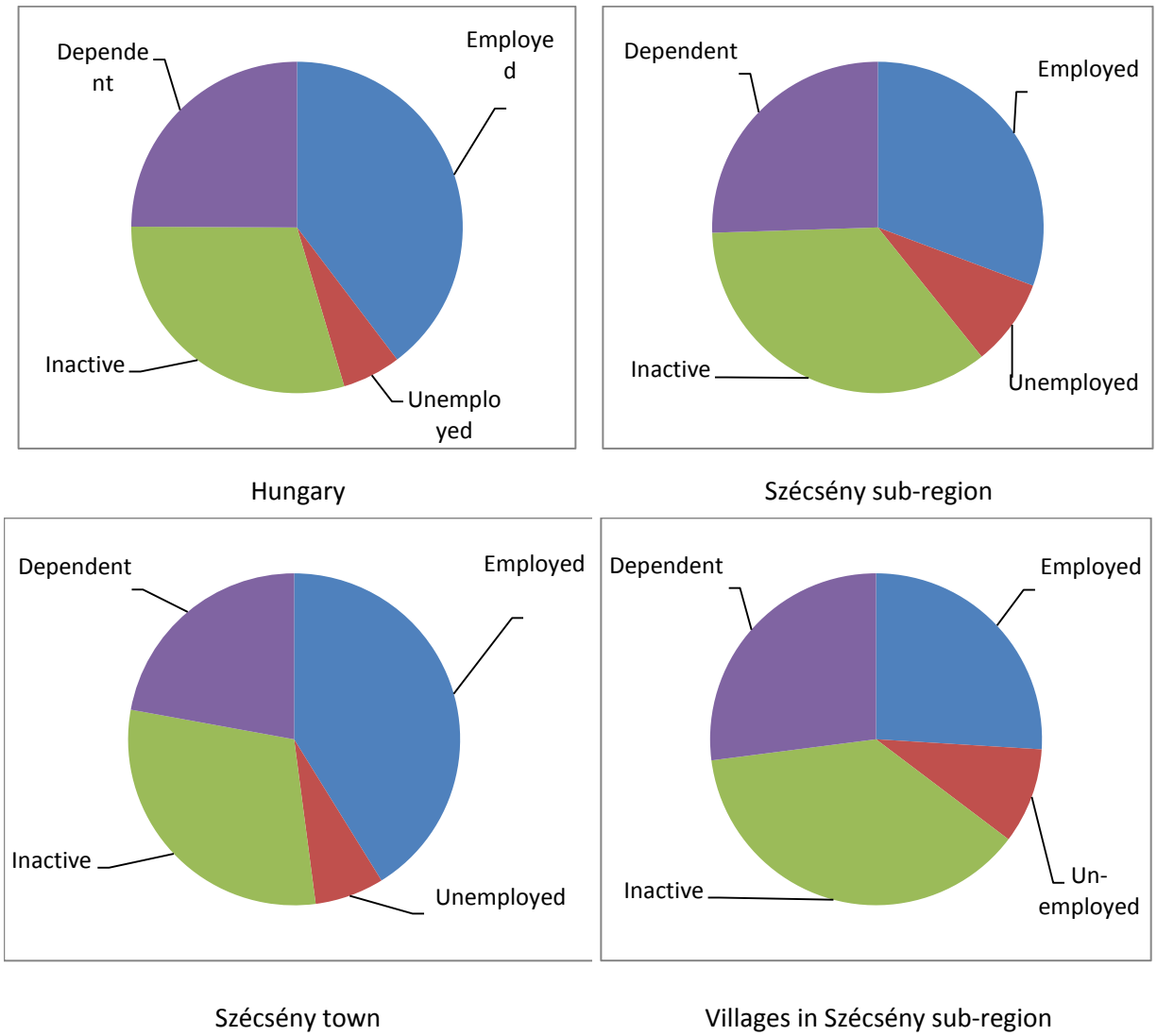
The proportion of the roma population is nearing 20% in Nógrád shire; and this figure is even higher in the Szécsény sub-region. Although the regional development programs define the problems, they do not include exact solutions for these problems. In our opinion, the integration of the roma population can be met mainly through education.

Unemployment

Unemployment in the sub-region is a hinder to sustainable growth. In this respect, Szécsény performs better: in 2013 every seventh inhabitant was unemployed in the villages, whilst only every twelfth one in the town. There has been an increase in unemployment rates in the previous years, with exception in 2013, whereas the ratio of public employees grew to public policy preferences.

A consequence and another problematic issue of the sub-region – similar to other peripheral areas – is the constant outflow of financial and human resources to richer areas. The former issue is mentioned in the regional development programmes, but only in general, without practical implications. In contrast to the current trends, the young professional labour force should be retained, via tenders, scholarships, settlement subsidies, etc.

Compared to country data, the sub-region, and especially its villages are lagging behind in terms of employment and activity ratios. Nearly two thirds of the inhabitants in the sub-region are dependent or inactive (Graph 3). The companies tend to employ non-qualified work force, at low salaries.



Graph 3 Activity ratios in 2011

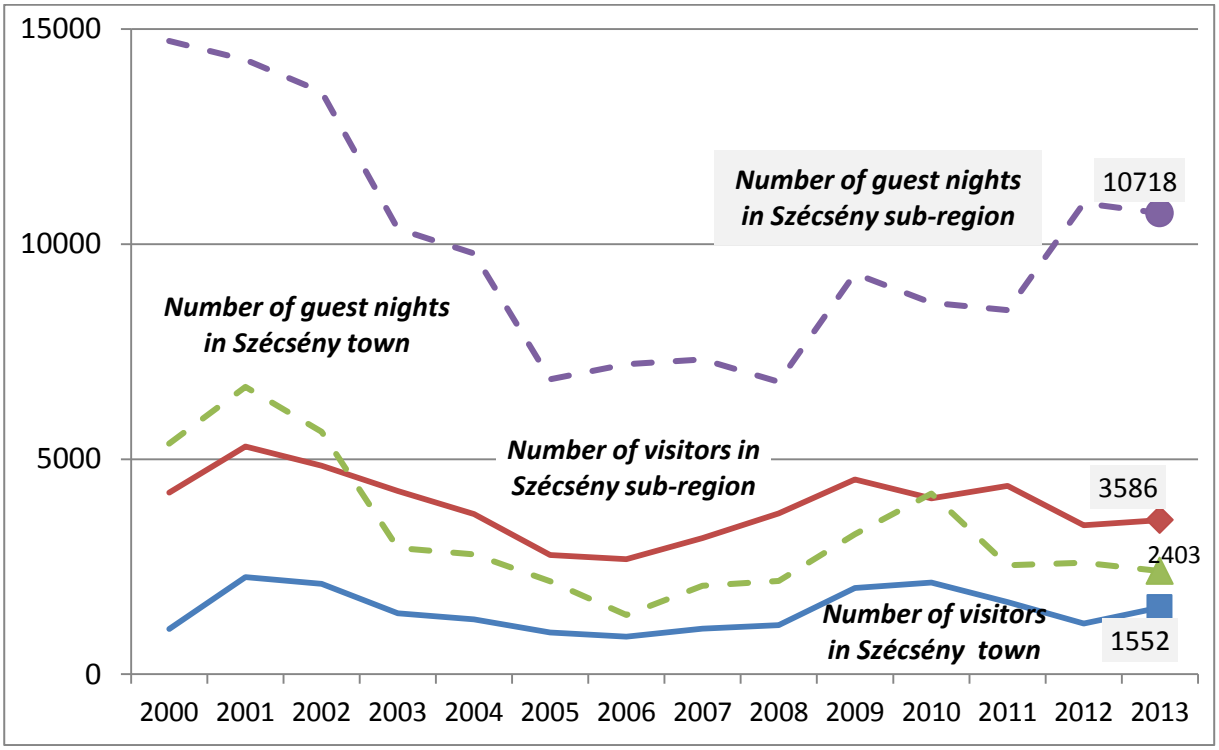
Source: 2011 year's census, regional data: Nógrád shire – Central Statistical Office, 2013

In 2013 the Hungarian Government designated the socio-economically most vulnerable 47 sub-regions within the country, including the Szécsény, Salgótarján and Bátonyterenye sub-regions. Enterprising is promoted by corporate tax deductions in these areas, nonetheless, there has not been any move in this field.

In order to enhance employment, i.e. to retain locally generated incomes within the region, there should be an organisation or programme to help, initiate and organise the marketability of local products, especially in regard to agriculture. Additionally, infrastructural developments would be needed to help the production and sale of local agricultural products.

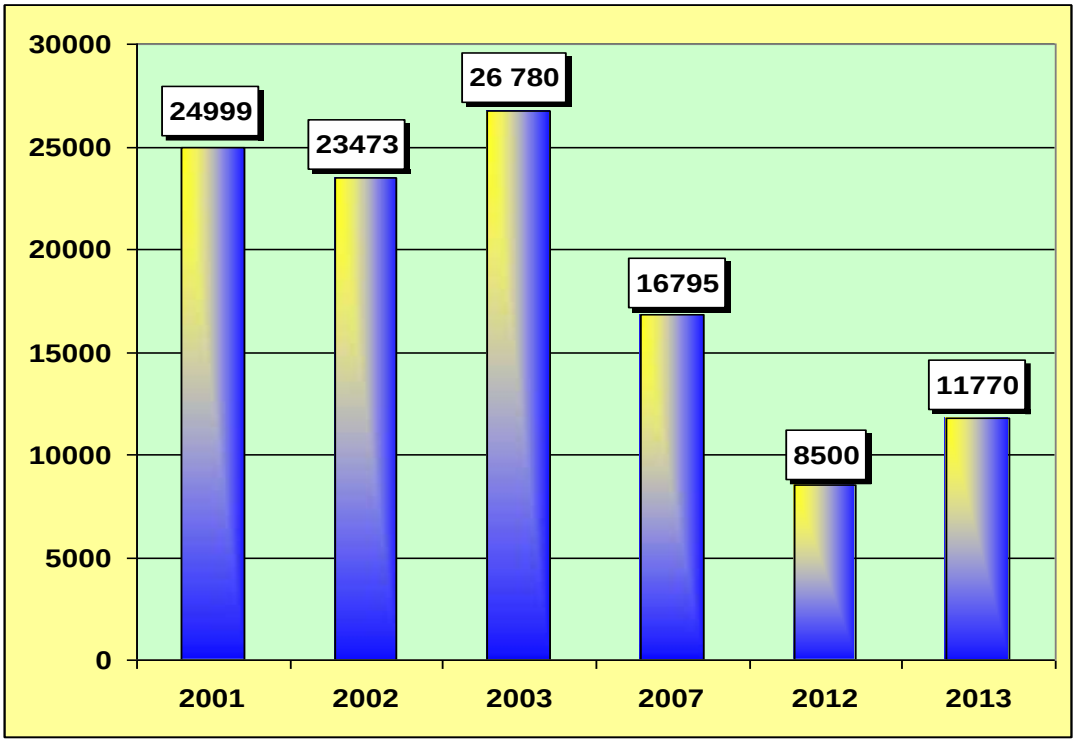
Developments and tourism

Less developed regions – in our opinion – over-emphasise the role of tourism in bridging the development gap. Between 2004 and 2007, there was the reconstruction of the inner town and the Forgách castle (together with the Kubinyi Ferenc Museum) in Szécsény that cost about 1 billion forints. The developments took place between 2010 and 2012, in the framework of a project that costs 945 million forints and targeted the enhancement of the social, economic and touristic development of the town and its region. As a result, other parts of the inner town were renewed, including the evangelist church, the town hall, the town wall, etc.



Graph 4 Number of visitors and guest nights in the Szécsény sub-region
Source: Database of the Central Statistical Office 'KSH Tájékoztatási Adatbázis' [2015]

These touristic developments did not meet the expectations concerning the economic upturn. Although the inner town had been renewed, this was not enough to stop the socio-economic downturn. The statistical data did not confirm the expected increase in the number of visitors. With good approximation, the visitors of the Forgách castle and the Kubinyi Ferenc Museum represent the visitors of Szécsény. In 2003 – before the renovation – the number of visitors was 26,780; and the similar figure in 2007 – one year after the renovation – it was 16,795.



Graph 5 Number of visitors in the Kubinyi Ferenc Museum in Szécsény (capita/year)
Source: Kubinyi Ferenc Museum

Local real estate market conditions
In Nógrád shire – as a result of the employment and demographic crisis – the deterioration and exhaustion of the real estate market has become a severe problem. The proportion of the 40-year-old or older flats is the highest with 67% in the Bátorterenye sub-region and the second highest with 62% in the Szécsény sub-region (2011 census, regional data: Nógrád shire – Central Statistical Office, p. 57). Due to the low income level and migration, the demand is low for real estate, and therefore the accumulated family wealth is downgraded. The non-tradable wealth is diminishing local consumption, and is not sufficient for loan collateral (making it impossible to raise loans for start-up enterprises). In local development plans one cannot find clues of how to mitigate this situation!
With the 2008 crisis the real estate prices have fallen across the country. But some seemingly low priced shires – Békés, Jász-Nagykun-Szolnok, Nógrád – suffered from an extreme (more than 20%) decrease (Real estate market prices, real estate price index, 2013. Q3 - Central Statistical Office, p.3). According to the website "otthonterkep.hu", the average flat price was 76 thousand HUF per square meter in Nógrád shire in 2013, which is one third of the average flat price in Budapest. At the same time the average flat price was only HUF 53 thousand per square meter in the Szécsény sub-region.

Conclusions
Since joining the EU there have been several developments in the region, however, there are no signs of progress. The solution on one hand can be a well-prepared, tailor-made regional development concept, and, on the other hand, the raising and targeting of external (EU) funds. The development of these sorts of regions will need more decisive and harmonised governmental policies at the central, shire and local levels. The different regional development programs claim that the ability to retain population should be increased by having attractive living spaces. In our opinion, the development programs do not consider the (presumably constant) decrease in population. Therefore, it is not rational to subsidise the extensive developments, but rather the renovation of the existing infrastructure. A smaller, but sustainable economic and social infrastructure is needed.
The development concept of the town [Regional development program of Szécsény town, 2015] is for example planning the building of a swimming pool, although a similar pool is making a loss in a nearby town, Bátonyterenye (the population of the later one is twice as much as of Szécsény). According to the

plans, a new 7 km long cycle track is to be built, whereas it would be enough to connect to the Hollókő-Rimóc cycle track with a new 4 km section. Similarly, there is no need for a new industrial area, since there are several unused, empty properties at the town's border.

In tourism the sub-regions could be strongly connected to Hollókő, which is a world heritage site, and a famous destination even internationally. Although Hollókő attracts tens of thousands visitors by events, it has no significant effect on the surrounding villages and towns.

A highly problematic issue of the sub-region is the constant outflow of financial and human resources to richer areas. The former issue is mentioned in the regional development programmes, but only in general, without practical implications. In contrast to the current trends, the young professional labour force should be retained, via tenders, scholarships, settlement subsidies, etc.

In order to enhance employment, i.e. to retain locally generated incomes within the region, there should be an organisation or programme to help, initiate and organise the marketability of local products, especially in regard to agriculture. Additionally, infrastructural developments would be needed to help the production and sale of local agricultural products.

It is important that thinking would change. It is important to recognise that if the countryside was lagging behind, that puts a burden on the more developed regions; and these scenarios are likely to get more severe in the future. But there is also a need for the change in mentality in the countryside, so as to stop developing projects based on self-interest, that disrespect the neighbouring towns. The right approach is missing, namely: „if the neighbouring settlements are flourishing, we are going to flourish as well". But it is difficult to employ. Without this change in mentality, these regions are facing separation and desolation.

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INNOVATIONS AS A DRIVER OF RURAL DEVELOPMENT: POSSIBILITIES AND PERSPECTIVES

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Abstract
European cohesion policy aims to achieve joint development and economic growth of all regions. Endogenous approach based on using internal resources and potential is seen as the best way for attainment of regional growth. At the present time there is a common agreement that innovations represent the main driving force for development because they provide significant competitive advantage based on tacit knowledge. Rural areas are generally seen as problem regions with small potential for growth. Although there are several policies providing special support for rural regions, they are often overlooked in national development strategies. It is also generally believed that rural regions can hardly innovate because they are lacking needed infrastructure – universities, research organizations, networks of high-tech enterprises. Is it really truth that rural areas are not capable of creating innovations? The aim of this paper is to discuss various views on rural innovations in current literature. Using several case studies this paper shows that rural regions have potential both for innovations and growth. Rural innovation process however differs from innovation process in urban areas and according to the special form of rural innovations we must shape the supporting policy.

Keywords: rural areas, innovation, regional development, regional specifics

JEL Codes: O31, R10

Introduction

In the recent times innovation became one of the most discussed terms in the context of national and regional development. The very first sentence of Oslo manual (2005, p.10) says that "it is widely accepted that innovation is central to the growth of output and productivity". Innovation arises from knowledge and precise knowledge is considered to be the most powerful competitive advantage in the globalised economy. Especially tacit knowledge, which is bound to the concrete location and concrete people, can launch an economic growth if it is used in a proper way. Sleuwaegen and Boiardi (2014) argue that there is a potential for growth in regions of all types but it is important to find this potential and to mobilise regional assets.

Rural areas however are often considered to be "problem areas" in which this growth potential lags behind. Henderson and Executive (2007) and Jean (2014) say that both scientists and general public agree that rural world is lacking in a sense of initiative, creativity and innovation and that this is why the rural world is lagging behind in development. Jean (2015) adds that it is very important to change this outlook. He, same as many other authors, believes that rural world has a lot to offer and that it is necessary to start to recognise the emerging paradigm of rural innovation.

Rural areas are very specific in their characteristics. Rural economy is often based on natural resources; big part of economic activity comes from agriculture and forestry. Rural economies face problems caused by structural change, limited access to information, services and financing, population ageing and others (OECD, 2014). It is already clear that the model called "one size fits all" is not going to work for managing regional development (Tödtling, Trippl, 2005; McCann, Ortega-Argilés, 2012). But in the case of rural areas the need for specific political approach is even more significant. For recognising and supporting rural innovations, it is necessary to budge the economy-wide approach and to adopt specific approach directed right to rural areas. "Clearly, rural regions will not grow in the same way as urban regions" (OECD, 2014, p.10).

The OECD (2014) emphasizes that the topics of "innovation" and "modernising the rural economy" are closely related. The organization believes that the focus on innovation and modernisation represents an important next step in the evolution of rural policy dialogue. Innovation and modernisation should create two pillars critical to revitalising rural areas and can help both with raising productivity and with meeting the challenges of improved public service delivery. Drabenstott and Henderson (2006) think that two

necessary elements for rural development are twin forces of entrepreneurship and innovation and critical mass of human, financial and social capital.
Rural innovations are important not only for the development of rural areas, but also for the development and competitiveness of the whole state. European observatory leader (1997) stress that rural innovations can find paths that could play a part in solving such problems as unemployment, social exclusion, pollution, the loss of social ties, etc. that means problems that affect the whole urban environment. Also OECD (2014) points out that the current regional development approach focuses almost exclusively on large cities as engines of growth and does not realize the economic significance of rural regions and the degree to which the quality of life and economic viability of cities depend precisely on the rural sector.
OECD (2014) also argues that many rural regions are already very innovative and says "Innovation is as vital for rural economies as it is for urban economies" (p.11). The problem is however that rural innovation tends to be overlooked because it often has a different form. For that reason, it is crucial to recognise rural innovations properly. Increasing our knowledge of how rural regions innovate and finding the key factors driving their economy forward is necessary for finding ways to encourage rural development and helping rural communities (OECD, 2014).

Material and Methods
The aim of the submitted paper is to discuss various views on innovation in the context of rural development and to demonstrate that innovation starts to play an important role in the rural development. The paper analyses current literature related to rural innovation and shows three case studies – Quebec, Ireland and Alps. Information used for the processing of the paper has a secondary character, because it comes from scientific articles, regional and national strategies or web sites. This information has been described and analysed. Using deduction, several conclusions have been made.

Results and discussion
A long discussion does not have to be made to uncover that rural areas cannot equal urban areas in the sense of modern innovation infrastructure, high-tech technologies or number of patents. Yet, does it mean that rural areas are not innovative?
Jean (2015) thinks that many rural innovations come from necessity rather than from opportunity. Innovation is able to bring solutions for many practical problems that rural people and rural entrepreneurs face. OECD (2014) points out that rural areas display a particularly strong connection between innovation and entrepreneurship and the innovator tends to directly implement the innovation. Rural innovators probably care most about practical use of the innovation and pay small attention to publications or patents, which can be seen as administrative burden bringing higher costs. However, precise patents are often commonly considered to be important measure of innovation performance (OECD, 2014). This comes from generally accepted opinion that innovation arises from modern research institutions, universities or high-tech firms, for which patents are very important way to protect their know-how. Then, if we use number of patents, number of high-tech firms, number of employees in research and development and other similar indicators as an innovation performance measure, rural areas will definitely lag behind. But this approach, as we see, can be significantly misleading.
Following case studies are showing that innovation exists in rural areas and that developed economies already start to realize their importance.

Case study - Quebec
Jean (2014) is persuaded that "we can learn from the rural world" and demonstrates his conviction on the case of Canadian province Quebec. He says that rather than constant believing that rural inhabitants need to be taught, a lesson could be learnt from rurality.
Quebec's inhabitants create an active community collaborating to achieve common goals. According to Jean (2014), already in 19th century in almost every village agricultural associations were created that provided collective training. Farmers shared their knowledge, their experiments and learned from each other. Later, the residents of three small rural villages from the Bas-Saint-Laurent region founded so called "development co-op". This idea spread out and soon there were many local initiatives. Forest towns invented societies for the exploitation of resources, and in agricultural areas, co-ops were used to share farm machinery and regional agri-food advisory boards were set up. Other institutions based on public-

private or private-private partnership were established to maintain education and health services. For supporting local development, new agencies such as local development centres were created.
Technical innovations in agriculture are highly visible in rural enterprises. Jean (2014) says that several farm machinery producers used to prosper in the Quebec region before they were merged to bigger companies. He also argues that it is no surprise that many international agro-companies come from rural milieu. Moreover, in all over rural Quebec there is an evident interest in modern technologies because of the current demand for access to high-speed internet (Jean, 2014). If someone imagines rural inhabitants as common farmers not interested in new technologies and innovation, he is definitely wrong. "It is essential to understand that rural people themselves are perfectly able to embark on social learning processes that will sustain the progress of their own development" (Jean, 2014).
There are two important evidences that innovation is vital for rural Quebec. First one is the town **La Pocatière** which has about 5 000 inhabitants and is surrounded by small agricultural and rural communities. In the region of La Pocatière, there exists an advanced innovation system quite comparable to urban innovation centres. Local innovation system started to develop in 1830 and has thus very long history (Doloreux et al., 2007). According to Doloreux at al. (2007), an evolution of innovation system in this region went through four phases: a phase of setting up pioneering institutions and innovations (1827–1911), a phase of growth and influence of the agricultural-science institutions (1911–62), a phase of rupture, economic diversification and development of the technological cluster (1962–97), and a phase of redeployment and growing complexity of the elements of the innovation system (1997–2005).
It is interesting that La Pocatière has no industrial history. It has tradition in agriculture and the innovation system emerged from research in agriculture science. An important factor of this region's success is continual knowledge transfer. Rather than enterprises, numerous isolated producers created a collaborating network, which was able to adapt all structural changes and to develop in a modern agricultural and industrial (after the advent of Bombardier factory) economy integrated into the global agri-food system. La Pocatière become important centre strongly integrated with the centre of Quebec and also connected to other European centres (Jean, 2015). This case shows the great importance of local networks and partnership, continual learning and constant evolution.
Other evidence of significant innovation activity in Quebec is the **Quebec Rural University** also called URQ. It is not a university, as we know it, it is unique informal institution established by professors of the University of Quebec, experts in rural development, and members of three networks also dealing with rural development. This institution is based on informal, user-friendly knowledge sharing approach and offers learning from rural life. The aim of the university is to mix academic knowledge and experience-based knowledge through several activities including conferences, workshops, field trips, etc. (Jean, 2014). The institution is very flexible because it has no official permanent organisation structure, therefore is can operatively react and adapt to changes.

Case study – Ireland
In the Ireland there exists an institution called CEDRA (Commission for the Economic Development of Rural Areas). CEDRA was established in October 2012 by Minister of Environment, Community and Local Government and Minister for Agriculture, Food and the Marine. Its aim is to assess the potential for economic development in rural Ireland and to make recommendations on how Government can launch and support this development to the year 2025 in the best way. CEDRA after that created a report with 34 recommendations (Rural Development Section, 2015). According to this report innovation should play one of the key roles in the future rural development.
In the report CEDRA (2013) defines rural Ireland as all areas located beyond the administrative boundaries of the five largest cities. CEDRA says that during economic crisis rural community experienced significant negative impacts because of its strong reliance on sectors most affected by the crisis. Therefore, it is very important to initiate a development of this area. CEDRA at the same time believes that rural Ireland has significant potential created by local communities, engaged citizens or entrepreneurs. The Commission also believes that in rural areas there is an abundance of natural, physical, human and capital resources. However, in order to activate these resources many rural areas need both private and public support (CEDRA, 2013). CEDRA prepared a list of well worked-out recommendations for making this support efficient. These recommendations include many perspectives; development through innovation is only one of them.

Firstly, CEDRA (2013) claims that Government should establish a Rural Innovation and Development Fund that could support innovative, small-scale pilot initiatives. After that, it is necessary to support enterprise and innovation in rural areas by mobilising community capacity. A culture of entrepreneurship and willingness to go through risk has to be encouraged. In order to do this, barriers that challenge entrepreneurial activity have to be identified and local community should be supported to face them. For the future of the rural economy, it is crucial to encourage members of the community with innovative ideas to bring their ideas forward and develop them to the point where they have real potential to generate economic activity in rural areas (CEDRA, 2013).
The commission believes that such kind of leadership, which is made together with local communities, has to be supported, and is at the same time convinced of the potential of rural Ireland to actively participate in their own economic development (CEDRA, 2013).

Case study – Alps
Alpine Convention is a treaty between the Alpine Countries including Austria, Italy, France, Germany, Lichtenstein, Monaco, Slovenia and Switzerland. This Convention is a kind of framework that sets out the basic principles and general measures for the sustainable development in the Alpine region. Alpine Convention entered into force in the year 1995 (Alpine Convention, 2015). Alps, as the Convention describes them, are the natural, cultural, living and economic environment for nearly 14 million people. Two third of this population lives in middle and small-sized cities, one third lives in completely rural areas (Permanent Secretariat of the Alpine Convention, 2011).
In 2009, the Alpine Convention published the Third report on the state of the Alps called Sustainable Rural Development and Innovation. The aim of this report is to draw attention to the development potential which may be offered by the Alps both for inhabitants and whole European region. In the introduction of the report it is said that sustainable rural development can be achieved through providing local populations with vocational and technical training and improving access to information, resources and innovative technologies. Rural development is also based on the involvement of different levels of government and various local stakeholders. For supporting competitiveness it is important to promote the sustainable use of local assets and resources. The key sectors associated with mountain regions were identified as agriculture, forestry and tourism and it is stressed that all these sectors have multifunctional dimensions that are important to recognize (Third report on the state of the Alps, 2011). Concerning innovation, the Alpine Convention claims that "In terms of rural development, territorial innovation plays a key role: it must be considered and associated with the pillars of sustainable development, together with the reorganization and sharing of territories, and with the actor and communication networks…"(p. 8).
It is believed that Alpine area can play a very important and leading role in European countries and elsewhere. It is however necessary to make much greater effort to create an environment for innovation, research and development. One important thing that is stressed in the report is that subsidies are not a viable solution for remote rural areas. There is a strong need for complex solution including: networking of these small cities and remote regions for cooperation in political and cultural affairs; promoting traditional mountain products through regional marketing instruments; ensuring closer collaboration between agriculture and other economic activities; establishing a platform to facilitate job matching and motivate talented people and experts to stay in the region (Third report on the state of the Alps, 2011).
The members of the solving team are convinced that the ability of Alpine territories to generate sustainable development depends on their ability to mobilize researches and enhance knowledge transfer. To support these abilities, the team recommends: encouraging research to focus on specific or major topics for these areas (like how to cash in ecosystem services, how to manage natural hazards or how to diversify their tourism); and attracting trained workers from Alpine regions to become involved (Third report on the state of the Alps, 2011).
To prove that Alpine regions are already showing innovative activity, the Alpine Convention offers several good practise examples. Many of them are focused on tourism:

- using mobile "apps" to promote tourism;
- network of communities offering environmentally-friendly holidays;
- hiking networks linked to public transport in Lichtenstein (the network of start and end points of hiking trails connected to the public transport, where both tourists and local residents are well informed about the possibilities of public transport).

Some are focused on regional products

- "Bregenzerwald cheesestreet" which is a network of experts all over the Bregenzerwald region offering tasting sessions and revealing some secrets on cheese production in all attractive locations.

A brief summarization

At this point it would be useful to make some summarization of specifics of rural areas that should not be overlooked while preparing the support policy:

- firstly, it is necessary to realize that rural areas will not grow the same way as urban areas. Unified, large – area models or one-size-fits-all models will not bring desired results,
- for remote regions lagging behind in development, subsidies are often a seemingly easy solution. However, subsidies from the outside, not directed to the specific problems and needs of these regions are basically wasting of public assets,
- rural areas are generally seen as problem regions. This attitude has to be changed. Rural areas have a great potential for sustainable growth and it is up to the policy maker to uncover this potential and stimulate it in a proper way,
- of course, rural areas face problems associated with structural changes, workforce outflow, traffic non-availability, lack of modern infrastructure and many others. That is just another reason for specific support of these areas,
- rural residents have very strong sense of belonging. In most cases they want to participate in policy making to build their community. Policy maker should use this fact to cooperate with the local communities. The community should be engaged in the whole process of policymaking – from vision formulation to the strategy making.

Concerning rural innovations, several other conclusions can be made:

- those experts, who do not consider rural areas to be centres of innovation, are right in a large part. It is clear that in rural areas there are no conditions for developing such innovation infrastructure, as we know it from urban areas. However, it does not mean that rural innovation does not exist,
- rural innovation often arises from necessity as a solution of practical problems in agriculture, forestry, tourism and others. Rural innovators pay small attention on publications or patents. For that reason, comparing rural and urban innovation can be misleading,
- rural innovation can be found in many fields: active networks of inhabitants learning from each other about practical solutions in forestry and agriculture, collaborating groups of entrepreneurs, new approaches in tourism, environmental-friendly use of the land, creating local products and their promotion, and many others,
- many experts believe that innovation is a key to rural development. Many rural areas already are very innovative, but a strong need of public support is still here,
- the best way to support innovations in rural areas is to engage local communities and stakeholders. It is important to realise that rural inhabitants are more than just farmers. They are fully competent to participate in their own development,
- innovation in rural areas is strongly connected to entrepreneurship, for that reason, the ideal solution is to support small innovative enterprises,
- it is also important to prevent the drain of young educated people to cities. Interesting incentives have to be created to motivate these people to stay in the region.

Conclusion

Rural areas are very specific. They face problems associated with structural changes and inaccessibility of information, qualified workforce or needed resources. Agriculture, forestry and farming are often most important sectors in rural regions. The concept of innovation is often connected with modern cities equipped with infrastructure for research and development and for knowledge transfer. Rural areas can never dispose of such infrastructure and for that reason they have been overlooked by innovation policy for a long time. Today, however, more and more experts and regional policy makers realize that innovation is

vital for rural areas and that precise innovation can be a driver of development and prosperity in rural regions.

This paper shows that in some regions an active innovation support has been launched and that these regions already show a great innovation activity. The paper also argues that in the case of rural innovation support, a complex and specific approach is needed. As we already know very well, unified models like one-size-fits-all cannot work for regional innovation support. For rural areas, this claim holds even truer. For achieving successful innovation policy, it can be useful to engage local community to the process of policy making. It is important to realize that rural inhabitants are fully competent to participate on the development of their homeland.

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THE MAJOR TRENDS OF FOOD CONSUMPTION IN HUNGARY

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Abstract

In the beginning of the 20th century the food consumption levels were much lower than later in the century, when food production increased as well. The selection of foodstuffs became wider and we can observe the modernization of nutrition principles too, which both had a positive impact on consumption. The variety of food was also affected by the increasing life expectancy. The emergence of more modern ways in food consumption is halted not only by the traditions but by the fact that healthier foods are more expensive than fat or cereal prices. There is a significant correlation between the income levels and the quality of consumed food, as it can be observed in different regions in Hungary. The aim of the paper was to investigate the change in consumer behavior in parallel with the increase of income levels; to see which sort of foods are preferred by the wealthier, and which are preferred by the ones with less income. It is also important to analyze the economic and social indicators on regional and other spatial levels and to compare them with food consumption. The annual net income per capita is usually higher in more developed regions than in the less developed ones. Therefore, the expenditure spent on better quality and more expensive food products is also higher. Similarly, in the case of population there are differences in consumer habits according to purchasing power. For instance, for people with higher income one of the most important factors is to buy healthy and high quality food, but for the ones with lower income it can be a struggle only to find food in sufficient quantities, and quality cannot be as much of an issue. In the consumer basket, foodstuff accounts for approximately one-third of the overall expenditure. In this study we analyzed the annual expenditure of Hungary's population on foodstuffs and the annual quantity of food consumed by households per capita on a regional level between 2006 and 2012.

Keywords: food consumption, regional territorial levels, food economics goal, structure of food consumption

JEL Codes: Q21, Q02, O52

Introduction

During the 20th century the Hungarian agricultural production was able to satisfy the food demand of the population. Thankfully, the more difficult times lasted for not so long, and after those the consumption levels raised to the previous levels, or even higher. At the beginning of the last century food consumption levels were significantly lower than later, as production levels increased throughout the century. The selection of food increased also and the principles of food consumption became more and more modern. The structure of food consumption was influenced by the growing average life expectancy as well. But the modernization of consumption habits were hindered by traditions and the fact that healthier foods are more expensive as well There is a significant correlation between the income levels and the quality of consumed food. Within the domestic average the expenditure on food varied widely based on the income levels. From the 1960s the rapidly increasing production allowed higher consumption levels, which was even higher than the average of other European countries. However, the structure of consumption was still not optimal in every way. After 1990, agricultural production levels dropped, food prices increased, and the food consumption levels decreased below the 1980s levels. On the other hand, the consumption of meat and egg rose to Western-European levels, especially in the case of poultry. It is an unfortunate situation that fish consumption is still below 3 kilograms per capita, despite the fact that Hungary has many lakes and rivers suitable for aquaculture. The role of fruits and vegetables had grown until about 25 years ago, but then it halted (http://mek.oszk.hu).

Aim and methods

Hungary is currently capable of self-sustainment on a 120% level. This level could be increased to 150%, which may prove to be a valuable competitive advantage with the predicted rise of global food demand.

The country possesses every factor needed to supply its population with domestic products and to increase its food export as well. (National Rural Development Strategy, 2012-2020)
Food industry is important for rural development and local economic development strategies, because:

- the Hungarian food industry is the second largest employer among the processing sectors,
- it plays a significant role in providing jobs in rural areas,
- it is especially important for making settlements attractive for families and enterprises,
- to satisfy the local demand small-scale farmers process their own agricultural products (National Rural Development Strategy, 2012-2020) .

The importance of food production strategies is increasingly important, since the changes of demand and supply affect food prices, and through that, the choices of consumers as well. The ratio of food is still high in the expenditure structure of Hungarian households (24%, while the EU average is only 13%). This implies that the purchasing power is limited, and not that the population spends extreme amounts of money on food. Also, the food export – together with agricultural products – maintained its significant role. The domestic decrease of demand could be balanced out even with the export (Food Industry Strategy, 2014-2020).
On current prices the export revenues in 2004 and 2012 doubled but it was the result mostly of the exchange rate changes. This assumption is supported by the fact that the volume index increased only by 40% in this particular time period. Between 2004 and 2012 the sector was financially loss making, due to the large debts and therefore the expenditure on repayments (Food Industry Strategy, 2014-2020).
Promoting food industry is a general social policy aim; by exploiting the comparative advantages of the Hungarian food production and agroeconomy they become an important part of European food production. Food industry is a stable and competitive part of the Hungarian agro-sector, which does not only provide safe and secure food, but also contributes to increasing the well-being of the rural population (Food Industry Strategy, 2014-2020).
The national interest of Hungary:

- healthy, safe and reliable supply of the Hungarian population from Hungarian as much Hungarian resources as possible;
- producing the highest possible added value domestically by the optimization of the food chain, and to improve the situation of the national economy by promoting export;
- preserving the self-sustainment abilities and jobs of rural areas, for example by promoting food-processing, and by developing sustainable food production systems (Food Industry Strategy, 2014-2020).

During the process of investigating the topic we used domestic literature (books and scientific papers) to analyze the spatial economic trends of rural areas and the food industry. The aim was to find out as much as possible about development strategies for rural areas and the food industry.
The indicators we used were provided by high quality data, which we acquired from the Regional Statistical Books, the Hungarian Central Statistical Office (KSH), the Research Institute of Agricultural Economics (AKI), the GFK Hungária research institute, and international sources (Eurostat, OECD studies, other internet sources).

Results and discussion

We considered it important to investigate how the food consumption habits change along the changing income levels, and to see which types of food are preferred by the wealthier, and which are consumed by the poorer segments of the population. It is also important to analyze the economic and social indicators on regional and other spatial levels and to compare them with food consumption.
We found that the healthier premium-category food is clearly preferred by the population segment with greater purchasing power. Figure 1 indicates that the net income per capita is higher in more developed counties than in lagging behind ones. This results the fact that the households of these regions spend more on more expensive and valuable food.

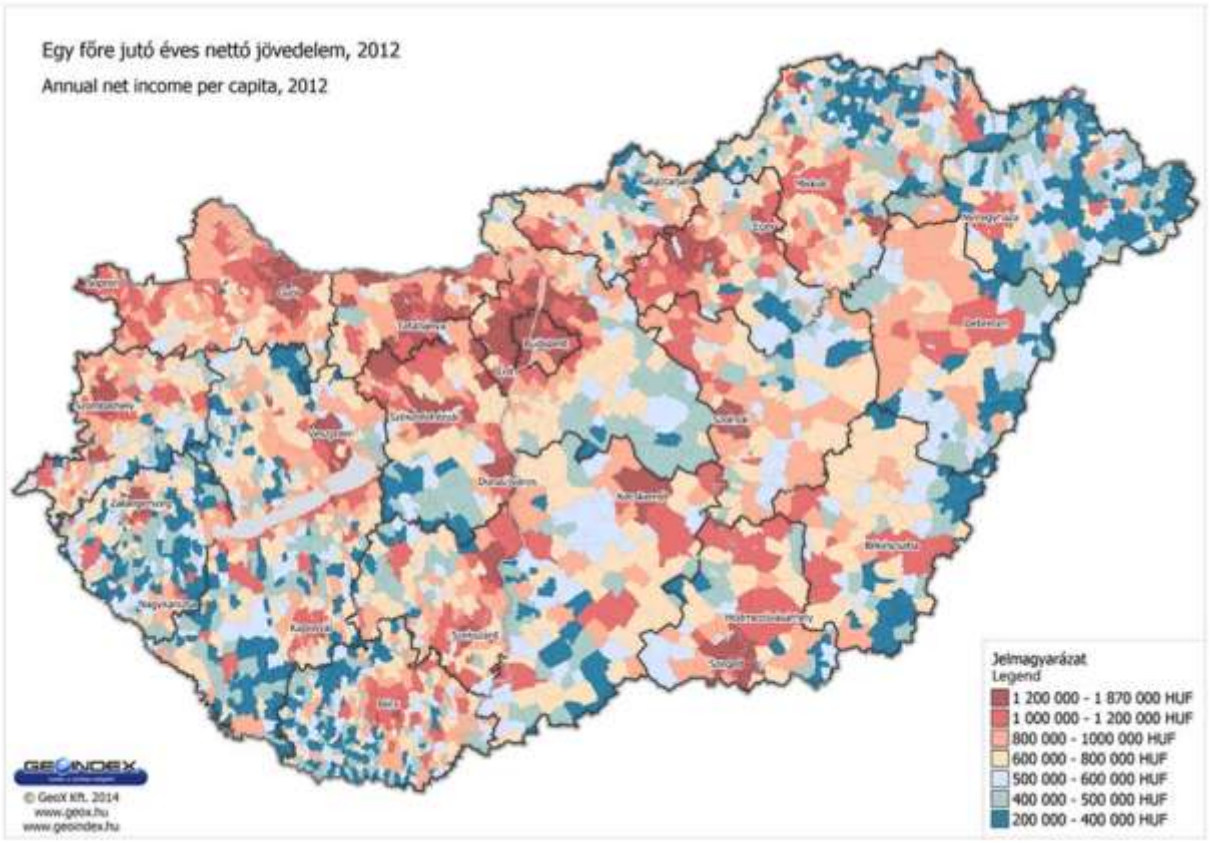

Figure 1 Per Capita Annual Income in 2012
Source: www.geoindex.hu

The main concern of those with lower income is to purchase enough food, the ones with higher income levels deal with a different issue: to buy food not only in sufficient quantity, but with higher added value.

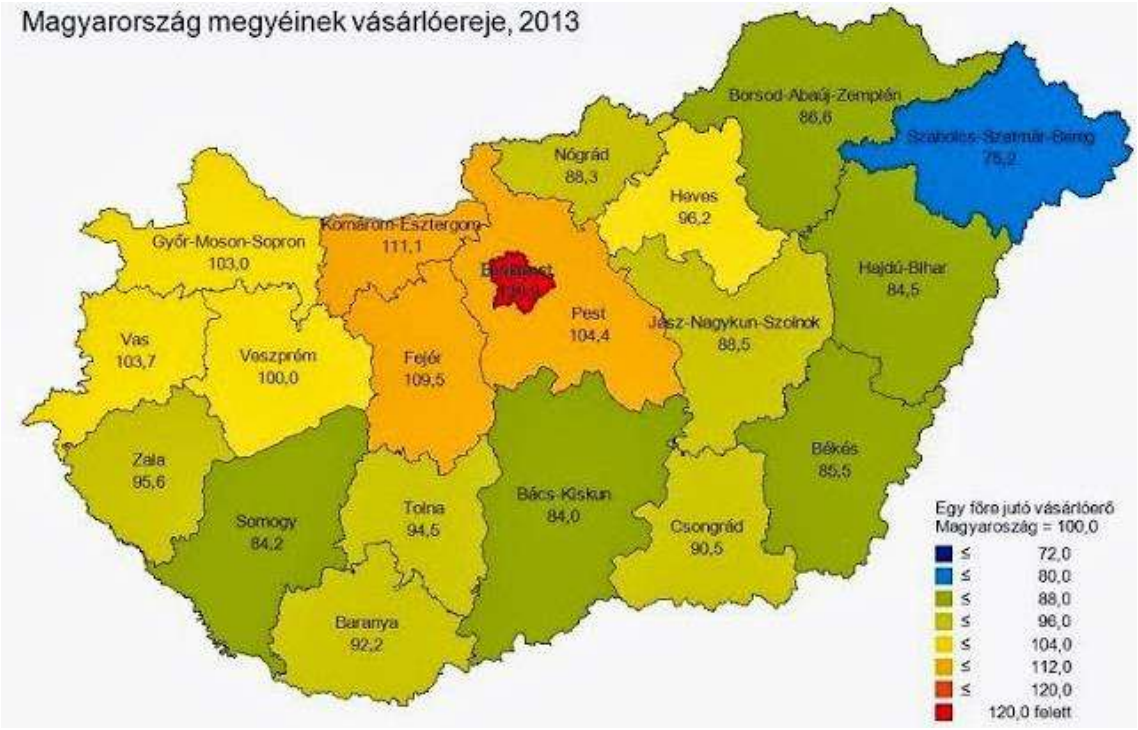

Figure 2 Purchasing power of the Hungary's counties in 2013
Source: GfK Vásárlóerő Magyarország, 2013

One of the most important tasks of agriculture is to provide food source on sufficient quality and quantity levels for a country. During the last few years the price level of staple food grew with 100-300% in Hungary. The expenditure on food plays an important role in the life of households, and changes in price levels change the structure of the consumer's basket. The expenditure on food among all the goods is approximately one-third. However, life circumstances are affected not only by food prices, but also by the income levels. Consumer behavior is influenced – beside the previously mentioned factors – by the inflation rate, the price of complementary products and some other micro- and macroeconomic factors (Szigeti, 2012).
In this study, we investigated the percentage of income the population spends annually on foodstuffs, as well as the quantity of food consumed by households, per capita, on regional level between 2010 and 2012.

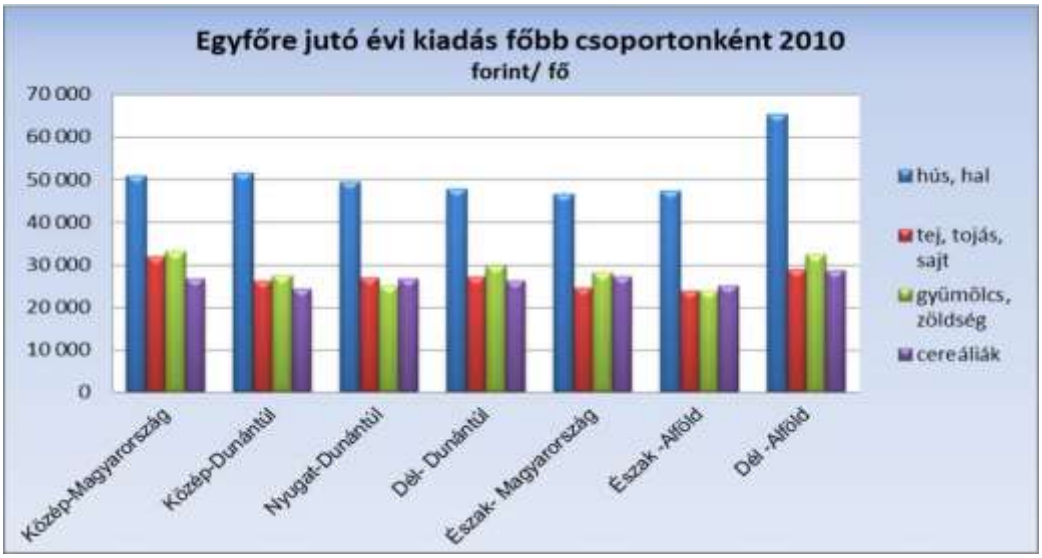

Figure 3 The main groups of expenditure per capita in 2010
Source: Own editing based on data from Hungarian Central Statistical Office, 2013

The diagram above indicates that in 2010 the expenditure on vegetables and fruits is the highest in Central Hungary and in the Southern Great Plain, which shows a certain indication that people spend more on healthier food in these regions than in others. Compared to earlier years, food consumption increased in Northern Hungary.

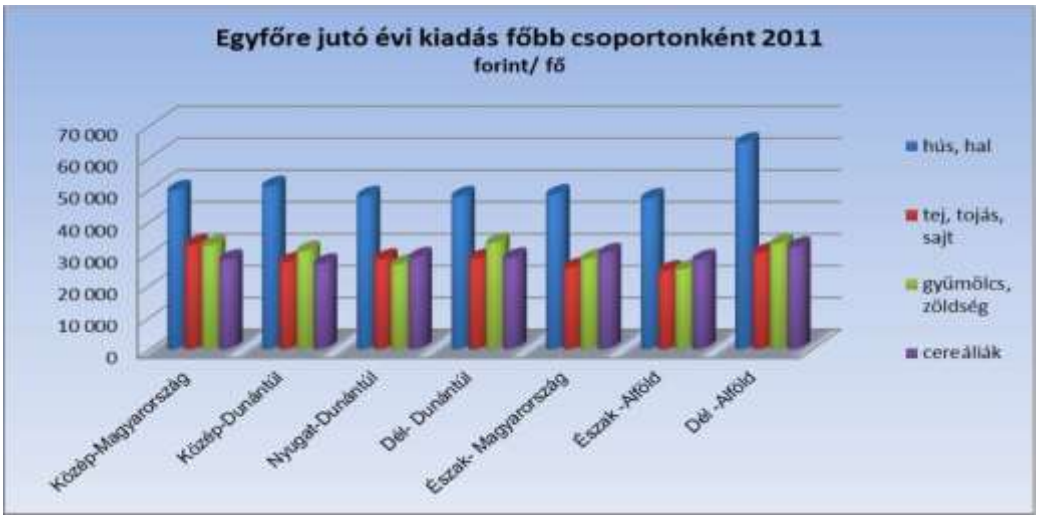

Figure 4 The main groups of expenditure per capita in 2011
Source: Own editing based on data from Hungarian Central Statistical Office, 2013

The expenditure on meat and fish products is high in the Southern Great Plain (as it is indicated on the diagram above). Based on the investigation of the data from 2010 and 2011 the expenditure on these goods is higher in every other region compared to the rest of the examined products. However, this high level decreased and got really close to the levels of other goods by 2012. Regarding to milk, eggs, cheese, fruits, vegetables and cereals we cannot observe significant changes.

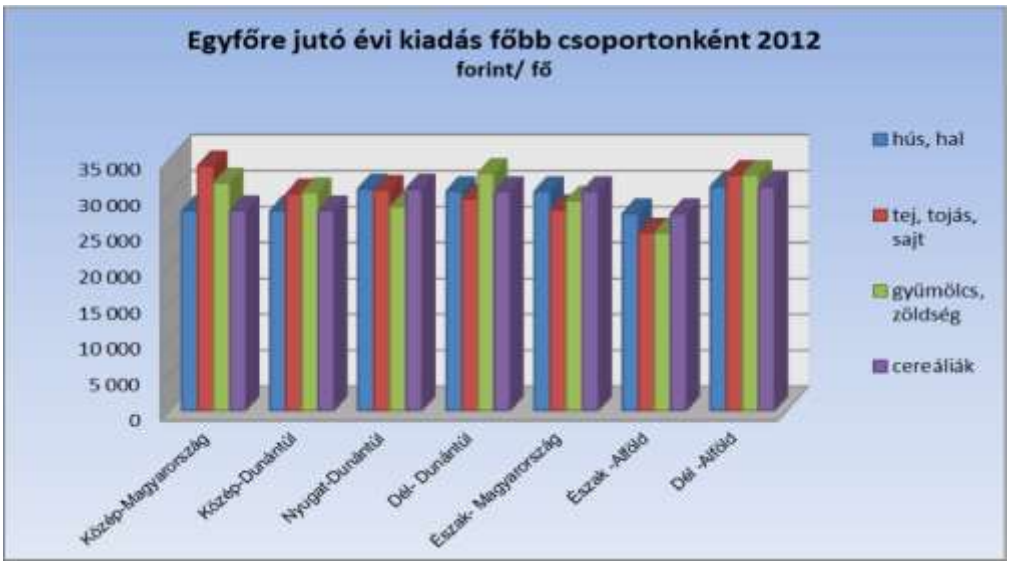

Figure 5 The main groups of expenditure per capita, 2012
Source: Own editing based on data from Hungarian Central Statistical Office, 2013

When analyzing these areas it must be taken into consideration that except for Central Hungary all the regions are convergence regions. It means that in these regions the GDP per capita value is lower than 75% of the average of the EU 25 countries, thus they can be considered lagging behind areas. On the diagrams below we can observe the quantity of food consumed in the households of regions in 2010, 2011 and 2012. We can see that in the households of Northern Hungary the quantity of consumed food is very low in the investigated years, and the results of Central Transdanubia and the Southern Great Plain support the outcomes of the previous analysis.
It is clear that in 2010, Central Hungary indicated the lowest level of meat and fish consumption. This value did not change in 2011, but the consumption level of these goods dropped in Western Transdanubia compared to the previous years. The Southern Great Plain produced the highest consumption levels in both years. In 2010, the consumed amount was 71 kg per capita; in 2011 it was 67.8 kg per capita.

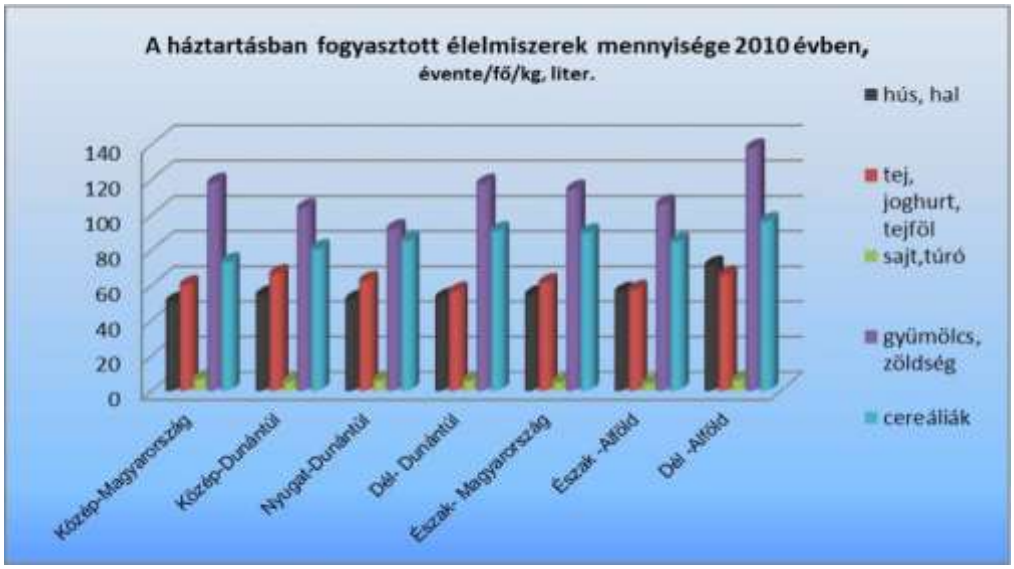

Figure 6 The quantity of food consumed in the households, 2010
Source: Own editing based on www.ksh.hu

Considering the dairy products the very high consumption (66.2 kg per capita) of the Central Transdanubia region in 2010 shows a 10% drop in the next year. Fruit and vegetable consumption reflects the importance of health among the population a great deal. Based on this assumption, we can observe that in Western Transdanubia this indicator increased from 91.7% in 2010 to 98.4% in 2011, but compared to other regions this result is low. The highest level of fruit and vegetable consumption can be observed in the Southern Great Plain with 137.6 kg per capita in 2010, and this amount decreased only to a small extent by 2011 (to 134.9 kg per capita).

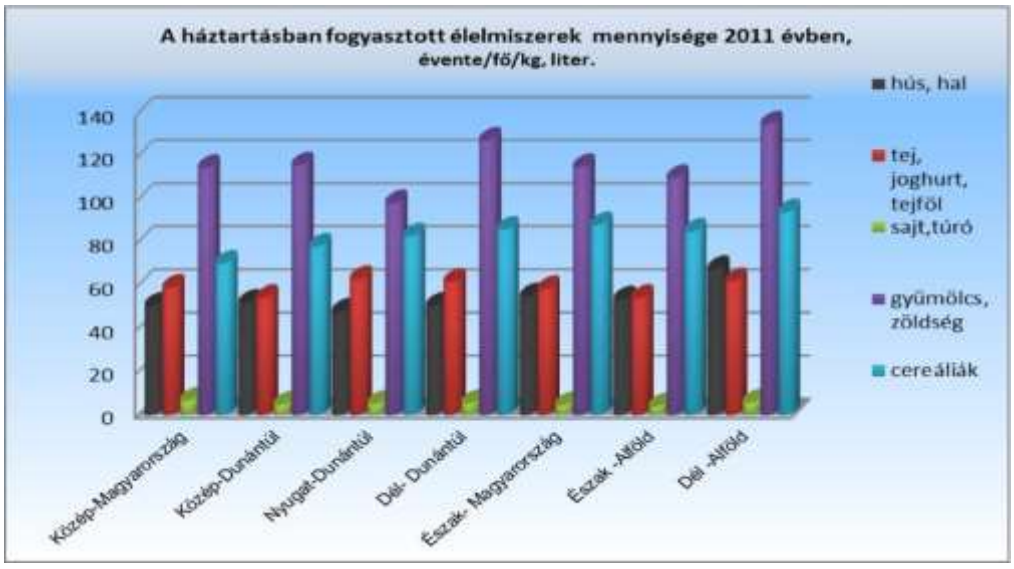

Figure 7 The quantity of food consumed in the households, 2011
Source: Own editing based on data from Hungarian Central Statistical Office, 2013

We can observe that in Central Transdanubia the demand for fruits and vegetables is exceptional, and that the consumption value per capita is the highest in the Southern Great Plain, which is probably the result of the fact that there is a large transit way going through the region.

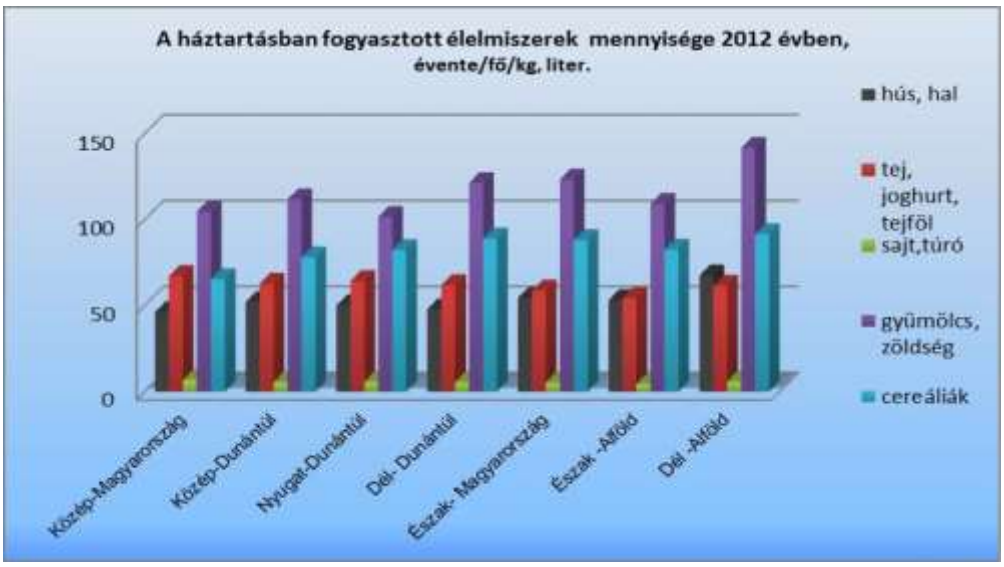

Figure 8 The quantity of food consumed in the households, 2012
Source: Own editing based on data from Hungarian Central Statistical Office, 2013

Beside the abovementioned factors, we can analyze food consumption according to education levels and residence as well. These two indicators influence the need for more sustainable and healthy products. In our opinion, household consumption patterns are also affected by general lifestyle, and by the demographic trends in their regions, too.
The production value of the food industry increased with almost 30 percent (on current prices) between 2004 and 2012, although it means an approximately 14% drop when taking the changes of volume. The volume of domestic selling decreased even more, with about 29%.

Conclusion
The regional inequalities of food consumption can be observed in the annual quantity of consumption of different foodstuffs per capita. We can also see that the traditional and more modern consumption patterns are regionally different. The income level of households shows a significant relationship with the economic performance of regions, and also with economic activity of the households, which is greatly affected by certain social flows and trends.
During the time of the economic crisis the average expenditure of households on foodstuffs was 158 000 forints per capita, which is less than the expenditure in 2008. This decrease is a direct cause of the economic crisis, but also of the changing consumer habits. Within the expenditure on food two thirds consist of meat, fish, milk, egg, cheese and cereals. Meat and fish accounted for the largest part of this group with 51 000 forints on average. The households of the Southern Great Plain region spent the largest sum on meat and fish (64 000 forints), while the households of Northern Hungary spent the least on these goods with 48 000 forints. On a national level the meat consumption per capita was 53kg, while the consumed fish amount was only 2 kilograms in 2009. Meat consumption decreased gradually with about 3 kilograms annually in Northern Hungary between 2005 and 2009, which is the highest extent of decrease among the regions. In this time period, the meat consumption of the Transdanubian regions decreased by 4 to 8 kilograms per capita. The milk consumption of the population of regions in 2009 was 51 to 57 liters. The households of Central Transdanubia consumed the most milk. The consumer behavior differences can be observed in relation to fruits too. The households of the Southern Great Plain consumed significantly more fruits than the households of other regions (KSH, 2011).
Consumption levels fell in the case of every foodstuff by 2012. Food is a price-sensitive good, which means that people seek to replace the ones, which get expensive with cheaper products or to decrease their consumption. The price of meat increased in a higher rate than of the average product price level (with about 9%), which resulted in a drop of the consumed meat per capita with about 1.4 kilograms. Egg consumption per capita decreased with 9.2%, which is the result of the significant price rise of 36%. According to the Hungarian Central Statistical Office KSH the vegetable and food consumption levels

dropped too; the consumers purchased 2.3 kg less vegetables and 1.4kg less fruits. On the other hand, the slow, but steady decrease in sugar, fat and oil consumption shows the emergence of a general healthier lifestyle, especially among the population segment younger than 30. This group consumes less vegetables and fruits as well; however in this case it indicates a shift of emphasis from quantity to quality (KSH, 2014).
The goals of the food economy and the food policy, such as food safety and security, job creation in the sector and the promotion of domestic food is in strong relation with the competitiveness of the rural areas. Agriculture and food production is still (and will continue to be in the future) one of the most important factors of rural competitiveness. Therefore, we consider investigating the spatial economic relationships of the rural areas important, because it can be a basis for job creation and enterprise development.
Food production plays direct and indirect roles in employment and in making the rural areas attractive. Local food processing provides alternatives for people who previously worked in the agricultural sector, but now are unemployed, and it is especially important in the convergence regions. It is an important task also to raise awareness of buying domestic food.

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IMPACT OF DECENTRALIZATION OF THE CONSTRUCTION ORDER'S COMPETENCE ON THE BUDGETS OF MUNICIPALITIES IN NITRA REGION

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Abstract
The construction order's competence was delegated from state administration (district offices) to local self-governments by Act No. 416/2001 Coll. on the transfer of some competencies from the state administration bodies to municipalities and higher territorial units. Ever since, every municipality with no reference to size is obliged to perform this competence in delegated scope. Municipalities, for which the performance is expensive and inefficient, decided to cooperate and established so called joint municipal office (JMO) for joint performance of certain competences. Despite the competence is transferred by law, we demonstrate that the state subsidies do not cover all the necessary expenses. This paper aims to analyze the impact of decentralization of the construction order's competence on budgets of municipalities in Nitra region and identifies the dependency between the number of cooperating municipalities and number of their citizens and costs for performance of the delegated competence: construction order.

Keywords: construction order, decentralization, joint municipal offices (JMO), Nitra region, municipality without JMO

JEL Codes: H72, O52

Introduction

Self-administration represents, in the context of public administration, the holder and the executer of public administration at the lowest level. Škultéty (2008), understands the self-government as the part of state, decentralized to subjects of non-state character. The first step which formed the self-government of today was adoption of Act No 472/1990 Coll. on the Local State Government Authorities abolishing the National Committees, which were lead by appointed representatives. The main important act, adopted in the same year put the base of the self-government. It was the Act No 369/1990 Coll. on municipal establishment, which characterizes the self-government as an independent territorial and administrative unit of the Slovak Republic, associating individuals permanently residing therein. The way of functioning of the self-governments as defined by municipal act has not changed for 10 years significantly.

The first change, which had a deep influence on the future development of modern Slovak state, was signing of the European Charter of Local Self-government, on February, 23rd, 1999 which came into force January, 1st, 2000. In the article 3, Slovak Republic binds to ensure that "local self-government denotes the right and the ability of local authorities, within the limits of the law, to regulate and manage a substantial share of public affairs under their own responsibility and in the interests of the local population" (European Charter of Local Self-government). The singing of the Charter was a precondition for SR´s memberships in the EU. The membership also required a decentralization reform aiming to bring the services closer to citizens. The base for the decentralization of competences, Kozovský and Žárska (2008) see in the effort of optimization of relation inside the economy with the aim to reflect the bottom-up initiative. In the Governmental program announcement from 1998, the Government of the SR confirmed the intentions for decentralization: *"government is prepared in this governmental period to propose and implement the public administration reform with aim to ensure its decentralization, stop the tendencies to centralize the power and make the coexistence of ethnical groups and minorities easier"*. The first strategic document adopted, was the Strategy of Reform of Public Administration, which pointed out the efficiency of the reform: "*expenses per one citizen decrease with the increasing size of municipality, it means that the highest expenses per citizen are in municipalities with up to 500 inhabitants"*. In the following year, the Government approved another strategic document: *the Conception of Decentralization and Modernization of Public Administration* as a legislative and preparation framework for decentralization of the competences. Besides the proposal of regional level of self-government, conception was highlighting the decentralization of competences. The *Conception of Decentralization and Modernization of Public Administration* proposed to

establish the second level of public administration – regional level of higher territorial units (HTU). The regional level was created by implementation of the Act No 302/2011 Coll. on Self-government of Higher Territorial Units. The decentralization of competencies was legislatively adopted by novelization of the Constitution of SR, of Act on municipal establishment and by adoption of the main important Act No. 416/2001 Coll. on the transfer of some competencies from the state administration bodies to municipalities and higher territorial units.

Methods

The objects of the research are the municipal offices in Nitra region, performing the construction order's competence. The municipal offices can be understood as those performing the competence in their own scope and those associating into the Joint municipal offices with at least one municipality. Primary source of data was the Database of Ministry of Interior of SR.

Furthermore, in this article, we use original data provided by 2 categories of municipalities:

1) municipalities without cooperation in the frame of JMO,
2) municipalities cooperating in the frame of JMO in construction order's performance.

The data can be dived into two categories:

- Qualitative data were received by realization of the pilot research on the sample of 10 construction offices.
- Quantitative data were provided by municipal offices: accounting office and construction office.

The data can be dived into two categories:

- Qualitative data were received by realization of the pilot research on the sample of 10 construction offices.
- Quantitative data were provided by municipal offices: accounting offices and construction offices and concerned the financial calculations of the costs for construction offices in 2010-2014.

The primary data serve for identification of the costs of construction offices which are paid from municipalities´ own budget, since the performance of the delegated power is more expensive that the subsidy provided by state. Secondly, in order to identify the dependency among the costs and number of associated municipalities and their citizens, we use statistical correlation.

Discussion and results

By adoption of the Act No 416/2001 Coll. on the transfer of some competencies from state administration bodies to self-government, a set of competencies was transferred to every municipality in the Slovak Republic. As stated by Grešová (2014), the weakness of decentralization of competencies was the municipalities´ lack of size categorization, when the competencies were decentralized *en block* with no reference to the size of municipalities. There is over 66% of municipalities with less than 1000 inhabitants and only 40 municipalities with over 20 000 inhabitants in Slovakia. The only competence which was not transferred to every municipality equally, is the Registry office in the field of general internal administration. The Act No 154/1994 Coll. on registry offices exhaustively determines the seats and districts of municipalities for which the performance of this competence is mandatory. The competencies were transferred to municipalities step-by-step from 1.1.2002 to 1.4.2003. The fields of competencies transferred from the level of state administration to self-governments are illustrated by the following table.

Table 1 Overview of the transferred competences in time

Validity	Field	Area
1.1.2002	General internal administration	Registry activities
1.1.2002	Environment	Landscape protection (wood protection, decision on cutting the tree, planting)
1.1.2002	Regional Development and Tourism	Elaboration of programs for tourism
1.7.2002	Social aid	Nursing service Shipping service Social service for children Children's Homes Crisis centers Social reintegration centers
1.7.2002	Education	Primary schools Basic Art School Preschools School children's clubs School centers of activity Leisure centers School kitchen and dining room Language schools for primary schools
1.1.2003	Transportation	Roads owned by municipalities performance of the special construction order
1.1.2003	Health	Ambulance stations, medical first aid Ambulances in social services Clinics Hospital type I Hospital Polyclinic type I Home nursing agencies
1.4.2003	Territorial decisions and construction order	Territorial decisions and construction order

Source: own processing, based on Act No. 416/2001 Coll.

After the transfer of competencies to local administrations, the municipalities had to face many difficulties, especially with the finances, since the fiscal decentralization was not realized until 2005. As Nižňanský (2013) explains:"*the problem was in the very nature of decentralization subsidy, when it was not defined normatively per unit of output of transferred competence".* Even with adoption of fiscal decentralization, the state´s subsidies do not cover all the expenses which municipalities have with the performance of certain competences. The legislation governs, that the municipalities in Slovakia are obliged to perform the transferred competencies only in regard to 2 conditions:

- the competence was transferred by law,
- the performance of the transferred competence is reimbursed by the state.

Despite of that, in the study of Nižňanský and Hamalová (2014) was stated that the municipalities do subsidy the performance of transferred competencies form their own sources. On the other hand, municipalities were given tools, for facilitating the performance of their competence. Municipalities have a possibility to cooperate in the frame of so called "Joint municipal offices (Hereinafter as JMO)". Intermunicipal cooperation can be formally based on a contract – as evident in Slovakia, Portugal, Italy or Finland, or can exist informally, just like in Netherlands, Spain, Austria, Belgium or Slovenia. The reason of existence of cooperation is explained by Hasprová, Drábik and Žák (2012): *"Intermunicipal cooperation is a classical compensation of small municipalities and their inability to perform social services individually".* The intermunicipal cooperation in Slovakia is governed by act on municipal establishment, which gives a

voluntary base for intermunicipal establishment in Slovakia. According to Žárska (2010), the main aim of associating into the JMO is to create geographically larger units of local self-government, which will allow higher effectiveness and optimization of provided different public services. The institute of intermunicipal cooperation was not used widely before 2003, since the cooperation is based on voluntary principle and the municipalities were not motivated to cooperate. However, with the decentralization of competencies, the municipalities realized the lack of financial and qualified human resources, especially in the performance of construction order competency. The process of associations of municipalities is illustrated in the following table.

Table 2 Overview of the establishment of the joint offices

	Joint Municipal Offices in the field of construction order
March, 28th 2003	75
April, 30th 2003	129
August, 31st 2003	147
May, 9th 2014	198

Source: Ministry of Interior SR, 2014

The table above indicates that before the decentralization, the municipalities have created only 75 JMOs. In fact, municipalities had no reason to use such a form of cooperation, not even within the performance of other competencies. With the decentralization, municipalities had to figure out a way of effective and efficient performance and the intermunicipal cooperation began to be the way. Since the performance of other competencies is not conditioned by high qualification of employees, it is not as financially consuming as construction order; municipalities do not use the option to cooperate that often. The overview of the current situation of JMO in Slovakia is illustrated by the following figure.

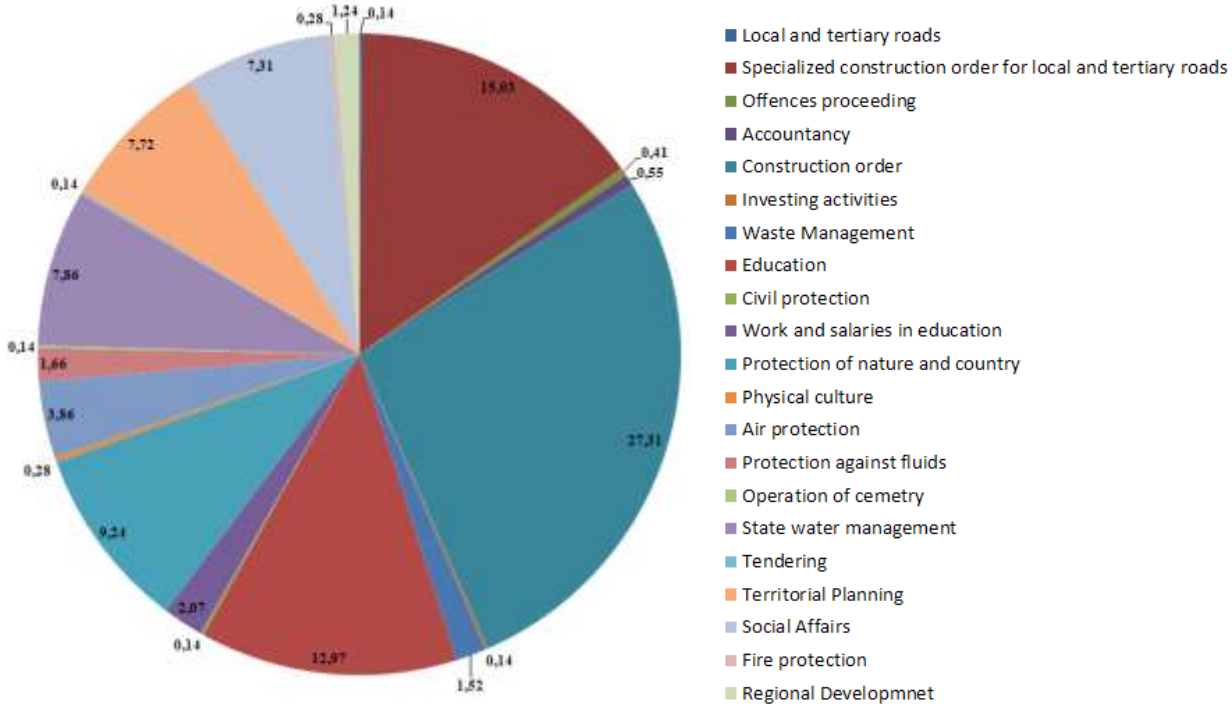

Figure 1 Representation of different JMO in %
Source: MI SR, own processing, 2014

The figure 1 illustrates the representation of different competencies in which the municipalities cooperate together in the frame of JMO. The highest number of municipalities formally cooperating among

themselves is within the performance of construction order, followed by education and specialized construction order. In the case of performance of other competencies, the municipalities do not tend to cooperate in the frame of JMO very often. The reason is that the performance is not as expensive and municipalities prefer not to be dependent on other municipalities.

Qualitative research
The first part of the research was qualitative research. Before the real qualitative research will be realized, we started with the pilot research, which was realized in 10 municipalities with legal representatives (mayors). The researched objects were small municipalities:

- 5 municipalities with less than 1 000 inhabitants,
- 5 municipalities in the category: 1 000 – 4 999 inhabitants.

We started with the small municipalities because they have the largest difficulties with performing of the competencies. Despite, small municipalities cooperate only in certain areas, in which they are forced to cooperate from financial reasons. Small municipalities are afraid of loss of their sovereignty in cases of associating with other (mainly bigger) municipalities in certain performance.

9 out of 10 municipalities which were a subject to pilot research were associated into the JMO. One municipality in the category of 1 000 – 4 999 was not cooperating in the frame of JMO at all. The main aim of pilot research was to examine the motivation and tendencies of municipalities to associate, or not to associate.
From the research resulted:

- 30% of the municipalities are satisfied that the performance was delegated to self-governments and prefer not to return it back to state level,
- 90% of the municipalities appreciate the possibility to cooperate in the frame of the JMO since these do not dispose with financial and human resources,
- 50% of the municipalities agree that the legislation shall govern that every municipality shall associate in the field of construction order,
- 30% of municipalities prefer the statement that closest town shall fulfill the supporting function – in a meaning to provide an option to surrounding municipalities to associate in the seat of the closest town,
- 70% of the municipalities are satisfied with the length of destination to the seat of municipality with JMO,
- 40% of municipalities prefer to associate in JMO and perform also other competencies.

The pilot research has created an important base for further research. The main important result from the pilot research is that especially the smallest municipalities would rather give up on the performance of construction order, since it is financially onerous for them. For municipalities, the performance of the competence simply means additional costs which they must pay yearly to the municipality which is a seat of JMO, since the state subsidies do not cover all the expenses.

Quantitative research
From the figure 1 results that municipalities join mainly in the performance of construction order. According to the Construction Act No 50/1976 Coll. as amended, construction offices are the municipalities performing the construction order's competence in the delegated power. According to §117, article 3, the employees of the construction order must have required qualification which is a subject to an exam. The required qualification is understood as a secondary vocational or university education in the field of construction. It is the required qualification and difficult agenda that make the performance of construction expensive. If every municipality would hire a qualified employee for performance of construction order's competence, it would be very inefficient, since the agenda does not require a daily basis performance (in some municipalities, there is only few filings per year).

Since the cooperation of municipalities in the frame of the JMO is voluntarily based, these associations vary in number of associated municipalities and number of citizens living in associated municipalities. In Nitra region, there are 7 districts: Komárno, Nové Zámky, Šaľa, Topoľčany, Levice, Nitra and Zlaté Moravce. The number of associations created within the districts varies, as varies the share of associated municipalities. The overview is illustrated at the following figure.

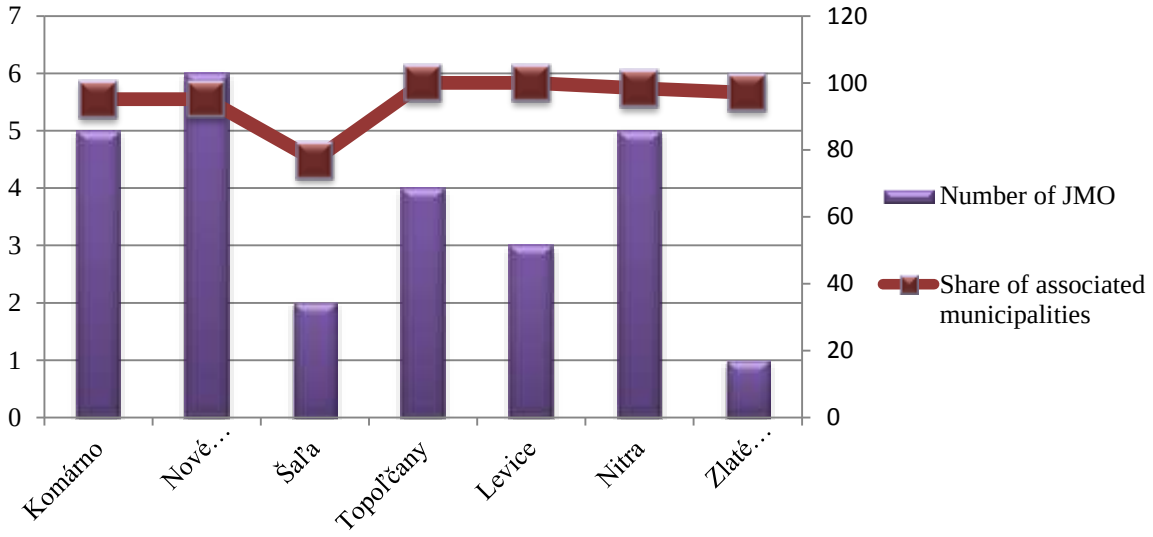

Figure 2 Number of JMO and share of municipalities cooperating in the frame of JMO in the districts of Nitra region
Source: Own processing based on MI SR, 2015

Since the JMOs are established on a voluntary base, there are significant differences in size of JMO from the point of view of number of municipalities and number of citizens. In total, there is 26 Joint municipal offices and 10 individual municipalities (no cooperating in the frame of JMO) performing the construction order's competence in Nitra region. The smallest JMO is located in Strekov and is associating two municipalities only (Rúbaň and Strekov). In total, JMO in the Strekov seat is performing the agenda for 2980 citizens. The largest JMO is the one with a seat in Levice. The town Levice, is associating most of the municipalities from Levice district (48 municipalities) and realizes the performance of competence for 70 223 citizens. From the point of view of number of citizens, the largest JMO is located in Nitra and is associating 13 municipalities with 96 187 citizens.

The quantitative research was realized in 2 categories of municipalities:

- 6 associated municipalities without cooperation in the frame of JMO (60%),
- 22 joint municipal offices (85%) in Nitra region.

The main aim of the quantitative research was to find out the level of additional financial expenditures of municipalities which must be paid for the performance of transferred competence and this way to demonstrate the fact the state subsidies do not cover all the financial costs. Secondary, we tend to find out, if the performance of the competence of construction order is “cheaper” in the JMO with higher amount of municipalities. The quantitative research has been realized from August, 1st, 2015 up to now (January, 2016).

The amount of state subsidies and amount of expenditures of municipalities for construction order in municipalities without cooperation in the frame of JMO, is demonstrated in the following table.

Table 3 Costs of the municipalities paid from own budgets in the field of construction order (municipalities without cooperation in the frame of JMO), Nitra region

Municipality/Year	2010	2011	2012	2013	2014
Andovce	1400	1400	1400	1400	1400
Hájske	997,7	997,7	997,7	2686,2	4392,5
Močenok	-898,81	122,76	132,08	10,23	10,23
Ivanka pri Nitre	-86,76	-121	-549,15	-21,15	-13,15
Klížska Nemá	0	0	0	0	0
Šaľa	45176,2	13933,4	35646,3	36530,5	40288

Source: Data from municipalities´ budget, 2015

Table 4 Costs per one citizen paid from own municipalities budgets for the performance of construction order, (municipalities without cooperation in the frame of JMO), Nitra region

Municipality/Year	2010	2011	2012	2013	2014
Andovce	1	1	1	1	1
Hájske	0,7616	0,7616	0,7616	2,05053	3,35305
Močenok	-0,209	0,02855	0,03072	0,00238	0,00238
Šaľa	1,95585	0,60323	1,54326	1,58154	1,74422

Source: Data from municipalities´ budget, 2015

From the table above results, that in the case of one municipality – Ivanka pri Nitre, the expenditures for the performance of construction order were **lower** than the state subsidy. In other cases, the municipalities had to fund the performance from their own budgets. In the case of Klížska Nemá, the expenses for performance of the competence are equal to state subsidies. However, it must be stressed out that in the case Klížska Nemá, there were not taken into account operational costs. Only staff costs were calculated. The reason is that the seat of the construction office is in the building of municipal office and other than staff costs are a part of operational costs of the whole municipality office. The largest additional expenses for the performance has Šaľa town, which funds the competence with around 40 000 Euro yearly. Since the municipalities are differently sized, we calculated the additional costs per one citizen.
From the table above results, that the highest expenditures paid from municipalities' budget for the performance of construction order has Šaľa town.
The following table indicates the costs paid from municipalities´ budgets for municipalities associated into the JMOs.

Table 5 Costs of the municipalities paid from own budgets in the field of construction order (municipalities with cooperation in the frame of JMO), Nitra region

Municipality/Year	2010	2011	2012	2013	2014
JMO Mojmírovce	16 865,48	18 365,48	21 865,48	17 341,44	16 340,95
JMO Bátorové Kosihy	445,62	0,00	2 475,42	1 767,43	936,56
JMO Hurbanovo	20946,01	16275,95	21209,86	20086,07	29294,73
JMO Jasová	0	0	0	0	0
JMO Kolárovo	17 519,05	12 208,87	13 534,79	15 755,41	16 273,59
JMO Komárno	24 991	26 620	22 633	8 134	9 446

JMO Kráľová nad Váhom	5706	5477	4735,67	5059,45	5297,95
JMO Nitra	180422,32	115021,61	116449,99	125591,38	141961,38
JMO Nové Zámky	48081,46	41747,2	41858,4	41563,1	45265,49
JMO Šahy	7295,83	11144,98	14122,01	18925,42	22722,4
JMO Solčany	11734,51	14603,04	19198,34	19565,64	24448,18
JMO Strekov	5614,8	5024,24	5507,68	8208,11	10727,48
JMO Šurany	15401,67	17202,54	20317,19	20330,59	19438,73
JMO Svodín	18240,19	16873,5	18284,02	18509,59	24468,39
JMO Topoľčany	65258,36	48346,68	47586,84	56305,91	53137,94
JMO Veľký Lapáš	5200,36	5424,06	5757,93	9549,9	12938,58
JMO Vráble	15 405	7 232	10 048	21 425	22 616
JMO Želiezovce	0,00	86,87	4 953,44	5 533,36	4 418,04
JMO Zemianska Oľča	6140,25	3920,84	3912,89	4329,8	4547,22
JMO Žitavany	-	-	-	9658,23	14157,37
JMO Veľké Kosihy	0	0	0	0	0
JMO Nitrianske Hrnčiarovce	17975	14279,97	13140	12499,51	25487

Source: Data from municipalities´ budget, 2015

Table 6 Costs per one citizen paid from own municipalities budgets for the performance of construction order (associated municipalities), Nitra region

Municipality/Year	2010	2011	2012	2013	2014
JMO Mojmírovce	2,89	3,14	3,74	2,97	2,80
JMO Bátorové Kosihy	0,05	0,00	0,27	0,19	0,10
JMO Hurbanovo	0,87	0,67	0,88	0,83	1,21
JMO Kolárovo	0,97	0,68	0,75	0,87	0,90
JMO Komárno	0,53	0,57	0,48	0,17	0,20
JMO Kráľová nad Váhom	0,57	0,55	0,47	0,51	0,53
JMO Nitra	1,88	1,20	1,21	1,31	1,48
JMO Nové Zámky	0,85	0,74	0,74	0,74	0,80
JMO Šahy	0,40	0,61	0,77	1,03	1,24
JMO Solčany	0,89	1,11	1,46	1,49	1,86
JMO Strekov	1,88	1,69	1,85	2,75	3,60
JMO Šurany	0,37	0,41	0,49	0,49	0,47
JMO Svodín	1,11	1,03	1,12	1,13	1,49
JMO Topoľčany	1,22	0,91	0,89	1,06	1,00
JMO Veľký Lapáš	1,57	1,64	1,74	2,89	3,91
JMO Vráble	0,60	0,28	0,39	0,83	0,87
JMO Želiezovce	0,00	0,00	0,20	0,22	0,17
JMO Zemianska Oľča	1,60	1,02	1,02	1,13	1,19
JMO Žitavany	-	-	-	0,47	0,69
JMO Nitrianske Hrnčiarovce	0,51	0,41	0,38	0,36	0,73

Source: Data from municipalities´ budget, 2015

From the above table results that the highest expenditures for the performance of the construction order in 2014 had the JMO with a seat in Nitra, followed by Topoľčany, Nové Zámky and Komárno. In the case of Žitavany, the years 2010-2012 were not included since the JMO was established in 2013. Before that date, the municipalities belonged to JMO in the seat of Zlaté Moravce. No additional costs had the JMOs Jasová and Veľké Kosihy, for which the state subsidy covered all the expenses. In the following table we bring the overview of additional costs per one citizen.

In 2014, the highest expenditures per one citizen for the performance of construction order had the municipalities of JMO Veľký Lapáš (3,91 Euro per one citizen), followed by JMO Strekov (3,60) and Mojmírovce (2,80). The lowest expenses per one citizen were in the JMO Bátorové Kosihy in 2014.

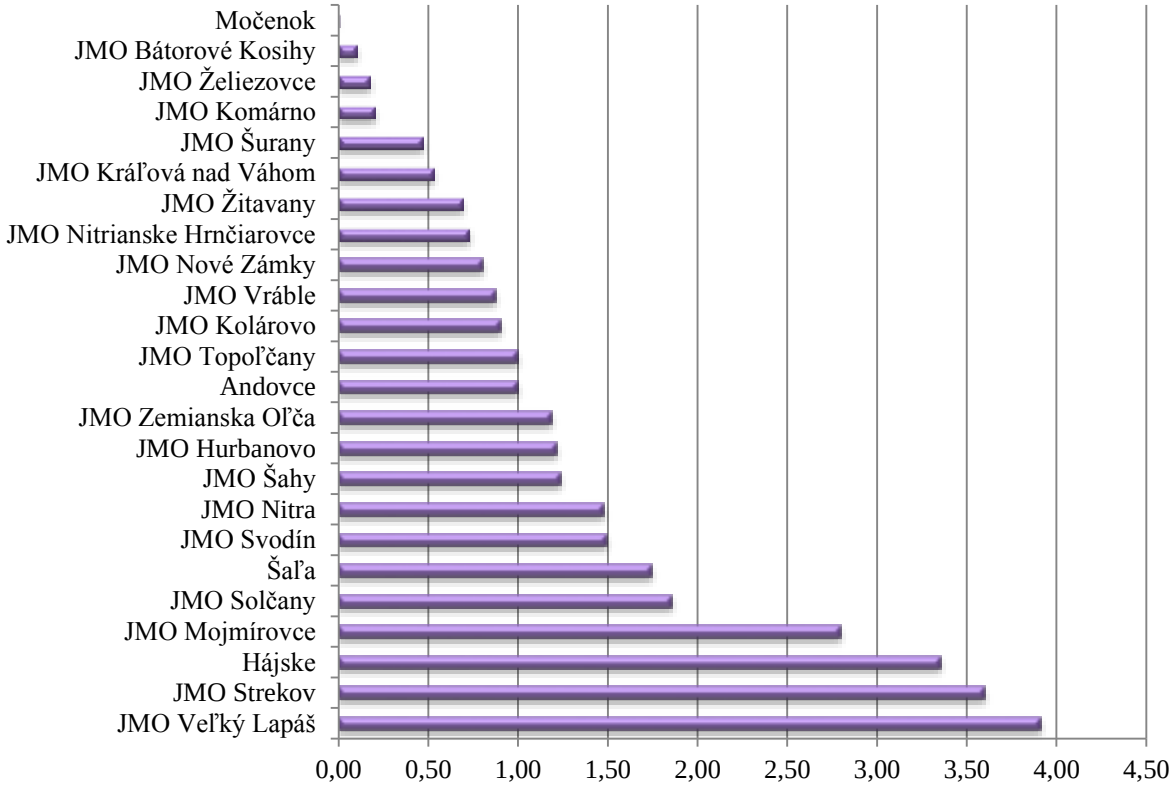

Figure 3 Comparison of expenses per one citizen between the JMO and municipalities without cooperation in the frame of JMO

Source: Data from municipalities´ budget, 2015

From the above mentioned results that the highest expenditures per one citizen has the JMO Veľký Lapáš, followed by JMO Strekov and municipality which does not cooperate in the frame of JMO: Hájske. The lowest expenditures per one citizen are in municipality without cooperation in the frame of JMO Močenok, followed by JMO Bátorové Kosihy and JMO Želiezovce.

In the following part of this paper, we will demonstrate whether the number of municipalities and their citizens, associated within certain Joint Municipal Office has an influence on the share of costs. In the case of municipalities without cooperation in the frame of JMO, we will count the number of municipalities as 1 and number of associated citizens as number of citizens of municipality without cooperation in the frame of JMO. For the calculation, we will use statistical method – correlation.

Table 7 Correlation between costs and number of inhabitants and number of municipalities associated into JMO

	Column 1	Column 2	Column 3
Column 1	1		
Column 2	-0,3889	1	
Column 3	-0,31024	0,474089	1

Source: Own processing based on own data collection

From the table above results, that there is no correlation between the number of municipalities and their citizens and costs of the municipalities for the performance of construction order. We can assume that the reason is, that not associated municipalities and small JMOs do not calculate all the expenses connected with the performance of the agenda. The seat of the office is usually a part of the municipal building, so the operational costs of the office are not calculated separately (energy, phone and post bills, paper and toners, etc.). In the case of bigger JMOs (Nitra, Nové Zámky, Topoľčany), all the expenses for operation of the construction office are calculated in details.

Conclusion

Decentralization of the competences in the SR was realized 13 years ago. After over a decade it is time to analyze what has the decentralization brought and what impact on the municipalities the decentralization had. In this article, we focus on the decentralized competence: construction order, which is performed either by municipalities within their own scope or by joint municipal offices (JMO). Joint municipal office is a form of intermunicipal cooperation used by Slovak municipalities in order to facilitate the performance of competencies and decrease the costs for the performance. In this article, we selected the construction offices in Nitra region and based on the primary data, provided by municipalities, we identified the amount of costs which must be paid yearly, by own municipal sources, and despite the competence is realized in delegated scope.

From the analysis resulted that the highest expenses in 2014 (per citizen) among the municipalities without cooperation in the frame of JMO had Hájske (3,35 Euro per one citizen). No additional costs for performance of the competence were claimed by the municipality Klížska Nemá, but this municipality took into consideration only the staff costs (no operational costs were included). The highest expenses in 2014 (per citizen) among the municipalities cooperating in the frame of JMO had the JMO Veľký Lapáš (3,91 Euro per one citizen). No additional costs for the performance of the competence were claimed by JMO Jasová, associating 3 municipalities: Jasová, Čechy and Kolta. Summarily, the highest expenses for performance of construction order's competence had in 2014 the JMO Veľký Lapáš, JMO Strekov and municipality Hájske which performs the competence in own scope. The lowest expenses had the municipality without cooperation in the frame of JMO Močenok, followed by JMO Bátorové Kosihy and JMO Želiezovce. By using the statistical method correlation, we demonstrated that the number of municipalities and their citizens, cooperating in the frame of the JMO has no influence on the costs of performance of competence construction order. Our research has not proved the fact that the construction order's competence is performed at lower costs by JMO with higher amount of municipalities. The reason is that the JMO associating more and larger municipalities invest in purchasing literature (vocational books) and hire more employees (lawyers - JMO Nitra, JMO Topoľčany, JMO Šaľa), while the small JMO and municipalities without cooperation within JMO do not have such additional costs. Therefor it is necessary to increase the research to the area of examining the **quality** of competence's performance in the future.

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THE CONCEPT OF HOMO COOPERATIVUS IN THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT BY LOCAL GOVERNMENTS ON THE NATURAL VALUABLE AREAS IN THE LUBLIN VOIVODESHIP[1]

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Abstract

The concept of homo cooperativus, as well as civil society, is considered a catalyst for the implementation of sustainable development. The local level is, however, a basic level of the practical implementation of the concept of sustainable development. Local authorities are therefore expected to present an open attitude to cooperation and activities aimed at building a civil society. The aim of the study was to analyze the scope and forms of cooperation of local authorities with local and supra-local entities, with particular attention to initiatives aimed at the development of a civil society. A diagnostic survey was used with an interview questionnaire addressed to mayors of 30 municipalities of natural value in the Lublin voivodeship (Poland). The study was conducted in 2013. A significantly higher level of activity was demonstrated in cooperation with other local governments than with local actors from the social and economic sectors. Therefore, a model was proposed for supporting the implementation of the concept of homo cooperativus in rural communities. This model can be used as a universal tool for stimulating the implementation of sustainable development by local governments.

Keywords: homo cooperativus, civil society, governance, cooperation, local municipalities

JEL Codes: Q01, H76, O52

Introduction

Starting with the UN „Conference on the Human Environment" in 1972 Stockholm, to the findings of the Rio+20 Summit in Rio de Janeiro in 2012, a gradual expansion of the range of issues that include the concept of sustainable development has been noticeable. Initially, in the 70s of the last century, the essential context for the discussion of sustainable development was almost exclusively the problem of "shrinking" natural resources in the view of the ongoing economic and demographic growth (Stanny, Czarnecki 2011). During the Rio+20 Summit the need to combat poverty in terms of respect for the natural environment was declared, to be reflected in the development of the bio-economy and institutional strengthening (Unccsd 2012).

Searching factors and mechanisms of sustainable development should be compared to the concept of man cooperating – *homo cooperatives* proposed by Rogall (2010). According to Rogall (2010), *homo cooperatives* is a kind of a man who can restrain his/her self-interest and also work for the good of the community due to idealistic motives. Such behaviors evolved during evolution as giving an advantage. People who are capable of them can develop a willingness to cooperate and take responsibility for others (ethical and moral values). Numerous examples of human history testify to the advantages of community actions (Rogall, 2010).

The concept of "homo cooperativus" refers to those observed in humans' tendency to cooperate. It comes from the experience of sympathy between people, mutual assistance and tendency to reject the power exercised by authoritarian regimes. It has become the foundation for ecological economics, and the economics of sustainable development. This concept consists of two elements – self-responsibility (a trend towards decentralization and negation of the authoritarian system) and mutual assistance (symbiosis and cooperation). Cooperation strategies shall be adopted by people spontaneously (they often repeat cooperation) and are more efficient – i.e. bring more benefits to both partners than the homo economicus strategies, losing at the start in the commonly known prisoner's dilemma. Homo cooperativus is a model of

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a human arising from a consciousness of bilateral relationships. (Horodecka, 2014). Czaja (2011) lists *homo cooperatives* among concepts being the basic categories of the economics of sustainable development (Czaja, 2011).

As Lawrence (2005) pointed out in the paradigm of sustainable development, economic ambitions are decreased in favor of social justice and environmental integration. Economics is forced to take its place as one of the three spheres of development (Lawrence, 2005). Social sustainability is synonymous with social empowerment and the prevention of marginalization units (Klekotko, 2008).

New regional policies devote much of their attention to networks of inter-firm and inter-institutional co-operation (clusters, partnerships) (Johannisson, 2008). This enables information exchange (what facilitates profitable decisions), accumulation of dispersed resources and advantageous effects of coordinated individual actions. Also the new contexts of local development (Blakely, Green Leigh, 2010), as compared to the traditional, perceive its main components in a different manner. The importance of the need for inter-sectoral cooperation and innovation and cluster structures is stressed.

Local authorities are the not-contested main entity stimulating development processes (Blakely 1989) but, as representatives of local communities, they should consider and determine the place of the communities in setting the vision and goals of development. The concept of sustainable development, in contrast to the paradigm of globalization, highlights the subjectivity of the local community. The greater the involvement of the various social partners in the system of local governance, the greater the chances of sustained growth – the co-governing concept enables better identification of problems in the area and enables faster overcoming them (Pondel, 2013).

Local authorities often do not have sufficient information about a number of issues which they must decide on. Such knowledge is, however, possessed by others, often informal, local community representatives – leaders, NGO activists engaged in concrete issues close to the inhabitants. No access to information at the disposal of these entities and multifaceted participation in the decisions taken and their implementation do not enable an objective diagnosis of the situation of the local community and any development and implementation of effective development strategies (Zajda, Kretek-Kaminska, 2014).

In territorial governance the effect of collective management of resources is an important issue. The enhancement of interactions between local stakeholders is considered as the first condition for a long-term co-operation, because the individuals taking part in trial-and- error processes learn that non-co-operative or free-rider attitude could not secure the best benefit in the long-term perspective (Axelrod, 1984).

According to Böcher (2008), the LEADER type initiatives are instances of regional (territorial) governance, which can be characterized by such important features as: (1) increasing self-governing responsibilities of regions; (2) replacing the principle of 'administrative' territory by a functional principle; (3) inter-sectoral co-operation through regional networks and partnerships; (4) hierarchical steering of incentives through various instruments and forms (i.e. support programmes and their eligibility rules). These aspects can be found in the LEADER Initiative rules (European Commission, 2006). LEADER is based on an economic development model of rural areas called: „Community-led rural development theory". This model presented by Terlluin (2001) in the paper „Rural regions in the UE: exploring differences in economic development" identifies „a main precondition for generating and sustaining economic development in rural regions: the existence of community capacity to function on a self-help basis. The community-led rural development theory focuses on the strengthening of the self-help capacity of local actors, which is considered to be a major precondition for establishing and sustaining local economic development. Partnerships and adjustments of the institutional structures are seen as the main tools in the process of capacity building (Terlluin, 2011).

Due to the ever-increasing role the LEADER approach has played in realizing rural development policy, Local Action Groups (LAGs) have become crucial to the institutional system of rural development (Kis, Gál, Véha, 2012). Local Action Groups (LAGs) are made up of public and private partners from the rural territory, and must include different socio-economic sectors. They receive financial assistance to implement local development strategies, by awarding grants to local projects (Albu, Chitu, 2014).

Measures aimed at promoting development of local communities in Poland were statutory assigned to municipal governments, which is why their representatives were particularly interested in the appointment and effective functioning of LAGs. In the literature, relationships and willingness to co-operating and co-governing local governments, mainly within LAG partnerships, are a frequent subject of empirical and theoretical papers (Halamska, 2011; Thuesen, 2010; Furmankiewicz, 2013). The studies often draw

attention to the phenomenon of the dominance of the public sector and the apparent willingness to cooperate. This study, therefore, is a reflection on the activity of local self-governments in various forms and areas of co-operation – (also outside LAGs) on the environmentally valuable areas of the Lublin voivodeship. It is a problematic region of Poland and the EU. It is characterized by a low GDP per capita[2], peripheral location on the eastern border of the EU and a low level of social capital. Particularly specific conditions of development characterize the valuable natural areas in the region being peripheral in relation to the center of the region.

The aim of the study was to analyze the scope and forms of co-operation of local authorities of natural valuable municipalities of the Lublin voivodeship with local and supra-local entities, with particular attention to initiatives for the development of civil society. It has been hypothesized that local rural communities from the environmentally valuable municipalities of the Lublin voivodeship exhibit a much higher level of activity in cooperation with other local governments than with local actors of the social and economic sectors. Therefore, a supportive model has been proposed for the implementation of the concept of homo cooperativus in the surveyed rural communities.

Material and methods

The study area consisted of 30 municipalities[3] with the highest ecological value in the Lublin voivodeship selected for the study basing on the value of the indicator developed by Guzal-Dec (2013) within her study of natural value of rural and urban-rural communes of the Lublin voivodship. The procedure is described in detail in Guzal-Dec (2013).

The study used a method of diagnostic survey using a questionnaire interview. Interviews were completed in the period of November-December in 2013. The research material comprised 30 questionnaires of interviews with the mayors. Moreover, sources of data included: websites of the surveyed communes and websites of Local Action Groups (LAGs), including the surveyed communes within the LEADER cooperation.

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Results and discussion

The analysis covered the activity of the local authorities of the surveyed environmentally valuable municipalities of the Lublin voivodeship in initiating and taking up inter- and intra-sectoral co-operation (Table 1).

[2] The lowest in Poland and 11th in the list of the 20 poorest regions in the EU, according to EUROSTAT, 2014.

[3] The group of 30 self-government units selected in the cited research includes: Janów Podlaski, Konstantynów, Józefów, Łukowa, Obsza, Dzwola, Janów Lubelski, Modliborzyce, Janowiec, Kazimierz Dolny, Wąwolnica, Kraśniczyn, Wilków, Dębowa Kłoda, Sosnowica, Stężyca, Lubycza Królewska, Susiec, Tarnawatka, Tomaszów Lubelski, Rossosz, Sławatycze, Urszulin, Włodawa, Adamów (the Zamość poviat), Krasnobród, Łabunie, Skierbieszów, Stary Zamość, Zwierzyniec

Table 1 Activity of local authorities of environmentally valuable municipalities of the Lublin voivodeship within taking up cooperation

Activity area	**Actions**	**Number of responses**
Contributing to the vision of development – socialization of the process of drafting municipal development strategies	participation of local authorities in the creation of development strategies	30
	participation of citizens in the creation of development strategies	26
	participation of external experts in the creation of development strategies	9
	NGOs participation in the creation of development strategies	0
Dissemination of the concept of governance in the relationships between the local executive and legislative authorities and office staff	participation of workers in management training	14
	creating fixed committees of the Municipal Council dealing with environmental/economic development affairs/development of a selected function	16
	organizing lectures and training on environmental issues for councilors and mayors	13
Activation of cooperation with NGOs	creating conditions for a debate with NGOs, such as: self-assessment of the quality of co-operation of LGUs and NGOs, as well as, implementation of standards of co-operation	2
Co-operation with residents	in the field of environmental actions with residents	9
Experience in cross-sectoral cooperation outside LAGs – including clusters	continuous cooperation of local government/community with scientific institutions e.g. within a cluster	2
	experience in cross-sectoral cooperation outside LAGs	10
Cross-sectoral cooperation within the framework of LAGs	co-operation within LAGs	30
	LAG board structure	4 symmetrical structure – equal share of sectors, 26 – above-average share of the social sector
	NGO participation in the structures of LAGs	27
Intra-sector cooperation	inter-municipal partnerships in the framework of obtaining EU funds	18
	co-operation with partner municipalities (twinning)	9
	associations	30
	inter-municipal relationships and agreements	6

Source: own study based on research

In line with the need to implement a concept of civil society, authors of development strategies should be all of the representatives of the local community, with the support of the substantive knowledge of external experts. In most of the surveyed municipalities (26), self-governing authorities declared cooperation in the area of creating the concept of development – participation of residents in the creation of development strategies – (it is difficult on this basis to determine for sure whether practically and to what extent this participation occurred), and only 9 declared cooperation with residents in the implementation of environmental actions. Therefore a problem was found in maintaining cooperation with local communities (in the implementation of jointly developed strategic objectives of development). In the case of four municipalities, representatives of authorities and employees of offices were the sole authors of strategies, which adversely affected the possibility of identifying internal and external conditions of development, and the lack of participation of local communities is reflected in a low level of residents' acceptability of strategic arrangements. Another problem identified in the area of strategic planning of municipal development is the still insufficient participation of external experts in the preparation of documents, which translates into poor substantive quality. The lack of NGOs' participation in drafting municipal development plans is particularly worrying.

The issue of the socialization of drafting local development strategies and expert support for that process is also pointed out by Pondel (2011). In the light of the research carried out by the above – indicated author in 47 rural municipalities of the Wielkopolskie voivodeship (Poland), the main actors (over 60% of responses) developing and updating local development strategies were employees of municipal offices and council members. Local entrepreneurs, social partners and society leaders were rarely mentioned as authors. As a rule, the self-governments prepared strategies on their own, the help of external companies was used by 5 out of 43 units of the self-governments of rural municipalities with development strategy (Pondel, 2011).

Dissemination of the concept of governance in the relations between the local executive and legislative authorities and office staff is enabled due to adequate – team work organization of councilors, manifested in the creation of problem – focused work units – fixed committees of the Municipal Council dealing with environmental/economic development affairs/development of a selected function/development direction. Enabling office staff's raising their management competences (by delegating them to participate in trainings) is a sign of activating the staff to co-participate in governance. An important area of activity of executive authorities (mayors) is the dissemination of knowledge about the environmental problems of the functioning of natural valuable areas among the co-administering local community – councilors, mayors. The activity of the executive authorities (mayors) in the local authorities of the surveyed valuable natural municipalities of the Lublin voivodeship could be considered low (declared in about 50% of offices).

The surveyed municipal self-governments from the natural valuable areas of the Lublin voivodeship also showed little experience in cross-sectoral co-operation (outside the structures of LAGs), especially in the area of co-operation with research centers. Conditions for debates with NGOs were also negligible. Despite the fact that all of the surveyed local governments cooperated with LAGs (mainly waiting for opportunities to improve the process of infrastructure development), only 10 (30% of the total) had previous experience in cross-sectoral cooperation outside LAGs**.** The structure of decision-making authorities (LAG councils) in most (but not all) of the surveyed LAGs should be considered as enabling articulating local community interests (a proportional share or majority of the social sector). NGOs in LAG councils were not present in all of the surveyed municipalities.

A similar problem of initiating and maintaining cooperation with NGOs was reported by Pondel (2013) in the study of self-governments of rural communes of the Wielkopolskie voivodeship. Only 4 self-governments of the rural municipalities of the Wielkopolskie voivodeship declared that they cooperated with NGOs, basing on the knowledge of experts in the given field and use a public debate with the participation of non-governmental organizations and local communities (Pondel 2013).

A visible resistance of local authorities against increasing citizens' participation in governance (implementation of the concept of *governance*) actually hampers the implementation of this concept. A more complex nature of this issue should also be pointed. In the light of the surveyed mayors of the environmentally valuable municipalities of the Lublin voivodeship, one of the main problems of the economic use of resources and the natural environment values was a poor civic activity of the residents aimed at organizing themselves in all sorts of groups working to promote local resources and natural values of the municipality and a low level of cooperation of various actors from the municipality (entrepreneurs, farmers and others) to promote sustainable economic use of local resources and natural assets.

Also the cited results of a study of self-governments of the rural municipalities of the Wielkopolska voivodeship show a poor activity of the local community in terms of initiating environmentally-friendly activities (27 out of the 47 surveyed municipalities indicated passivity of the population in this area). As it is stressed by Pondel (2013), it is important not to treat such an inactivity of rural population within pro-environmental activities as equal (only) to the lack of knowledge in the field of environment protection and development. Sometimes, municipal self-government actions are merely (or as much) needed, mobilizing to use or make better the use of knowledge possessed by inhabitants (Pondel, 2013).
Research within the European CORAZON project[4], conducted in Poland in rural municipalities of the Łódzkie nad Małopolskie voivodeships also point to the problems of cooperation of the local government sector with other sectors, especially the rural community and local NGOs, within LAGs (Klekotko, 2008).
A comparative analysis of the activity of the surveyed local governments in the inter- and intra-sectoral collaboration points to a greater activity in intra-sectoral cooperation with other municipalities. Similar conclusions are presented, basing on a research of self-governments of rural municipalities of the Wielkopolska voivodeship, presented by Pondel (2013). It should be noted that the main recital of cooperation with other municipalities (especially in the context of regional partnerships set up for the purpose of applying for funds from the ROP and LAG) was, against the limited possibilities of financing municipal investments, the desire of acquiring additional external funds for development.
The disclosed problem of initiating and sustaining cooperation by local governments of rural municipalities of valuable natural areas of the province (development of the concept of homo cooperativus in the promotion of civil society) needs to be resolved by identifying a model of inter-sectoral support cooperation of local governments. Indications are given below.

Table 2 Model solutions in support of inter-sectoral co-operation of local rural communities on environmentally valuable areas

Area	Actions	The initiator / recipient
socialization of strategic planning	• introducing the obligation of public consultation in the case of the most important acts of local law • introducing social local development strategies, modeled on the existing experience of the LDS	government agencies, municipal offices
activation of residents to cooperate	introducing free-of-charge, civil public functions performed by residents, for example: green areas, bike trails, rest and recreation areas, etc.	government agencies, municipal offices
improving communication forms of local government with citizens	introducing electronic forms of communication with residents (social networks, citizens service, sharing public data on the sites of municipal offices)	municipal offices
	promoting the construction of information and social networking sites, as well as, portals monitoring the activity of local councilors and local authorities	government agencies, voivodeship offices
strengthening the identification of regional identity	developing and supporting various forms of cultural and social life at the local level, organizing regional events and activities showing the customs, history, cultural heritage and traditions of different places and communities	voivodeship offices, municipal offices
	gradual digitization of cultural resources of the region – providing access to various cultural resources of the region	voivodeship offices, municipal offices

[4]„A Cognitive Approach to Rural Sustainable Development – Dynamics of expert and la knowledge", financed by the European Union under the Framework Programme, www.corason.hu (retrieved from)

	introducing “regional education" into the school curriculum	government agencies, local educational institutions
strengthening citizenship, creating social leader attitudes	developing and promoting greater leadership in local communities. Training and courses for local leaders, networking integration and exchanging experiences of local leaders to promote and support the idea of volunteering and philanthropy	voivodeship offices, poviat and municipal authorities, NGOs, local community, local media
	implementing civic education programs in cooperation with NGOs.	municipal offices, NGOs
	using the existing infrastructure of cultural and educational institutions (cultural centers, schools, libraries, museums) – as social capital development institutions	municipal offices, local institutions of culture and education

Source: Own study on the basis of Thlon et al. (2015)

The presented model identified five major areas of support: socialization of strategic planning, mobilization of residents to co-operate, improving communication forms of local self-governments with citizens, strengthening regional identity and civic attitudes, especially leader attitudes. Some of the proposed actions require the creation of a legislative solution at the central level and regional government support. Among local institutions, an important role is played by cultural and educational institutions.

Conclusions

In the light of the results of research on activities of the local authorities of natural valuable municipalities of the Lublin voivodeship within taking up cooperation to create sustainable local development, the following has been proven:

- a higher level of activity in cooperation with other local governments than with local actors of the social and economic sectors,
- a very poor level of cooperation with local NGOs and local government activities in initiating this cooperation,
- limited involvement of the local community and local government in taking up mutual co-operation,
- a model supporting implementation of the concept of homo cooperativus in rural municipalities was proposed,
- the model can be used as a universal tool for stimulating the implementation of sustainable development through local governments of rural municipalities,
- cultural and educational institutions play a significant role in the model supporting cooperation,
- the envisaged actions included: training and courses for local leaders, introducing free-of-charge public functions performed by local residents, introducing electronic forms of communication with residents, supporting the construction of information and social networks, organizing regional events and activities showing the customs, history, cultural heritage and traditions of different places and community.

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DOES THE TYPE OF REGION DETERMINE THE EXTENT OF POPULATION AGING AND THE LEVEL OF WEALTH CREATION?

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Abstract

The development of European regions, which is often specified by gross domestic product per capita, has recently been faced with the increasing challenge of an aging population. Noticeable signs have mainly been observed in small towns and sparsely populated areas.

The aim of this paper is to identify the links between the type of region (predominantly urban, middle urban, and predominantly rural), an aging population and the creation of wealth as an expression of the potential of its development and to verify the hypothesis that predominantly rural regions are characterized by significantly lower wealth generation, but by higher rates of population aging. The hypothesis has been verified on a sample of European regions at NUTS 3 level, on Eurostat data for 2011, using comparative and classification analyses, and including the application of diagrams. The obtained result has been used to draw conclusions that are applicable to regional policies, particularly in terms of the need to apply various tools of regional policies within different types of regions.

Keywords: rural urban relationship, aging population, wealth creation, NUTS 3 types, EU regional policy

JEL Codes: R10, R22, R23

Introduction

As part of the 2007–2013 programming period the European Union incorporated regional cooperation among the objectives of its cohesion policy, within which transnational and interregional cooperation is supported, including the development of relations between urban and rural regions. While the support for the development of rural areas was transferred, at that time, under the Common Agricultural Policy (Hloušková, 2015).

In pursuing the objectives of EU regional policy one must of course take into account the changing environment and predictions of these changes. Often the EU responds institutionally to these problems, as evidenced by e.g. the establishment of an "expert group on demographic issues" (EC, 2007); there are specific analyses and predictions carried out, stating inter alia that in 2060 Europe will be, in terms of the size of its population, roughly the same, but the population will be much older*:"...the EU will no longer have four people of working age (15–64 years) per one 65+ person, but the ratio will change to only two to one. The largest decline is expected in the period 2015–2035, when the boomers retire. "* (EC, 2008). The whole issue is also widely discussed in society as a whole; this was encouraged by declaring 2012 the "European year of active aging" (EC, 2010).Even national governments are not indifferent to these forecasts; as an example there has been the "2013–2017 National action plan to support positive aging" introduced by the Czech Republic government (MPSV, 2014).

The process of population aging does not affect all regions equally. Economic, social, as well as safety implications can especially be fatal in rural communities. The relations between urban and rural locations are identified as both positive and negative spillover effects in the research conducted by Veneri and Ruiz (2013), which focused on 14 OECD countries and their small regions. Referring to previous research (Brezza, Dijkstra & Ruiz, 2011; Dijstra and Poelman, 2008; OECD, 2011) they pointed out two facts: i) rural regions often face economic decline and depopulation; this applies especially to rural areas located away from the major population centres; ii) there is a very high variability in the performance of rural regions — some face the aforementioned decline, whereas others show rapid growth, and some of them even outperform urban regions in this regard. Langhamrová and Fiala (2010), among others, point out the economic implications of an aging population by using the example of the Czech Republic, with regard to the amount of the average wage by gender and age, the amount of health care costs, the amount of health insurance and social security deductions as well as the desired pension to net wage ratio with projections to 2060.

The issue of population aging is closely related to the economic resilience of the regions, as interpreted e.g. by Svoboda and Maštálka (2013), but there are also wider connotations in the context of the understanding of sustainable development. Although some of the conclusions of Ehrlich (1968)do not seem quite correct or seem obsolete nowadays ("Humanity has a clear choice between more people with poorer lifestyles and fewer people with a better quality of life"), as proved by a steady positive progress in the Human Development Index (HDI), presented by the United Nations since 1990 and calculated back to 1980, where between 1980 and 2013 the level of HDI increased in all four assessed groups of countries, although it should be noted that in the 33 years the "Low-Human Development" countries have not reached, by 2013, (with their maximum of 0.540) the minimum of "Very High-Human Development" countries from 1980 (0.583) (Kraftová, 2015). Ehrlich methodology condensed into the sustainability equation (1), which was later modified and expanded in many ways, can be described as timeless.

$$I=PAT, \text{ or } I = P*A*T, \quad (1)$$

where I is the impact on the environment resulting from consumption; P is the population number; A is the consumption per capita (affluence); T is the technology factor.

The first two factors (population and affluence) increase the impact, while the third (technology) decreases it. The view on sustainable development in terms of quantity, i.e. the size of Earth's population, is necessary to supplement with a qualitative view, or with the changing age structure of the population of each region with its economic, social, and security implications. The growth in terms of sustainability cannot be uncontrolled, it must be guided. Even with the purely environmental aspect suppressed it is apparent that there is a clear link between the evolution of the regions' demographic structure and their performance that in turn affects consumption as well as other components that represent preconditions for a high quality of life. The measures implemented under EU regional policy should also help to create conditions for a multidimensional quality of life.
It appears that regions of different classification or different type often have different characteristics and development. Several typologies have been implemented in order to monitor and review them systematically(OECD, 2010), (MZe ČR, 2007); (Kašparová & Půček, 2009),(Dijkstra & Poelman, 2008).The most relevant typology for the European Union countries is mainly the Eurostat typology (EC, 2011) that represents a modification of the OECD methodology for the purpose of consistent communication and analyses.

Objective, Material and Methods

The objective of this paper is to assess whether the rate of population aging and wealth creation is affected by the type of region, or more precisely, whether a certain type of region is linked with a certain degree of aging and a certain level of wealth creation, or even whether it would be possible to consider the type of region as a relevant indicator of these two aspects.
There are two hypotheses connected with the defined objective:
i) Rural regions are characterized by a lower level of wealth creation when compared with urban regions.
ii) Rural areas are characterized by a higher index of population aging when compared with urban regions.
Hypotheses will be considered confirmed if not more than 20% of the rural NUTS 3 regions of the PR type fall in the <1;306>sequence interval and at the same time not more than 20% of the urban regions NUTS 3 of the PU type fall in the interval <799;1294>.

The basic set of analyzed data consists of data on 1,294 EU regions at NUTS 3. Eurostat data on the age structure of the population in 2011 (Eurostat, 2011) and on the economic level of the regions presented by gross domestic product per capita in 2011 (Eurostat, 2012) have been used. Using the "Urban/rural typology of NUTS 3 regions" (EC, 2011) the total number of regions was divided into 306 (23.6%) of predominantly urban (PU), 492 (38.0%) of intermediate (IN) and 496 (38.4%) of predominantly rural regions.
While the level of wealth creation was evaluated with the aid of the frequently used regional gross domestic product per capita (GDPPC), for the evaluation of the rate of population aging the aging

population index (API) was selected, which Matěja (2015) characterizes as the ratio of the number of post-productive and pre-productive age people in the society (2).

$$\text{API} = \frac{\text{No of over 65 residents}}{\text{No of under 15 residents}}, \quad (2)$$

An API value greater than one represents a situation where the post-productive age population outnumbers the pre-productive age population, which means that the society is aging or that an increase in the average age of the population of the region can be realistically expected.
The analysis is divided into three phases: in the first, a comparison of various types of regions is made using basic descriptive statistical characteristics for both evaluated indicators; in the second a correlation between the two indicators is searched for using diagrams; in the third—in order to verify the hypotheses—the ranking of both indicators is performed (downward one for GDPPC, and upward one for API) and the prevalence of each type of region at intervals in groups according to the number of regions found in the interval of PU (sequence of 1–306) , IN (sequence of 307–798) and PR (sequence of 799–1,294) is evaluated.

Results and Discussion
In terms of GDPPC it can be stated that the maximum values and the middle values (arithmetic mean and median) show inequality (3):

$$for\ GDPPC: PU > IN > PR \quad (3)$$

However, the minimum values indicate an ambiguity of such a conclusion. In this parameter (minimum GDPPC) the regions IN and PR are equal, as shown by Table 1. It is interesting that five NUTS 3 reached this minimum value: four from Bulgaria (BG311— PR type, BG325— PR type, BG342— IN type, and BG425— PR type) and one from Romania (RO216— PR type).
However, it is necessary to take into account the GDPPC max outlier of the PU type (UKI11 — Inner London); therefore, the median value appears to be more adequate for the assessment of the result than the mean value. It is also worth mentioning that the PR type has a different distribution of regions according to the GDPPC, and as the only region of the three types, it has median of a higher value than the arithmetic mean.
Variability parameters in the form of standard deviation and variation range show similar inequality as in (3). However, the relative measure of variability —coefficient of variation — points not only to the strong similarity of all three types of regions, but also to the equality of this parameter for the PU and PR types; IN type has a slightly lower GDPPC coefficient of variation.

Table 1 Selected statistical characteristics of different types of NUTS 3 regions

NUTS 3 type	PU		IN		PR	
Indicator	GDPPC*	API	GDPPC*	API	GDPPC*	API
max. value	164,100	2.56	108,900	2.93	61,400	3.06
min. value	6,500	0.35	2,600	0.48	2,600	0.12
arithmetic mean	29,632	1.17	24,690	1.37	19,807	1.38
median	27,450	1.11	23,800	1.30	20,750	1.34
standard deviation	15,002	0.37	12,264	0.45	10,016	0.44
variation range	157,600	2.21	106,300	2.45	58,800	2.94
coefficient of variation	0.51	0.32	0.50	0.33	0.51	0.32

* in EUR
Source: authors' own with the use of Eurostat data (2011) (2012)

The second indicator that is captured in Table 1, the aging population index, shows in line with expectations an inequality in terms of the maximum value, arithmetic mean, and median parameters as follows (4):

$$for\ API: PU < IN < PR \qquad (4)$$

But even here the minimum value is not in line with the other parameters, which means that the PR type regions have the lowest minimum value of API, namely Guiana (FR930).
The AP indicator variability can be described in terms of the standard deviation and variation range as parallel with GDPPC; there is also some analogy in terms of the coefficient of variation (equality between PU and PR types), but with the difference that the IN type regions exhibit a slightly higher coefficient.

Graphic analysis of the GDPPC and API relationship indicate clear differences among the various types of regions, as shown in Figures 1, 2, and 3, which not only depict the positions of the individual NUTS 3, but also, after the removal of outliers, indicate the area that is covered by a given type of region in terms of evaluated parameters.

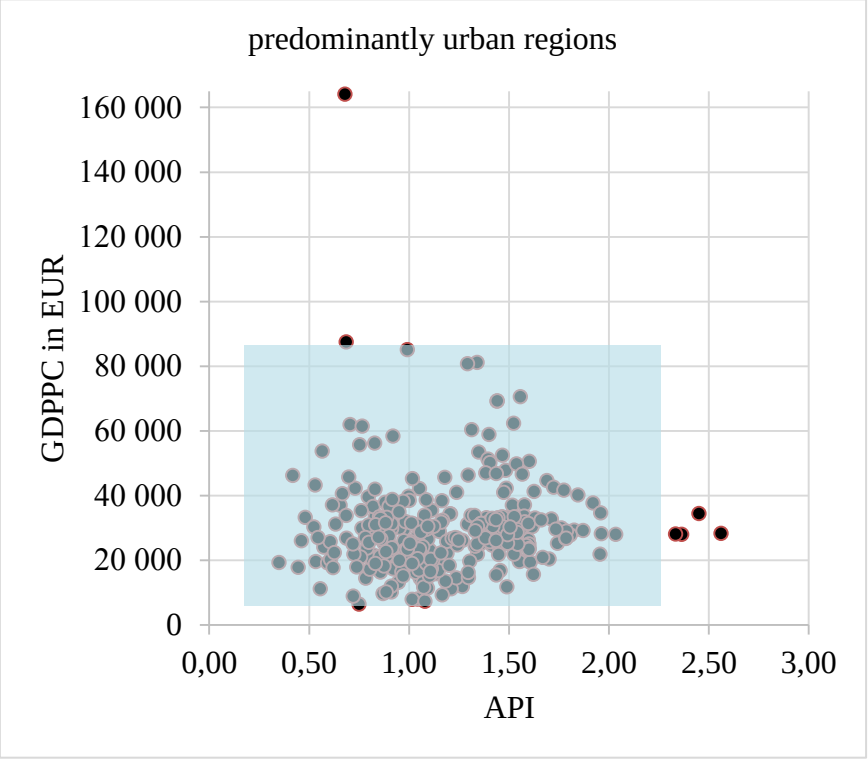

Figure 1 Distribution of the PU type NUTS 3 regions in terms of GDPPC and API
Source: authors' own with the use of Eurostat data (2011) (2012)

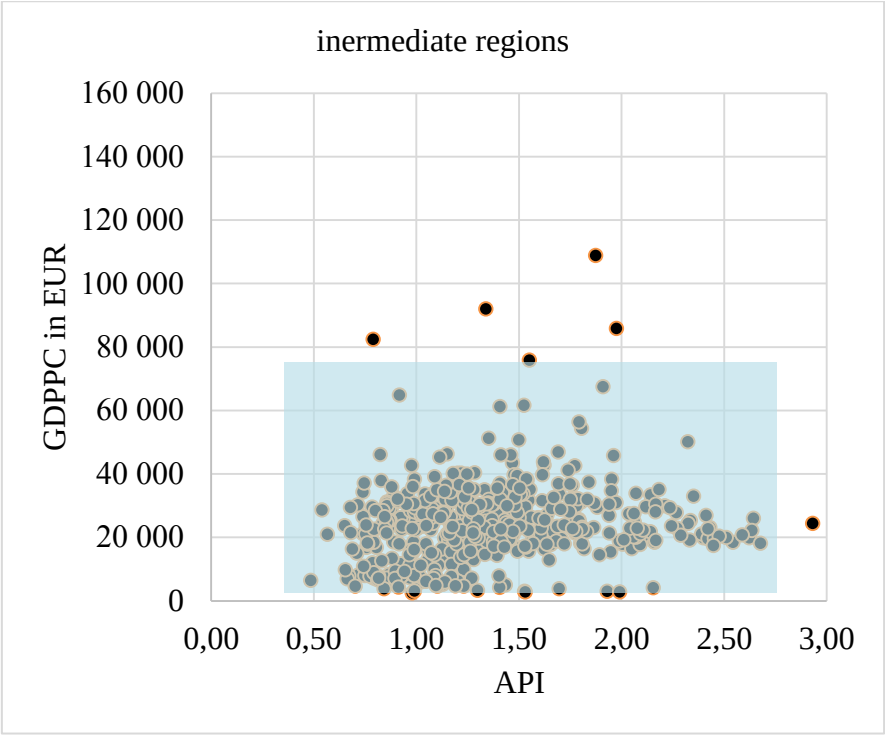

Figure 2 Distribution of the IN type NUTS 3 regions in terms of GDPPC and API
Source: authors' own with the use of Eurostat data (2011) (2012)

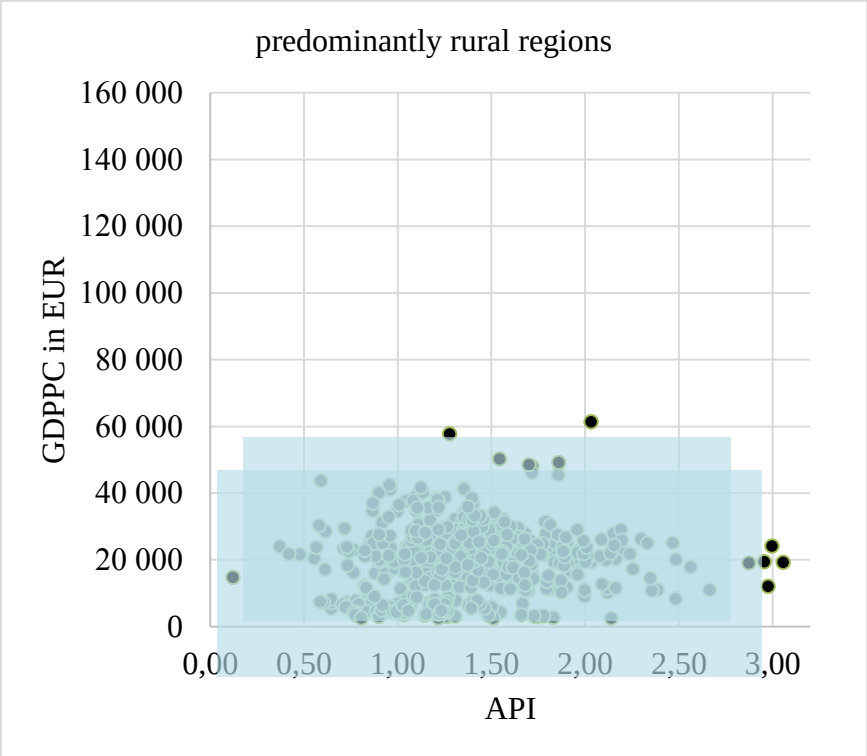

Figure 3 Distribution of the PR type NUTS 3 regions in terms of GDPPC and API
Source: authors' own with the use of Eurostat data (2011) (2012)

The shape and location of rectangles containing occurrences but excluding outlying values, confirm the assumption that PU regions are characterized by higher GDPPC values and lower API values when compared with rural regions. While the PU rectangle is positioned more toward the left side of the graph (lower API values) and higher up (higher GDPPC values), the rectangle for PR regions is much flatter and

positioned more towards the lower middle part of the graph. At the same time thanks to the graphical analysis there is a noticeable similarity between IN and PU regions in terms of the GDPPC parameter — although the rectangle in Figure 2 is positioned lower down; in terms of the API parameter there is a similarity of IN regions with PR regions — although the rectangle in Figure 2 is positioned more to the right. The merged comparative graphical view in Figure 4 is completed with a rectangle area calculation (Si) for each of the different types of regions. The graph shows that IN regions occupy the largest area, followed by PU regions and, with considerable distance due to the differences in the GDPPC parameter, by PR regions:

S_{PU} (excluding 2outlying values) = |0.35 - 2.45|/0.5* |87500 - 6500|/20000 = 17.017
S_{IN} (excluding 5 outlying values) = |0.54 - 2.93|/0.5* |75900 - 2600|/20000=17.534
S_{PR} (excluding 3 outlying values) = |0.37 - 2.98|/0.5* |57700 - 2600|/20000=14.358

(Note: the criterion for determining an outlier as an intersection of the two parameters and its subsequent exclusion from the rectangle is the fact that there is only one such value in the specific field of the grid.)

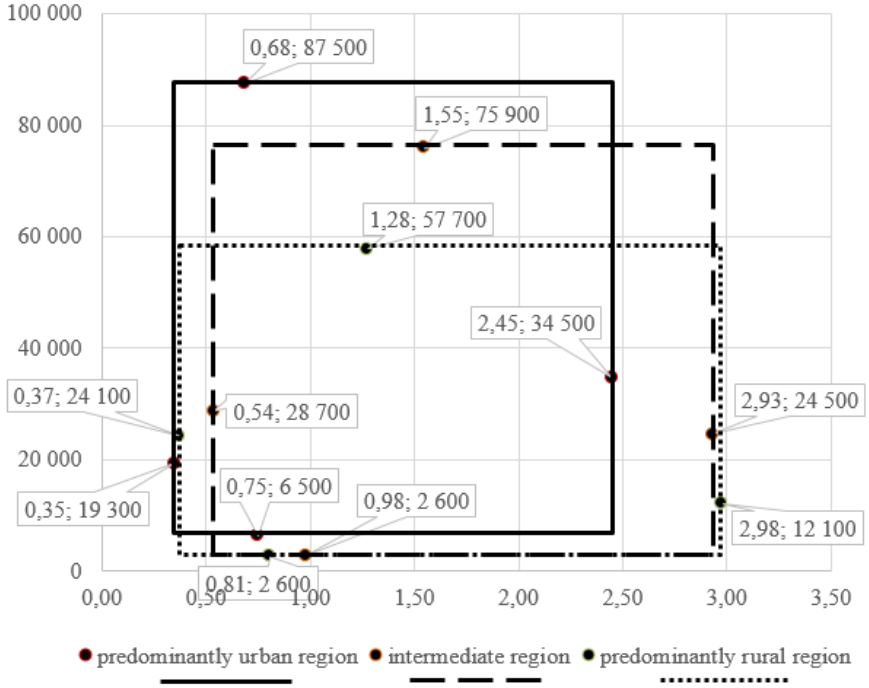

Figure 4 Comparison of rectangle areas containing intersections of the evaluated parameters for each type of regions
Source: authors' own with the use of Eurostat data (2011) (2012)

The last part of the analysis is concerned with the verification of hypotheses. The results of ranking and interval distribution of regions in terms of GDPPC are presented in Table 2, in terms of API in Table 3.

Table 2 Degree of representation of the different types of regions in given intervals in terms of GDPPC

Intervals	Degree of representation of the regions in percent			Total
	PU	IN	PR	
1–306	39.2	41.5	19.3	100.0
307–798	22.2	39.4	38.4	100.0
799–1294	15.5	34.5	50.0	100.0

Source: authors' own with the use of Eurostat data (2011) (2012)

It is apparent from Table 2 that the degree of representation of the PR type regions in the first interval is below 20% as expected, while the representation of the PU type regions in the last interval is also below

20%. The first stated hypothesis is therefore confirmed. It is also noteworthy that the last interval contains a full 50% of the PR type regions. Unexpectedly, however, the first interval is dominated by IN regions instead of the expected PU regions in terms of the highest GDPPC values.

Table 3 shows the representation of NUTS 3 regions in the intervals following the upward ranking according to API.

Table 3 Degree of representation of the different types of regions in given intervals in terms of API

Intervals	Degree of representation of the regions in percent			Total
	PU	IN	PR	
1–306	35.6	35.3	29.1	100.0
307–798	22.4	37.6	40.0	100.0
799–1294	17.5	40.1	42.3	100.0

Source: authors' own with the use of Eurostat data (2011) (2012)

In terms of representation in the first interval with the lowest values of aging based on the API, the PU type regions are predominant, but they are closely followed by the IN type regions. However, the IN type regions also have the second highest representation in the last interval that contains regions with the highest values of aging. In this last interval, the PU type regions do not exceed in terms of their occurrence the expected 20%. Although the PR type regions dominate the last interval, the degree of their representation in the interval with the lowest API values exceeds the considered 20%; therefore, the second hypothesis is not confirmed.

Conclusion

In agreement with the conclusions of the previous studies, which were mentioned in the introduction, we can also say that the presented analysis focused on the comparison of the three basic types of regions — predominantly urban, intermediate, and predominantly rural — as defined within the European Union, shows that there are some differences in terms of the two analyzed indicators, namely gross domestic product per capita and aging population index. The basic statistical characteristics rather support an acceptance of the assumption that urban regions are more productive compared to rural regions and have a lower old age index. However, only the hypothesis regarding the relationships between rural and urban regions in terms of gross domestic product per capita, thus performance, was confirmed within the specified condition. The indicator of aging populations shows that a significant percentage of rural regions fall within the first interval derived from the applicable EU typology, which represents about the first quartile with the lowest aging population index.

Therefore, the question posed in the title of this article can not be answered affirmatively. However, this does not mean that the conclusion may not have implications regarding the direction of the EU regional policy, or the tools for its implementation. With regard to the distribution of individual regions by type in terms of the aging population index, it is apparent that this problem affects a number of urban regions as well. For example, in the last hundred of NUTS 3 regions with the highest age index, which starts with API = 2, i.e. two 65+ people against one person under the age of 15, there are 5 predominantly urban regions, 54 intermediate and 41 predominantly rural regions. It is the intermediate type of regions that may be associated with latent problems (low productivity vs. high rate of population aging). This has also been highlighted by the results of this analysis.

The tools that aim at achieving the EU regional policy goals, especially those that prefer to focus on smart specialization, the search and use of region's specifics, those that allow an increase in Ehrlich PAT or sustainable development in all its aspects, but also those that will prevent an exclusion of individuals or groups of people in a safe environment, must be selected and applied in such a way that their socio-economic efficiency can be proved.

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STRUCTURAL CHANGES IN THE POSITION OF AGRICULTURAL ENTITIES IN SLOVAKIA

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Abstract
After 1989, the transformation of the Slovak society into market economy and its accession into the EU in 2004 influenced the position of agricultural holdings focused on the agricultural production. The main aim of the paper is to evaluate the structural changes in the position of the agricultural entities on the basis of the selected indicators during the periods from 1994 to 2010 in Slovak Republic. Particularly, the results of the changes of the following indicators as the number of agricultural holdings and its share of employees and cultivated land in the structure of these holdings will be provided.

Keywords: state enterprises, agricultural cooperatives, business companies, cultivated land, number of employees

JEL Codes: Q13, Q15, R52

Introduction

In 1990 two main types of agricultural enterprises were dominating, such as cooperatives and state enterprises, but new reforms as business companies were established after 1990, in accordance with the new Commercial Code No. 513/91 Col.as amended and self – employed farmers in accordance with the Law No. 219 /1991, as amended. The main reason of changes in the structure of business entities was the transformation of the agricultural holdings. Particularly, the process of transformation of the agricultural holdings included the process of privatization of state agricultural enterprises. This process was implemented by the adoption of the Law No. 229/1991 Col. as amended, the transformation of the agricultural cooperatives by the Law No. 42 / 92 Col. as amended and the solution of restitution claims (Bezáková & Bandlerová, 2006). Despite these changes in the structure of the new formed cooperatives as well as transformed ones, they still take a leading position in the provision of employment in agriculture, represented about 65 per cent as for 2010 (Green Report, 2011) and the total use of agricultural land, cultivating approximately 40 per cent in 2010 (Farm Structure Census 2010 – Complex Results, 2012). The share of the business companies according to farmland has been increased by 39 per cent (Green Report, 2011) for the last fifteen years; however, their position is still behind the agricultural cooperatives. According to the number of registered farms among other forms are dominating the natural persons, representing 76 per cent as for 2010 (Green Report, 2011) from the total number of agricultural holdings cultivating on agricultural land.
Therefore, this paper will focus specifically on the analysis of the agricultural holdings in order to provide an assessment how the changes of the selected indicators impacted on the current position of these entities over the selected period.

Materials

This paper deals with the period from 1994 to 2010. The information concerning our issue was obtained in accordance with this selected period.
Sources on the development of agricultural holdings after 1989 come from the domestic literatures from the studying materials „Agrarian Law 2013“ and other articles. Similarly, foreign literature materials as “Doing Business in the Slovak Republic” and “Agriculture of Central Europe” in the period of economic transformation served as a source to depict the position of agricultural entities after transformation processes.
Besides the studied literature, main legal regulations concerning the analyzed entities as the Commercial Code No. 513/91 Col.as amended, Law No. 229/1991 Col. on the adjustment of property relations to land and other agricultural property, as amended, Law No. 42/1992 Col. on the adjustment of property relations and the settlement of property claims in cooperatives, as amended by Law No. 264/1995 Col. as amended were used.

Indicators of the structure of the labor force and the number of agricultural holdings were obtained from the publication of the Green Reports for the years 2000 and 2011provided by the Ministry of Agriculture and Rural Development of the Slovak Republic and from the Statistical Yearbooks of Slovak Republic from 1999 to 2014.
Changes in agricultural land use in the legal and natural forms of these agricultural entities in Slovakia were evaluated on the basis of the Reports on Agriculture and Food Sector in the Slovak Republic for the years 1997 – 2007 and from documents „Farm Structure Census 2010 – Complex Results" published by the Statistical Office of the Slovak Republic available from www.statistics.sk.

Methods
To evaluate the change difference in the number of agricultural entities, employees and agricultural land use changes, first had to find out whether the selected indicators decreased or increased or there was not any changes. To clarify this, it was used increase /decrease indicator. This indicator reflects the percentage of increase (decrease) in various categories that has the following mathematical expression:

$$ZR_{k(a-b)} = ([(r_{ib}/c_{ib})/ (r_{ia}/c_{ia})]x100)-100\ [\%]$$

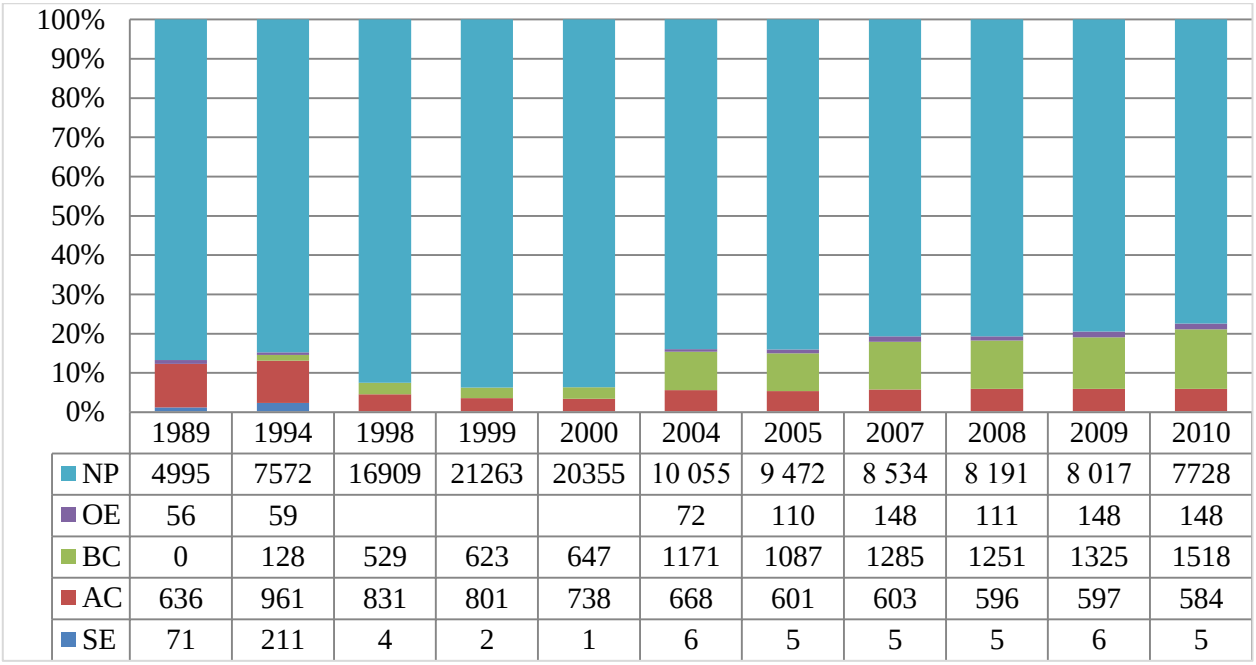
where, $ZR_{k\ (a-b)}$ is the change in the particular category (decrease/increase indicator), r_{ia} is the number of agricultural entities or employees or the area of agricultural land use at the beginning of the period 1994 and r_{ib} at the end of the period 2010, c_{ia} is the total number of entities, number of employees and area of agricultural land, of the studied territorial unit at the beginning 1994 and c_{ib} at the end of the studied period 2010.
This indicator does not express the difference of the selected values changes in analyzed business entities, but only shows us the final results of the changes of the selected values.
Therefore, we identified the difference of the values changes (named as change index) with the help of the above calculated results of increase /decrease indicators in the following way. The mathematical expression of the change index is as follows:

$$IZ_{(a-b)}=ZR_{k\ (a-b)} - 100\%$$

where, $IZ(a-b)$ is the change index in the period from 2010 to 1994, **ZRk (a – b)** is the final result change in the particular category (decrease/increase indicator).

The subjects of the analysis were the agricultural enterprises focused on the agricultural production. Namely, they are state enterprises, agricultural cooperatives, business companies, other forms of entities and natural persons.

Results
Changes in the number of agricultural holdings
Slovak agriculture has undergone several upheavals after 1989. In particular, they are accompanied by the end of agricultural holdings operating before 1989 and emergence of new forms of agricultural enterprises in the primary sector. As a result of those changes, almost 98,9 per cent of the state-owned enterprises were liquidated, whereas the total number of the other holdings as new established business companies had been rapidly increased during the period from 1994 to 2010 (Table 1). Similarly, the number of the agricultural cooperatives had been dropped. However, there are still several state holdings left that play a strategic role in operating scientific and research activities as research institutes focused on plant and animal production and breeding, or state companies specialized in gene-pool conservation (Némethová et al., 2014).



	1989	1994	1998	1999	2000	2004	2005	2007	2008	2009	2010
NP	4995	7572	16909	21263	20355	10 055	9 472	8 534	8 191	8 017	7728
OE	56	59				72	110	148	111	148	148
BC	0	128	529	623	647	1171	1087	1285	1251	1325	1518
AC	636	961	831	801	738	668	601	603	596	597	584
SE	71	211	4	2	1	6	5	5	5	6	5

Figure 1 The changes in the number of agricultural holdings[1] in Slovak Republic
Source: The Statistical Office of the Slovak Republic; Green Report of the Ministry of Agriculture and Rural Development 2000 – 2011

The privatisation of the ownership and restitution processes gave a push to rapid increase in the number of these new established forms specifically in the number of natural persons and business companies. For example, in 1989, from the total share of agricultural enterprises, the natural persons made up about 87 % that accounted for only 4995 subjects. Since then, there had been a quick growth in the number of natural persons and by 2000, their number jumped to 21741. However, in 2004, Slovakia after joining the European Union, their number dropped suddenly over 50 per cent, whereas the number of business companies increased at the same rate. Since then, there had been analysed an annual gradual decline of natural persons, however, over the period 1994 to 2010, there had been only 9 per cent decrease change (Table 1). One of the main reasons of the rapid fall of the number of natural persons after 2004 (Figure 1) could be dealt with, that approximately those decreased half of natural persons with a successful results of their holdings enlarged their farming in the forms of limited liability companies[2] (Mizickova & Urbeziova, 2004).

Table 1 The change difference in the number of agricultural holdings for the years 1994 and 2010

Form of enterprise	**SE**	**AC**	**BC**	**OE**	**NP**
Change index 1994/2010 in (%)	-98,9	-46,6	960,0	123,4	-9,7
Increase/ Decrease 1994/2010 in (%)	1,1	53,4	1060,0	223,4	90,3

Source: The Statistical Office of the Slovak Republic; Green Report of the Ministry of Agriculture and Rural Development 2000 - 2011. *Own calculations*

The greatest share in the total number of the legal entities constitutes the business companies as represents the most used one, in terms of number of members, value of the deposit, time of establishment and running the risk of the invested deposit. For example, during the period from 1994 to 2010 it was recorded a nine fold increase (960 per cent) in the number of this form of entities. In contrast to business

[1] NP – natural person; OE – other enterprises; BC – business company; AC – agricultural cooperatives; SE – state enterprise
[2] One of the forms of business companies in Slovak Republic (Obchodný zákonník (Commercial Code) No. 513/91 Zb. as amended))

companies, agricultural cooperatives experienced a downturn trend during the studied period by 46.6 per cent (Table 1).

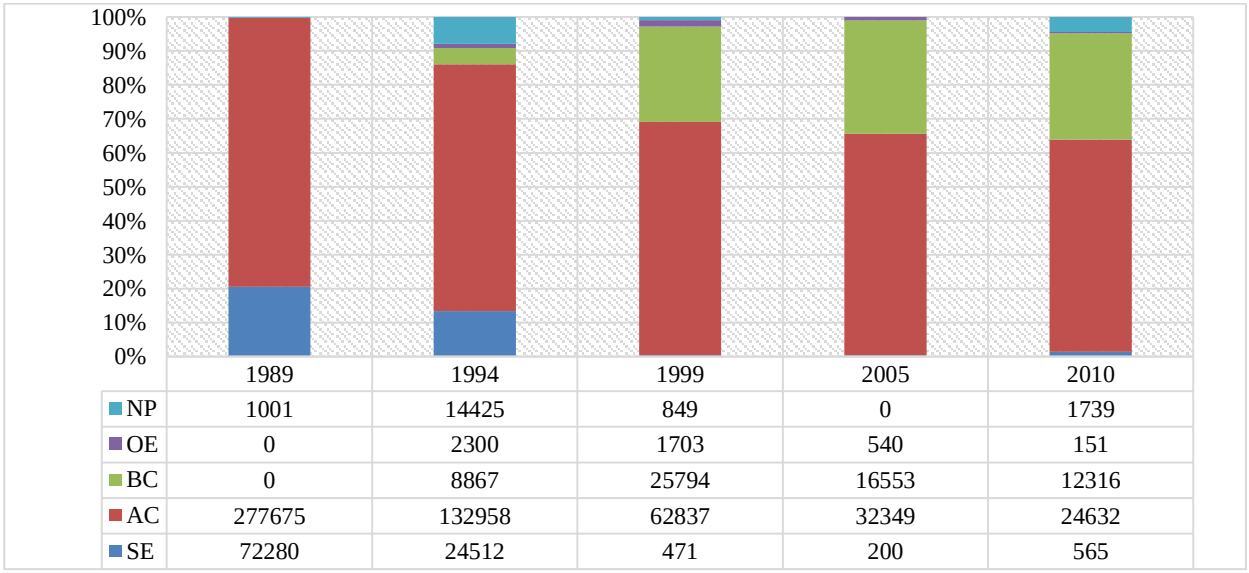
Changes in the number of employees of the agricultural holdings

In the past, agriculture performed a vital economic and social function in rural areas of Slovak Republic. Besides the major production function of the Slovak economy before transformation, it fulfilled a leading social function in terms of the main employer of rural population, wage levels, reproduction labour, and education level thus keeping the viability of rural localities (Chrastinová et al. 2015). For instance, in 1989, there were employed 350956 people, representing 13.2 per cent of the total labour force. The first dramatic drop could be seen by 1994, when the proportion of agricultural workers was reduced to 10.2 per cent and since then it has been gradually decreasing. By 2010 in comparison with 1994, agriculture recorded a significant drop in the number of workers by up to 85 per cent where the number of workers decreased to 323869 (Figure 2).

Subsequently, the changes in employment led to the overall fall of the rural population in the same way the emergence of many other social and economic problems in rural areas of Slovakia.

There are several reasons of such sudden decrease of the employment rate in agriculture impacted by the changes in national economy, legal regulations concerning the establishment of new business companies and transformation of old agricultural cooperatives and implementation of the new agricultural policy.

First of all, the transformation of the society to market economy after 1989 made a fast increase in development of the other sectors of the Slovak economy, thus stipulating migration of people from primary to secondary and tertiary sectors. For example, currently, the overwhelming people are employed in services (about 60 per cent) and industry (about 30 per cent) and about only three per cent are in agriculture (Petráš, 2011). Secondly, in the 1990s it was influenced by problems of agricultural holdings occurred by adaptation of them and their products to new market conditions with implementation of new agricultural policy and their competitiveness with the products with the foreign agricultural entities. Thus, it resulted in the growth of production costs with increasing input prices for oil, fertilizers, seeds, feeds while the income from agricultural production had been decreased (Falťanová, 2008).



	1989	1994	1999	2005	2010
NP	1001	14425	849	0	1739
OE	0	2300	1703	540	151
BC	0	8867	25794	16553	12316
AC	277675	132958	62837	32349	24632
SE	72280	24512	471	200	565

Figure 2 The changes in the number of employees from 1989 to 2010 in Slovak Republic
Source: Statistical Yearbooks of Slovak Republic from 1999 to 2014; Green Reports between 2000 and 2011

The Figure 2 shows that the changes in employment rate of the agricultural holdings has happened due to the changes reflected in the number of different organizational and legal forms (see Figure 1 and Table 1). However, the rate for each form has not been the same. The employment rate mainly experienced a significant decrease in all four selected agricultural holdings except for business companies. The most dramatic fall in the number of workforce experienced the state enterprises with a decrease of 88.3% by 2010. State enterprises are followed by the other enterprises of legal entities which declined by less than

70.6 per cent, from 2300 to 151 between 1994 and 2010 and agricultural cooperatives (about 55 per cent). Although the share of employees in agricultural cooperatives was reduced during the analysed periods about fivefold times, they still dominate the employment of the total workforce among agricultural holdings. By 2010, its share of employment represents about 65 per cent to the total share of employees in agriculture (Table 2). Apart from substantial decrease of the number of employees in the above mentioned holdings, there was a dramatic increase in the workforce of the business companies. It rose almost by fivefold times and reached the highest level in the recent years (Table 2). Business companies employed close to 33 per cent of people in agriculture by 2010 (Figure 2).

Table 2 The change difference in the share of employees of the selected agricultural holdings for the years 1994 and 2010

Form of entreprise	**SE**	**AC**	**BC**	**OE**	**NP**
Change index 1994/2010 in (%)	**-88,3**	**- 55,6**	**544,3**	**-70,6**	**-45**
Increase/ Decrease 1994/2010 in (%)	**11,7**	**44,4**	**644,3**	**29,4**	**55**

Source: Statistical Yearbooks of Slovak Republic from 1999 to 2014; Green Reports between 2000 and 2011. Own calculations

Changes in the size of ownership of agricultural land in the agricultural holdings

The significant changes in the size of the agricultural holdings started after the transformation of agriculture and afterwards after joining the EU in 2004. The total agricultural size of the land cultivated by the agricultural holdings including legal and natural persons throughout the periods from 1994 to 2010 dropped rapidly close to half and continue up to current days. (Figure 3). Dubcová et al (2014) suggest that this is because CAP policies have been protecting the green areas by the support of non-market agriculture through allocating high payments for farmers. Subsequently, these CAP findings for agricultural holdings led to decrease in the cropland areas of major crops in the Slovak Republic, as well as to decrease in the number of livestock, especially cattle and pigs.

Consequently, the substantial changes in the size of the cultivated agricultural land occurred in the all selected forms of holdings.

The size of land of the state enterprises and other enterprises had experienced a dramatic fall by 0.9 percent and 40 per cent. Likewise, the size of land cultivated by agricultural cooperatives recorded a decrease of 43.1 per cent (Table 3). However, in terms of farmland area, cooperatives still remain a dominant position in agriculture but their share in the total area had been gradually declined (Figure 3). While in 1994 cooperatives owned 68.5 per cent of agricultural land, in 2010 it represented only 40 percent. More than 90 per cent of the lands of agricultural cooperatives are mainly leased particularly from their members as well as other owners (non-members, state, church, etc.) through lease contracts made with the owners of agricultural land (Bandlerová et al., 2012).

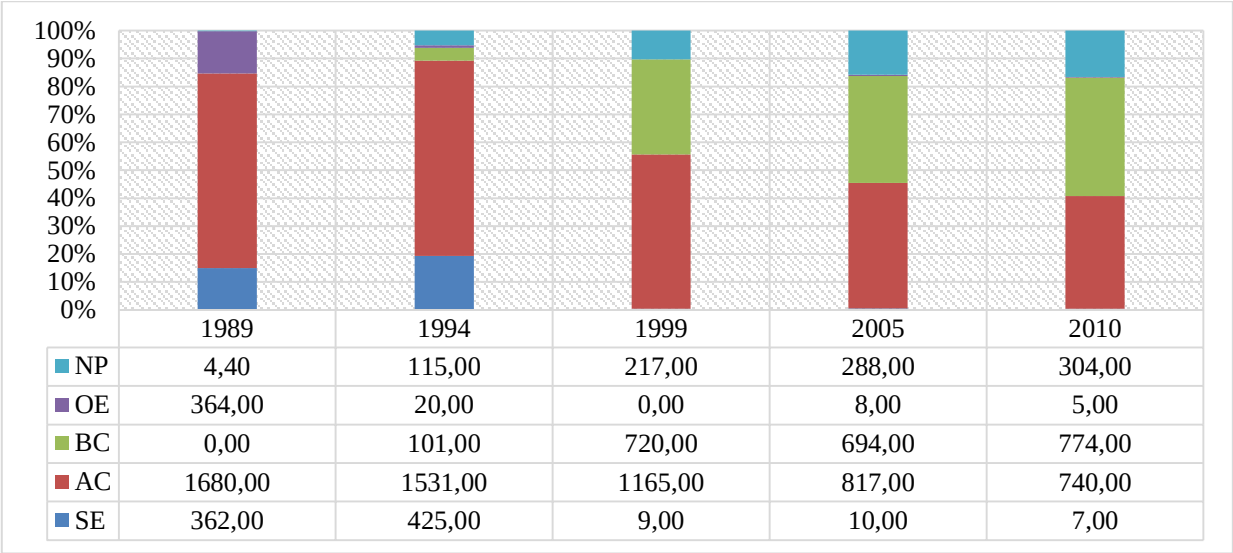
In contrast to the agricultural cooperatives and state enterprises, the share agricultural land of the business companies rose sharply between 1994 and 2010. For instance, in 1994, their share of agricultural land amounted for less than 5 per cent to the total share of agricultural land used by those entities, and in 2010 it reached to about 42 per cent (Figure 3). Their size by 2010 in comparison with 1994 increased about eightfold times (Table 3).

From business companies, a greater part of agricultural land is managed by limited liability companies.

The share in farming agricultural land of natural persons has been increased to 330,620 ha by 2010 that constitutes 16% of the total share of cultivated land. Therefore, the total growth of used agricultural land of the natural persons constitutes about 300 per cent.

At present, legal entities manage less than 85% of total share of agricultural land used by the enterprises[3] and the rest of land is used by natural persons, especially by self-employed farmers (Figure 3).

[3] Total agricultural land in thous. ha used together by legal entities (L.E) and natural persons (N. P)



	1989	1994	1999	2005	2010
NP	4,40	115,00	217,00	288,00	304,00
OE	364,00	20,00	0,00	8,00	5,00
BC	0,00	101,00	720,00	694,00	774,00
AC	1680,00	1531,00	1165,00	817,00	740,00
SE	362,00	425,00	9,00	10,00	7,00

Figure 3 Changes in the size of the area of the agricultural holdings in Slovakia in thousand hectares
Source: The Reports on Agriculture and Food Sector in the Slovak Republic for the years 1997 – 2007; Farm Structure Census, 2010

Table 3 The change difference in size of the area of the agricultural holdings for the years 1994 and 2010

Form of entreprise	**SE**	**AC**	**BC**	**OE**	**NP**
Change index 1994/2010 in (%)	-100,9	-43,1	816,9	-60,2	330,6
Increase/ Decrease 1994/2010 in (%)	-0,9	56,9	916,9	39,8	430,6

Source: The Reports on Agriculture and Food Sector in the Slovak Republic for the years 1997 – 2007; Farm Structure Census, 2010, Own calculations

Conclusion

All things considered, the agricultural holdings focused on the agricultural production during the analyzed period underwent substantial structural development. Therefore, the position in each analyzed legal entity and natural persons in terms of the number of subjects, share of workforce and the cultivated area of agricultural land had been considerably changed by 2010.

The state enterprises and other forms of entities by 1989 had one of the dominating positions after agricultural cooperatives in terms of cultivated farmland and number of employees. However, after 1994 it can be seen from the analysis that there had been a fast decline in the number of the state farms and they almost disappeared during first decade. Reduce in the number of that holdings respectively led to the decrease both in the used land area and the number of employees. Likewise, the number of agricultural cooperatives as well as its farmland recorded a decrease over 40 per cent for the last selected years. The number of employees also experienced a rapid drop by 44.4 per cent. Despite those facts of decrease, agricultural cooperatives still play a dominant position in the share of total employment in agriculture and the cultivated area followed by business companies. Business companies are the only legal forms experienced the dramatic growth rate in all analyzed categories. The business companies are the most used form of entrepreneurship, in terms of number of members, value of the deposit, time of establishment and running the risk of the invested deposit. The greatest share in the number of the all legal and natural holdings remains the self-employed farmers during the studied periods.

At present, legal entities manage less than 85% of total share of agricultural land used by the enterprises and the rest of land is used by natural persons, especially by self-employed farmers.

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Legislations:

1. Slovak Republic. Commercial Code "Obchodní zákoník" No. 513/1991 Col.
2. Slovak Republic. Law No. 229/1991 Col. on the adjustment of property relations to land and other agricultural property, as amended

3. Slovak Republic. Law No. 42/1992 Col. on the adjustment of property relations and the settlement of property claims in cooperatives, as amended by amendment Act (No. 264/1995 Col.)

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CZECH COUNTRYSIDE FROM THE VIEWPOINT OF THEIR INHABITANTS

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Abstract
The paper tries to answer the question of the role of internal factors such as the characteristics of local inhabitants´ involvement within the process of rural development. We focused on the development of villages within rural areas of the Czech Republic. The aim of the research was to design model development strategies of rural municipalities. In order to meet this aim, the innovated approach to rural municipality definition was employed. The questionnaire survey serves as a data source for social capital analysis. Several chosen characteristics of social capital in the sample of the Czech rural municipalities as a whole have been assessed in the contribution.

Keywords: rural development, rural perception, endogenous factors, social capital

JEL Codes: R50, R13, O52

Introduction

After the so-called velvet revolution, the traditional evaluation of rural areas in connection with the changes of producer relationships and social processes in space has continued (agricultural production and specific forms of settlement dominating these debates). As the post-totalitarian transition went on and the Czech rural areas simultaneously integrated into the European structures, it has become necessary to assess rural areas in their broader context, e.g. a as part of reforms in public administration, regional development, regional policy, the wide process of society modernization.

According to Ambrosio-Albalá and Bastiaensen (2010), changes in the national and international context are shaping a new scenario in which rural policies gain prominence. Firstly, environmental issues imply special consideration of the sustainable exploitation of natural resources. As a consequence, externalities of agriculture in terms of land and water use, biodiversity and forestry ask for much more attention. Secondly, the outcomes of international trade negotiations determine and usually restrict the number and nature of policy options for agriculture. In order to be able to maintain public support for agriculture activity, new perspectives are therefore called for. As highlighted in the 'multifunctionality' paradigm, food security, rural employment, production of rural landscape and conservation of the rural heritage and traditions are increasingly recognized as important non-commodity outputs of agriculture in this respect (Jenkins, 2000; Maier and Shobayashi, 2001). Finally, decentralization and deconcentration enable local actors to engage in the definition of priorities and the use of resources to tackle regional inequalities (OECD, 2006).

Rural areas are understood as space with changing networks of social institutional relationships, or space with unique cultural relationships and socio-cultural patterns of behaviour among people. A variety of endogenous factors (society´s culture, civic societies, identity and rural inhabitants´ attitudes) are becoming increasingly important and discussed. In light of the transition from research on the geographical organization of society to research on the social organization of society, rural areas can be understood as a socio-spatial process or rather as a "social construction" (Chromý et al., 2011).

Social capital has been recently held up as a conceptual framework to build a bridge between the diverse disciplines involved in rural development. However, despite its potential and the impressively rapid take-up of the concept by the community of development professionals, it remains an elusive construct. No definition is yet generally accepted and many definitions are in use. Recently, social capital in the form of social networks has gained much attention in rural development theory and empirical research (Dufhues et al, 2006).

Social capital has appeared on the agenda of public policies as an important factor that facilitates "certain actions of actors within the existing structures" (Coleman, 1988: 98). Recently, it has been also discussed as

one of the important factors of local and regional development (Sorensen, 2000; Majerová et. al., 2011; Debertin, Goetz, 2013).

According to Terluin (2001), the debate about rural development is on the one hand concerned with theories on economic growth in rural regions, and on the other hand with the question how rural development policy can stimulate economic growth in rural regions. In the debate, three main approaches can be distinguished:

1. the exogenous development approach;
2. the endogenous development approach;
3. the mixed exogenous/endogenous development approach.

The concepts have different implications for the strategies of local actors and for the rural development policy (Terluin, 2001). The main elements of exogenous models are that the rural development is considered as being transplanted into particular regions and externally determined, that benefits of development tend to be exported from the region, and that local values tend to be trampled on (Slee, 1994:184).

The endogenous development is to be understood as local development, produced mainly by local impulses and grounded largely on local resources (Picchi, 1994:195). In contrast to the exogenous model, the benefits of development tend to be retained in the local economy and local values are respected (Slee, 1994:184). Two specific 'rural' theories within this approach have been put forward: the community-led rural development theory and Bryden´s theory on the potentials of immobile resources for creating competitive advantages in rural areas. Where rural policies were concerned, the emphasis shifted towards rural diversification, bottom-up approach, support for local business, encouragement of local initiatives and local enterprises, and provision of suitable training (Lowe et al., 1995:91). Intensive interactions, information exchanges and cooperation between local actors can be considered to be prerequisites for the success of the endogenous development model. Where these do not exist, some form of a local development agency is needed to act as a catalyst for bringing about this cooperation (Stöhr, 1990:23 – cited by Terluin, 2001).

The Exogenous/endogenous approach rejects the polarization of the exogenous and endogenous development models and proposes 'an approach of the analysis of rural development that instead stresses the interplay between local and external forces in the control of development processes´ (Lowe et al., 1995:87). This approach relates the rural development to the process of increasing globalization, mainly due to rapid changes in the information and communication technology sectors. In this changing global context, actors in rural regions are involved in both local networks and external networks, but the size, direction and intensity of networks vary among regions. Hence, in this approach, the rural development is considered as a complex mesh of networks in which resources are mobilized and in which the control of the process consists of interplay between local and external forces (Lowe et al., 1995).

Material and Methods

Delimitation and typology of the Czech countryside

The proposal from the working group for the Plan of the Rural Development 2014 – 2020, flowing from the differentiation based on the delimitation of the Strategy of Regional Development in the Czech Republic in 2014 - 2020 (Perlín, 2013), is one of the basic material for delimitation of the Czech countryside. According to the proposal, villages within the limit of up to 3,000 inhabitants, situated in the stabilized or peripheral areas within the Strategy of Regional Development in the Czech Republic in 2014 - 2020 (2013: 56) should be included in rural municipalities. For the analytical purpose of this paper, villages of up to 3,000 inhabitants, situated outside the commuting zones of core towns with more than 10,000 inhabitants, delimited primarily on transport access modelled in the programme ArcGIS 10.0 via Network Analyst extension, were included in the rural municipalities.

The conducted questionnaire survey provided a source data for the analysis of particular aspects of social and human capital. The Focus agency carried out the survey at the turn of 2010 and 2011. The aim of the questioning was to find out whether local inhabitants´ activity and their perception of the rural life differ among various groups. We worked on the presumption that social and cultural capital plays an important role in the municipalities´ development. Two fields of questions formed the questionnaire. The first one focused on the characteristics of inhabitants, their personality traits, personal relationship to village and

their involvement to community life, willingness to help in the village, interest in community activity and management. The second part of the questionnaire paid attention to a municipality assessment, how people perceive a quality of life in it (municipality characteristics, visions, what could be changed etc.).

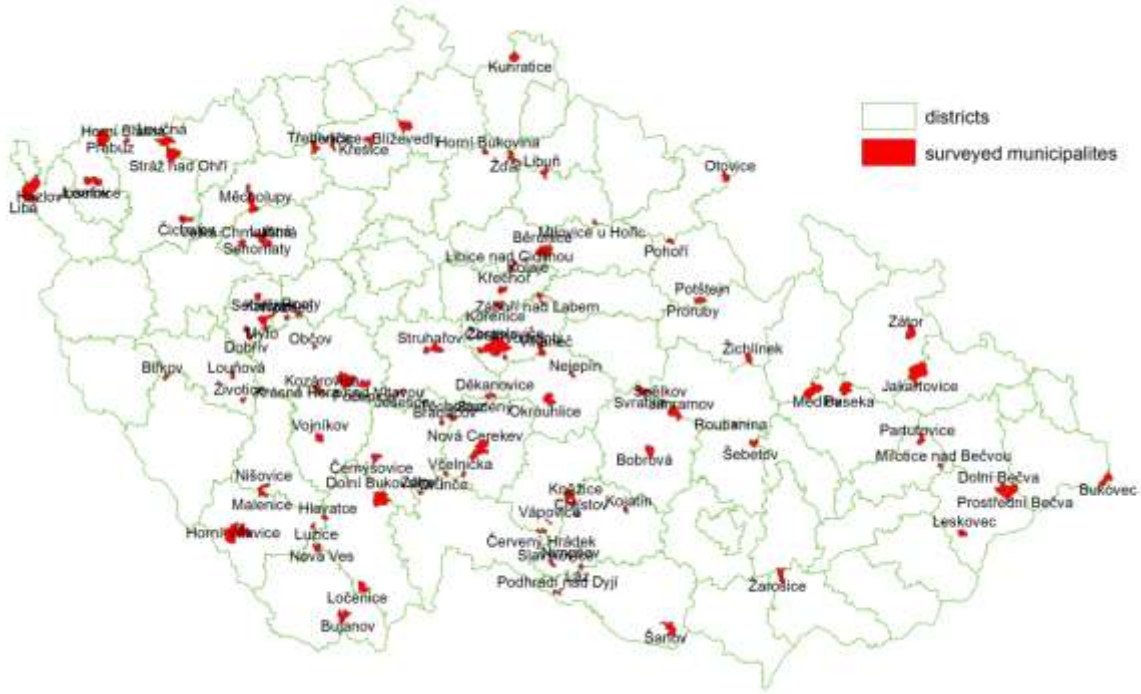

Figure1 Municipalities of questionnaire survey
Source: own processing in ArcGIS

Thousand inhabitants in hundred randomly chosen rural municipalities participated in the survey. The survey was realized in the frame of the research project of the National Agency for Agricultural Research titled “Rural countryside as a space for living or just a space for surviving?”.

Results and Discussion

The set of the rural municipalities, outside suburban zones with municipalities with less than 3,000 inhabitants, consists of 4,561 municipalities; it is 4,557 not considering military districts. The rural areas, defined this way cover almost 63% of the area of the Czech Republic. Comparison of the above-mentioned delimitation with the proposal of the working group for Program of Rural Development 2014–2020 is presented in Table 1.

Table 1 Delimitation of rural municipalities – comparison

Size categories	PRD 2014 – 2020		Authors	
	Number of municipalities	Population (2011)	Number of municipalities	Population (2011)
less than 500	2,930	682,994	2,951	684,687
500 – 1 000	961	63,287	927	661,304
1 000 – 2 000	418	579,464	516	730,057
2 000 – 3 000	123	300,743	167	419,568
Total	4,432	2,236,488	4,561	2,495,616

Source: authors, Perlín (2013)

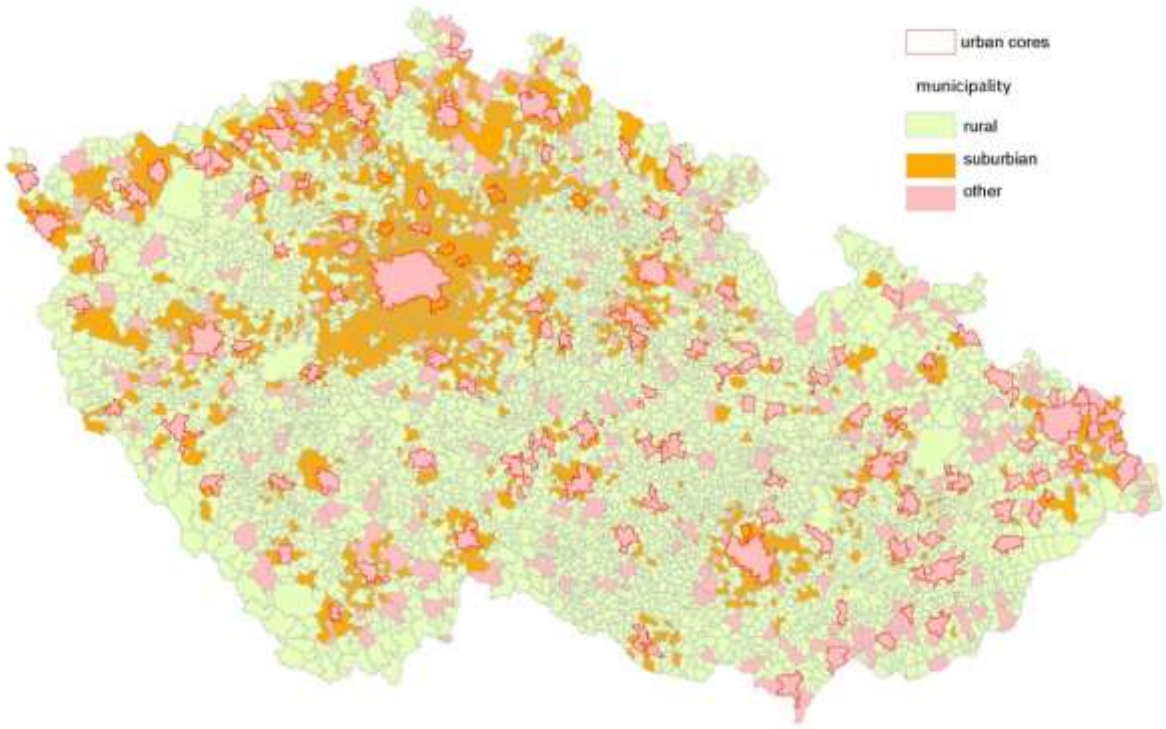

Figure 2 Delimitation of the Czech rural space
Source: own processing in ArcGIS

According to assumption that local inhabitants play an important role in rural development, we tried to obtain as much information as possible describing personal characteristics of local inhabitants.
In order to find out inhabitants´ attitudes, we offered them a range of personality traits. The respondents had to mark the activities, which characterize them, their beliefs, attitudes and behaviour. They assigned values 1 – 5 to each of 16 traits (1 – the highest agreement, 5 – absolute disagreement). Structure of their answers is shown in Figure 3.
On one hand, the high agreement rate has been found out in activities which can be influenced by the respondents themselves (decisions about their lives, home life, personal independence, relationship to land, neighbours, tourists, reflections on the future, training and education) and also in attitudes to their village (the municipality management should help inhabitants, safety in the village). Activities, influenced not only personally but also from outside, have been marked, on the other hand, with greater rate of disagreement (sport, angling, DIY, public activities, possibility to be alone).
A high percentage of people who like to make decisions about their life can be seen as that rural people are traditionally used to relying on their skills and decisions about themselves, their home and even historically its homestead. Generally, we can assess a typical inhabitant of the Czech countryside as an independent, mostly positively minded person.
The relationship to vacationers is an important characteristic considering that most municipalities have its own development strategy based on the development of tourism. If citizens would prefer personal peace and privacy, which are disrupted by the arrival of tourists, this position would be strongly against the development of the municipality. Figure 3 shows that the relationship of respondents to vacationers is positive, thus it does not preclude the development strategies.
Due to the increasing levels of welfare, people are in search of a wide range of recreational possibilities. Rural areas meet this demand by offering all kinds of rural amenities like cultural landscapes of outstanding scenic beauty or high natural value, settlements with a rich history and architectural remains, and protected areas like regional or national parks. The valorisation of these rural amenities and the related employment opportunities affect the economy of rural areas, but there is insufficient knowledge about how tourist activities can be exploited in the rural economy in a sustainable way.

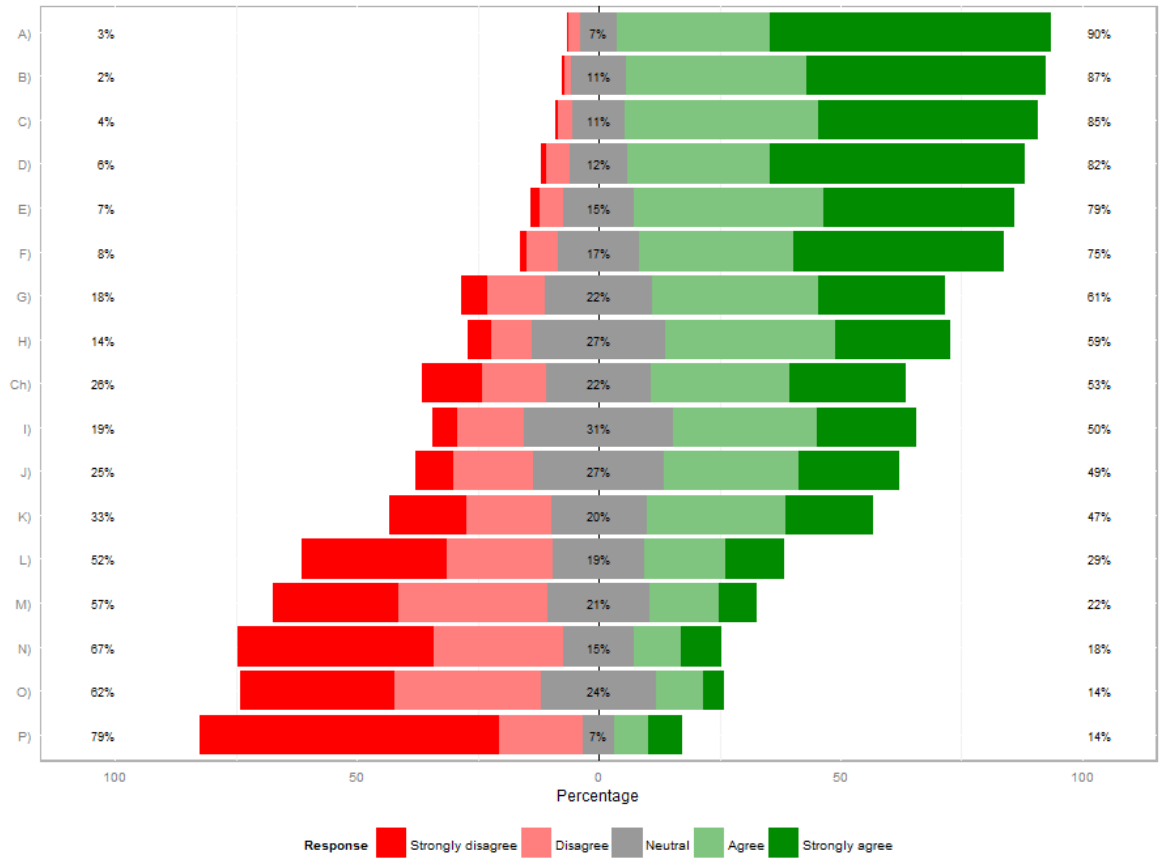

Figure 3 Personal features of local inhabitants
Source: own processing

Legend: A – decision about own life, B – the village should help to its inhabitants, C – it is safe here, D – prefers family life, E – thinks of future, F – is independent, G – like to sit with neighbours, H – perceives tourists positively, CH – is related to land, I – concerned about the future, J – likes to educate himself, K – likes DIY, L – makes sport actively, M – likes risking, N – engaged in public activities, O – is happiest when alone, P – likes fishing

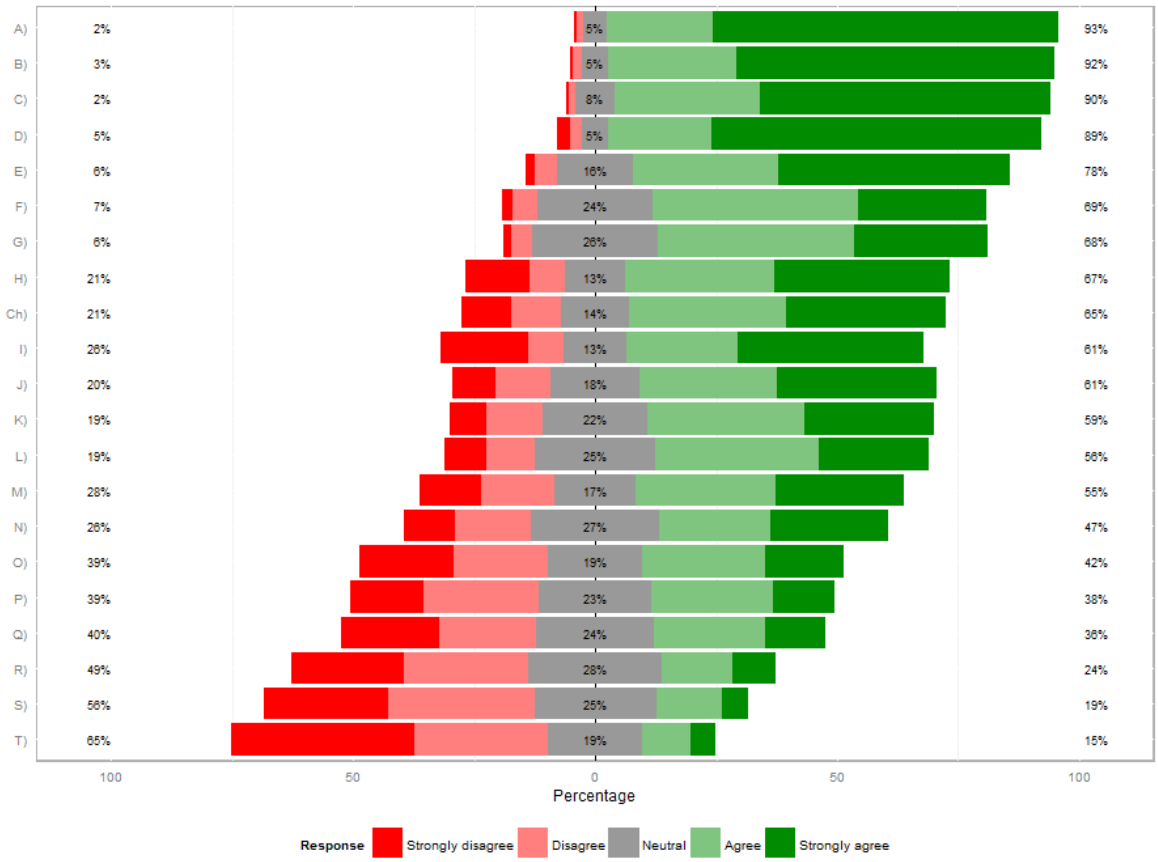

Figure 4 Personal relationship to village
Source: own processing

Legend: A –pretty nature is close, B – there is a healthy air, C – there is healthy environment, D – forest is next door, E – there is better water than in towns, F – people are able to communicate here, G – there are good neighbourly relations, H - there is the possibility to purchase goods for daily use, CH – there is an opportunity for sports, I – can use public transport, J – traditions are supported, K – there is a possibility to build family houses here, L – can realize in free time, M – there is a good availability of the town, N – tourism is supported, O – medical care is easily accessible, P – affordable housing, Q – good services, R – good conditions for young people to start in life, S – who wants to do business, find opportunities here, T – possibility to find working environment

Relationship to the land is tied to the rural tradition and the original agricultural role of the countryside. Is it possible to believe that people related to land will also have a strong attachment to the place where they were born and live, and hardly will move out. These people will probably support traditions and will be strongly connected to life of the village. These hypotheses should be confirmed by the detailed data analysis.
The query on the willingness to constantly educate itself provides information about the people who are important and interesting in terms of the village development. They represent potential elite, which partially disappeared at the time of totality due to forced collectivisation and the displacement of indigenous elites of the villages. Recently, there is a certain renewal thanks to the migration of certain groups back to the countryside which is connected to processes of counter-urbanisation or amenity migration (for example Bartoš et. al, 2011; Šimon, 2012).
Personal relationship with the municipality in which they live, respondents expressed by their responses to three questions: why they live in the municipality, how they perceive the uniqueness of the village, and whether they are willing to help the community. Figure 4 shows the structure of personal attitudes to the village (its uniqueness). A uniqueness of municipalities was included in the questionnaire because it can be

a reason for the decision to settle in the country. Rating uniqueness of the village is very subjective. As we can see from figure 4, there prevail positive attitudes to the locality in the structure of responses.

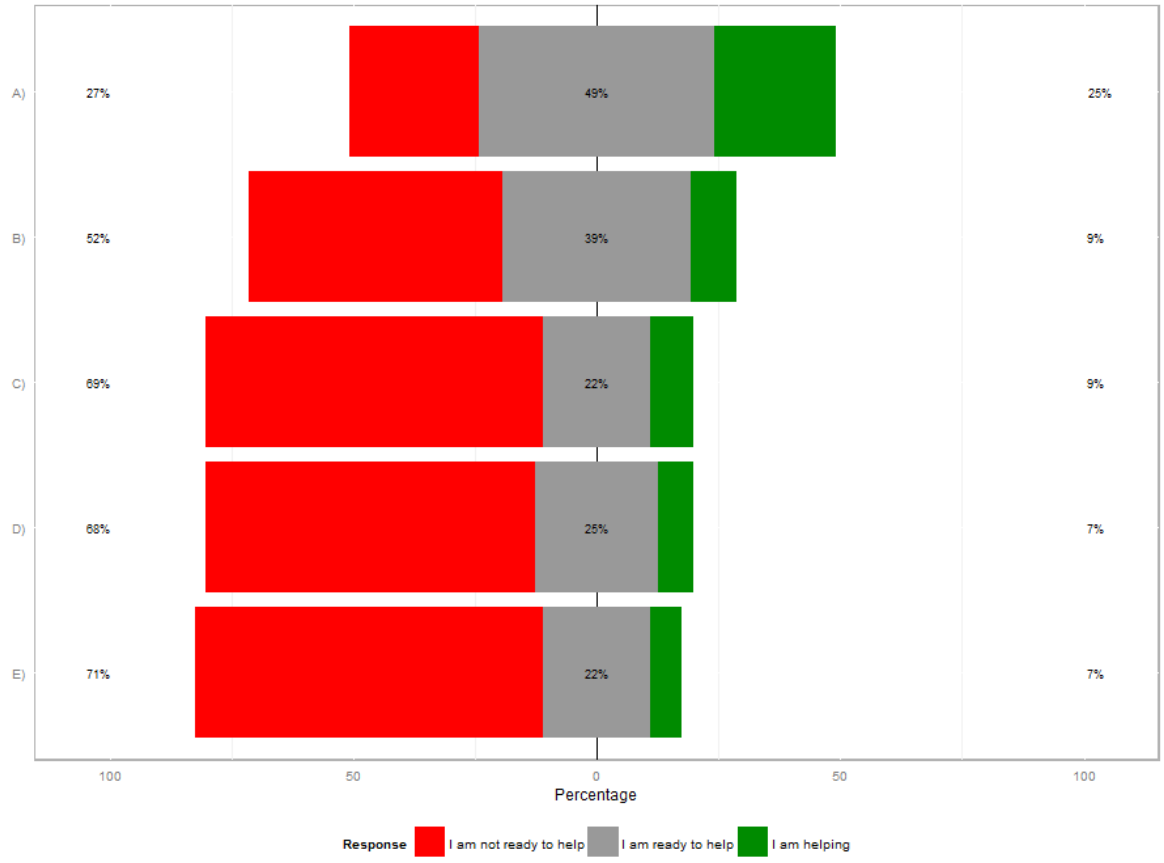

Figure 5 Willingness to help to community
Source: own processing

Legend: A – participation in brigades and improving activities, B – other support for clubs and events, C – work in municipal council, D – sponsorship of events organized by municipality, E – clubs sponsorship

Respondents rated highly not only the quality of the environment in which they live (nature, clean air, healthy environment, forest close, better water than in towns) but also factors connected to social and economic environment (people can communicate together, quality of neighbour relationships, possibilities to buy every day goods, to sport, to use public transport, to support tradition, to build family houses, to realize himself in a free time, good availability of towns nearly). On the other hand, respondents perceive worse an availability of some services and opportunities (to find a proper working environment, possibility to do business, conditions to start for life, housing availability, services and medical care availability). Similar findings can be seen in Majerová (2009: 128).
In general, we can say that residents of the Czech countryside are rather satisfied with the environment in which they live. There are themes for improving the living conditions in the rural areas connected to availability of quality services and possibilities to do business and to spend their leisure time, which were identified by the questionnaire survey.
The willingness of the population to help the community, either financially or for example by direct help to construction of kindergarten and beautification of the village is one of the key indicators of the identity of people with a place and the community in which they live. Voluntary activity of people plays undoubtedly a positive role and contributes to the development of the municipality. Figure 5 help characterize the overall situation in the queried file population. Interviewees were offered several options to help the community: participation to brigades and improving events, sponsorship of clubs or events organized by municipalities, other support events, working in municipal council, otherwise.

The respondents are not interested in working in the municipal council. Almost 70% of all respondents stated that their help is definitely not associated with the work in the council. Almost equally high percentage of negative responses is also in the form of financial assistance to local clubs and events organized by the municipality. Much better relationship is to the direct assistance in brigades: 25% of respondents have already actively assisted in voluntary work and 50% are willing to be involved in this process. People prefer direct assistance to the financial support.

Conclusion

In the literature, there is not a single exclusive model behind the driving forces of local rural development. Instead there are multiple development trajectories resulting from various combinations of local, regional, national and global forces in specific circumstances. Different research works have revealed the complexity of European rural regions, and indicated how the strategies and development policies have shown a mixture of exogenous and endogenous development components (for example, Terluin, 2003) as well as a combination of tangible and intangible assets (for example, Bryden and Hart, 2004).

The emerging shift in the rural development policy from an exogenous, top-down towards an endogenous, bottom-up approach is a complicated process, as it requires changes in the institutional structure, changes in competences between different administrative layers, and sufficient capacity of local actors to initiate and sustain economic growth in the local economy. Many bottlenecks exist and have to be dealt with before an endogenous, bottom-up approach in rural development policy can work. Despite these difficulties, the EU still intends to continue with this approach.

The aim of the paper was to describe some aspect of the social capital in the Czech rural areas as a whole. We tried to identify an extent to which the prosperity of the village is connected to cultural and social capital. The work was not focused on geographic external indicators such as size and the location of the village but we aimed to the association of the community development and internal factors. It is a certain simplification and analysis based only on the internal factors of the development is not an exhaustive and comprehensive answer to the causes of good or bad community development. Social capital analysis gives an answer to the strength of tie between the community development and the people who live there.

Our survey confirmed a predominant characteristic of the Czech countryside: the people are more tied to the place where they were born. There prevails a positive view of the village as a place of which to be proud. It is rather natural beauty, culture and sights of what people perceive as the uniqueness of the village. The fact that the rural inhabitants celebrate carnival, have firefighters etc., are not considered as exceptional, although they are reported it as the main reason for satisfaction and good life. Unlike traditions is a participation in public life small. Rural residents prefer personal assistance (in voluntary work for example) to a financial contribution. Other common features of the Czech rural community life are activities in the interest organizations (firefighters, hunters, sportsmen, etc.).

The extent of the contribution does not permit a detailed analysis of the observed characteristics depending e. g. on residents' age, education or occupation and also on various types of the Czech rural. These may be an issue of additional contributions.

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EVALUATION OF SUSTAINABLE DEVELOPMENT OF THE REGION PODLUŽÍ

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Abstract
The paper deals with an evaluation of sustainable development of one part of the region of Podluží through the selected sustainable development indicators in the period 2009-2013. The comprehensive analysis consists of individual analysis based on expression of environmental, economic and social indicators in all selected municipalities in the micro-region. The methodology for the development evaluation uses data sets provided by Czech Statistical Office, The Ministry of Labour and Social Affairs, The Ministry of Finance, the archive of region of Podluží and strategic documents and other evidences of individual municipalities. There were 5 selected indicators of economic pillar (out-of-state budget finance, debt service, rate of investment, support of local NGOs, intensity of entrepreneurial activity), 4 indicators of environmental pillar (ecological stability, municipal waste separation, public expenditures on the environment protection, wastewater treatment) and 6 indicators of social pillar (net migration rate, population growth rate, age index of population, registered unemployment rate, civil society index, voter turnout). The final section provides a summary of results, which is conceived to priorities, and specific measures recommended by the author to enhance the sustainability of the region in three general areas – economic, environmental and social.

Keywords: sustainable development indicators, municipality development, development strategy, development priorities

JEL Codes: Q01, O52

Introduction

A sustainable development issue is very often referred as one of the basic paradigm in 21st century. This issue has started discussing mainly in connection with intensified concern about global, continental and national sustainability of economic growth since early 60s of the last century (Dušek et al., 2014). In the broader sense, an effort for sustainable development is understood as a promotion of a harmony among human beings one another and between human beings and the nature (Nováček, 2010). All documents on sustainable development agree with the basic definition that it is balanced economic, environmental and social development that simultaneously satisfies people´s needs without jeopardizing the needs of future generations. The balance means, that none of these areas cannot be preferred in the long-term period without damaging one of other two pillars (Fridrich, Markvart, 2002). Due to the monitoring and evaluation processes within three pillars of sustainable development and their changes in territories and in time it is possible to achieve a knowledge and understanding of these changes, their character and causes. A suitable tool for objective description of observed phenomena in different parts of the territory are indicators also called indexes or metrics (Maier, 2012). The indicator should serve as an information system expressing the rate of the development of the region and the ability to use the resources flowing into the region or made in the region. It is essential to evaluate the development ability and obtained data reintegrate into the decision-making process and policy documents (Svatošová et al. 2005). According to Jeníček and Foltýn (2010), the indicator is such index that is obtained by continuously monitoring, recording and subsequent assessment of certain data. Hřebík and Třebický (2007) report that it is possible to observe many types of indicators that are usually divided according to individual monitored scope and methodology.

The main aim of the paper is to evaluate the sustainable development in the selected municipalities of the region Podluží in the district Břeclav. The chosen set of sustainable development indicators was used for the assessment of sustainable development in the period 2009-2013. Based on the results of the indicators analysis the priorities and development measures are drawn. This evaluation is completed by specific recommended activities for the preservation and promotion of sustainable development in the region Podluží.

Material and Methods

The region Podluží is located between towns of Hodonín and Břeclav. Due to favourable climatic conditions the region is known primarily for the environment kindly for winegrowers and fine wines that are sought out by many visitors and tourists. The name Podluží is related to stagnant water or to flood-plain forests typical for this part of the Czech Republic (Čupa, 2009). All selected municipalities are members of the Voluntary Association of Rural Municipalities under the auspices of Local Action Group Dolní Morava. This LAG was founded in 2004 to protect, promote and coordinate the common interest of associated municipalities mainly in the area of regional development, cross-border cooperation, tourism, culture and environment.

From the perspective of geological structure the region Podluží belongs to the Carpathian geological system; the larger part of the territory lies on the Lower Morava Valley; smaller northern part belongs to Dyjskomoravské hills. As a dry and hot territory the region Podluží has generally mild winters with prolonged sunlight. According to the typology of climatic zones (Quitt, 1971) studied area falls into the warm climate (T4), which is characterized by the warmest climates in the country.

Figure 1 The localization of selected municipalities in the region Podluží within the district Břeclav
Source: Own processing based on own data collection

The sustainable development evaluation of selected municipalities is based on the analysis of indicators from economic, environmental and social sphere.

The level of economic development was evaluated based on five indicators (Out-of-state budget finance, Debt service, Rate of investment, Support of local NGOs and Intensity of entrepreneurial activity). There were five indicators for evaluation of environmental pillar (Ecological stability, Municipal waste separation, Public expenditures on the environment protection and Wastewater treatment) and six indicators of social pillar (Net migration rate, Population growth rate, Age index of population, Registered unemployment rate,

Civil society index and Voter turnout). Individual indicators were selected from the database of so-called Stock indicators of sustainable development at the local level (TIMUR, 2006) and also on the basis of the Manual on processing and use of a set of indicators of development for the small municipalities (Hřebík and Třebický, 2007). The evaluation used data from the time period 2009 – 2013. All results of indicators analysis of three pillars and for all municipalities are represented using SWOT analysis and description. Additional, priorities and measures aimed at individual pillars of sustainable development are proposed.

Results

The essential characteristic of the region in term of economic pillar is relatively low entrepreneurial activity. Greater amount of enterprises is concentrated in the nearby larger and most important settlements Břeclav and Hodonín. The characteristic of entrepreneurial activity combines closely with social pillar. Due to convenient and easy access to main towns many residents commute to work and they may not be registered at the Labour Office. On average, there are only 98 active economic subjects in all municipalities per 1 000 residents with significant proportion of self-employed persons. From this point of view most of resident also have to commute to work. All municipalities are located in the border and this fact represents an opportunity for cooperation with foreign investors and employer from mainly Austria. The very significant economic sector in this region is undoubtedly viticulture. Many winemakers profit from wine sales to smaller wine shops in the surrounding towns and by smaller proportion to tourists. A big risk for this kind of business is the import of cheap wine from abroad and it is very difficult to compete on price due to production costs. Therefore, all municipalities should be involved in the promotion of domestic products and interpret the benefits of buying local product to potential visitors. Due to the characteristics of the region, there are very good conditions for the development of specific forms of tourism such as rural tourism and wine tourism.

Table 1 SWOT analysis of the economic pillar of selected municipalities in the region Podluží

Strengths	**Weaknesses**
• Low, decreasing municipal debt • Good accessibility and infrastructure (connection to international routes) • Geographic location - border region • Above-average quality of agricultural land fund • Presence of unused buildings • Occurrence of mineral resources (natural gas, lignite) • Famous wine region • Strong and expanding international and cross-border cooperation between municipalities • Suitable conditions for the development of specific forms of tourism (rural tourism, wine tourism, cycling) • Well processed website	• Downward trend in the allocation of funds in the form of grants • Lower investment rate • Low business activity • Presence of unused, abandoned buildings • Absence of large enterprises • Higher proportion of freelancers • Generally low support for nongovernmental organizations • Continuing seasonality in tourism - insufficient supply in winter • Insufficient background for tourism
Opportunities	**Threats**
• Support and development of business • Obtaining grants and funds • Development of cooperation between municipalities in the region, cross-border cooperation • Creating conditions for potential investors • Land fund management • Utilization of abandoned, still unused buildings and areas • Greater support of club activities • Development of tourism and recreation • Extension of tourist season • Website update	• Decay of unoccupied, abandoned buildings and areas • Unwillingness to sell unused property held in private ownership • Poor knowing of entrepreneurs • Change of state policy in the field of agriculture • Change of legislation in the field of business • Lack of finances • Cheap wine from abroad • Restricting communication between municipalities • Unattractiveness of the region and the outflow of tourists

A part of the region belongs to the Biosphere reserve Dolní Morava characterized by precious flood-plain forests and to the Site of Community Importance „Soutok – Podluží“ and the Special Protection Area for birds „Soutok – Tvrdonicko“. Therefore, the main priority for municipalities in region is to cooperate in the field of nature and landscape protection. On the other hand, given the high proportion of arable land and relatively large built-up areas this territory is characterized as intensively used cultural landscape with a significant application of agro-industrial elements. To increase the ecological stability of the area it is necessary to focus on the regulation of new urban and built-up areas and support the implementation of the features of territorial system of ecological stability. All municipalities should also aim on promotion of waste separation, raising awareness of residents in connection with the use of solid fuels for heating, removal of old environmental burdens and illegal dumping sites. Finally, the region should jointly focus on flood protection measures (still insufficient in municipalities) and on increasing the water storage capacity of the floodplains of watercourses and retention capacity of the landscape.

Table 2 SWOT analysis of the environmental pillar of selected municipalities in the region Podluží

Strengths	**Weaknesses**
• Quality environment and diversity of nature • Presence of floodplain forests • Lower Morava Biosphere Reserve, Site of Community Importance, Bird Area • 7/8 of municipalities connected to the sewage treatment plant and sewerage system • Increasing number of inhabitants of individual municipalities connected to the sewage treatment plant • Collection point or collection yard in each municipality of the region • Dense network of containers for waste separation	• Insufficient stability of the territory • Inadequate flood protection measures • Lack of rainfall, drought • Illegal landfills • High proportion of undermined area especially by lignite mining • Territorial development eliminated by the protection of mineral deposits • Existence of environmental burdens
Opportunities	**Threats**
• Raising public awareness of the environment • Obtaining grants and financial resources of the OP Environment • Pumping grants to build a sewage treatment plant in the municipality Ladná • Revitalization of watercourses, adaptations to increase territory accumulation capability • Implementation of flood protection measures • Preventing illegal landfills by using mobile collection places • Reducing the amount of municipal waste • Support for non-motorized forms of transport	• Drying of floodplain ecosystems • Climate change increasing the risk of floods and conflicts of development projects with flood protection • Illegal landfills and environmental burdens • Lack of funding for environmental protection • Devastation of the environment as a result of tourism • Increasing automobile transport (impact on air quality and noise)

The social sphere is very connected with the economic sphere particularly in the context of employment. Compared with the district Břeclav the region of Podluží has still relatively high unemployment rate although there is a very good accessibility because of the integrated transport system. The availability of Brno agglomeration without car is within one hour. Due to good transportation and the overall localization of the region residents have easy access to Austria and Slovakia what open the possibility of getting a job offer.

The region is located in area with high quality of natural conditions so it is possible to present the region as a good place for young families with children. All municipalities should adapt municipal infrastructure for this part of residents. Weak point of the region is the number of places for leisure activities. It can be recommended to extend the system of playgrounds, new sport opportunities, green places etc. For example, to create high-quality and adequate facilities for expectant mothers, to offer courses and joint actions can be a positive impulse to upbringing children in the region. Primary schools are located in all municipalities except municipality of Kostice where residents share the facilities with adjacent municipality

of Tvrdonice. The highlighting the good accessibility of children to education at all levels can influence the decision of young families.

Table 3 SWOT analysis of the social pillar of selected municipalities in the region Podluží

Strengths	**Weaknesses**
• Positive migration balance in most of the municipalities • Human potential • Easy access to work commutation to the district town and other towns • Functioning integrated bus system between municipalities and cities • Cultural heritage, folklore, tradition • Strong inhabitant relations to municipalities and to the Podluží • Interest organizations and social activities, a wide range of leisure activities • Stabilized network and quality of schools • Good availability of secondary schools in Břeclav • Relatively good access to universities in Brno • Sufficient amount of daily needs service • Above-average electoral participation	• Negative natural population increase in most municipalities • High unemployment • Rising unemployment across the region • Lack of job opportunities • Low participation rate of local associations in tourism • Insufficient facilities for cultural and leisure activities • Lower concentrations of commercial services in the municipalities of the region (cash dispensers, financial services, etc.) • Relationships between people in some municipalities
Opportunities	**Threats**
• Retraining of unemployed • Support of birth rate • Support and service development for seniors • Greater financial support for club activities in municipalities • Integration and citizens' motivation, utilization of human potential • Developing and maintaining of folklore traditions • Use of free spaces in schools for interest education activities (eg. activities of seniors, etc.)	• Leaving of young people for job opportunities to other locations • Decreasing population • Aging population • Need for greater social support due to the aging population • Low community activity of residents • Indifference of municipalities about events in the region • Extinction of traditional culture • Insufficient interest of the population about traditional local associations

Priorities and actions rise from indicators analyses of all pillars in all selected municipalities in the region Podluží. Priorities and actions directed to individual pillars of sustainable development are listed below.

Priority 1: Encourage entrepreneurship and employment creation; increase the attractiveness for investors and their business plans

Action 1.1: Create offers for attracting business plans to municipalities

Promotion the economic potential of the area (eg. a constantly updated website)

Preparing available, appropriate plot and objects for business development (land, buildings, halls, or brownfields - dealing with the issue of property rights, territorial limits)

Developing knowledge of subsidies and their maximum utilization by local entrepreneurs (training, promotional materials)

Ensuring quality technical infrastructure

Priority 2: Support tourism development

Action 2.1: Increase promotion and support arrangements of cultural events

Creating a program of events in the region throughout the year and its promotion

Supporting educational and informative seminars aimed at service providers in tourism

Increase funding for local associations active in the field of tourism

Action 2.2: Promotion and preservation of traditions

Support associations aimed at preserving and restoring local traditions

Support and promotion of local identities - local food, eminent personalities, cultural events, etc.

Expanding communication with bordering municipalities in Slovakia and Austria - joint cultural events focused on tradition
Action 2.3: Services and infrastructure for tourism
Cooperation between municipalities to extend the existing bicycle paths
Expansion of thematic tourism (traditions, gastronomy) and offering specific forms of tourism (cycling, tourism, horse riding etc.).
Increasing the quality of human resources in tourism
Action 2.4: Improvement of tourism infrastructure
Creating a landmark tourist signs in individual municipalities
Construction of facilities for daily recreation for residents

Priority 3: A good quality environment, agriculture, forestry

Action 3.1: Nature and landscape protection
Respect the limits of the Biosphere Reserve, Sites of European Importance as well as Special Protection Area for birds
Maintenance of watercourses, increasing retention capacity
Enhancing the use subsidies in the field of environmental protection
Action 3.2: Reduce the discharge of pollutants into the landscape
Completion the lack of sewerage and sewage treatment plant in the village Ladná, construction and expansion waste collection yards, extending collection points, solving potential of bio-waste
Increasing the waste separation and reducing the amount of waste deposited in landfills
Say no to waste burning in households
Action 3.3: Support increasing the ecological stability of the territory
Presentation of friendly agriculture between the farms and support its implementation
Removing old environmental loads and land reclamation after mining
Action 3.4: Increasing the public awareness about the environment and its protection
Enhancing public awareness on the efficient sorting of municipal waste
Promoting the use of environmentally friendly fuels for heating (gas, biomass, etc.).
Support local associations focusing on environmental protection
Creation and application of environmental education programs in nursery and primary schools in villages

Priority 4: Enhance quality of life

Action 4.1: Ensuring a higher quality of life and improved public facilities
Construction of facilities for families with children (playgrounds)
Renovation and construction of facilities for leisure activities (culture, sport)
Restoration of parks and expansion of public green plantings
Support for leisure for seniors
Ensuring medical facilities in all villages
Encourage at least one ATM in every municipality
Action 4.2: Support of community belonging and communication with the public
Construction and modernization of community centres
Holding regular meetings, discussions with citizens, local entrepreneurs, associations and institutions
Regular monitoring and evaluation of requirements and needs of citizens
Action 4.3: Development of activities of local associations
Increasing support of local associations and establishing new associations reflecting interests of citizens
Promotion of associations among young people and support individual youth activities in social life
Support associations dedicated to seniors

Priority 5: Supporting employment and improving the quality of human resources in the region

Action 5.1: Reducing unemployment and creating new jobs¨
Support entrepreneurs that generate jobs
Increasing the potential of our human resources through requalification and other courses
Support business meetings from one field

Conclusion

The paper deals with the state of sustainable development in the eight municipalities of the region Podluží belonging to the District Břeclav. The evaluation of sustainable development is based on description of individual indicators from economic, environmental and social pillars.

The first indicator set was focused on the economic pillar of development in the region. The evaluated indicators were Out-of-state budget finance, Debt service, Rate of investment, Support of local NGOs, Intensity of entrepreneurial activity. Compared to other two pillars the economic part seems to be the most problematic. From the perspective of obtaining subsidies to support the development of the village, all the municipalities are below the average for the region. It reflects the unwillingness or inability of municipalities to apply for funding from other sources. The average investment rate of the selected region for the period of five years is approximately 30%. The positive aspect is the value of the total debt service of the region, which corresponds to a rate of investment. All municipalities do not use excessive lending with liabilities and subsequent interests. Investments are adequately covered by own resources. The indicator of the support of NGOs is connected with social area. It reflects the interest of municipalities to develop local associations respectively the whole area. Subsidies in this sector should be increased in all municipalities. Currently, only less than 2% of the total expenditure is devoted to local NGOs.

The environmental part of the analysis was focused on the evaluation of four indicators (Ecological stability, Municipal waste separation, Public expenditures on the environment protection, Wastewater treatment). Monitoring area of the region was evaluated as less stable, intensively utilized cultural landscape. Forestland covers 30% of the area, but the cause of instability is the proportion of arable land, which occupies 51% of the total area of the region. All selected municipalities, except the municipalities Ladná, are equipped with sewerage systems ended in the wastewater treatment plant. All municipalities annually divert part of the funds to environmental field. Usually in regular and necessary activities such as waste disposal or care for the appearance of municipalities and public green spaces. Average amount of invested funds are below 20% of total expenditure.

The last analysed part of the sustainable development has been dedicated to the social sphere and contained an analysis of five indicators: Net migration rate, Population growth rate, Age index of population, Registered unemployment rate, Civil society index and Voter turnout. The age index is increasing every year by the value of nearly 0.1 in the monitored region. That means increasing the number of people older than 65 years against a group of children ranging in age from 0 to 14 years old annually by 10%. This phenomenon has an impact on the increasing demand for medical and care services. The net migration rate reached positive values during five monitored years. But the development of this indicator has gradually declining trend. It is therefore necessary to focus to support the promotion of the region as a place for inhabitation and life. Certain urgency derives also from the negative population growth rate. It should be emphasized all the positive aspects of living in smaller communities, and it is necessary to underline the good availability of district towns and the city of Brno. Residents actively participate in the decision-making process in municipalities. This can be derived from the relatively high turnout. Civil Society Index pointed to relatively good social conditions in all municipalities. Around 19% of the total population receive on one non-profit organization. The increasing unemployment rate is the negative factor in the social pillar. The registered unemployment rate reached an average of nearly 15% in the region which is more than 2% higher than in the district of Břeclav and more than 3% in the South Moravian region.

The real application of the results of this study can be seen mainly in updating the existing strategic documents (e.g. Development Strategy for the Region Podluží).

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BE PART OF CSA! WHAT IS THE MOTIVATION TO JOIN COMMUNITY SUPPORTED AGRICULTURE IN THE CZECH REPUBLIC?

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Abstract
The study introduces a new consumer approach towards organic agriculture in the Czech Republic. By researching the perception of values held by members of Community Supported Agriculture (CSA) in the Czech Republic, this study provides valuable insight which may strengthen food networks created between producers and consumers on a local scale. CSAs are direct partnerships between farms and local consumers resulting in a communal sharing of the risks, responsibilities and rewards of farming activities. Generally operating on a small-scale, CSAs aim at providing quality food produced in an agroecological way. The CSA movement is rapidly growing all around the world and the Czech Republic is recently following the trend. Using an online survey of 99 members who belonged to 11 CSAs in the Czech Republic during 2014 and 2015, we assess members' reasons for joining their CSA. The primary motives found among members were ability to access high quality food and the desire to support local farmers. This is expressed by their "perceived benefits" provided by the CSA. The "perceived sacrifices" by the majority of members were found to be the lack of product choices and dysfunction within the community. These findings correspond with the results of similar studies.

Keywords: local groups; alternative food networks; CSA; producer/consumer relationships; participation

JEL Codes: Q13, O52

Introduction

Food chains are complex socio-ecological systems operating on multiple scales (Toth et al., 2015). Besides the traditional forms of food systems (supermarkets, farmer's markets, etc.) recent trends in consumer demand also include alternative options for the food supply chain or "Alternative Food Networks"; such as Community Supported Agriculture (CSA) (Lagane, 2015). According to the European CSA Research Group (URGENCI, 2015), CSA is "*a direct partnership between a group of consumers and one or several producers whereby the risks, responsibilities and rewards of farming activities are shared, through long-term formal or informal shared agreement. Generally operating on small-scale, CSAs aim at providing quality food produced in an agroecological way*." According to Cone and Myhre (2000), this is usually done by an initial investment from members which provides capital for farmers at the beginning of the season. Thus, as shareholders, members receive production or other goods as return on their investment which depends on the success of the season. One of the main aims of CSAs is to create a functional cooperation among consumers and farmers to ensure that communities can cope with external stresses and disturbances which may influence food market systems as a result of social, political and environmental changes (Adger, 2000). What distinguishes CSA from other types of direct agricultural markets (e.g. seasonal roadside stands, U-pick operations) is its special emphasis on creating and building community around the interwoven issues of food, land and nature (Hinrichs, 2000). Ensuring food resilience through social safety nets need not only rely on institutional structures, such as forms of social security or benefits; local social networks can also provide resilience through networks of family, friends, neighbors and faith based organisations (Toth et al., 2015).

The focus on community, reciprocity and education in CSA makes a social network, which is highly embedded, directly into the agricultural market. Hinrichs (2000) claims that for a CSA to last while adhering to the movement's ideal of a holistic community it must foster a committed group of members at its core. Originally CSAs were designed to build community proximate to the farm with members collecting their goods on site, encouraging a closer connection between the farmer and members. More recently, CSAs have expanded in scope extending their reach to suburban and urban areas illustrating a metamorphosis in cooperative farming endeavors from small towns and cities to include ventures with a regional emphasis.

Changes as this demand rethinking of commonly held notions of community in CSA (Pole and Gray, 2013). Member participation is, therefore, critical in establishing and maintaining a connection to the farm that inspires commitment to a particular CSA. The role of community in CSAs naturally ranges from CSA models which involve the full support of the community to market-oriented models in which community plays a limited role (Pole and Gray, 2013).

The aim of the study is to describe the overall situation of the CSA movement in the Czech Republic and particularly to investigate members´ motives for joining a CSA. This concept is inspired by the study of Pole and Gray (2013), not only due to the great overview of community notions related to CSA in this study, but also because they claim that smaller studies investigating the motives of CSA members can play an important role in exploratory and descriptive research about CSAs. Although generalizations are not often possible due to the huge variety of CSAs around the world, characterization of the typical CSA participant can help target the particular individuals, who are more likely to join and who would benefit most from a CSA program (Uribe et. al., 2012). This case study, therefore, asks a research question according to Pole and Gray (2013): *"What motivates members to join CSA? Is it to meet like-minded individuals and/or share financial risks in support of local farmers - activities constituting community or elements of community - or do members primarily desire ultra-fresh, seasonal, organic produce for reasons related to health and taste, with little connection to community?"*

Material and Methods

The analysis is based on a data set provided by "Asociace místní potravinových iniciativ - AMPI" (Association of Local Food Initiatives, www.http://asociaceampi.cz), which is a non-profit organization in the Czech Republic. Its main target is to educate adults in the field of environmental aspects of agriculture and food consumption, to provide advisory services for farmers and consumers, to assist them in setting up local-food initiatives and social enterprises, to promote local food alternatives and to perform research and study activities in the field of sustainable farming and local food systems.

We examine the CSA membership by analyzing the results of an online survey distributed by AMPI to CSA members between November 2014 and October 2015. The email sent to CSA coordinators contained an explanation of the study and a link to the online survey. The coordinators were asked to send the online survey to all CSA members. Consisting open-ended and close-ended questions, the survey was divided into two sections including member demographics and member motivations for joining CSA. Using open-ended questions, respondents were asked to answer these questions: Why did you decide to join CSA? What are the benefits/disadvantages of being a member of CSA? We categorized answers according to taxonomy of perceived value in CSA which was developed by Chen (2013). The taxonomy includes two broad categories: perceived benefits and perceived sacrifices, which form the overall perceived values of CSA members. Chen (2013) distinguishes categories of value for perceived benefits to be: product benefits, emotional benefits and social benefits. The perceived sacrifices include categories of inconvenience and risk. For the purpose of this study, we added an additional subcategory (level 2) in order to obtain a greater detail of member incentives. The classification scheme with description is listed in Table 1.

Table 1 The taxonomy of perceived values in CSA

PERCEIVED BENEFITS		
Level 1	*Level 2*	*Description*
PRODUCT BENEFITS are related to the perceived utility of joining CSA to solve food consumption-related problems	**Quality**	is the concern about the quality of the food (fresh, high quality, nutritional, healthy, organic produce)
	Cost	is the concern about cost and time savings
	Safety	is the concern about safety and reliability of food supplies
	Seasonality	is the respect for seasonal cycles of nature; avoiding the problem of choice; surprise
EMOTIONAL BENEFITS refer to perceptual benefits acquired from a CSA farm and community to arouse feelings and/or affective states	**Support**	means the support for a local farm and local community; a sense of spiritual fulfillment and civic responsibility
	Knowledge	is ability to gain a stronger understanding of the relationship between sustainability and the environment; increase knowledge in food production and environmental issues; curiosity and interest in innovative ideas
	Lifestyle	is the interest in lifestyle change, especially in connection to food (increasing consumption of vegetables, new style of cooking or diet)
	Independency	the independence from global food chains
SOCIAL BENEFITS acquired from a CSA farm and community association with social class, social status, or a specific social group	**Involvement**	is being involved with the farm and community; participation in community activities; learning more about each other´s circumstances, interests and needs; creating a more integrated community
PERCEIVED SACRIFICES		
Level 1	*Level 2*	*Description*
INCONVENIENCE is the discomfort and difficulties related to being a part of a community	**Lack of choice**	is the limited choice of production or its amount, pick-up place and time; seasonality; inclusion of unfamiliar or undesirable vegetables; variability or poor quality of food
	Participation	is the need to invest the time and energy to participate in community activities and communication
	Dysfunctional community	means poorly designed community rules; poor communication

RISK is the share of risk and uncertainty	**Responsibility**	the possibility of a bad season and sharing the risk with the farmer
	Monetary value	the sense of uncertainty about the monetary value of the CSA share

Source: Own processing based on own data collection

Results and Discussion

Overview of the CSA situation in the Czech Republic

As of 2015, there are 24 known CSA schemes or initiatives in the Czech Republic. Some well-established CSAs have been in the direct agricultural market for a long period of time, the first CSA was established in 2008. The majority of CSAs belonged to the informal network of local food initiatives, although a formal network of CSA was established in 2015 due to the activities of AMPI. CSAs are unevenly distributed within the country (see Figure 1), particularly concentrated in big cities such as Prague, Brno and Ostrava.

Figure 1 The distribution of Community Supported Agriculture (CSA) initiatives in the Czech Republic in 2015

Source: Own processing based on own data collection

The majority of the CSAs (13 initiatives) act as a **Community subscriber group.** This category is described as a group of consumers committing to an existing farm for a specified period of time. Consumers usually commit to a subscription by season (whole or a half season), and pay in advance for the membership (usually in installments). Members are responsible for organizing the administration of the group and location for distribution. Farming is the sole responsibility of the farmer who is an entrepreneur selling his production to members. Risks and rewards are shared to a certain degree as consumers usually agree to receive shares based on output (smaller/no shares in emergency cases).

Community shared farms (5 initiatives) are a type of CSA organized by a community or non-governmental organization (NGO) which hire a farmer to manage the cultivation on land own/rented by the enterprise. All

costs and benefits (such as production) are divided among members. The farmer is usually both a member and employee, who is often solely responsible for production and farm operations (including volunteer organization). Risks and rewards are shared fully.
Another type of CSA (6 initiatives) are a **Subscription CSA group.** The farmer offers his products and consumers subscribe for shares during a whole season for a discounted price. Deliveries and the outlet for distribution are organized by the farmer. There is no risk or reward sharing. Moreover, no commitment apart from advance payment and subscription for the entire season is required from the subscribers. This type of CSA can encounter problems if community involvement is not strong. Without an active community at its core the significant burden of running the CSA often falls on the farmer(s), which in turn can overwhelm small-scale operations and lead to an unsustainable system (Hayden and Buck, 2012).
Concerning the number of consumers involved in these 24 CSAs in the Czech Republic, there are approximately 600 members (usually families) involved; which can mean around 1400 people in total. There is currently no central registration; therefore these numbers are rough estimates. In the future, this database should be administered by AMPI to gain more accurate figures. Based on survey results 19 farmers are the suppliers for the 24 CSAs in the Czech Republic; 10 of whom are officially certified organic farmers. The other 9 farmers declare to farm according to organic principles without having obtained the official certification.

Members´ demographic characteristics
Of the 24 CSAs in the Czech Republic, there were 99 member respondents from 11 CSAs. The survey sample represents approximately 17 percent of Czech CSA members. In order to help us understand the background of members' motivations, we analyzed the demographic characteristics of the respondents. Among them, women represent a slight majority (66 %). If we examine the average age, the respondents tended to be younger than it was expected, 80 % were in the range of 26-40 years old, 2 % were below 26 years old, and 18 % were above 40 years old. 55 % of respondents have children living with them at home.
Education and socio-economic standing are valuable sections of the demographic survey. Interestingly, all respondents have at least high school education. Out of them, 81 % of respondents have a university degree. This suggests that members of these CSAs tend to be a highly educated part of the population with higher income. Based on wages recorded by the Czech Statistical Office (2015), the majority of respondents were making a monthly income which is near or above average for the Czech Republic (approximately 950 EUR). 15 % of the respondents reported their monthly household incomes around 370-740 EUR; 49 % 741-1480 of EUR; and 22 % higher than 1481 EUR; 10 % of respondents did not report their income at all.

Members´ motivations to join CSA
The impact of credential attributes on consumer preferences for CSAs has been found to have better explanatory power than other consumer characteristics, such as socio-demographics (Peterson et al., 2015); therefore this study focuses primarily on the characteristics of member motivation. The primary motives for members in the Czech Republic to join a CSA, based on this study, are expressed by their perceived benefits from the CSA. Perceived sacrifices are the primary factors considered by members to be downfalls to the CSA membership. The summary of results for perceived CSA benefits and sacrifices are given in Table 2. The value of each subcategory is represented by the percentage of total respondents whose answers in the questionnaire expressed those specific incentives.

Table 2 The importance of individual categories of perceived benefits and sacrifices for respondents gained through online survey (in %)

PERCEIVED BENEFITS		
PRODUCT BENEFITS	**Quality**	74 %
	Cost	26 %
	Safety	33 %
	Seasonality	18 %
EMOTIONAL BENEFITS	**Support**	60 %
	Knowledge	35 %
	Lifestyle	17 %
	Independency	20 %
SOCIAL BENEFITS	**Involvement**	35 %
PERCEIVED SACRIFICES		
INCONVENIENCE	**Lack of choice**	58 %
	Participation	12 %
	Dysfunctional	11 %
RISK	**Responsibility**	7 %
	Monetary value	6 %

Source: Own processing based on own data collection

The results of product benefits - Quality, Cost, Safety, Seasonality

The most common response for member incentives in joining a CSA in the Czech Republic is the ability to access healthy, fresh, nutritious and organic food. High quality of food is mentioned as an important value by 74 % of respondents in our survey. These results support the recent research findings that the primary motivation for members to join a CSA are the acquisition of fresh local vegetables (Pole and Gray, 2013, Schnell, 2013) and the desire to increase vegetable consumption (Russell and Zepeda, 2008; Uribe et. al., 2012). The main reason for participants joining a CSA cited by study of Saltmarsh et al. (2011) was for provision of more sustainably produced food. This is connected in our study with another significant outcome about Safety category. One third of survey respondents (33%) expressed concern about the safety and reliability of the food supply; they want to know where their food comes from, who produced it and what agricultural methods they use. The results support the assumption that CSAs are favored by people who have sufficiently strong preferences for local food and financial resilience to withstand potential costs associated (Peterson et al., 2015). Another common driver for CSA membership is awareness of seasonality — the idea that one should eat not only locally, but also what is in season (Schnell, 2013). Our study found 18 % of respondents valued the concept of seasonality.

The results of emotional benefits - Support, Knowledge, Lifestyle, Independency

The motivations of CSA members reported in a range of existing studies appear to be largely similar, focusing not only on access of quality foods but also on concern for the environment or support for local

farmers (Perez et al., 2003; O'Hara and Stagl, 2002; Cone and Myhre, 2000). Our findings suggest that the local food movement in the Czech Republic is also strongly motivated by people's support for local agriculture and economy. This is expressed by 60 % of respondents who selected the Support category as a valued benefit. A personal relationship between consumer and farmer, rather than the anonymity of supermarket shopping, is therefore one of the motivations to join a CSA. As expressed by one respondent: *"I do want to support particular people. I buy meat at a small butcher shop. I never enjoyed buying vegetables from around the world in a supermarket. That is why I joined the CSA".* Some members (20%) even directly express their need for independence from global food chains as they realize the broad negative socio-economic and environmental consequences of global markets and the importance of food sovereignty.

The decision to "eat better food" is also associated with an effort to change food lifestyle for 17% of respondents. Buying organic food, increasing vegetable consumption and changes in lifestyle is for 13% of respondents primarily a response to concern for the health of family, specifically for their children. Family values influence the choices of CSA members in regards to knowledge as well as health. One third of respondents (35%) expressed a desire to gain a stronger understanding of sustainability in food production and the environment issues. This is illustrated by one respondent's answer: *"I want my children to know, how vegetables are growing."* Overall, it is more important for the surveyed CSA members that the vegetables were grown by means that protect the environment without the use of unnecessary chemicals, than the official organic certification of the farmers. According to Schnell (2013) the formal certification can be replaced in the concept of CSAs by the personal trust and knowledge of farmers and the agricultural processes, which they use.

The results of social benefits - Involvement

CSAs offer an opportunity for community members to build a closer relationship with the farmer and potentially with other members. Many CSAs also include elements such as opportunities to work on the farm or social events. In the Czech Republic, the option for participatory involvement in community activities is important for 35% of respondents. CSAs can offer a forum for meeting with like-minded individuals offering mutual support. This was reported to be frequently cited value among respondents in the study of O'Hara and Stagl (2002). Lang (2010) suggests that the members of CSAs are more interested in the theoretical aspect of community rather than the practical involvement; therefore, their rate of actual involvement in local community issues is often low. Level of desire for community involvement varies significantly among members. For CSA farmers this means that they should not judge the success of their CSA by how often or how many of their members are actively involved with the operations. Farmers should recognize that different members have different needs (Zepeda et al., 2013). Some members would rather pay a little more money per share in order to have fewer, if any, farm-related responsibilities (Lang, 2010). This conflict between community involvement and member participation is a significant finding also in our study and it is important to differentiate between the two.

The results of inconvenience - Participation, Dysfunctional community, Lack of choice

Member participation is supposed to be critical in establishing and maintaining a community connection to the farm, which inspires commitment to a particular CSA (Hinrichs, 2000); although the study by Cone and Myhre (2000) shows that few members are actually interested in or willing to participate enough to establish such a community. O'Hara and Stagl (2002) found that while a "stronger sense of community" was a factor in motivating people to join a CSA, this became less important during the membership period. Cone and Myhre (2000) were also surprised by the consistently low ranking of value of community in survey results. Our study shows that 12% of respondents claim that they do not have the desire to commit time and energy into the participation of CSA community involvement. Specifically emphasized by one respondent: *"I do not have either the time, energy or interest to participate in community activities. During the week, I am tired when I come home from my job. On the weekend, I do not want to go to work in the field."* These results are supported by the study of Russell and Zepeda (2008) as they also found that the members may have limited time and therefore do not engage in community social activities. Moreover, in our study 11% of members in the Czech Republic complain of a dysfunctional community. One respondent commented on the situation in his CSA: *"We are not a community. We do not meet. There are only three people going to help on the field, the rest are not interested, although everyone claims the contrary."* The

low occurrence of social interaction among CSA members could be explained in a few different ways. It could be attributed to the fact that members already have their own established communities and are not interested in building new relationships or getting involved with additional projects (Russell and Zepeda, 2008, Lang, 2010). Pole and Gray (2013) concluded that most CSA members did not experience a strong sense of community, nor was it a dominant motivation for joining CSA. O'Hara and Stagl (2002), for example, found that over time, members claimed to be more strongly motivated by concern for the environment, eating vegetables in season, reducing packaging and knowing where food comes from, and less motivated by seeking a sense of community. Zepeda et al. (2013), therefore, concludes that community building is often imagined.

Lack of choice is also a common cause of discontent within the CSA (Chen, 2013). Similarly, in our study 58% respondents were not satisfied with the diversity, amount or freshness of the produce. The typical complaint is: *"Share composition was too dull and repetitive."* Another respondent answers: *"Sometimes, there are too many vegetables which we are not able to handle or eat."* Respondents also complain on limited choice of pick-up location and time: "*The pick-up place is too far for us. It is time and money wasting, because we have to use the car and pay too much for fuel."* These problems are related to poorly designed community rules and poor communication which is supported by the study of Cox et al. (2008) as they found that communication with participants can be beneficial to CSA managers and can encourage a reflexive kind of understanding which in turn leads to long-term commitments and tolerance amongst consumers. The motivation of members indicates that high participation is correlated with a broader understanding of the implication of CSA and a greater commitment to its ideals (Cone and Myhre, 2000). Some studies of CSAs have shown that consumers can join simply for convenience and that it is CSA managers that end up supporting community-building activities (Cone and Myhre, 2000; Hinrichs, 2000).

The results of risk - Responsibility, Monetary value

In our study some respondents (7%) are aware of the responsibility related to possibility of a bad season and sharing the risk with the farmer. Consumers typically pay in advance and if the outcome is less than expected, there is no refund for CSA members. 6% of respondents are not sure about the monetary value of the share. As presented by one respondent: *"It is not as cheap as in the supermarket."* Such an answer signals, that respondents are not always aware of the externalities and the hidden cost of cheap food. As confirmed by Cox et al. (2008), communication within CSAs can help members to better understand the values of CSA schemes. Knowledgeable and "hands-on" members may be more tolerant and forgiving, if problems arise. In the future, the success of the CSA movement may depend on the willingness of shareholders to participate more actively in their farms or to pay a higher price for their shares (Cone and Myhre, 2000). The perception of consumer motives however, is crucial for understanding the influence that consumer behavior has as an integral part of a demand side analysis in sustainable development (O'Hara and Stagl, 2002).

Conclusion

This research contributes to the general knowledge of CSA members and their preferences, while advancing the understanding of the perceived values concept for CSA members in the Czech Republic. The members' primary motives to join CSA in this study were the access to high quality fresh food and the opportunity to support local farmers. These findings are expressed by the perceived benefits of members discovered by the online survey distributed through Czech CSAs. The sacrifices perceived by the majority of CSA members in the Czech Republic were found to be lack of choice and dysfunctional community. These results however, cannot be generalized as our study contains several limitations. Firstly, the study is focused only on CSAs in the Czech Republic, therefore our ability to generalize results with other locations is limited due to different cultures, historical background and conditions. Secondly, limitations in research results may be related to the length and complexity of the online questionnaire, its biases and the way of its distribution. Since respondents are self-selecting, the sample of this study cannot be taken as a representative sample of CSA members in the Czech Republic. Nevertheless, the study increases knowledge about CSA in the Czech Republic and may be the step to further extensive research.

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POPULATION DYNAMICS AND SUSTAINABILITY IN EASTERN AFRICA: CASE STUDY OF BURUNDI

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Abstract
Sustainability are facing many challenges population dynamics are among them, this paper contributes to analysis of the relationship between population dynamics and sustainability issue Burundi and the factors that can improve sustainable development in this country. The use of bivariate correlation permits to conclude that the growing density of population has a positive relationship with agricultural production, gross domestic product and gross domestic product per capita but the increase of gross domestic product and agricultural production has negative effect on the environment. The carbon dioxide emission increases with agricultural production and gross domestic product and that carbon dioxide emission has a negative relationship between life expectancy. Burundi has to control the growth of population and makes an efficiency allocation of the growing labour force due to its growing population; review his economic sector such as agriculture in order to achieve sustainable development.

Keywords: sustainability, population dynamics, relationship

JEL Codes: O15, Q01, O55

Introduction
Population growth affects consumption, production, employment, income distribution, poverty and social protection as where complicates the healthcare, education, housing, sanitation, and water food and energy system and in this case can compromise sustainable development. Sustainable development is related to development that meets the needs of the present without compromising the ability of future generations to meet their owner needs (UNCED, 1987). Population growth influences production and consumption in a country that can compromise sustainable development what have been noticed by many authors (Elya Zulu et *al.*, 2012; UNDP, 2013; Akinyoade et *al.*, 2014). The population trends is now showing that a major proportion of population will be in less developed country and is highly increasing and continue to increase with domination of youngest people (9% in 1950 to 29% in 2050 (Haub and Mederios Kent, 2009*).* Africa population is growing rapidly and Sub Sahara Africa' s population is the most rapidly growing in comparison with other regions of the world (2012, population and sustainable development in Africa).
Burundi is among these countries. Burundi is facing population growth and density of population and many challenges for sustainable development. Burundi is in Eastern Africa, and bordered with Rwanda, Tanzania, and Democratic Republic of Congo and is among the most populated countries.
Burundi is facing a growing population and problems of affecting resources for sustainable development. The population density is high (408.3 inhabitants per square kilometre) and the fertility rate is also high 6,3 births per woman in 2014 (World Bank indicators, 2015) and the annual growth of population is 3,1 in 2014 (World Bank indicators, 2015).

Figure 1 Burundi political Map
Source: Own processing based on own data collection

In order to satisfy the needs of this growing population, the population uses all the possible means to get food and products for their life. The impact of actions and attitudes of population to adapt themselves to this population growth and high density can cause negative effects on sustainable development. The analysis of the correlation of the population dynamic and the other aspects of development such environment, economic and social issues can help to detect the impact of this growth on factors involved in sustainable development issues and on which and how to manage this situation for sustainable development towards dynamic population.

Methods and materials

The aim is to analyse the relationship between population density and aspects of sustainable development, and to analyse the relationship of the population dynamic and sustainable development aspects. We use bivariate correlation with SPSS software. The relationship analysis between population dynamics and sustainability aspects can help to detect, which aspects decisions and actions Burundi can emphasize, to achieve sustainable development.

The variables selected are: gross domestic products, carbon dioxide emission, health and life expectancy, agriculture production. The main ideas behind the choice of these variables is to analyse the relationship between them and to detect which among them can be emphasized by policy and actions for sustainable development according to their relationship with population dynamics and carbon dioxide emission connected to environment. These variables have been selected according to their importance link to economic, social and environment aspects that sustainability development pretend must be in equilibrium and available for future generation.

The analysis concerns the variables such as gross domestic product, gross domestic product per capita, carbon dioxide emissions, carbon dioxide emission per capita, total agricultural production in tonnes, life expectancy, and health expenditure. The data are from Food and Agricultural Organization database and World Bank indicators databases. The period of study is between 1996 and 2012.

The analysis is done with bivariate correlation analysis with SPSS. The bivariate correlation analysis method permits to evaluate the sense and to strengthen of weakness of relationship between the economic, social and environmental components of sustainable development.

Results and discussion

Data summary

Table 1 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
CO_2 emissions in thousands tonnes	154.01	322.70	229.73	57.92
CO_2 emissions per capita in metric tones	.020	.052	.032	.0121
Health expenditure per capita in USS	5.86	21.32	11.26	5.24
Health expenditure per in % of GDP	5.01	11.59	7.54	1.97
Density in capita per square kilometre	241.82	371.51	292.42	42.8
Annual population growth in %	1.19	3.49	2.6	.93
Total population	862428	9540362	7052761	1915617
Agriculture production in tonnes	2121312	2654820	2392844.8	167200.66
CO_2 emissions in agriculture gigrams	1139.35	1907.33	1339.01	233.34
Renewable internal freshwater resources per capita (cubic meters)	1.1	12.3	2.090	2.6359
Life expectancy in year	46.43	52.62	49.10	1.946
Gross domestic Product in current US $	784654423.6	2355652064	1193955419.8	472444998.7
Gross domestic Product per capita in current US $	106.02	240.61	152.17	36.63

Source: author's calculation

The analysis of data shows that average carbon dioxide emissions is about 229.73 thousands of tonnes and do not vary a lot, the standards deviation is 57.93. The CO_2 emissions per capita are 0.032 metric tonnes per capita. The average annual population growth in the period is about 2.6 and varies of 0.93% around average. The renewable internal freshwater is 2.090 cubic meters per capita and varies a lot, the standard deviation is 2.6359. The density is high and varies a lot, it average is 292.42.

Results of bivariate correlation analysis

The analysis of bivariate correlation shows us that the carbon dioxide emissions are negatively correlated with life expectancy, health expenditure and gross domestic product and gross domestic product per capita. The coefficient of Pearson correlation is respectively of -0.743, -0.498 and –0.77 all significant at level of 5% for these three variables. This can show that environmental issues in Burundi impact negatively on life expectancy, production and health of the population. The population growth imply the production and GDP growth what shows that density pushes population to positive and intensification of production system, but also leads to increase of health expenditure.

The agriculture production system has a great correlation with carbon dioxide emissions in Burundi, the increase of carbon dioxide emissions leads to a decrease of agriculture production, that shows the necessity of Burundi to emphasize on carbon dioxide emissions reduction policy. Carbon dioxide also impacts negatively gross domestic product and gross domestic product per capita, agriculture production, life expectancy and health expenditure. The economic sector that permit gross domestic product growing is

positively correlated with the destruction of environment, that is also proved by the positive relationship between agricultural production and dioxide emission and agricultural.

The Gross domestic product has negative correlation with dioxide emission per capita but the relationship between gross domestic product with agricultural production, life expectancy and the population growth is positive. The coefficients of bivariate correlation is 0.633 for agricultural production at level of 1%, 0.879 at level of 1% for life expectancy and 0.555 at a level of 5% then the coefficient of correlation between gross domestic product and carbon dioxide per capita is – 0.558 at level of 5%. Also the increase of gross domestic product leads to an increase of carbon dioxide emission in agriculture. The coefficient of correlation is high (0.995 at level of 1%)

The analysis of population density relationship with other variables shows that the relationship between population density and life expectancy, production, gross domestic product and gross domestic per capita is high and positive, at level of 1% the coefficients of correlation are respectively 0.826 for agricultural production, 0.925 for life expectancy, 0.907 for gross domestic product and 0.773 for gross domestic per capita. Meanwhile, the analysis of GDP per worker is decreasing and shows us there is no efficiency in production system in the sectors, which contribute to gross domestic products and that the increase of gross domestic product is due to the increase of labour force not to the efficiency of sectors.

The population growth and density leads to an economic development but increases environment destruction by dioxide emission. Burundi must review its agricultural system and other economic sectors in order to control and reduce dioxide emission and negative effects of economic growth to its environment. This must be combined with population policy and efficiency of allocation of labour force in order to achieve high economic growth and social development.

Conclusion

The population density of Burundi is positively correlated with agricultural production, gross domestic product and gross domestic product per capita, and life expectancy but the increase of Gross domestic product and agricultural production it involves has negative correlation with dioxide emission and dioxide emission in agriculture. Growing of gross domestic product is due to the growing of labour force not to the efficiency of labour allocation. This dioxide emission has negative relationship with life expectancy. Burundi must focus on its agricultural system and other sectors of economy, population policy and labour force allocation in order to achieve the sustainable development.

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Appendix

Table 2 Results of bivariate correlation analysis Correlations

		c	hp	hpp	d	cp	pgp	pop	x	coa	RWC	lex	GDP	GDPC
C	Pearson Correlation			-.777	-.712	.978	-.938	-.237	-.838	-.426	-.118	-.743	-.385	-.162
	Sig. (2-tailed)			.000	.001	.000	.000	.359	.000	.088	.653	.001	.127	.534
Hp	Pearson Correlation	-.498		.700	.880	-.635	.651	.339	.562	.882	.106	.849	.892	.840
	Sig. (2-tailed)	.042		.002	.000	.006	.005	.183	.019	.000	.685	.000	.000	.000
Hpp	Pearson Correlation	-.777	.700		.653	-.792	.833	.333	.569	.419	-.011	.660	.400	.238
	Sig. (2-tailed)	.000	.002		.005	.000	.000	.191	.017	.095	.966	.004	.112	.358
D	Pearson Correlation	-.712	.880	.653		-.841	.836	.317	.826	.923	.190	.995	.907	.773
	Sig. (2-tailed)	.001	.000	.005		.000	.000	.216	.000	.000	.464	.000	.000	.000
Cp	Pearson Correlation	.978	-.635	-.792	-.841		-.968	-.275	-.887	-.595	-.147	-.867	-.558	-.344
	Sig. (2-tailed)	.000	.006	.000	.000		.000	.286	.000	.012	.573	.000	.020	.177
Pgp	Pearson Correlation	-.938	.651	.833	.836	-.968		.241	.861	.589	.179	.852	.555	.352
	Sig. (2-tailed)	.000	.005	.000	.000	.000		.350	.000	.013	.491	.000	.021	.166
Pop	Pearson Correlation	-.237	.339	.333	.317	-.275	.241		.357	.326	-.871	.321	.296	.233
	Sig. (2-tailed)	.359	.183	.191	.216	.286	.350		.160	.202	.000	.209	.248	.369
X	Pearson Correlation	-.838	.562	.569	.826	-.887	.861	.357		.680	.057	.843	.633	.452
	Sig. (2-tailed)	.000	.019	.017	.000	.000	.000	.160		.003	.828	.000	.006	.068
Coa	Pearson Correlation	-.426	.882	.419	.923	-.595	.589	.326	.680		.144	.898	.995	.946
	Sig. (2-tailed)	.088	.000	.095	.000	.012	.013	.202	.003		.582	.000	.000	.000

RWC	Pearson Correlation	-.118	.106	-.011	.190	-.147	.179	-.871	.057	.144		.183	.167	.165
	Sig. (2-tailed)	.653	.685	.966	.464	.573	.491	.000	.828	.582		.482	.523	.527
Lex	Pearson Correlation	-.743	.849	.660	.995	-.867	.852	.321	.843	.898	.183		.879	.730
	Sig. (2-tailed)	.001	.000	.004	.000	.000	.000	.209	.000	.000	.482		.000	.001
GDP	Pearson Correlation	-.385	.892	.400	.907	-.558	.555	.296	.633	.995	.167	.879		.965
	Sig. (2-tailed)	.127	.000	.112	.000	.020	.021	.248	.006	.000	.523	.000		.000
GDPC	Pearson Correlation	-.162	.840	.238	.773	-.344	.352	.233	.452	.946	.165	.730	.965	
	Sig. (2-tailed)	.534	.000	.358	.000	.177	.166	.369	.068	.000	.527	.001	.000	

The correlation is significant at level of 1%, 5%, 10% , when the value of sig(2-tailed) is low than 0.001 , 0.05 and 0.1 respectively.
Source: Own processing based on own data collection

1. C :carbon dioxide emission
2. GDP : gross domestic product
3. GDPC : gross domestic per capita
4. X: agricultural production
5. HP :health expenditure
6. HPP health expenditure per capita
7. Lex :life expectancy
8. Pop :total population
9. PGP: annual population Growth
10. D: population density
11. CP: dioxide emission per capita
12. RWC: internal renewable water per capita
13. Coa: carbon dioxide emission in agriculture

PARTICIPATORY PLANNING AS AN ENGINE FOR REVITALIZATION OF SMALL RURAL FARMS: AN OVERVIEW ON LOCAL ACTION GROUPS IN SLOVAKIA AND SERBIA

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Abstract
Local strategic planning requires full bottom-up participatory approach, based on a genuinely participatory process in full consultation with local communities and organizations. An effective strategy for rural development should be able to recognize community priorities and identify the means through which local actions will contribute to achieving the local and national goals. Holistic indigenous views must be reflected in the planning of all policies relating rural people. Organizing and directing the local capacity to develop entrepreneurship based on biomass production is one of possible solutions to local development. Gathering of stakeholders in local action groups (LAGs) with a shared vision, is one of the main goal of the EU LEADER approach, as a key instrument for the promotion of cooperation between the public, private and civil sectors. The aim of the paper is to make a comprehensive overview on experiences gained through establishment and activities of LAGs in different projects and pilot regions in Slovakia and Serbia.

Keywords: Local Action Groups, overview, Slovakia, Serbia

JEL Codes: R58, Q10, R10

Introduction

Over the last few decades, rural landscapes have come under increasing pressure. Although agricultural land use has predominated for many centuries and still accounts for majority of the European territory, coinciding functions are now demanding a place of their own and are ready to take over. As urbanisation takes place in the countryside, the influence of urban agglomerations extends far beyond town limits. This development is felt in many different ways. Traditionally nonurban areas are increasingly being used for housing and businesses that accommodate urban lifestyles and architecture. Urban transport systems expand far into rural areas. New facilities for recreational activities and tourism have been established. Also, the countryside is used for nature preserves, retreats for species that are threatened by urban-influenced developments. All these processes are competing with each other for influence on and space in the countryside. Increased urbanisation of the countryside will increase competition among these functions, but as rural areas cannot be enlarged, more and more functions will have to be integrated simultaneously in a given landscape thus leading to multifunctional landscapes. Such a development results in an enormous challenge for planning in rural areas, which have to find ways to solve upcoming conflicts. The individuals included in the decision-making process, planners as well as researchers, must be able to identify and co-ordinate different functions while respecting and integrating the interests of many different groups. But can planners and researchers define future landscape functions and interrelationships solely on their own authority? How can they identify the interests of a specific area without asking the people living there? Landscape planning is often fixed on a top–down approach and involvement of stakeholders is not part of the official planning strategies.

An effective strategy for local sustainable development should be able to recognize community priorities and identify the means through which local actions will contribute to achieving the local, national, and global goals. Holistic indigenous views must be reflected in the planning of all policies relating rural people. Rural development strategy is developed around their shared vision of the territory and a set of common objectives. This is frequently the result of a complex process, where different and often conflicting views on the most appropriate strategies for the whole territory converge. Role of the mediator of such conflicting views is ideally assumed by a local leader who is capable of leading the strategy and project design (Djordjevic-Milosevic, Milovanovic, 2012).

Only partnership can provide sufficiently detailed analysis of rural area in terms of territorial capital-resources of the area – people, activities, land resources, cultural heritage, technical knowledge etc. and not in for of inventory but unique characteristics, which can be further developed. Analysis of these charactertistics and through identification of key points through that analysis related to the area, identification of possible local development strategies is possible. These strategies can be mid or long term for certain branch or area and although certain external expertise in its design could help a lot, it's crucial to have diverse developed visions and strategies exposed to public debate, for obtaining high level of concensus. This is the way to launch the process of endogenous development which is understood as the hypothesis that improvements in the socio-economic well being of disadvantaged areas can best be brought about by recognising and animating the collective resources of the territory itself (Ray, 2000 through Nemes G., 2005).

Material and Methods

The primary aim of the paper is to make a comprehensive overview on experiences gained through establishment and activities of LAGs (Local Action Groups) in different projects and pilot regions in Slovakia and Serbia. Participative local planning is a process which requires time, patience of external consultants, but first of all, patience of local leading organization or individual to fulfil expectations of all relevant representatives from the region. There is significant amount of field work applying PLA/PRA (Participatory Learning and Action and Participatory Rural Appraisal) methodology. The methodology which provides an opportunity for compiling real picture of particular village and municipality through participation of all local actors and through appraisal of rural potentials and needs. Methodology is developed in a way which has to be interesting, inspiring and understandable for all members of local community, with all levels of education and from all community groups. It contains different tools and exercises to push local representatives to think about their village, their life, and mostly their needs for improvement of the quality of life. Methodology used was semi-structured interview, questionnaire (structured interview) and PLA/PRA tools. Interviews with local authorities, NGOs, projects and enterprises were done in form of semi-structured interviews, individually or in focus groups. A classical questionnaire was made to do structured interview with individuals, villagers, farmers. Certain level of flexibility with questions was also allowed, to provide possibility to get more information on project ideas during these interviews. Concept of Participatory Learning and Action (PLA) was used for conducting case studies to be able to provide an inside view on rural development in the region by local communities. Typical villages were selected by local stakeholders. The process of assessment was introduced to impose the process of coping with new situations through repeated learning cycle.

Secondary goal was evaluation of experiences in use of funds under LEADER. Methods included primary data collection, secondary data collection, descriptive statistical methods used for data processing, graphic processing of data and map processing of data.The aim of the research was to draft a comprehensive overview on experiences gained through establishment and activities of LAG's in Slovakia. Experiences in use of funds under LEADER were evaluateded by Pareto analysis methodology based on project data from various thematic topic measures assigned within the Rural Development Program 2007 – 2013.

Results and Discussion

The aim of the paper is to introduce some interesting results of rural development surveys conducted in Serbia and Slovakia, and several good examples of participatory approach used for planning of improvement of life in rural areas. The first question is why rural development is so important.

According to collected and processed data, Serbia is rural country, with more than 85% of its territory defined as rural areas, and more than 55% of its population living in these areas. National definition of rurality compiles with international OECD definition which is less than 150 inhabitants per square kilometer. Categorization of regions within the country, using this and other following criteria, has been done thanks to the support of European Union through the project aimed to improve RD programming and planning in Serbia completed during 2006. According to this comprehensive analysis Serbia has only few urban centers. Number of rural municipalities is 130 (165 in total) and number of villages 4,706. Statistical data provided an opportunity for identification of homogeneous groups of municipalities as representative types of rural areas in Serbia. Four different regions (Figure 1) have been identified according to their natural characteristics and potentials for agriculture development: high productivity agriculture and

integrated economy, small urban economies with labour intensive agriculture, natural resource oriented economies mostly mountainous, high tourism capacity and poor agricultural structures.

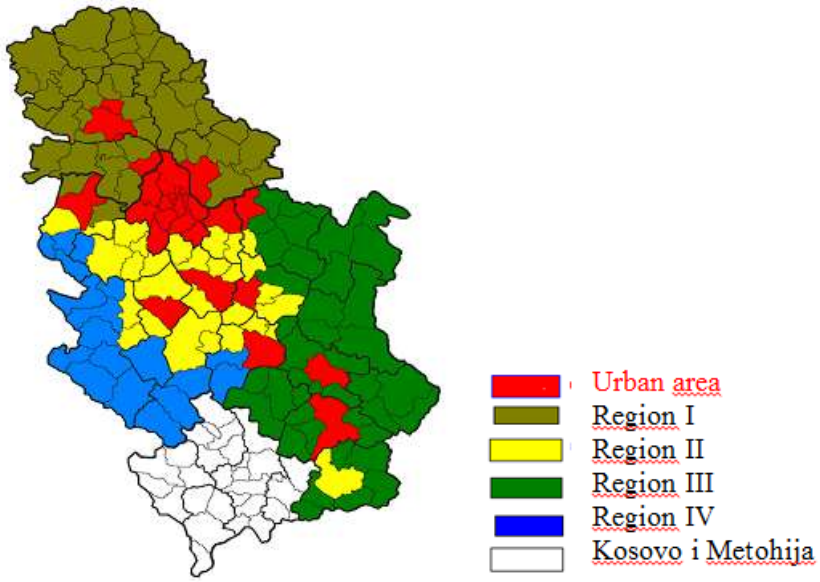

Figure 1 Types of rural areas in Serbia
Source: Bogdanov, 2007, Djordjević-Milošević & Milovanović, 2014

With respect to the nature of the territory and population density, Slovakia is a rural country. The average population density in the Slovakia is 110 inhabitants per square kilometer. The Eurostat methodology defines a rural region as an administrative unit structured according to the level of rurality by the rate of number of people living in rural villages and the total number of inhabitants in the region. Significantly rural regions are regions where the share of the population of the region living in rural municipalities is more than 50%, prevailingly rural regions have a share of 15-50 % and prevailingly urbanised regions have a share of inhabitants less than 15 %.
With respect to regional level (NUTS III), single regions of the SR are classified as follows: significantly rural regions (Banská Bystrica region, Prešov region), predominantly rural regions (Trnava region, Nitra region, Trenčín region, Žilina region, Košice region), predominantly urban districts (Bratislava region).

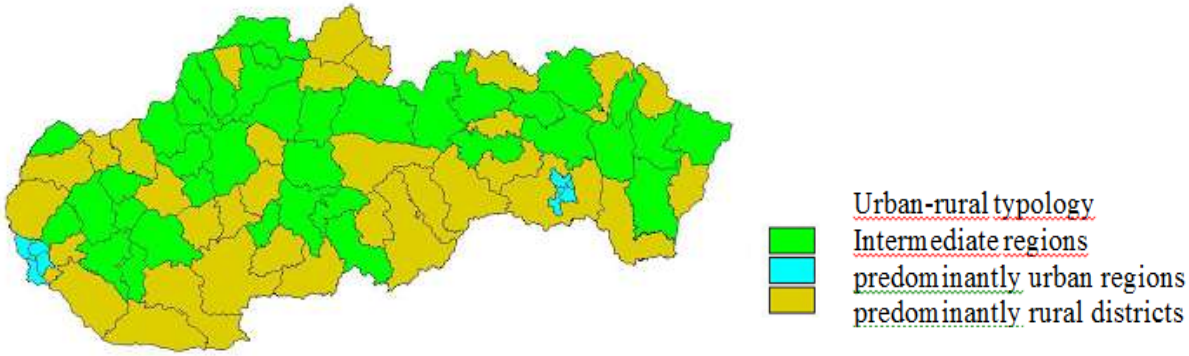

Figure 2 Types of rural areas in Slovakia
Source: Own calculations, based on statistical office of Slovakia, www.statistics.sk

Very good example of participatory approach, not perfect but with real wish to succeed, is the process of development of Local strategy for the Municipality of Ljig in the central part of Serbia. This example was selected to be presented as a case study which can be used, and it is used, as a model for all future processes of local strategic planning in rural development in Serbia. Process was supported through the project financed by FAO Technical Cooperation Program. This case study will show the participatory process

from the beginning to a successful end which is now leading to further successful actions in their municipality.

The first, and probably the hardest step, was to wake up the community, to select most interested members to participate and to elaborate the need for such process and its benefits for the community. Selected NGO “Moba” conducted set of meetings with representatives of three relevant sectors: local self-authorities, entrepreneurs and NGOs and civil associations. The result of negotiations was establishment of the Local Group for Rural Development as an entity responsible for the process of rural development strategy drafting and implementation. The Group is a model for future LAG which will be officially founded when Serbia get the law on local action groups. For this occasion, they signed the agreement on cooperation during the strategy development and for future implementation of its goals. Members of the local group included representatives of the municipality, public enterprises, civil associations, women associations dealing with handcrafts and private enterprises. Actually, each sector is represented and has right to propose, discuss and vote for different proposals.

The signing ceremony was also the first meeting of the local group and they used this opportunity to agree on field work activities and to share responsibilities between volunteers applied for field work. Field work was divided into three parts:

A) Questionnaires for rural people
B) Semi-structured interviews for stakeholders
C) PLA/PRA workshops for local community

Representative sample was also developed for this occasion and it is used for all future processes in different regions in Serbia.

There are some of results gained from the questionnaire, can be seen in Figure 3. Positive information was that more than half questioned persons see the possibility for the progress of his household in agriculture, they are familiar with existing support from the government, but they are facing with complicated paperwork, therefore lack of financial means, and they have most expectations from the government and local authorities to help them with these problems.

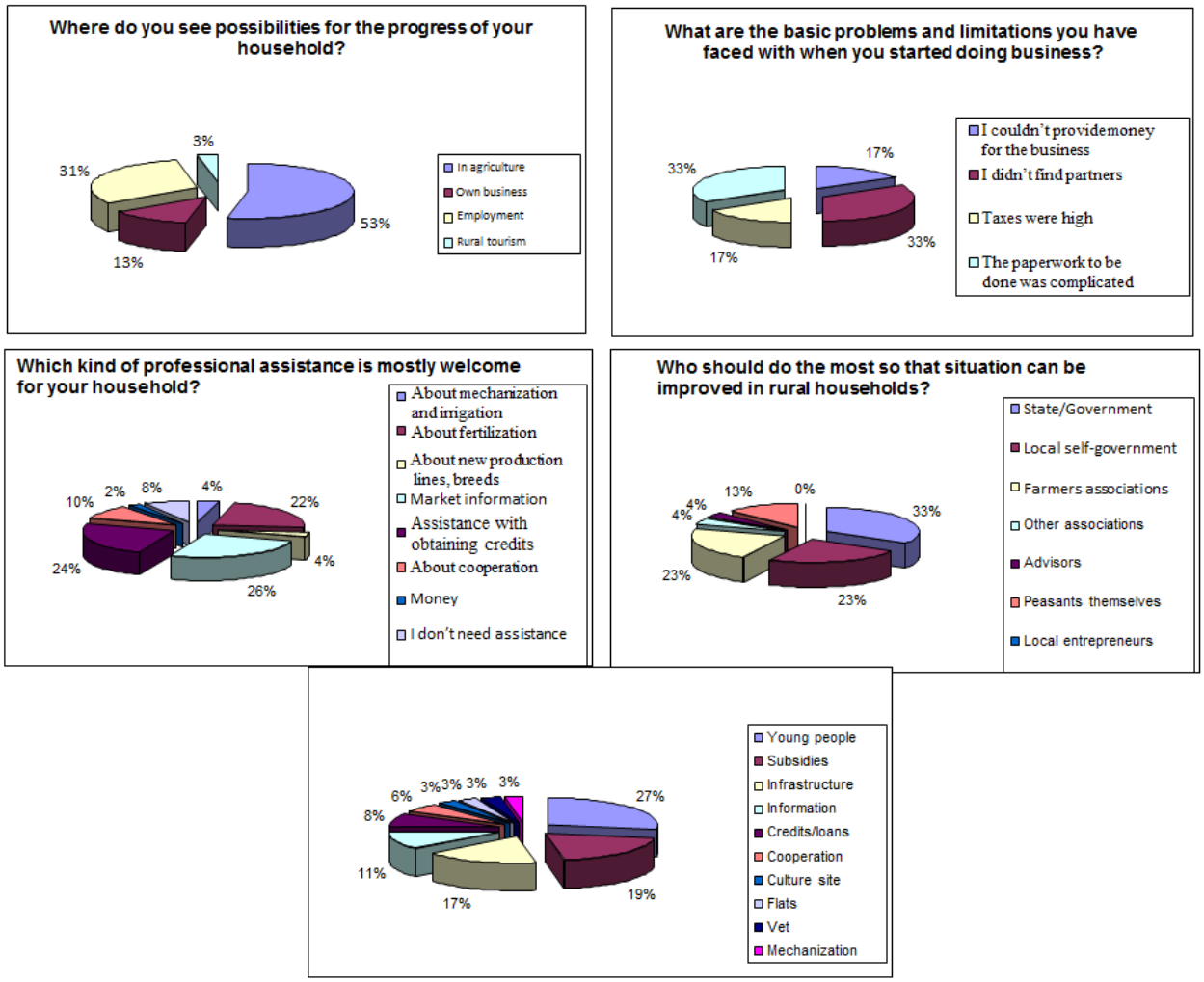

Figure 3 Results gained from the questionnaire in Serbia
Source: Milovanović, 2010, own processing

Semi-structured interviews for stakeholders on the area of the Municipality of Ljig have been developed in several models, according to the type of stakeholder. Semi-structured interviews provided the group with attitudes of all relevant stakeholders about existing systems of knowledge transfer and information dissemination as a shape of nonfinancial support to rural development, and potentials and needs of local stakeholders for participation in the improvement of these processes. The interviews have been structured to provide information on different topics. The third part of the process were workshops in sampled villages applying PLA/PRA methodology and collecting of opinions and attitudes of village representatives, real agricultural producers and community respected individuals.

The list of potential projects was the most important part of the strategic document and pilot municipality now has more than 50 project ideas, divided into three groups: projects they can implement by their own capacities, projects for which they need external assistance and projects that other donors and experts should conduct for them. The FAO project, mentioned as the support for this process of strategic planning in this pilot area, and representatives of the Center for Sustainable Rural Development of the Faculty of Applied Ecology Futura Singidunum University Belgrade, provided the established group also with an assistance to develop several project ideas from the list into project proposals which have been submitted to the Ministry of Agriculture during the open call.

Model of participatory local planning in RD that can be seen on Figure 3 developed on the example of the Municipality, was applied in other parts of the country. It was adopted from FAO as very good example, so they supported this process to be applied in 4 regions in Serbia, through the UN national program financed by Spanish MDG Fund, which includes several UN agencies: FAO, UNDP, UNWTO, UNICEF and UNEP with the aim to support sustainable rural tourism. The Center for Rural Extension of Singidunum University was

engaged in this process of establishing four regional groups for RD and developing four regional strategies based on full participation of all relevant stakeholders.

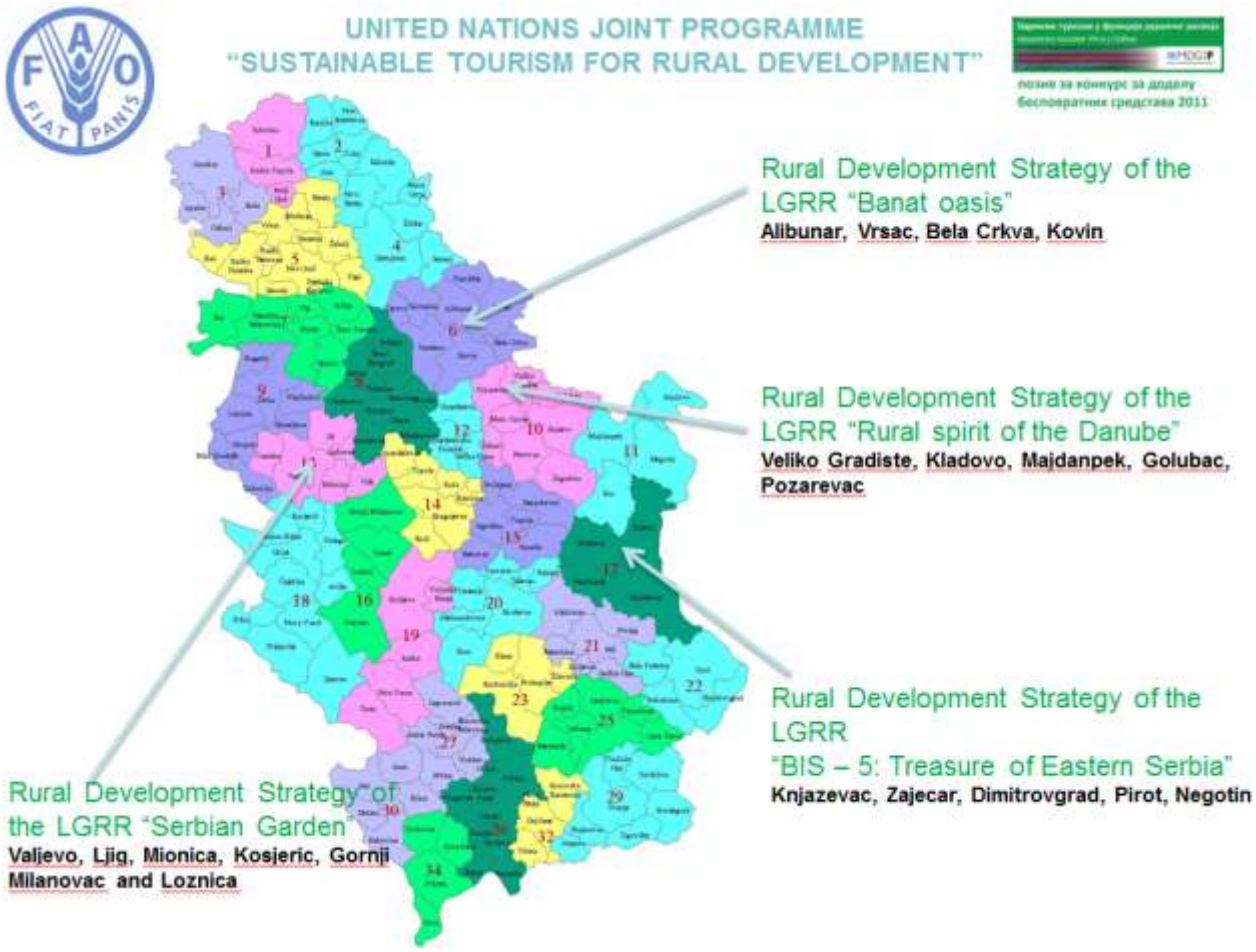

Figure 4 Pilot regions assessed and rural development strategies developed under the UNJP "Sustainable Tourism for Rural Development"
Source: Own processing based on own data collection

The third case study of successful application of this methodology is in southern part of Serbia, Jablanica and Pcinja district, it includes 13 municipalities (Vranje, Leskovac, Crna Trava, Medvedja, Bujanovac, Presevo, Bojnik, Lebane, Trgoviste, Vladicin Han, Vlasotince, Bosilegrad, Surdulicaand) the final result of the process is regional strategy for rural development. The process was supported by the Austrian Development Agency and implemented by the Center for the district development with expert support of the center for rural extension of Singidunum University.
In Slovakia there are 29 local action groups of the country (as can be seen on Figure 5) approved by the Ministry of Agriculture and Rural Development of the Slovak republic. Strategic objective of the integrated strategy for rural development is particularly increase the attractiveness of the area through the completion of infrastructure and the development of rural tourism (with emphasis on the specificities of each region), as well as improving quality of life and standard of living of local people to improve the environment, knowledge and educational level of the population and creating sufficient job opportunities and public services. LAGs also want to focus on community mobilization of the local population and make area more attractive for visitors as well as for potential investors. Emphasis is placed on sustainable development and preservation of natural and cultural-historical heritage and the values and traditions for future generations. Finally, it is increasing the competitiveness of the territory, support of small businesses and agricultural restructuring. All these aspects should contribute to the integrated development of the area.

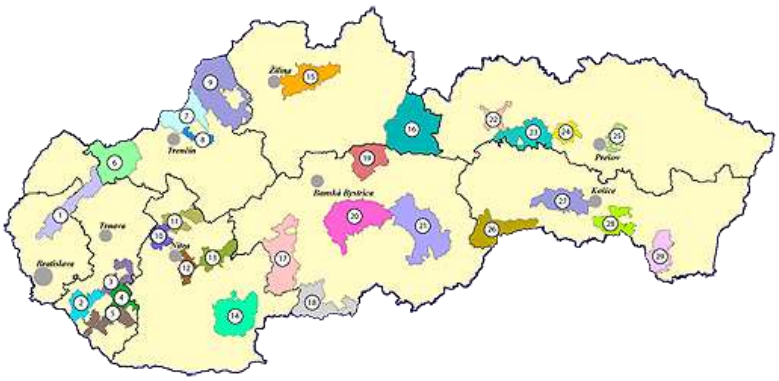

Figure 5 Local action groups in Slovakia
Source: www.nsrv.sk

According to database of realized projects registered to Rural Development Agency, there were 1318 projects in total from the Axis 3 and Axis 4 of the Rural development program 2007-2013. From all these projects 33,46% projects were allocated in the east of Slovakia (especially in the Košice and Prešov region), 24,96% of the projects were allocated in the centre of Slovakia (Žilina and Banská Bystrica region) and 41,58% of the projects were allocated in the west of Slovakia (Bratislava, Trenčín, Trnava and Nitra region). Allocation of the financial resources was different in different parts of Slovakia, in total had been contracted 45 282 549 €. Distribution of financial resources was as follows:

- 12 097 989 € was allocatted for east of the Slovakia
- 10 622 497 € was allocatted for central part of the Slovakia
- 22 568 062€ was allocatted for west of the Slovakia

In percentage, the most financial contributions went to the Nitra region, where are located five LAGs and the least to the Bratislava region, where are two LAGs.
Financial contribution in regions can be seen on Figure 6 and Figure 7.

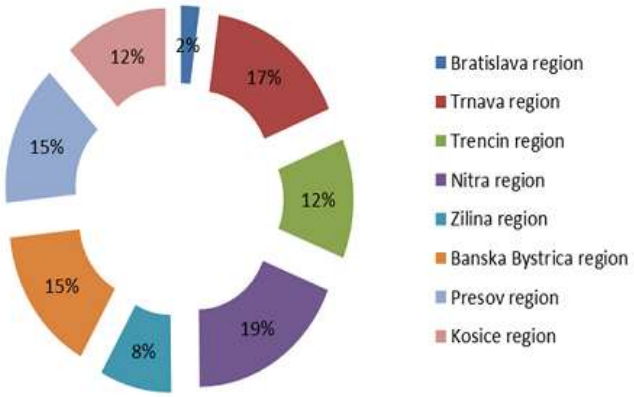

Figure 6 Financial contributions per region
Source: Agency for rural development, www.nsrv.sk, 2015

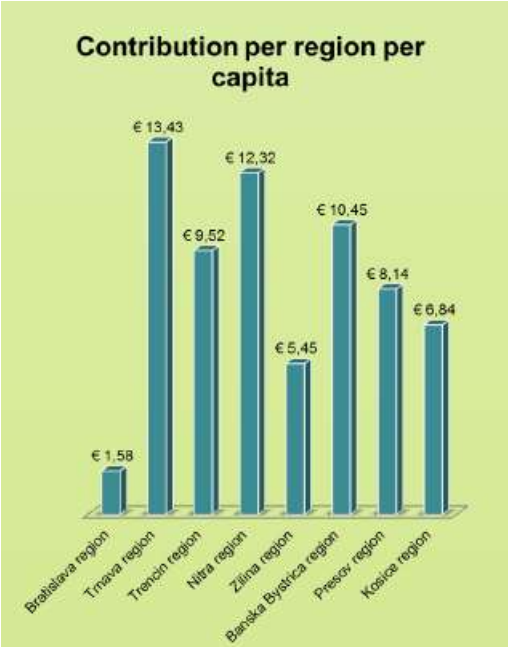

Figure 7 Financial contributions per region per capita
Source: Agency for rural development, www.nsrv.sk, 2015

Above mentioned result suggest relatively high successfully implemented number of projects, by the LAG´s, however, we need examine the topic structure of the projects more deeply. So, there were roughly implemented around 1318 projects from 6 various topics, according the provisions assigned in Rural Development Program. Brief description of the provisions is as follows:

Table 1 Provision description within the RDP 2007 - 2013

Code of provision	*Number of provision*	*Description*
1	3.1	Diversification towards to non agricultural activities
2	3.2.A	Supporting initiatives in the field of the rural tourism
3	3.2.B	Marketing activities in the field of the rural tourism
4	3.3	Education and information
5	3.4.1	Basic services for the rural population
6	3.4.2	Village renewal and development

Source: own processing, Rural Development Program

However the frequency distribution of the projects within the thematic topics is very uneven.

Table 2 Frequency distribution of the projects by the thematic topic

Code of provision	*Frequency*	*Cumulative %*	*Code of provision*	*Frequency3*	*Cumulative %*
1	7	0.005	3.1	7	0.005%
2	37	2.81%	3.4.1	658	49.96%
3	41	5.92%	3.4.2	544	91.27%
4	37	8.73%	3.2.B	41	94.38%
5	658	58.69%	3.3	37	97.19%
6	544	100%	3.2.A	31	100%

Source: own processing

Further examination is going to be based on Pareto analysis. From the Pareto graph we can see that the majority of projects (and funds) were allocated to provision No. 3.4.1 Basic services for the rural population and provision No.3.4.2 Village renewal and development. Activities from these provisions are focusing in general on restoring the technical infrastructure of rural communities, for instance: road network, water pipelines, sewer system, public lightning and greenery. With a large gap is following provisions No. 3.2.B Marketing activities in the field of the rural tourism, provisions No. 3.2.A Supporting initiatives in the field of the rural tourism and provisions No. 3.3 Education and information. The smallest contribution recorded provision No.3.1 Diversification towards to non agricultural activities.

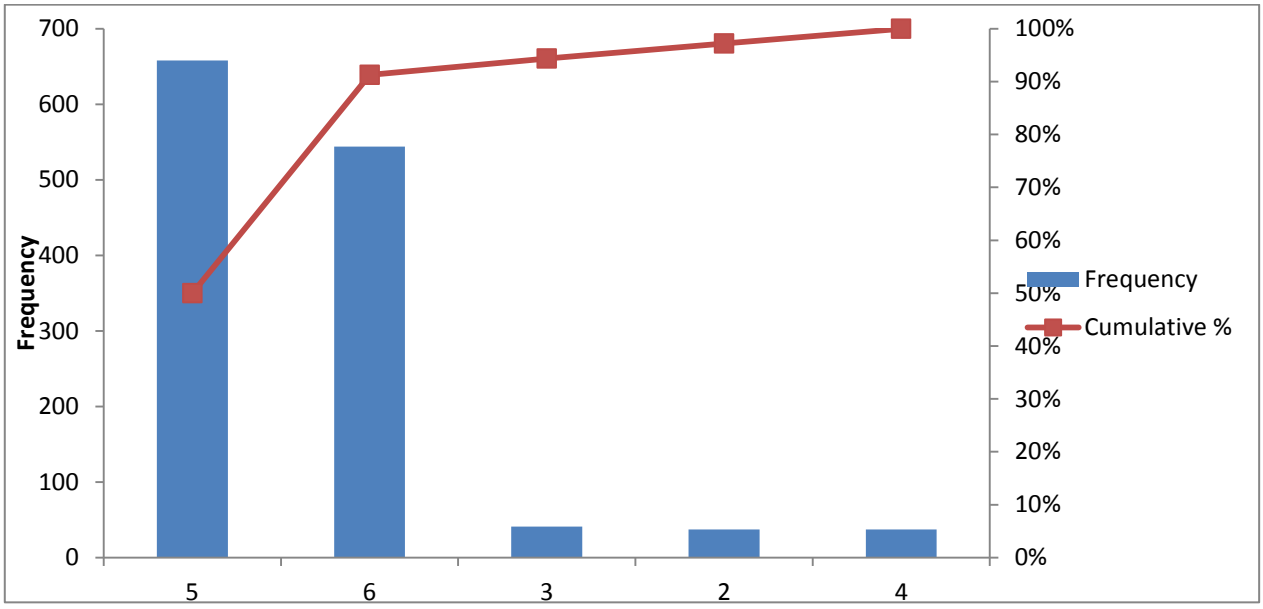

Figure 8 Project frequency by the Code of provision, histogram plot for Pareto analysis
Source: own processing

Conclusion

Rural areas of West Balkans are fully colored by their small scale agriculture systems. Their small scale farms, although often unprofitable from a modern business perspective, have survived over time and still seems to be one of the most sustainable options for given environments. Not all reasons for their persistence are understood yet, but it is generally agreed that such households were important in providing food and shelter during economic disruptions of the transition period for both resident families, and even urban based relatives. Having this in mind, it is necessary to talk about participatory planning in a real sense of its meaning. Not rarely, especially in the Western Balkans area, the term planning is understood as some job done by strangers called external specialists with no communication with people who are living in particular area. The strategy and the plan for development of every rural business have to fit with the overall strategy for development of rural community. For that reason, building of local capacities for rural development includes enhancing partnerships of all stakeholders – public and private, business and administrative, civil and governmental as much as business to business partnerships. Partnership development is the most important tool for bridging the gap between potentials and needs of rural regions. In Slovakia there are 29 approved Local action groups which can decrease the disparities by implementing projects under LEADER programs in rural areas. In total 1 318 projects were approved in Slovakia. The majority of projects was approved in western Slovakia—Bratislava region, Trnava region, Trenčín region and Nitra region. In total over 45 million of EUR was allocated in Slovakia. Almost half of these finances were allocated in western Slovakia.

The project topic structure has proven relatively high interest about participatory planning of the rural development within the LAG´s in Slovakia. Together, the results have shown up a relatively great imbalance in terms of regional – spatial allocation and thematic allocation of projects. The majority of projects was focusing on restoration of infrastructure and public spaces of rural municipalities, what, based on the results of Pareto analysis, we can consider as a most pressing problem. Small residual of a number of

projects were concentrating on the diversification on rural economies and enhancing enterprenual base of the countryside. In the current programing period the effort will be concentrated on better use of the endogenous potential of rural areas, aiming on job creation and enterprising promotion. Infrastructure restoration within the rural areas might help to stem the migration outflow and economic diversification might avert further economic decline of the countryside. Based on this reaserch results, we recommend to Serbia, primarily to focus on making sustainable conditions for living and working on countryside, through to municipal infrastructure restoration and development. Next challenging topic would be stabilization of rural labor market, with potential of new jobs creation. The most challenging activity for sustainable bridging between local production achievements and markets is a struggle for achieving sustainability of small-farming sector through better networking of primary producers and processors with services providers and through providing conditions for modernization of production and services.

Acknowledgments

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CHANGES OF REGIONAL LINKAGES IN THE SUBURBAN EPOCH

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Abstract
Regional linkages are permanently in progress thanks to the processes that are very often contradictory. The East and Middle Europe is presently going through the epoch that was typical for the West Europe and the North America few decades ago – epoch of suburbanization. This process affects urban environment as well as the rural one. The suburbanization is very well described as well as its development and impacts by many project proceedings, books and science papers. But the same regional processes could be seen as a natural continuation of urbanization processes where the extensive urbanization was replaced with the intensive form of urbanization. The physical relocation of population was replaced with increasing number of linkages and strengthened relations between regional cores and their hinterland. It has impacts into many aspects of rural life including adoption of the urban life style by the inhabitants of many formerly rural villages.
The aim of this paper is to identify changes in the regional linkages between the cores of selected regions in the Czech Republic and their hinterland. For that purpose there were analyzed several indicators that could show increase or decrease of the core´s regional power.

Keywords: region, suburbanization, urbanization, regional ties

JEL Codes: R58, R11, R23

Introduction

Although residential structure is stable in the Czech Republic, the strength of relationships between regional cores and their outskirts is gradually evolving. Suburbanization can certainly be included among the social and economic phenomena that have a direct effect on the relationship between the core and the outskirts. Suburbanization is understood as the process of suburban sprawl, spatial variation of settlements, characterized by the mass migration of the population from central parts of urban agglomerations and conurbations to their edges and administrative beyond the boundaries of urban units, while maintaining the narrow functional relationships of newly populated areas with the residential cores (Pásková, Zelenka, 2002) or as a phase of the urbanization process, in which the population of the core city is stagnating or declining, and the number of residents in the suburban zone communities is growing (Koutný, 2006). The process of suburbanization is a continuous change in the social and physical environment from rural to suburban.
Although a wide range of authors focuses on the effects of suburbanization, there are not many methodologies available to define the suburban areas in the Czech Republic. Most active in this area is probably Ouředníček, who uses a combination of statistical indicators regarding the number of immigrants, the number of completed dwellings and the number of population to determine the size of a suburban zone (Ouředníček et al. 2013). Based on these indicators, he also derives the strength of individual regional ties. From other authors we can mention Kučerová (in Šilhánková et al., 2013), who works with the index of population development, population density, migration, population, commuting to work and school, and the building index. A simply different attitudes to describe suburban areas uses Hnilička who is focused mainly to the residential form of the urbanization (Hnilička, 2012). All kinds of suburbanization have their impact to spatial division of towns and villages (Šilhánková 2007) and to their economic efficiency (Šilhánková 2007, Šilhánková, 2013).
The suburbanization has its own specifics in each country. I depends on society´s systems of values, politic establishment, builing- and spatial planning-system and other circumstances. It also a reason for using only Czech definitions in previous parts of the paper.
For the needs of the presented research, the authors of the paper set the following hypothesis: Despite ongoing suburbanization, the regional links between regional centers and their outskirts are increasing.

The aim of the research was to determine in the selected regions whether the position within the regions is strengthened by the center through the decline of the population in the core of these regions, or whether the movement of residents into the outskirts of towns also reduces their influence in the region. Three regions in eastern Bohemia were selected for the research. While Hradec Králové and Pardubice form a joint conurbation on the inter-regional level, their mutual reach within this agglomeration does not overlap too much. The Svitavy region has been selected as a complementary region for these two. Even in this peripheral region, there are signs of suburbanization and the team of authors has therefore decided to use it for research on regional bonds.

Methodology

The actual research was conducted using a combination of methods by Dr. Kučerová and Assoc. Prof. Ouředníček, this combination was further adjusted. There was also used the assessment method of statistical indicators. Data from 2001 and 2011 were compared and their percentage change examined. The total number of analyzed municipalities is 109 (Svitavy 27, Hradec Králové 42, and Pardubice 40).

For these 109 areas we monitored selected indicators from 2001 to 2011, or 2001 and 2011 (census of population, houses and apartments). The source of data is the Czech Statistical Office (hereinafter CSO), which also provides information on the CPHA used in the practical part of the paper as one of the data sources.

Data examined in all 109 areas are:

- population
- average age
- migration
- natural addition
- finished dwellings
- number of economic units

Data from 2001 to 2011

- commuting to work outside the municipality
- commuting to work inside the municipality
- occupied dwellings

Data from 2001 and 2011

For each indicator we individually specified the interval from when the municipalities met this indicator. The first group consists of four indicators assessing the suburban municipalities. Those that met three of the four criteria (75%) are classified among the most suburbing. They have a strong population influx (indicator of population, the number of occupied dwellings) from the core cities, while maintaining the narrow functional relationships of the newly populated areas with the residential cores (the "commuting to work" indicator).

Results

In the monitored regions we found a relatively low rate of suburbanization, especially in the Svitavy region and Hradec Králové. According to the indicator analysis method, the most suburbing region is Pardubice, in which the most suburbing municipalities have been identified from among all the analyzed regions. Selected indicators – especially commuting to work – rather surprisingly showed that there was no significant increase in commuting to work in the suburbing municipalities in the 2001-2011 period. The resulting evaluation is shown in the following cartograms.

Figure 1 Suburbing municipalities, Hradec Králové and Pardubice Regions
Source: Own Construction

The selected analysis identified only two suburban municipalities in the Hradec Králové region, which are Býšť and Vysoká nad Labem. Both municipalities met the same three out of four criteria: population, commuting to work and the number of occupied dwellings. Two criteria were met by Běleč nad Orlicí, Borek, Divec, Sendražice, Třesovice, but also the core city of Hradec Králové.
The required number of criteria in the Pardubice region was met by five municipalities: Němčice, Spojil, Srch, Srnojedy and Starý Mateřov. Němčice, Spojil, Srch and Starý Mateřov meet the criteria of population, commuting to work and occupied dwellings. Spojil met all four requirements. Two criteria were met by Černá u Bohdanče, Chrudim, Mikulovice, Staré Hradiště, Staré Jesenčany, Stéblová, Úhřetická Lhota and Veselí.

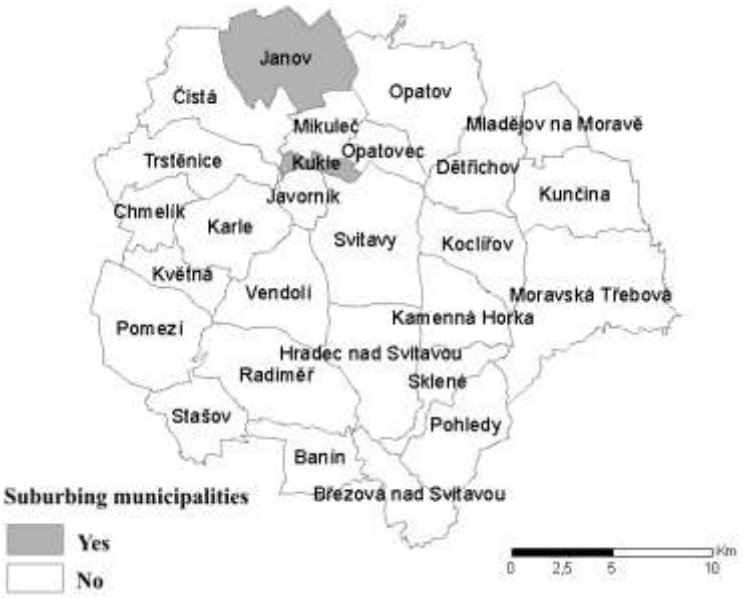

Figure 2 Suburbing municipalities, the Svitavy Region
Source: Own Construction

In the Svitavy region, there are only two municipalities that have met at least three of the four criteria. Janov met the criteria of population, commuting to work and occupancy of dwellings. Kukle has fulfilled all the criteria. Other municipalities in the Svitavy outskirts failed to fulfill even two of these four criteria, at least two criteria achieved by the core city of Svitavy, which is apparently losing its power of core city.

Table 1 Suburbing municipalities

Suburbing municipalities according to the indicator method	Region
Býšť	Hradec Králové region
Janov	Svitavy region
Kukle	Svitavy region
Němčice	Pardubice region
Spojil	Pardubice region
Srch	Pardubice region
Srnojedy	Pardubice region
Starý Mateřov	Pardubice region
Vysoká nad Labem	Hradec Králové region

Source: Own processing based on own data collection

The second group of municipalities is *municipalities strengthening their position* in the region. In such municipalities, the number of economic units is increasing, thereby not only is the offer of jobs increasing, but it can be assumed that the offer of services in the municipality is expanding. These phenomena are related to the reduction in commuting to work. For the municipality to be defined as one strengthening its position in the region, it is necessary to fulfill both these indicators, i.e. both the number of economic units and commutes to work. Most municipalities strengthening their position in the region are in the Hradec Králové region. The Svitavy region has the least such municipalities.

Figure 3 Municipalities strengthening their position, Hradec Králové and Pardubice Regions, Source: Own Construction
Source: Own processing based on own data collection

In the Hradec Králové region there are five municipalities strengthening their position: Býšť (which is also suburbing), Čeperka, Divec, Dolní Přím and Výrava. The percentage commute to work was mostly negative. Only three municipalities are strengthening their position in the Pardubice region, according to established standards. Němčice (which is also suburbing), Třebosice and Úhřetická Lhota. The percentage of commutes to work was also mostly negative in the area of Pardubice.

Figure 4 Municipalities strengthening their position, Svitavy reg.
Source: Own Construction

There are only two municipalities strengthening their position in the Svitavy region: Koclířov and Květná. Other municipalities have failed to achieve the specified limits mainly because commuting declined from 2001 to 2011, therefore it has been positive, which is crucial in this assessment.

Table 2 Municipalities strengthening their position, Source: Own Construction

Municipalities strengthening their position according to the indicator method	Region
Býšť	Hradec Králové region
Čeperka	Hradec Králové region
Divec	Hradec Králové region
Dolní Přím	Hradec Králové region
Koclířov	Svitavy region
Květná	Svitavy region
Němčice	Pardubice region
Třebosice	Pardubice region
Úhřetickálhota	Pardubice region
Výrava	Hradec Králové region

The results of the analysis of these six indicators determined which municipalities are suburbing, but also which are strengthening their regional position. This method revealed a very low intensity of ties between the regional centers and outskirts. Only a few municipalities meet the criteria. Above all, the municipalities in the Pardubice region are among the most suburbing from selected regions, but in spite of this the ties in this region are very weak. The largest municipalities to strengthen their position are situated in the Hradec Králové region; in the Svitavy region, the number of these municipalities is the lowest.
A special category is formed by municipalities classified among suburbing and also among municipalities strengthening their regional position. For inclusion in these groups, the municipalities had to meet the criteria of both groups, and it means that the residents are moving in masses into these areas, but also that a new micro-regional center with new job opportunities and civic amenities is being established, and this center is competing with the existing regional center.

Conclusion

The analysis showed that suburbanization at the level of regional centers also has an influence on the change of their position in the regional system. Especially in the case of Hradec Králové, there is a reduction in its position in the region and the emergence of new centers at the micro-regional level. These centers will probably increasingly compete with the core city in the future and thus contribute to the suburbanization tendencies in the region. In the case of the Pardubice and Svitavy regions, these tendencies are indeed also evident, but to a much lesser scale than in the aforementioned Hradec Králové. The hypothesis that although suburbanization is happening in the regions, but due to the economic power and concentration of work activities within the core of the regions, the position of the centers in the regional system is being enhanced or at least stagnating, has not been confirmed. But there is still a separate question then becomes, if the cities are able to defend themselves against this development at all, or what resources they use.

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TERRITORIAL COMPETITIVENESS GROWTH ON THE BASIS OF SOCIAL CAPITAL - A CASE STUDY OF THE SPIŠSKÝ HRHOV MUNICIPALITY

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Abstract
The aim of the paper is to identify the benefits of social capital in local economic development and growth and determine how it translates into territorial competitiveness examining the example of the municipality Spišský Hrhov. The focus is aimed at identification of the key actors in the development process of the municipality and their relationships, linkages between different groups of actors and their impact on the utilization of the development potential of the area, as well as identification of the processes of local potential utilization for the development of the municipality. Results presented in the paper were obtained via semi structured interviews with local stakeholders and analysed using methods of network analysis. Findings underline the importance social capital, particularly the informal ties within the community for the functioning of a network of local development stakeholders in the given municipality. Also several key actors were identified, among which very important position belongs to municipal firm, whose impacts on local economic development are multifaceted.

Keywords: local economic development, territorial competitiveness, social capital, network analysis, local stakeholders

JEL Codes: R10, O15, O52

Introduction

The use of resources in space is uneven due to globalization and other factors. Concentrated capital locates in areas with the highest resource productivity and when they run out, i tis very quickly moved to other regions, able to provide desired benefits. This causes large spatial differences manifested in rapid development of some, and decline of other regions. In declining regions, this process is accompanied by destruction of the economic structure, growing inequality and the escalation of social problems.

A possible solution for these regions can be based on a set of activities, which are referred to as local economic development. The term "local economic development" (LED) is not yet uniformly defined; different authors emphasize different aspects of its nature. Part of authors links local economic development with economic activities and their structure in a particular territory. E.g. Bartik (1995) understands LED as a process of changes affecting the capacity of the local economy aimed at improving the well-being of the local population. Economic aspect of LED has been highlighted by Meyer-Stamer (2008) as well, who understands LED as the ability of a particular area or locality to produce rising incomes and improve the quality of life of its citizens. Also, some degree of market failure correction happens, especially levelling the playing field for small businesses and improving the availability of information. Čapková (2005) sees LED as complex strategy in which local actors and institutions strive for the most efficient use of local resources.

Another group of authors emphasize the social and procedural aspects of LED. Blakely and Bradshaw (2002) define LED as a process aimed at creating new jobs and increasing economic activity. It is a combination of disciplines and set of policies and practices that link together local development actors. The World Bank has a similar definition of LED, stating that it is the process of creating better conditions for economic development and employment growth, as a shared effort of partners from public, private and non-governmental sector. (Swinburn, Goga, Murphy, 2004). LED can therefore be seen as a development process whose main objective is to improve the quality of life of citizens. It is based on local resources, trying to use them as efficiently as possible. Synergy will be achieved through cooperation between different sectors, while "local" depends on the particular situation.

Wide and varied group of actors participates in local economic development. These are the direct actors actively intervening in development processes, as well as indirect (passive) stakeholders. The crucial role in the process of realization of strategy belongs to the motivation of actors such as citizens (motivated by

their work, identity, and social relationships), politicians (motivated by their electoral support and the amount of tax revenue) and businesses (motivated by their invested capital and built business relationships) (Sopkuliak, 2013).
Through the use of endogenous resources and mutual crosslinking of direct and indirect stakeholders minimization of leakages of resources from the local economic system and increasing the level of income of the community can be achieved.
LED cannot be based on ad hoc decisions, but must be a strategically directed process of applying the principle of participatory strategic planning. According to Gasser and White (2001), common features of local development strategies are participation and social communication, mobilization of local resources and the use of comparative advantages, bound in the territory, local ownership and management. Key role in LED therefore has the local level of social capital and the capacity of local leaders to effectively combine the use of local resources and reflect the interests of all development partners.
Social capital is comprised of institutions, norms and relationships that make up the quantity and quality of social interactions in society. The concept of social capital therefore applies mainly to social ties, shared values, facilitating co-operation between people. It creates a link between individuals and allows them to achieve common goals in a more effective way (Harper and Kelly, 2003). This so-called bridging social capital can be seen as a public good that allows efficient use of endogenous resources in the interest and for the benefit of the community, which contributes to reducing social inequalities and stabilization of communities. Also important is another form of social capital, the so-called linking social capital that links regional and local institutions with vertical types of links to institutions (organizational, administrative, political) on higher territorial level (regional, national or transnational). This connection will facilitate the flow of information between the different hierarchical levels, enabling more efficient use of existing resources. Flow of information gives room for influencing national policies (Putnam (1993), Paxton (1999)). There is a general assumption that the level of social capital affects economic growth and level of GDP. Networks, trust and norms, all contribute to the efficient functioning of markets. Uslaner (2003) points out that there is a strong correlation between trust and income inequality. Disparities seem to be quite strong predictor of levels of social capital.

Objectives and methodology

The aim of this paper is to identify the benefits of social capital in local economic development and growth and determine how it translates into territorial competitiveness examining the example of the municipality Spišský Hrhov. Main objective is achieved through the fulfilment of partial goals of

- Identification of the key actors in the development process of the municipality and their relationships, linkages between different groups of actors and their impact on the utilization of the development potential of the area,
- Identification of the processes of local potential utilization for the development of the municipality.

For analysis of the benefits of social capital in local economic development, we conducted a case study of the village Spišský Hrhov, which was based on semi structured interviews with the most significant actors identified in the given municipality. The actors were divided into three groups: public sector, private sector and non-profit sector. Entities belonging to the non-profit and private sectors have been identified on the basis of ELIS database, a list of which was subsequently verified with the municipal office.
For the analysis of relations between local actors, we decided to use network analysis, which as Melichová (2015) points out, allows quantifying various aspects of the level of social capital. Melichová and Fáziková (2014) further state that network analysis as an analytical method is essentially derived from graph theory.
To assess the level of social capital and connectedness of actors we used indicator of network density.

$$network\ density = \frac{number\ of\ existing\ relations}{number\ of\ potential\ relations}$$

Significance, i.e. the position of particular actors in the network, was evaluated using indicator of centrality of actors. The centrality of the particular actor is equal to the degree of their node (vertex) in the graph (Melichová, Fáziková, 2014), as follows:

$$C_a = \deg(v)$$

Relations between local actors were divided into informal (which were internally divided as follows: "We know each other", "We share information" and "We cooperate informally") and formal (containing subtypes "occasional collaboration on projects"; "systematic collaboration on projects" and "customer-supplier relations"). The results were analysed using the UCINET software made and graphically illustrated using NetDraw software.

Results and discussion

Spišský Hrhov municipality is localised in the mountainous, historically attractive area with good transport accessibility. It is a cultural landscape with undisturbed environment, with high potential for tourism development, and the possibility of intensification of its use in multifunctional agriculture and forestry.

In terms of technical infrastructure it can generally be described as modern, while social infrastructure of the municipality is at a high level of quality as well.

Currently, the municipality has 1,445 inhabitants. What is interesting is the dynamics of population development in the municipality. Since 1990 the population of the village increased by 62%, while the projected population in 2020 is 2180, which is a unique phenomenon particularly in terms of the location of the municipality. Level of economic development of the region where the municipality is localised (Kežmarok District in the Prešov region) is among the lowest in Slovakia and the municipality has large Roma minority.

The municipality has about 26% of children (the population of pre-productive age), 64.5% of the population of working age and only 9.5% of the population in the post-productive age. In terms of educational structure, 35% of the working-age population attained only primary school education, and only 7% of the adult population has tertiary education. The level of human capital in the village is therefore below average compared to the state average in rural areas of Slovakia. Nevertheless, the municipality is developing rapidly, which is reflected in the overall level of its facilities, in the appearance of the municipality, in a low unemployment rate (9%) despite the fact that there is a large Roma minority. The economic base of the municipality is unusually developed in comparison with the average rural municipalities in Slovakia. Index of business activity (number of business entities/number of economically active population*100) is 2.3, while the average for rural municipalities in Slovakia is 1.6.

The analysis of the social capital and interactions of local development actors

As indicated by many theoretical and empirical studies one of the most important engines of development in structurally weak, economically and socially lagging regions is well-developed social capital.

During the empirical research in the Spišský Hrhov municipality, we have identified 36 entities belonging to three sectors: public, private and non-profit. Table 1 describes the density of interactions between those surveyed within different types of relationships that exist between them. Denser network means higher intensity of cooperation between associated entities and more direct interaction. Greater density of interaction was observed in relationships of informal character than in formal relations.

Table 1 Density of different types of relations within groups of actors

Relation density	Public sector	Non-profit sector	Private sector	Total – all actors
Number of actors	**4**	**11**	**21**	**36**
Total – all relations	**0.4643**	**0.3351**	**0.1429**	**0.1400**
We know each other	0.1071	0.1247	0.0463	0.0770
We share information	0.0714	0.0649	0.0245	0.0420
We cooperate informally	0.1143	0.0675	0.0272	0.0490
We collaborate on projects occasionally	0.0857	0.0286	0.0150	0.0270
We collaborate on projects systematically	0.0357	0.0364	0.0150	0.0240
They are my supplier	0.0286	0.0052	0.0109	0.0110
They are my customer	0.0214	0.0078	0.0041	0.0070

Source: own elaboration based on primary research results

Overall, the highest density was found between entities belonging to the public sector, followed by the non-profit sector, while the density of all relations was the lowest in the case of private sector entities. Of all the types of defined relationships, in the Spišský Hrhov municipality informal relations are dominant (We know each other, We share information, We cooperate informally). This finding underlines the importance of informal ties of social capital for the functioning of a network of local development actors in this municipality.

Table 2 Density of relations between groups of actors

Type of actor	Public	Non-profit	Private
Public	1.330	0.955	0.488
Non-profit	0.682	0.618	0.191
Private	0.155	0.082	0.048

Source: own elaboration based on primary research results

In the sectoral comparison, the highest frequency of interactions was observed between the public and non-profit sector (almost all actors from these two groups somehow cooperate - 0.955). These two groups of actors work together mostly on an informal basis and there are dense informal relations between them. In most types of defined relations, private sector primarily cooperates with public institutions in the Spišský Hrhov municipality. An important finding is the identification of the customer-supplier relationship between the public sector and local businesses and non-profit institutions, into which public sector bodies enter as a customer.

Identification of key development actors

In addition to analysing the density of relations between actors in the municipality and the level of social capital, the purpose of the case study was to identify which of them have a key position in a network of all actors, and can therefore be considered as local leaders and facilitators of cross-sectoral cooperation. Quantitative indicator, based on which we have identified key players is the degree of centrality of each actor.

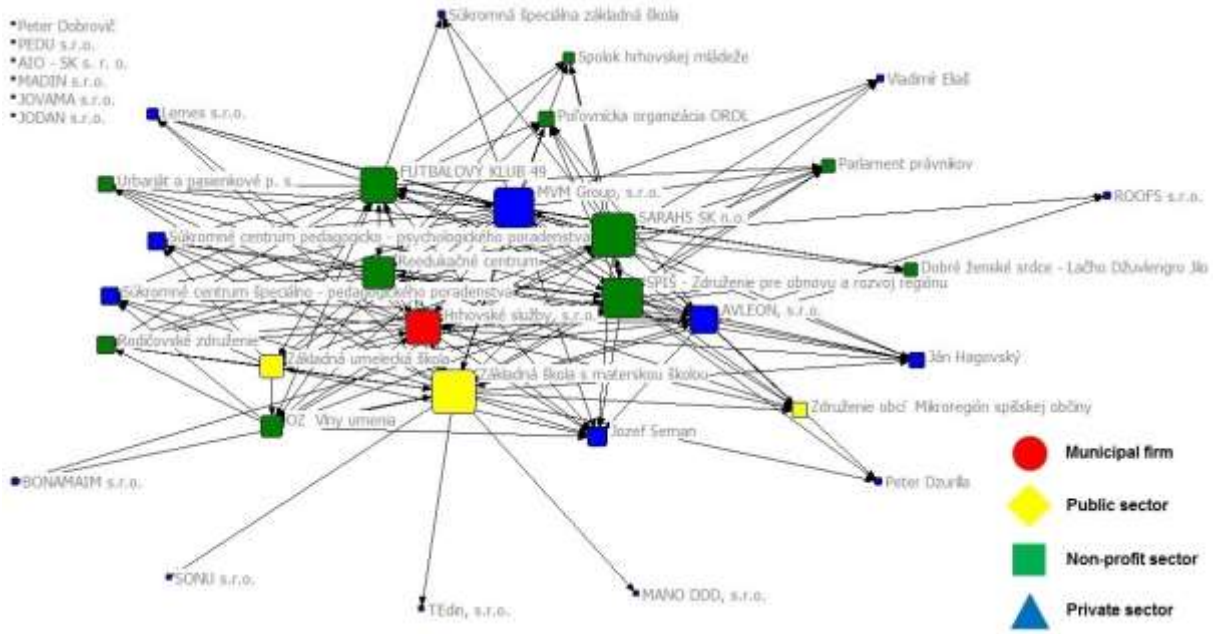

Figure 1 Network centrality of local development actors
Source: own elaboration based on primary research results

Figure 1 shows all identified ties between interviewed actors based in the Spišský Hrhov municipality. Belonging to various groups of stakeholders (public, private, non-profit) is differentiated by colour. Of the 36 actors identified in the municipality, only six of them are not in any way linked to the rest of them. In general, we can conclude that a dominant position in the network of local development actors is occupied by both public and non-profit institutions. Regarding the public sector, network analysis confirmed the importance of municipal firm ("Hrhovské služby") as an integrator and facilitator of cooperation. In addition to the municipal firm a major actor is also the Elementary School with Kindergarten. From number of non-profit entities localised in the municipality, the most important position have civic association "SARAHS SK" and "SPIŠ - Association for the reconstruction and development of the region". Significant position in the network of actors also holds the company "MVM Group", which is primarily active in the woodworking industry.

The importance of social capital in local development is based mainly on facilitating the flow of information, mutual sharing of resources, which gradually grows through informal cooperation, ad hoc formal cooperation and results in systematic institutionalized cooperation between development actors.

Defined types of relationships between actors are developed at different levels. There are a couple of actors mainly from the non-profit sector, who are the source of new and innovative ideas that spread across the social network. In particular, the civic association "SPIŠ - Association for the reconstruction and development of the region", whose mission is to enhance the economic, social and environmental competitiveness of the territory and raise the living standard of the population. Association elaborated the development strategy of the region and received the status of a local action group (LAG), thereby gaining access to the resources of the LEADER program.

Another important source of new ideas and innovator is the municipality's non-profit "SARAHS SK" It is an association whose mission is to spread the spiritual and cultural values in the field of garden and landscape architecture by organizing training events focusing on the environment, public health, revitalization of public areas and buildings.

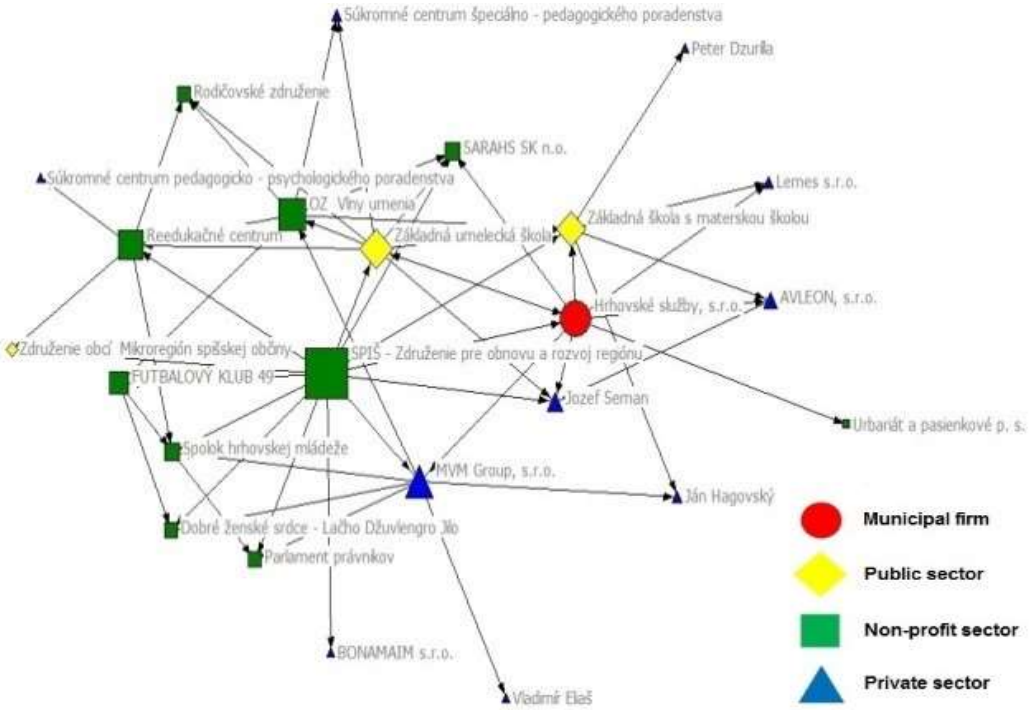

Figure 2 „We share information“ relations between local actors
Source: own elaboration based on primary research results

An important position in the dissemination of information is occupied by the municipal firm "Hrhovské služby", which, as seen in Figure 2, is an important source of information, particularly for businesses in the municipality. It is an important source of information for Elementary School with Kindergarten, but also for the above-mentioned civic association „SARAHS SK”.
Informal cooperation means ad hoc cooperation, without a formal contract, based on the specific needs of actors.

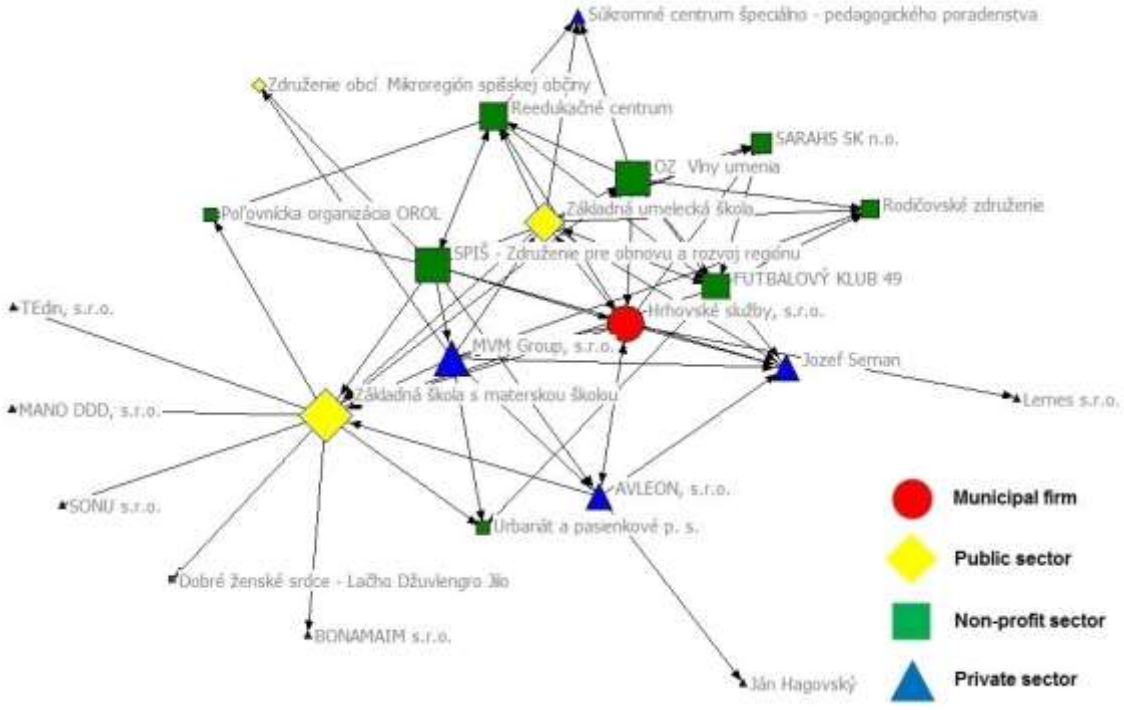

Figure 3 „We cooperate infromally“ relations between local actors
Source: own elaboration based on primary research results

A major actor in the field of informal cooperation is the elementary school with kindergarten in Spišský Hrhov. It has a significant impact on Roma minority integration in the community through educational activities. The school is integrated into the general community through dense network of ties which are shown in Figure 3. The school has two basic types of relationships: non-market, with civic associations and organizations concerned with education and the dissemination of culture in the municipality and region (parents' associations, "SARAHS SK" civic association "Vlny umenia" and the Elementary Art School), and the market relationships, with the firms who are the suppliers of goods and services ("Hrhovské služby", Tedin, Ltd., MANO DDD, Ltd., and BONAMAIM, Ltd.).

Another key actor within the informal cooperation is the municipal firm "Hrhovské služby", Ltd. Within the informal relationships the municipal firm has an interesting pattern of relations, because as a for profit organization it develops informal cooperation with profit and public sector in the municipality. Informal cooperation within the private sector indicates the high level of confidence within the social network. Cooperation between the municipal enterprise "Hrhovské Služby" Ltd. and other companies localised in the municipality and beyond takes different forms. For instance, classic forms of cooperation such as rental of construction machinery and equipment. Municipal enterprise operates similarly to the employment agency. If necessary, it hires its employees out to other firms in the municipality and in the region, helping them cover the seasonal labour shortages.

In comparison with the previous results of the analysis of network structure of local actors, informal cooperation between key players is more balanced (there are several subjects with a very similar degree of centrality in the network and extremes are not present).

Informal types of cooperation are often the basis for the development of formal types of cooperation and for building stable territorial partnerships of development actors.

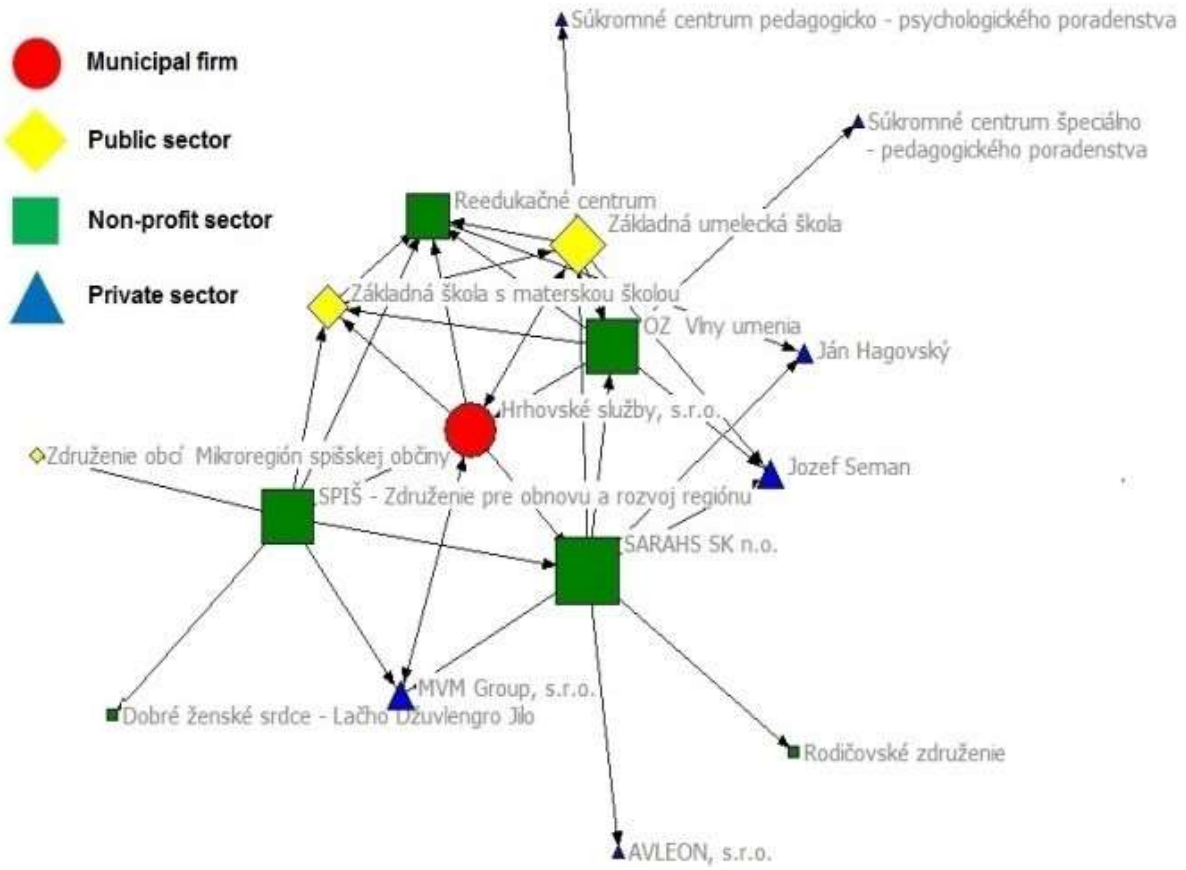

Figure 4 „We collaborate on projects occasionally" relations between local actors
Source: own elaboration based on primary research results

As shown in Figure 4, in case of this type of relation, there is a relatively dense social network, within which the municipal firm “Hrhovské služby” again has a high centrality degree. The firm continuously looks for business opportunities and new markets. It enters into various forms of supplier relations and partnerships based on the use of local natural, human and capital resources (for example, the municipal firm harvests firewood from municipality-owned forest to deliver to households, produces wood chips that is used to heat municipal buildings). An important activity is construction, in particular the construction of social housing, in which local resources of wood, stone, and especially the local workforce is used. Municipal firm is also developing external relations, particularly providing the above-mentioned services to the surrounding municipalities. Workforce is also used for the production of beehives, wooden toys and other wood products reacting to demand on external markets.

Municipal firm “Hrhovské služby” was established as a local government's response to addressing the problems of high unemployment of the Roma minority in the municipality. Its basic function is to ensure the provision of services within the competence of the municipality. In particular, the maintenance of public spaces, maintenance of forest and public greenery, municipal water and sewage network, repair of local roads. The high demand for this type of activities and services in the region was the basis for the growth of profitability of the municipal firm and its ability to expand the range of activities and services and hence employment of local Roma population. This contributed to the growth of qualification and skills of its employees, which they started to put to use in other, purely commercial firms for example in construction and agriculture industry.

Another important contribution of the municipal firm is its ability to create spin-off companies. E.g. municipal firm established a blacksmithery. Its employee, after he developed his skills established his own blacksmithery, for which the municipal firm leased him the necessary facilities and equipment. The character of municipal firm enables it to develop not only economic but also social activities. For instance, assisting its employees in addressing the shortage of funds in case of unforeseen payments, improving housing (construction of bathrooms for employees). The secondary spillover effect of the economic and social functions of the municipal firm is the growth of employment and employability of the Roma, the growth of their living and cultural standard, the growth of education and the applicability of the young Roma population.

The network depicting the relationship of long-term systematic cooperation is dominated by non-profit organizations and public sector represented by local schools. Highly developed continuous cooperation has mainly primary school with kindergarten, which in this way also develops cooperation with NGOs and the private sector. Municipal firm is a small business (under 50 employees). Its market potential is large enough to be able to build long-term, institutional relations with external entities. It is integrated in the network of relationships of long-term systematic cooperation as well, but has a secondary position.

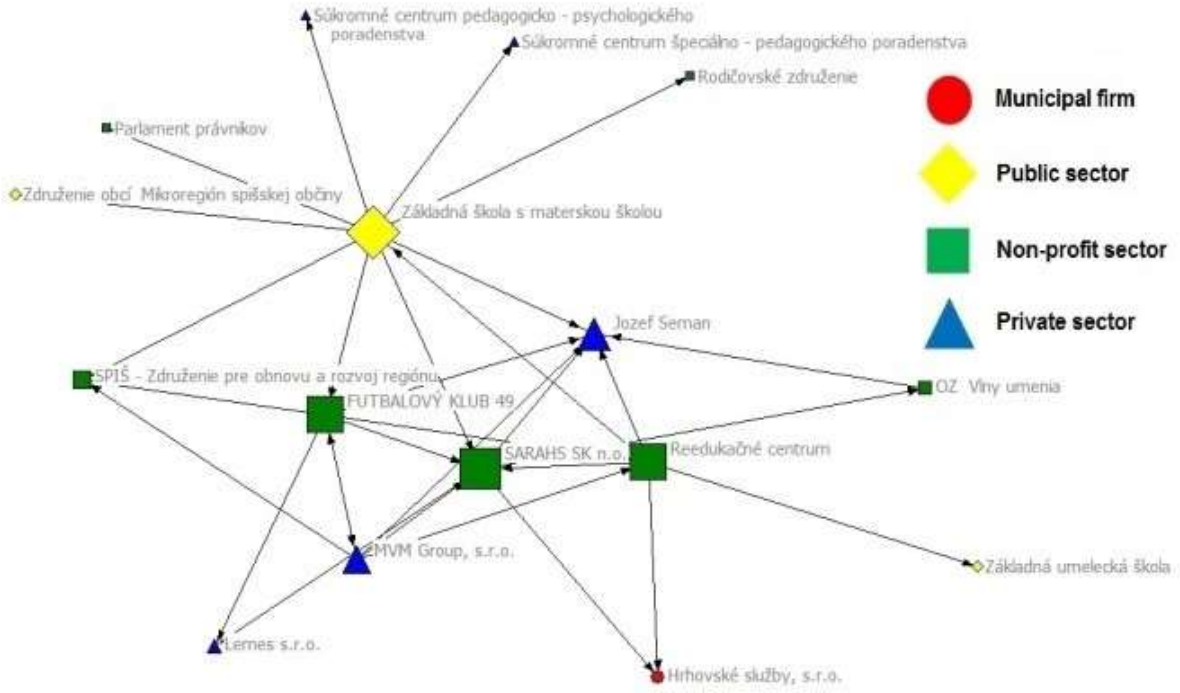

Figure 5 „We collaborate on projects systematically" relations between local actors
Source: own elaboration based on primary research results

The importance of the municipal firm as a development actor is evidenced by its significant positions in terms of the degree of centrality and positioning in the network in all types of defined relationships (excluding systematic cooperation on projects). It indicates the role of the municipal firm mainly as a facilitator of development activities carried out in the municipality and integrator supporting mutual cooperation of all other relevant entities active in the municipality.

Effects of municipal firm on competitiveness growth of the municipality

Endogenously driven development is based on the use of specific immobile and poorly mobile sources whose unique combination allows achieving high territorial productivity. Important role in this process plays local human and social capital, as development strategies must be tailored to specific area, based on its territorial potential and still be able to compete with surrounding regions.

Competitive and sustainable development of the area is generally based on:

- Use of their own resources while maintaining the overall coherence of the territory,
- The involvement of local actors in the development process,
- The integration of the private sector in the innovation process,
- Cooperation with other municipalities and networking with regional, national and European institutions, as well as global systems.

Achieving a competitive territorial development requires that local actors and institutions have four basic skills, namely:

- The ability to make best use of the potential resources of the territory,
- Ability to work together,
- The ability to link the sectors so as to achieve and maintain maximum added value,
- Ability to cooperate with other territorial entities (municipalities, regions and the rest of the world).

The municipality Spišský Hrhov found an effective tool for achieving a competitive local development, that of the municipal firm that operates on the for-profit principle, but its primary goal is not to make profit, but employment growth, growth of employability (total value of the human capital), and subsequent rise of the quality of life in the municipality. This is reflected in the economic, social and environmental impact of the municipal firm on local development.

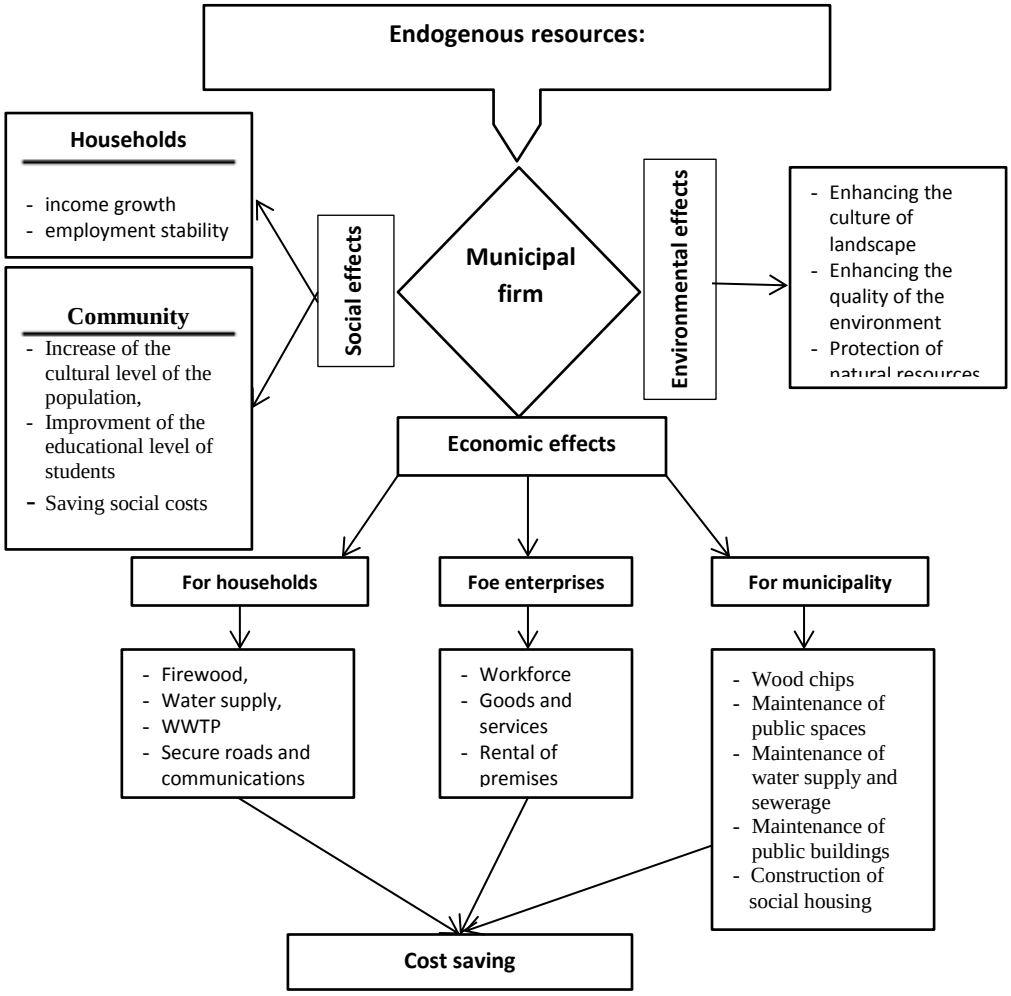

Figure. 6 Effects of the municipal firm „Hrhovské služby" on community and local development
Source: own elaboration

Conclusion

Municipal firm „Hrhovské služby" is a multifunctional entity that can efficiently combine and use local resources, whether in the form of natural, human or environmental resources for the benefit of increasing the competitiveness of the municipality. It facilitates the creation of a dense network of social relationships, integrating other businesses; it is the source of economic and social innovation. It also facilitates the integration of the local private sector in regional economic systems, which opens opportunities for further economic and social development of the municipality.

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HOW TO MEASURE THE IMPACTS OF TOURISM ON THE RURAL ECONOMY AND SOCIETY?

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Abstract
In addition to its GDP contribution, tourism has various impact on the economy and society. However, it is still difficult to find the most proper indicator to measure such impacts. In addition to its contribution to the settlement development, its role in rural development is also widely acknowledged. Due to its inter-sectoral character, it has influence on e.g. the environment, nature protection, infrastructure, culture, society as well as economic efficiency though it depends on them as well. Therefore, our paper primarily focuses on the different methods and indicators, which can be suitable to measure the wide range of impacts of tourism. The aim of our research is to see how much the tourism can be a potential in the development of Hungarian rural areas lagging behind.

Keywords: tourism, rural development, efficiency indicators

JEL Code: Z32, R10, R12

Introduction
According to the estimations of the World Tourism Organization (WTO), the contribution of tourism to the world's GDP directly and indirectly is nearly 10%, providing 100 milliom jobs. According to the European Commission (ESPON website, 2014) data, it is 5% and 9 million in Europe, respectively. The role of tourism in the global economy cannot be debated, it has essential importance both globall and locally. Europe is both the target and the generator of the international tourism, since its outstanding destinations have become top receiving places as well.

The impact of tourism on the economy
In addition to the settlement-development role of tourism, its role in spatial and rural development is continuously increasing. Due to its intersectoral feature, it influences e.g. the environment, nature protection, cultural and economic efficiency and of course it also depends on them (Aubert, 2011).

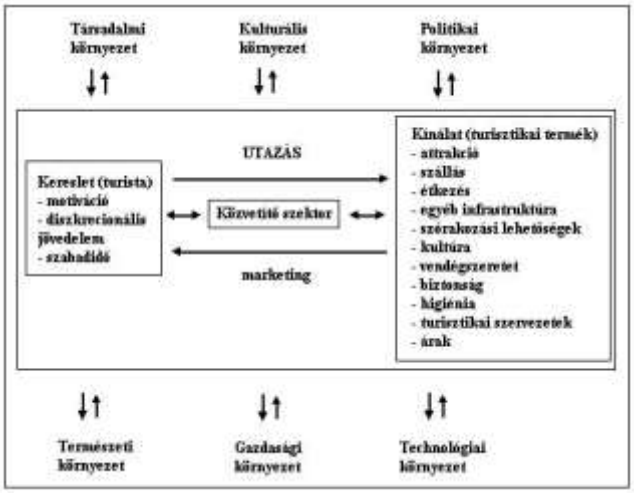

Figure 1 The structure of tourism
Source: Veres, 2011

The need for the integrated development of tourism and space is acknowledged due to the multiplicator effect of tourism, since its influence on the whole economy is undoubted.
Positive impacts of tourism among others:

- direct or indirect job creation ability;
- income-multiplicator ability;
- encouraging infrastructural invesments and developments,
- maintaining local culture and traditions;
- capital inflow by businesses;
- moderating the unfavourable demographic tendencies, improving the population keeping power;
- increasing the education level of the population.

„The uniqueness of tourism is that the consumption and production are carried out at the same time, the product is consumed on site. It is the demand what changes location instead of the product. Such special feature of touristic products gives a special function to the space, location: the attractions, which are the resources of geographical space, are also the development factors of a given local society" (Aubert, 2011).

However, a poorly established development concept for tourism may have several negative impacts as follows:

- degradation of the environment, increasing load on environment;
- overloades infrastructural network;
- exploiting the natural and artificial attractions;
- price-increasing effect due to wealthy tourists;
- depreciation of local traditions and culture;
- negative feelings of local poluation with tourism and tourists etc. (Aubert, 2011).

ESPON programs (2006, 2013, 2020)
The aim of the ESPON (European Observation Network for Territorial Development and Cohesion) program is to moderate the spatial differences and to establish the spatial development policy as well as to create a scientific research network in the framework of spatial development, covering 32 countries in Europe (28 EU member states + Iceand, Liechtenstein, Norway, Switzerland).
It is important to mention the ESPON program projects and research, since the ESPON 2006 and 2013 programs deal with the issues of tourism in individual projects and its impacts on the everyday economy are also mentioned indirectly in several other projects. An important value of the program is that it provides data and information for a great territory of Europe resulting from standardized statistical analyses.

Projects of ESPON 2006 program (with the participation of 29 countries):

1. priority: „thematic projects";
2. priority: projects analizing the effects of community and member state policies;
3. priority: projects aiming at the assessment of results as wel as the preparation of their future application and coordination;
4. priority: projects to promote scientific network creation;
5. priority: studies and scientific support projects (ESPON program official website, 2014).

Tourism is examined primarily in the priority No. 5. („Studies and Scientific Support Projects"), in which the sectors gets emphasized role in „1.4.5. Tourism" axis (ESPON program website, 2014). The background study completed in January 2007 was made based on the cooperation of 5 countries (Sweden, Denmark, Spain, Austria, Norway), which makes the importance of tourism clear at European level, examines its role szerepét in the period of 000-2006, analizes the tourism types as well as the impacts of tourism on destinations. Researches in the framework of the project prepare the next projects after 2013 by carrying in-depth analyses in some of the areas, by claryfing the differences in the definitions and by overviewing the availability of necessary data. Moreover, they introduce the practice of successful initiatives that can be applied by the countries to moderate the spatial inequalities caused by tourism (Aalbu et al, 2007).
The new ESPON 2013 program approved in 2007 (European Observation Network on Territorial Development and Cohesion) involved 32 countries (despite of the former 29 participants. The calls for

proposals in the ESPON 2013 program opened in 2008. 47 million EUR is available to finance the projects (Sütő, 2007). The aims of the program are to establish the cohesion and harmonized spatial development, to improve the competitiveness of the regions, to discover the potentials of the spatial capital and to carry out a comparative analysis on the dynamism of spatial development. Another important aim is to analize deeply and review the European spatial structures, trends, perspectives as well as political effects. It is backed by the final study of ESPON 2006. The 1st priority of the program (Applied researches) deals with the Europan touristic attractions in details (ATTREG), which is published in the final study of 2013 (Russo et. al, 2013).

The final study introduces the European „mobility trends" in the first decade of 2000s, distinguishes the various motivation aspects of mobility (e.g. migration of active population to workplaces, short-term freetime activity mobility, student mobility, the migration of retired people), which do not have direct structure to the tourism-defining elements. The study highlights that European tourism has been dependent on „the more is the better" principle, which – in many cases – means the overexploitation of natural and cultural resources, the economic dependence on touristic sector, as well as imbalanced spatial development (Russo et. al, 2013).

As continuing the objectives, there is another program called ESPON 2020 with the contribution of the EU members states and Iceland, Liechtenstein, Norway and Switzerland, aiming at the execution of the experience of former ESPON programs, research results and the improvement of the applied observation tools over Europe (ESPON 2020 Cooperation Programme Draft, 2014).

Material and method

Opportunities and limitations

It has already been found out in the case of ESPON 2006 research that the countries do not have sufficient data with the required quality which could be the basis for the synthesis of indicators. However, the EUROSTAT international database contains tourism-related data as well, the countries do not have unified data collection methods, therefore the use of data is really difficult. There is shortage in the tourism-related indicators too: e.g. statistics on accommodations, tourist migration flows and the indicators on spatial impacts (Sütő, 2007).

Due to the abovementioned problems, in order to analize the touristic spatial structure, the following steps have to be made:

- such data should be collected which are not included in the EUROSTAT but necessary for the analysis;
- research institutions should be established (or appointing ones from the exisiting institutions) in the countries, which would work out the methodology for data collection and creates the necessary conditions;
- some existing practices should be used as „good practices" to elaborate a unified system (Sütő, 2007).

In our opinion, the abovementioned steps are inevitable to solve the problems, however, a European-level, uniform central regulation should be applied for the data collection and the creation of indicators, making the processes easier for the participating countries.

International tourism indicators

Despite of the fact that there has been great interest in measuring the effects and capacities of tourism for long, there are poor and concrete results in this regard. Some researchers emphasize the lack of definitions and the need for more proper ones and the need for uniform methodology (Getz, 1983). Some researchers believe that the reason for the difficulty in measuring the indicators of tourism (de Kadt, 1979) is dynamic development and spread of the sector.

Wall (1996) says that it is often difficult to state what modernization effects are related to tourism directly. He says that the various types of visitors and receiving them are much more important than the pure number of tourists. According to Stankey and McCool (1984), it is important what changes the visitors bring on the local community and whether the local society can accept such changes. Lundberg (1974a) also added the importance of touristic developments and their intensity to the former assumption.

Most experts call the attention to the serious environmental, economic and socio-cultural problems in relation with the tourism sector. Such problems might be infrastructural recession, the disappearing of

traditional economic activities; such status when the increase exceeds the local labour force-supply; real estate inflation; crowdness as well as noise (Johnson-Thomas, 1996). Due to the increase in the men-created attractions, natural values are neglected, crime increases, prostitution, gradual degradation of cultural traditions as well as the appearance of non-authentic cultural attractions. Observations show that the massive existence of the sector goes along with the drop in visitors' satisfaction (Pattullo 1996). All in all, it can be stated that the literature provides only few guidelines how to measure the effects of tourism in an objective way.

The current measuring methods of the complex effects of tourism (volume/dominance) are rather raw and unidimensional. Methods which emphasize the economic impact include the following factors: the contribution of tourism to the GDP, current account, employment and the income from taxes. Other standard indicators include the rate of incoming visitors to the GDP, export trading, unsettled dues and the expenditure per capita. Other sectoral indicators are e.g. the average length of stay, occupation rate in hotels, the size of large hotels, rate of foreign ownership, advertising and marketing costs (Albuquerque-McElroy, 1992). The usage of such methods is limited, since they are separate and unidimensional. In other words, they are not suitable to be combined either for a complex economic indicator, or an indicator reflecting non-economic aspects and socio-environmental burden.

One-dimensional touristic indicators

We have heard about several one-dimensional tourism-related indicators so far. The problem with such indicators is that they usually examine only one factor and reflects its relation to only another factor (e.g. area or population).

The most commonly used indicator for the social and environmental loads is the so-called "visitors staying overnight" compared to the permanent residents and the area. In the studies of Lundberg (1974a) we can find the **TII,** i.e. the **"Travel Intensity Index"**, which is simply the number of visitors compared to the local population. After the researches of Lundberg, Doxey (1976) created the **„Index of Tourism Irritation"**, i.e. the „IRRIDEX-model" (Formádi et. al, 2011), which ranks the reaction of local society influenced by tourism on the arrival of visitors. According to him, there is a correlation between the increasing tourism tendency and the negative changes in the attitude of the local people to tourists. This process of changing has 4 stages: 1. euphory; 2. apathy; 3. irritation; 4. antagonistic status.

The **„Tourism Intensity Rate"** created by Harrison (1992) might be more well-known and more commonly used than the abovementioned. It examines the number of visitors per 1000 citizens and per square km of agricultural land.

The difference between the calculation methods of the indicators below is that one of them uses population-related data, while the other uses data on the area:

„Tourism Penetration Ratio"

TPR= (number of visitors*average length of stay/population)*365

„Tourism Density Ratio"

TDR= (number of visitors*average length of stay/area size)*365

These indicators may reflect the daily average visiting density per 1000 citizens or per km^2 (Albuquerque, McElroy 1992).

Overall, it can be stated that most of the indicators deal with the data only from one perspective, which means that none of the tourism-related economic, social, environmental impacts are reflected in the indicators, thus they are not able to reflect a complex picture about the tourism of the areas selected.

Tourism Function Index

The **„Tourism Function Index"** can be found in the study published by ESPON, detailed above. It examines the differences in the spatial structure based on a simple, specific indicator. The denominator might be the population or area size (in km^2), the numerator might be the accommodation capacity (number of beds).

The index can be calculated quite simply as follows:

TFI = (N x 100)/P

N= beds (number of rooms, beds)
P= population or area (km^2)

TFI index can vary from zero to infinite. Lower values reflect poor accommodation capacity in a region; high values reflect high number of beds or relatively high capacity compared to low population or small area (Sütő, 2007). According to the ESPON program 2006 analysis, in the TFI rank the following places are in the upper, mature status and are popular destinations: Eastern-Spain, most of Italy, Southern-France, Alps in Austria, Greece (both based on the population and area). The other pole of the scale includes less-popular destinations (in some cases large areas) in Eastern-Europe: Poland, Romania, Bulgaria, Baltic states (Aalbu et al, 2007, Sütő, 2007).
It is clear that the abovementioned indicator has both advantages and disdvantages. One of its advantages is that the data-collection challenges and obstacles do not influence it much, since the accommodation capacity data (it is an internationally acknowledged indicator of tourism) are collected in every country therefore the data are available. Despite of the fact that the accommodation capacity data are available in all the countries, the data collection aspects and methods are not standardized. In Great-Britain, every urban accommodation is counted in the surveys, while in Denmark only such facilities are counted that have minimum 50 beds. It means that the TFI index calculated on the number of rooms/beds does not show uniform result (Sütő, 2007). Its disadvantage is that it caounts with only one dimension, thus it can only provide a rough result about the European touristic spatial structure. In addition, it cannot give real picture about the influence of tourism sector in the large-size countries either. In order to get more precise picture about the concrete impacts of tourism, we need to use other methods. Overall, the TFI index does not bring a lot of new things regarding the methodology, but it can serve as a basis for more complicated indicators.

Tourism Penetration Index

It is possible to create other type of indicators to measure the competitiveness of tourism. Tourism is a complex, multi-dimensional phenomenon, therefore its impacts should be measured by a multi-dimensional index (Tóth, 2010).
Based on the abovemnetioned, it is a conclusion that there is a need for a complex, multi-dimensional indicator that is able to provide even international data on tourism. It was a conclusion by McElroy and Albuquerque as well, who created – in their study about the Caribbians published in 1998 – the **complex tourism penetration index**.
The authors considered four criteria in the creation of the index so that it could match the former research results somehow. The criterium was to create an easily understandable and accessible, complex indicator that may result simple and clear values (McElroy- Albuquerque, 1998). The aim of the creation of the index was to make a simple index which consists of three separate but inter-related sub-indices, measuring the economic, social and environmental load as well. In order to reflect the economic impact, the expenditure per tourist was applied, since it can be considered a standardized index of the overall impact of tourism. Apart from it, it has strong relationship with the GDP per capita too (McElroy- Albuquerque, 1998).

Because of such reasons (uniformity, accessibility, common use), the average daily number of visitors was selected to reflect the social impact, calculated per 1000 citizens. To reflect the environmental effect, the number of hotel rooms per square km has been chosen. Though this indicator reflects some information about the impacts of tourism on the physical environment, infrastructure, this effect is not balanced from spatial point of view. Moreover, unlike the two abovementioned sub-indices, the number of hotel rooms per square km is not much affected by the fluctuation of the visitors per year (McElroy- Albuquerque, 1998).
The three sub-indices have been selected from several various indicators. There were several other sub-indices to be integrated, e.g. the rate of crime per 10,000 citizens, the rate of crime against visitors, the vexation against visitors, as well as the number of cars per square km, energy production per capita, solid

waste production per capita, the annual rate of deforestation etc. In order to analize the tourism impacts in a complex way, such indicators would have been interesting and useful to be reflected in the TPI, but the necessary data was not available.

Methodological background of the index
The essence of the index is that it is a complex index integrating three dimensions at the same time (economic, social and environmental).

1. **Economic effect:** the expenditure of incoming tourists per capita;
2. **Environmental effect:** number of hotel rooms per square km;
3. **Social effect:** average number of visitors per day per 1,000 citizens.

These effects are all calculated for each region and their average results the **complex tourism penetration index** (Dávid, 2011).

- Economic effect: TPI_{eco} — $TPI_{eco} = (x_{eco} - x_{eco}min)/(x_{eco}max - x_{eco}min)$
- Environmental effect: TPI_{env} — $TPI_{env} = (x_{env} - x_{env}min)/(x_{env}max - x_{env}min)$
- Social effect: TPI_{soc} — $TPI_{soc} = (x_{soc} - x_{soc}min)/(x_{soc}max - x_{soc}min)$

x_{eco} or x_{env} or x_{soc} = the value of the given indicator in the given region
$x_{eco}min$ or $x_{env}min$ or $x_{soc}min$ = the minimum value of the given indicator among the data of all the regions analized
$x_{eco}max$ or $x_{env}max$ or $x_{soc}max$ = the maximum value of the given indicator among the data of all the regions analized

The mathematical average of the three abovementioned indices gives the „Tourism Penetration Index" for each area, where the TPI reflects the volume of the tourism effects. It is clear that there are no weigthed indicators in the TPI, which means that it is assumed that all indicators have the same impact in the complex tourism system. Later, a weigthed TPI has been created, in which the expenditures of tourists per capita i.e. the economic effect, had double weigth of the two other indicators. It also proves that the most direct correlation exists between the economy and tourism (Dávid, 2011, Tóth, 2010).

„Tourism Penetration Index"

$$TPI = (TPIeco + TPIenv + TPIsoc) / 3$$

The TPI (McElroy- Albuquerque, 1998) has been used by several international and Hungarian researchers to measure the impacts of tourism. Therefore, the base formula can be modified if more weight is put on the economic factors as follows.

Weighted „Tourism Penetration Index"

$$TPI = [(2*TPIeco) + TPIenv + TPIsoc] / 4$$

The map of Europe according to the „Tourism Penetration Index"
Europe is a primary destination in the world and the primary generator of international tourism, too. As it is for the rest of the world, Europe sees a decreasing tendency in the average length of stay of tourists, while the frequency of trips increases. Most of the trips in Europe are from the Northern parts to the Mediterranian, however, there are new destinations e.g. to Central-Easter-Europe, too (Eurostat, 2006).
The TPI for the Caribbeans by McElroy and Albuquerque (1998) was applied for the states in the study of ESPON 2006 program as well. In the international practice, the TPI index primarily focuses on the foreign incoming tourists and sometimes it does not consider the domestic ones. The ESPON project calculated the index for European countries (due to the abovementioned obstacles in data collection), but the calculations should be done for regions at NUTS II-III levels (Dávid, 2011).

As it is mentioned above, the economic effect is considered double in the TPI calculations, but there is a problem related to the environmental effect too. Namely, the values of small-sized countries e.g. Malta, Cyprus. Luxemburg disfigure the rank based on the real effect on environment. Thus the abovementioned countries have been eliminated from the analysis to create a real rank. Still, the dominance of the three countries in tourism is undoubted.

It is interesting to see on Figure 2 that there is a clear gap between the Western and Eastern part of Europe according to the TPI. Mature destinations and destinations with high penetration are located primarily in the Western parts of the continent, while the penetration is rather low in the Eastern countries. Destinations with high penetration are the most important destinations of Europe, e.g. zones on the seashores, urban destinations, or places with landscape suitable for winter sports. Hungary belongs to the upper cathegory among the Eastern countries, which is due to such popular destinations like Budapest, the capital, the Lake Balaton or the thermal baths.

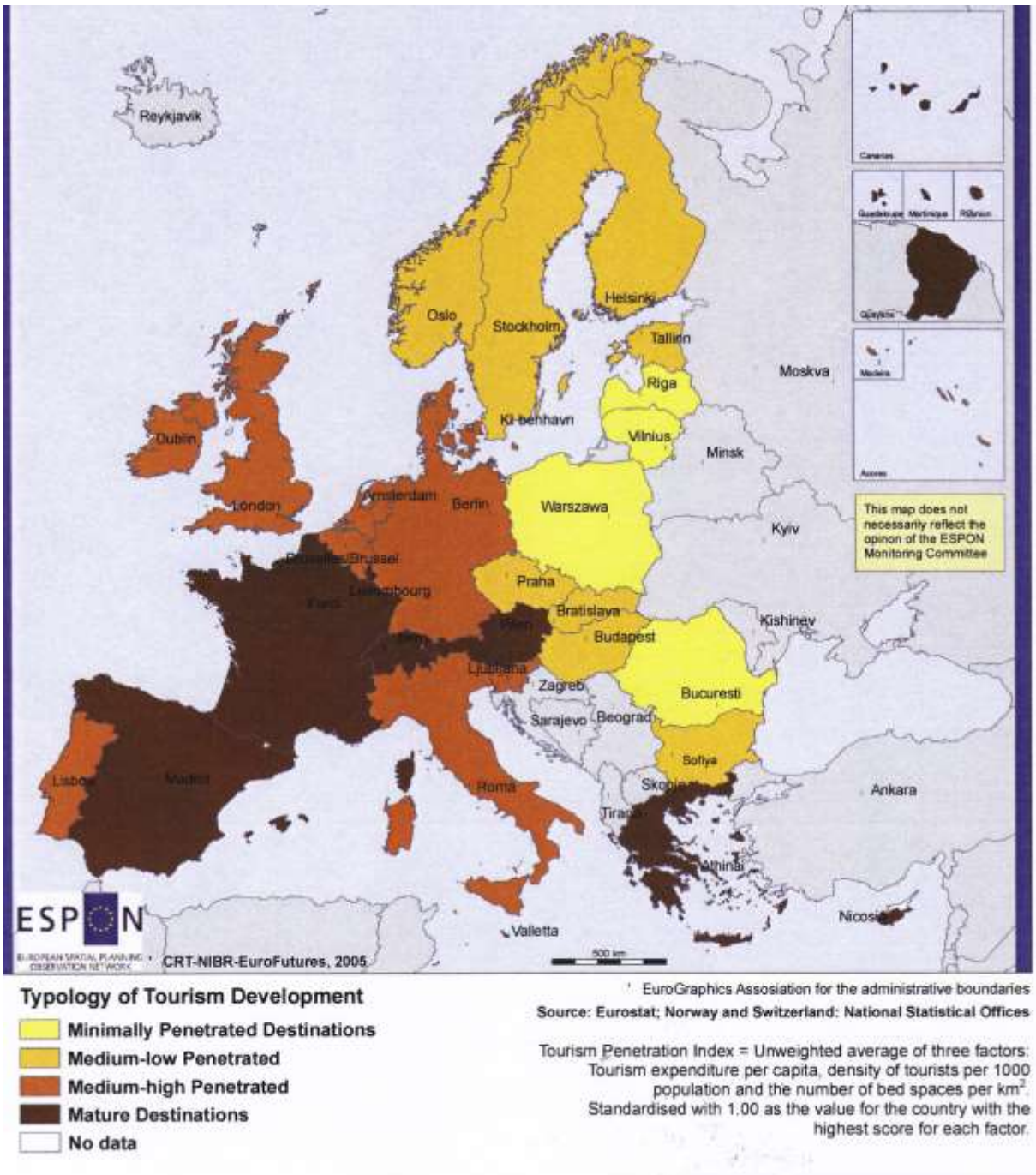

Figure 2 TPI index in the ESPON states in 2005 (ESPON 1.4.5. project)
Source: Aalbu et. al, 2007; Sütő, 2007.

Major errors in the method:

- National data-collection methods are not uniform (e.g. the number of arrivals is calculated according to statistics provided by the borders or statistics of accommodations, and the number of beds is calculated totally or only in the hotels with over 50 beds);
- The specific expenditures are not calculated for the domestic tourists;
- Data calculated for the size of the area distort the real results (small-sized countries with significant tourism have outstanding data which distort the data of larger-sized countries with similarly significant tourism);
- Research carried out for NUTS 0 level does not highlight the regional differences within the borders, in addition, there is no data available for NUTS II or lower levels in all the countries (Sütő, 2007).

Results and discussion

In our research, we focused on Hungary's LAU 1 level units to see how the abovementioned methods can be applied to measure the impacts of tourism. The data was collected from the 2007-2013 programming period of the European Union, with special focus on the start and end of the period. All the data is from secondary sources from the Central Statistical Office TEIR database and the TSTAR database. Every data was standardized by the total population of the micro-regions and the size of land (km^2). The primarily aim was to see the tendencies between 2007 and 2013. It can be stated out of 174 micro-regions, 110 showed increase from 2007 to 2013, while in 64 micro-regions, the index decreased. In Table 1, it can be seen which sub-indicators changed over the period and generated the increase or the decrease. In most cases the change in the **environmental effect** generated the increase. It can be seen that even only one sub-indicator can modify the value of the index, since in 7 micro-regions only the environmental part increased, the others decreased, still the index grew in total. In 9 micro-regions, there were adverse tendencies. It was only the environmental effect, which reduced, while the other elements increased, it was not enough to have a higher TPI.

Table 1 The change in TPI in the micro-regions of Hungary from 2007 to 2013

ΔTPI_k CHANGE FROM 2007 TO 2013	*Change in sub-indeces*	***Economics effect*** **$_{env}TPI_k$= number of nights spent per 1000 citizens**	***Environmental effect*** **$_{eco}TPI_k$= number of bends per km^2**	***Social effect*** **$_{soc}TPI_k$= number of visitors per 1000 citizens**	**Number of elements that changed**
INCREASED	*Three sub-indices*	72	72	72	72
	Two sub-indices	6	6	0	6
		9	0	9	9
		0	15	15	15
	One sub-index	0	7	0	7
		0	0	1	1
	Total	**87**	**100**	**97**	***110***
DECREASED	*Three sub-indices*	24	24	24	24
	Two sub-indices	6	6	0	6
		19	0	19	19
		0	4	4	4
	One sub-index	0	9	0	9
		0	0	2	2
	Total	**49**	**43**	**49**	***64***

Source: own editing, based on CSO, TEIR data, 2015.

The micro-regions were put into categories based on their TPI values. The categories were created in cluster analysis. In addition, the methods called „neraest neighbour" and „Ward- method" were also applied, thus helped to create four clusters. They are the same as in the ESPON study.

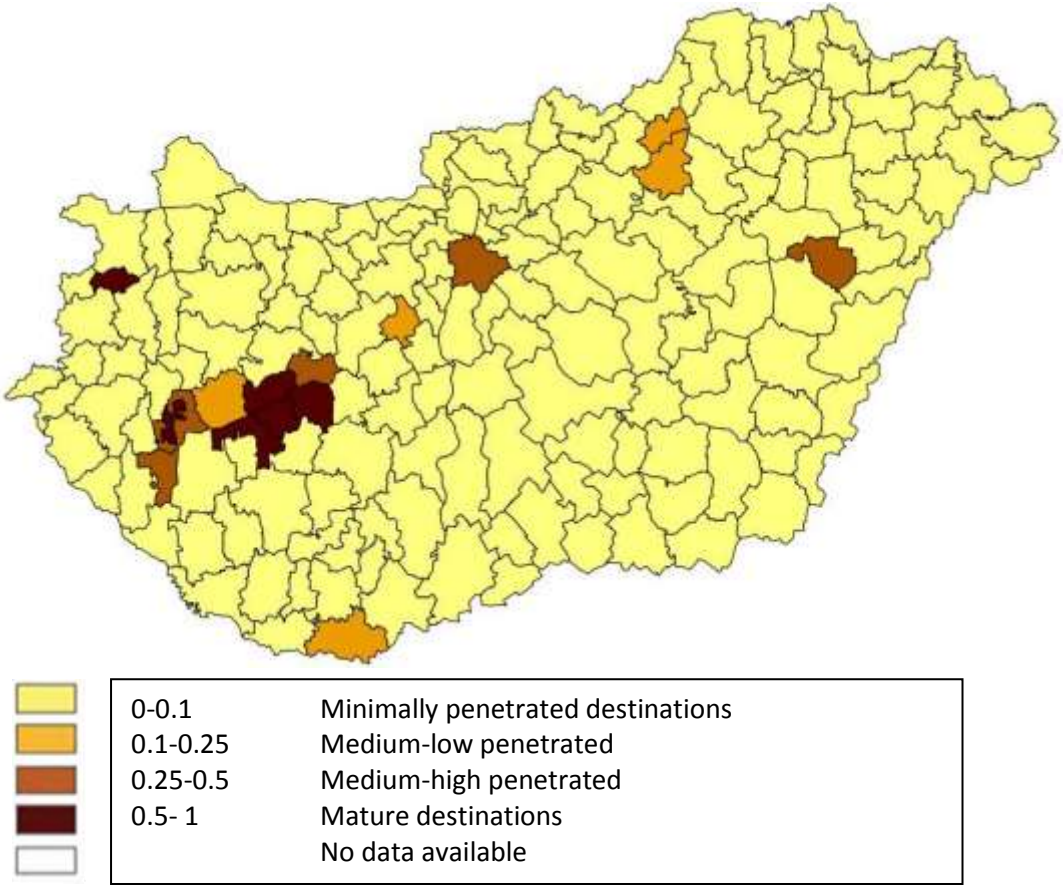

Figure 3 The TPI in the micro-regions of Hungary in 2007
Source: own editing, based on CSO, TEIR data, 2015

On the map above, the tourism situation in the micro-regions in 2007 can be clearly seen, namely that the Hungarian tourism is significantly influenced by the Lake Balaton and Budapest, i.e. they are visited by the most visitors. Unfortunately, larger cities and their agglomerations have more moderate role in tourism. Since the data was weighted by the number of population, Budapest got to the second category. The general picture is not really bright, since only 16 out of 174 belong to the clusters with at least moderately low penetration. The index in the rest of the micro-regions (158) was under 0.1, which is significantly different from the leading destinations. The national average is also really low: 0.054.
By 2013, the number of mature destinations decreased (only four remained in the category instead of the former 6 ones). It was a general tendency that the TPI values decreased over the years, even in the popular micro-regions like Hévíz, Balatonfüred, Budapest and Keszthely.

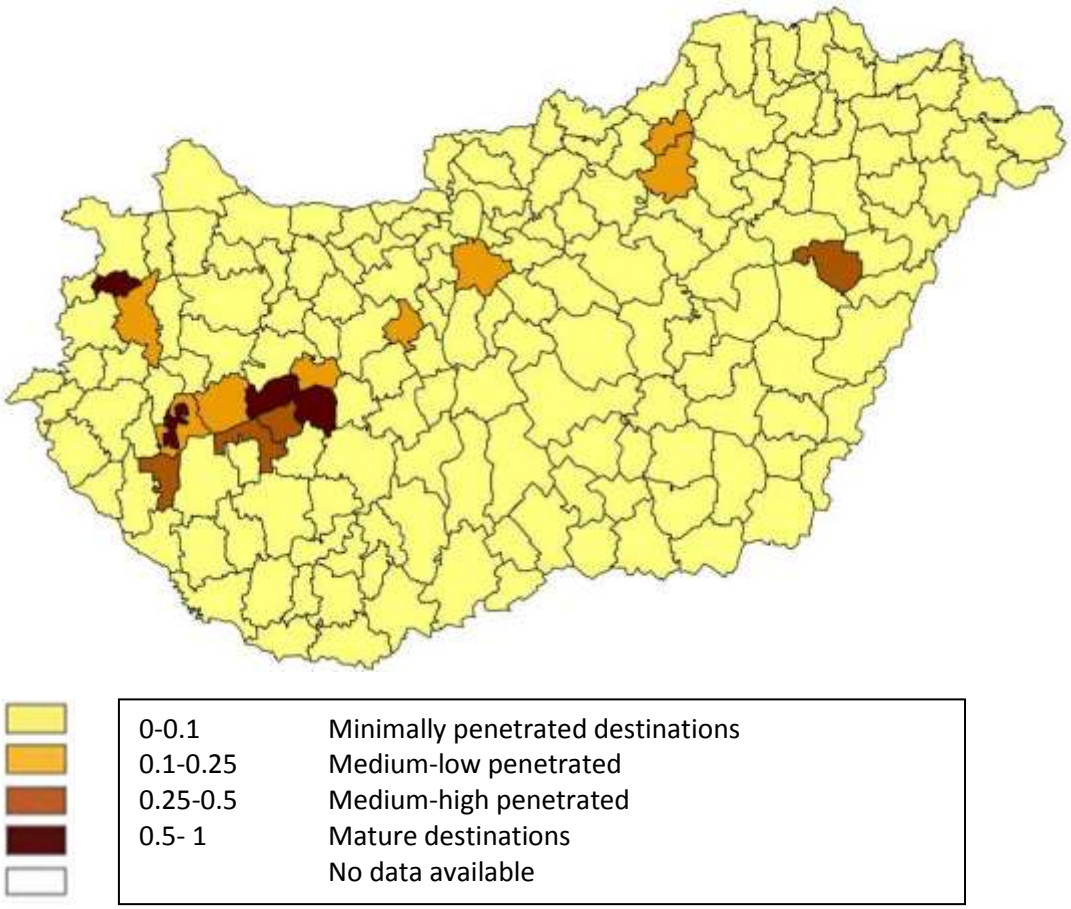

Figure 4 The TPI in the micro-regions of Hungary in 2013
Source: own editing, based on CSO, TEIR data, 2015

Conslusions

Overall, we can see that the examination of tourism effects is really complicated, but very useful. There have been several attempts to measure the impacts of tourism because the sector has gained more and more importance globally and its contribution to the GDP has been also increasing. But a question is raised: is it only its share in the GDP what makes tourism important from economic point of view, and is it only the economic factor that is important in relation with the tourism or are there any other factors which determine its significance?

Hungary is known as a popular destination of tourists, however, based on the index, it is clear that there are significant discrepancies in the country. Tourism is concentrated in the capital and around the Lake Balaton mainly. The larger cities and other attractions are not able to attract tourists in sufficient amount. However, in most of the rural areas, where the economic, social conditions are not favourable, tourism is considered as the number one and sometimes the only tool to break out and achieve progress. Most of the rural areas intend to start tourism activity, despite of the fact that they do not have the necessary services and resources available.

In such periphery areas, with low-educated human resource, tourism is considered a good potential, forgetting about the fact that tourism requires well-educated, experienced human resource. Based on the abovementioned, it is clear that in most of the micro-regions of Hungary, the complex conditions are not suitable to have sustainable tourism. The long-term objective of the country should be to carry out complex development in the rural areas that enable the creation of resources and conditions for sustainable tourism, specifically targeted to the regions lagging behind and based on the local values.

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THE EFFECT OF INTEGRATED MARKETING COMMUNICATION ON RICE PRODUCTION AND TRADE IN THE MEKONG DELTA, VIETNAM

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Abstract
IMC appeared in the late 1980s of twentieth century and it is a strategic business process for creating and nourishing profitable relationships with customers and other stakeholders. IMC consists of six elements: advertising, personal selling, sales promotion, direct marketing, public relations and sponsorship. This paper focuses on analyzing the effect of IMC on rice production and trade in the Mekong Delta, Vietnam. Facts and evidences showed that IMC helps farmers with better decision-making processes in their production and trade to bring profit to them; for rice traders and firms IMC expands existing channels for getting in touch with clients, attracting new customers, improving relationships with customers, and increasing sales volume to raise turnover, profits; and for rice consumers IMC improves their awareness about products and their profitable behavior.

Keywords*:* Integrated marketing communication (IMC), rice production, rice trade, Mekong Delta, Vietnam.

JEL Codes: D47, O13, O53

Introduction

Rice has an important role in Vietnamese life and economy. According to Asia Development Bank, rice subsector is occupying 40% of gross output of Vietnamese agriculture, 9.3 million households are planting paddy (65% of rural households) and over 70% of the national labor force is employed in rice production. Rice consumption in Vietnam accounts for about 60% of daily per capita calorie intake (Rice today, 2002). According to FAO, Vietnam is the 5th largest rice producer and the 2nd rice exporter in the world. Mekong Delta with nearly 54% national rice production and about 90% rice surplus for export yearly is the largest rice granary of Vietnam (Nguyen Cong Thanh and et al, 2013).

Market information has an effective role in increasing the marketing system efficiency. Sharing information is one of the most effective ways of improving supply chain performance (Riikka Kaipia, Helena Lakervi, 2005). According to Daniele Giovannucci and Andrew Shepherd (2009) and World bank (2011), knowledge of market information tends to reduce the risks, reduces asymmetries of information between traders and producers, reduces transaction costs of participating in the market, enables farmers to purchase inputs, and enhances farmers' ability to their production strategies to match the accelerating rates of change in consumer demand with marketing channels. Effective marketing communication can lead to increased participation in the markets and greater stability of prices and supply-demand.

Some researchers in Vietnam reckoned that rice is a simple and homogenous product so IMC is not important in rice value chain performance (Luu Thanh Duc Hai, 2002). There are no studies about the impacts of IMC on agricultural products value chains in general and rice value chain in particular in Vietnam so this paper will analyze and disseminate evidences of the impact of IMC on rice production and trade in the Mekong Delta, Vietnam.

Research Goals

The main objective of the paper was to review the impact of IMC on rice production and trade in the Mekong Delta, Vietnam.

Specifically:

- To summarize the theory of the rice value chain in the Mekong delta, Vietnam and IMC;
- To assess the impacts of IMC on the rice value chain in the Mekong delta, Vietnam.

Methodologies

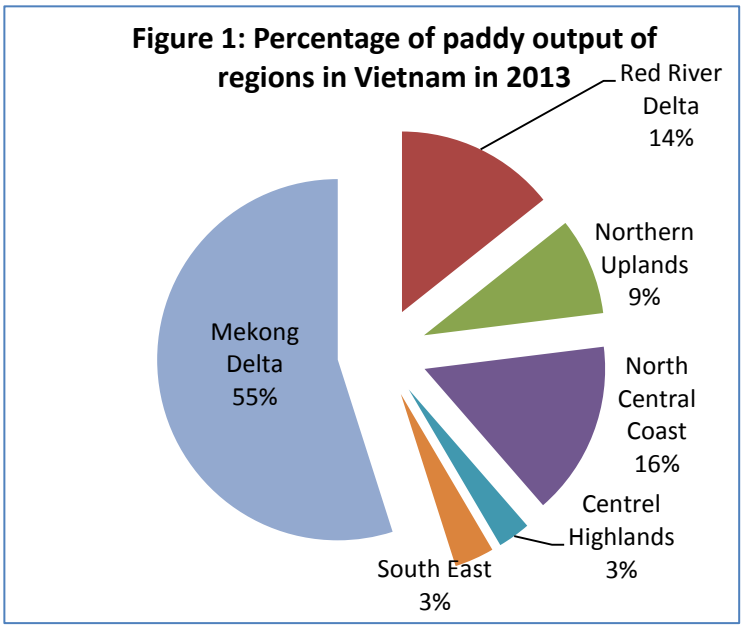
Study site

The study site was the Mekong Delta in the southern part of Vietnam. Rice production in the Mekong delta has been producing yearly for national food security and export.

The Mekong delta has 13 administrative units including: Can Tho city, Long An, Dong Thap, An Giang, Tien Giang, Ben Tre, Vinh Long, Tra Vinh, Hau Giang, Kien Giang, Soc Trang, Bac Lieu and Ca Mau provinces.

Data collection

Information and data analyzed in the paper are collected from secondary information and data and our experiences.



Source: Own processing based on own data collection

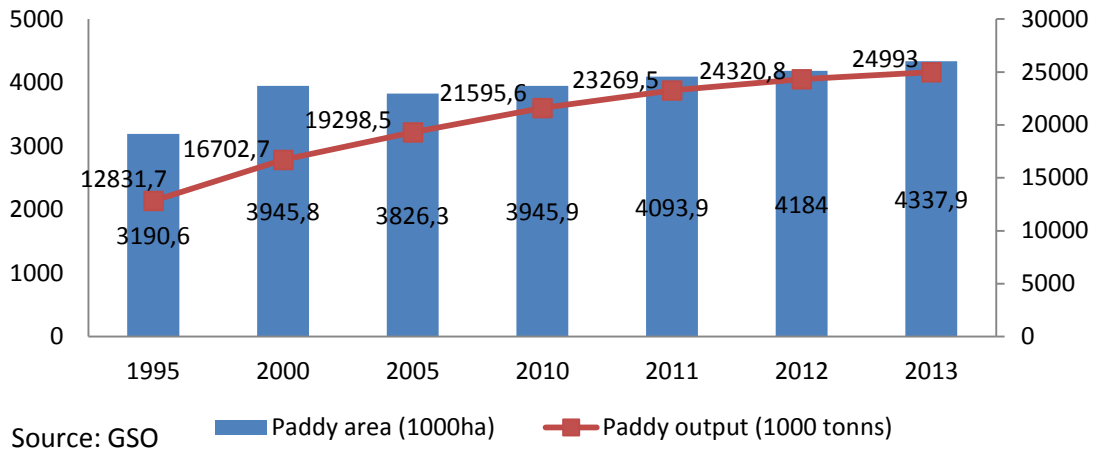
Map 1 Map of Mekong Delta

Results and Discussions

Rice production and trade in the Mekong delta

The Mekong delta has been Vietnam's rice bowl, producing about 50% of the country's total rice output (Nguyen Lam Thu Uyen, 2011). According to statistic data from General Statistical Office (GSO), in 2013 the Mekong delta had rice cultivated area with 4,337,900 hectares, its rice productivity was 57.6 quintals/hectare and its rice output was 24,993,000 tons. However, rice production in the Mekong delta is still small, an average household has 1.3 hectares of rice production, of which there are 30.6% of farmer households with an area from 0.2 to 0.5 hectares and 7.7% of households with an area less than 0.2 hectares (Tran Thi Quy, 2010).

Figure 2 Paddy area and output in Mekong Delta in the period 1995-2013

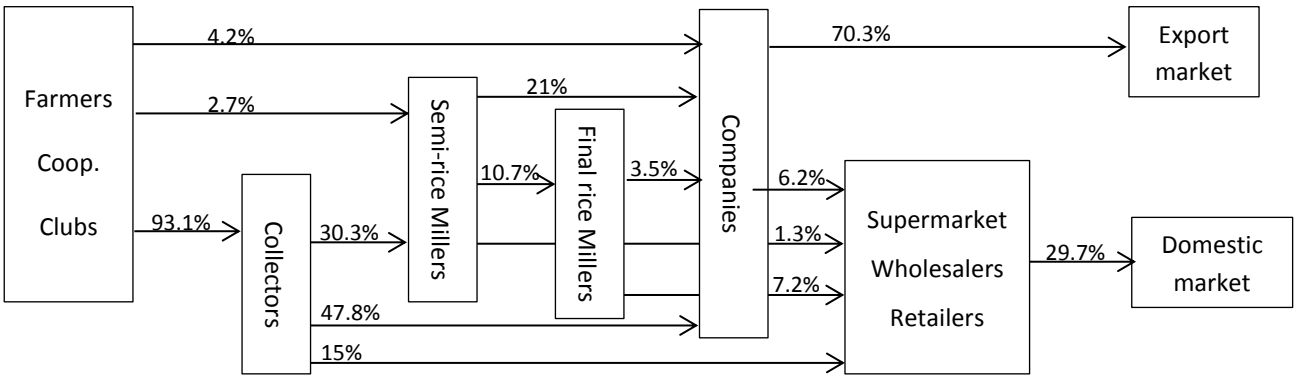


Rice market of the Mekong delta: Rice in the Mekong delta has 2 main market channels: a channel for domestic market and a channel for export. According to William Smith (2013), annually the Mekong delta supply of about 7.7 million tons entered the market (after deductions for seed, wastage and consumption) and of the 7.7 million tons of marketed rice, 70% was destined to export (equivalent to 90% of total national rice export), 30% to the domestic market.

For domestic market: rice in the Mekong delta has to be transferred to many market places within the country during the year, particularly from the Mekong River Delta (surplus region) to other regions (deficit regions) (Luu Thanh Duc Hai, 2002). A study of Vo Thi Thanh Loc and Nguyen Phu Son (2013) showed that the domestic flow of rice in the Mekong delta accounted for 29.7% of the total commercial rice of total region and in which 15%; 7.2%; 6.2% and 1.3% are distributed to three major markets: super-markets, wholesalers and retailers in provincial cities (inside and outside the Mekong delta) by collectors; final rice millers; companies and semi-rice millers, respectively.

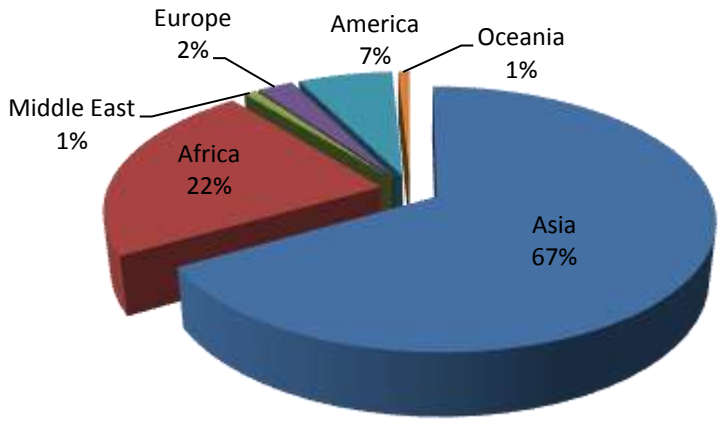
The rice export chain is dominated by the companies. The rice export trade occupies approximately 70.3% of the total amount of commercial rice and the main markets are in Africa, Asia, America.

Figure 3 Rice value chain map in the Mekong delta



Source: Vo Thi Thanh Loc and Nguyen Phu Son (2013)

Figure 4 Percentage of export rice of Vietnam by market in 2011



Source: Own processing based on own data collection

IMC and its tools

* Definition of IMC:

Since the late 1980s, along with revolutions in information technology the concept of IMC has emerged as an important topic and been widely applied by the marketing communication communities, researchers and practitioners (Dong Hwan Lee and Chan Wook Park, 2007).

One of the first definitions about IMC was given by the American Association of Advertising Agencies (AAAA) in 1989. According to AAAA, the definition of IMC: "A concept of marketing communications planning that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines (e.g. general advertising, direct response, sales promotion, and public relations) and combines these disciplines to provide clarity, consistency, and maximum communication impact" (Viola Sibylle Erlenmaier, 2009). Then many scholars redefined IMC such as Don Schultz in 1996, Duncan and Caywood in 1996; Schultz and Schultz in 1998 and Duncan in 2001. The definition of IMC of Duncan in 2001 is considered as the newest one. Duncan defined IMC as follows: "IMC is a cross-functional process for creating and nourishing profitable relationships with customers and other stakeholders by strategically controlling or influencing all messages sent to these groups and encouraging a data-driven, purposeful dialogue with them". One of the important contributions of Duncan is that IMC should play a vital role in building a close relationship with the customers in the target market.

* IMC tools

Ilse Niemann (2002) stated that IMC consists of six tools: advertising, personal selling, sales promotion, direct marketing, public relations and sponsorship. As for Viola Sibylle Erlenmaier (2009), IMC was divided according to one-way or two-way communication and direct or indirect channels.

Table 1 Classification of IMC vehicles

Relationship between sender and receiver			
Ways of communication		**Indirect (non-personal**	**Direct (Personal)**
	One-way	- Mass media advertising	• Direct advertising • Sales promotion • Point of sale advertising • - Sponsorships
	Two-way	- Telephone hotline - Online communication - Direct-response measures	• Personal communication • Trade fairs and exhibitions • Event marketing • Sales promotion with personnel involved

Source: Viola Sibylle Erlenmaier, 2009

IMC in the rice value chain in the Mekong delta, Vietnam

First of all, we want to say that IMC in the rice value chain in the Mekong delta is underdeveloped, especially for domestic market. Only 18% of rice traders in the Mekong delta has promotion strategies but it is very simple. They just offer a favorable quality with a fair price; weigh exactly; deliver in time, and discount for buying large volume and maybe they usually try to keep a close relationship with the consumers; always give hospitality to them when negotiating and in the case of wholesalers, providing credit is a very important instrument for sales promotion and the relationship is based on trust and reputation (Luu Thanh Duc Hai, 2002).

* Channels to access to market information in the rice value chain in the Mekong delta

There are ways for actors in the value chain to access market information. Radio, TV, cell phones, face-to-face communication are the popular ways of actors in the rice value chain in the Mekong delta to access to market information due to its low cost and its conveniences. Advanced ICTs such as Internet, fax and email; printed materials; community bulletin boards; community loudspeakers are rarely used to access to market information by participants in the rice value chain in the Mekong delta.

To rice farmers: Most of them use radio, TV, cell phones to access market information. These vehicles are very efficient ways of disseminating information to them. Face to face communication is used when the farmers get market information from their friends, relatives, neighbors and traders. In addition, community bulletin boards, community loud speakers can also be channels to gain market information but the farmers rarely use these information channels because the quality of market information of these channels is not sure. Some large scale farmers can use printed materials such as newspaper and advanced ICTs such as internet to access to market information.

For rice traders and millers: They can get the market information from radio, TV, cell phones and newspapers. Some large millers/polishers and traders can get the information from the SOEs everyday by telephone or fax or email.

For consumers: They mainly gain market information from radio, TV, newspapers, internet and rice traders. However, they often believe in market information the traders introduced to them during purchasing and in fact, market information from radio, TV, newspapers, internet are used rarely by consumers.

* The market information sources in the rice value chain in the Mekong delta

Market information sources in the rice value chain in the Mekong delta are divided into 2 sources: formal and informal ones. Accordingly, the formal sources are implemented by extension stations, market experts, newscasts and broadcasts, internets, newspapers, magazines etc… Informal sources are provided by individuals as other farmers, companies, agro-processors and non-government organizations (Le Van Cuong, Ngo Thi Thuan, Nguyen Hung Anh, 2012).

Table 2 Sources of market information in the rice value chain in the Mekong delta

Sources of market information	**Percentage of response to different resources (%)**			
	Farmers	**Assemblers wholesalers**	**Millers Polishers**	**Retailers**
Newspaper, radio and TV	29	7.8	24.3	4
Information from SOEs	2.6	25.5	32.7	20.8
From private traders or intermediaries of the channel	20.5	54	30.3	58.4
From relatives, friends	43.5	4	9.2	10.4
Other (internet)	4.4	8.7	3.5	6.4
Total	**100**	**100**	**100**	**100**

Source: Luu Thanh Duc Hai (2002)

A study of Luu Thanh Duc Hai (2002) indicated that most farmers reached market information from their relatives and friends, rice traders (informal sources), occupied 43,5%. In addition, they can gain the market information from mass media such as newspaper, radio, TV. Only few large scale farmers got the market information from SOEs and via internet.

Wholesalers obtained market information mainly through other traders in the channel of distribution or from the SOEs. In addition to market information sources from other traders and SOEs, rice millers/polishers gained market information from newspapers, radio and TV. Interestingly, rice traders with their knowledge and experience also have their own source of market information. They know the information about rice production areas, prices among different areas to make profitable decisions on production area and time to buy rice and these result in saving time and money for them.

Market information source from the internet is underused in the rice value chain in the Mekong delta. Some websites provide information about the rice market day by day. Rice traders can obtain the information on export prices of rice, domestic prices at different major market places, business activities of the SOEs and the Vietnamese Food Association, new government policies on rice production and export, etc. but according to rice traders, market information online is general information in the whole country, not their targeted markets and this information source is not good enough to apply in practice (Luu Thanh Duc Hai, 2002).

* Market information sources of public institutions

Market information is used by public institutions for the following purposes: to make policy decisions; to monitor changes in the economy; and to assess the food security situation in the country; to supply participants in market, etc.

Vietnamese government had some activities to supply rice market information to actors in the rice value chain such as broadcast by national and local radio stations, published in newspapers, and posted on websites (The world bank, 2011).

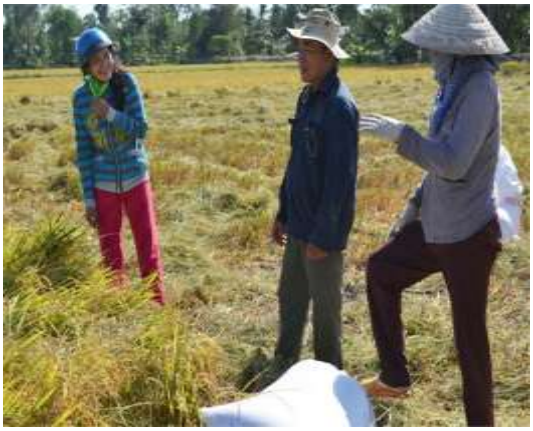
Ministry of agriculture and rural development applied advanced IT to build the database on the market prices of agricultural products, including rice to provide farmers and actors in the value chains through the activities of state agencies, farmers' organizations, agricultural extension stations at commune and district levels posted on the website of Ministry www.agroviet.gov.vn or www.mard.gov.vn (Nguyen Quoc Nghi). In addition, Ministry of Agriculture and Rural Development has built an agricultural information system to support market development and agro-products trade promotion activities since 2003. The system provided information inside and outside the country including prices of agricultural products and agricultural materials all over the country; trade news, including official and unofficial import and export; domestic and international market forecasts and analyses; news on main agricultural commodities (rice, coffee, rubber, sugar, tea, pepper, cashew nut, wood, meat, fruit and vegetable and etc.); news on production; recommendations and guidelines on agricultural production; etc. (Tran Thi Ngan Hoa and Nguyen Hong Son).

However, facts have showed that participants in the rice value chain in the Mekong delta rarely access to or use market information from public institutions because of its poor accuracy and lack of timeliness and even some actors in the value chain have not known or had ability to access to market information from public institutions.

** Some pictures about accessing to market information in the rice value chain in the Mekong delta*

Through TV

Through newspaper and internet



Through neighbors and traders

Through community loud speakers

The impacts of IMC on the rice value chain in the Mekong delta

* On farmers

Rice farmers in the Mekong delta worked hard to increase their income but in fact, they cannot attain that purpose because of no availability of market or lack of knowledge about the market. According to Heidi Kaila (2015), farmer households that have access to market information have higher income than households without access because market information positively affects prices paid to farmers and the results are generally positive in terms of farmers' income and prices. Timely and reliable market information is needed by farmers in planning, production and marketing (N.D. Chavan, A.N. Deshmukh, S.A. Barge and S.U. Mokhale, 2011).

Rice farmers with market information will gain the following successes:

- *Improve selling price and location.* Information on prices helps farmers to have ability to compare the prices between different traders or different market places and so farmers' ability to negotiate with traders increases. Market information also changes the time and location of farmers to sell rice at better prices.

- *Change farmers' behaviors.* Market information will help farmers change activities to protect themselves from the disadvantages of market. They can co-operate with each other to establish farmer organizations to increase their negotiation, to sell prices and avoid low price pressure from traders. They can negotiate, sell directly rice to wholesalers or large scale intermediators to reduce the amount of intermediators in the rice value chain. They are active to find out market information and also develop contact systems to avoid low price pressure from traders. Interestingly, some dynamic farmers can develop a two-way trade by bringing rice into the market and buying other products from the market to sell them in their own rural communities. An important change of farmers was that over the long term a better understanding of market demand and consumer trends help farmers change their production system from producing low-value rice varieties to high-value rice varieties to improve their income and to meet market demands.

- *Change rice supply and demand.* Providing up-to-date information and consumer trends can help farmers make the better decisions in their production and product sales. With the information about the demand (rice quality and quantity) of market, the farmers can improve their decisions on rice production to adjust rice supply and quality to meet market conditions. Market information can help farmers in finding new sources of demand to increase product sales.

- *Reduce farmers' risk in production and market.* Market information helps farmers build the plan of production and market to meet targeted market places. For example, farmers know how to grow rice varieties to meet market demands or farmers can modify the date of marketing, or switch to alternate markets to gain a better price and better profits.

* On rice traders:

- *Market information is very important for rice traders* because it will help them choose the relevant places, time and prices to buy and sell rice efficiently (Luu Thanh Duc Hai, 2002) and to raise their profits. Information about rice production areas in the Mekong delta will help rice traders save their time and expenditure to purchase rice and buy good quality rice because they can have chances to compare and choose from different rice production areas to purchase.

- *IMC helps rice traders achieve the maximum profits.* With market information a rice trader can analyze and evaluate the rice market, supply and demand and they can determine the prevailing prices on market and decide on buying prices from rice farmers and selling prices to customers to gain maximum profits.

- *ICM helps rice traders increase sales volume.* Rice traders were able to expand their reach of searchable markets, sell on more markets, and increase their network of contacts from market information they have through IMC.

- *IMC builds good customer relationship and increases a competitive advantage.* Through IMC the information flow in the rice value chain is improved, customers know all the rice information from traders and in turn this will improve the good relationships with customers and increases comparative advantage of rice traders and companies.

* On rice consumers:

- *Changing awareness of customers.* Due to IMC, customers are in aware of rice market to have many choices in buying rice to meet demands of their families and so it is said that IMC has effects on attracting new customers as well as retaining the existing customers for traders.

- *Changing behaviors of customers.* ICM can lead to the conviction and purchase of rice customers. IMC is one of the marketing tools that enables to change consumer purchasing behavior, both personal consumer and organizational consumers (Tan Kai Hun, Rashad Yazdanifard, 2014). In today's markets, customer loyalty is critical (Catherine Mazwi R. Tsikirayi, Blessing Muchenje and Zodeac Katsidzira). IMC can persuade rice customers to make a repeated purchase and ultimately becomes a loyal customer.

- *To narrow the rice prices among different market places, farmers' prices and consumers' prices.* IMC makes transparence of market information in the rice value chain and between different market places and in turn this helps customers with knowledge about market adjusting their negotiation and purchase to avoid disadvantages and narrows the gap between farmers' prices and customers' prices.

Conclusions

The Mekong delta is a rice bowl of Vietnam; it produces about 24,993,000 tons of paddy and supplies the market with about 7.7 million tons of rice annually. However, IMC in the rice value chain in the Mekong delta is still underdeveloped and has not been given adequate attention by participants in rice market.

Main channels to access to market information in the rice value chain in the Mekong delta are TV, newspaper, radio, cell phones and face-to-face communication and market information sources are informal such as rice traders, relatives, friends, neighbor and SOEs (mainly for large traders).

IMC has positive impacts on all participants in the rice value chain in the Mekong delta in terms of improving income, saving costs, better customer's relationship, increasing competitive capacity and decision-making, and so on.

IMC of public institutions in Vietnam is not really effective in the rice value chain in the Mekong delta because the quality of market information of public institutions is inaccurate and untimely respectively actors in the value chain are limited in access to these market information sources.

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POSITION, MISSION AND ROLE OF LOCAL ACTION GROUPS (LAG) IN THE STABILITY AND DEVELOPMENT OF RURAL SPACE

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Abstract

In the present paper, possibilities of using LAG as an ideal platform for the initiation of actually functional and long-term development of rural regions are described. The countryside in the Czech Republic faces an exodus of young people, a relatively decreasing level of education, and particularly a non-conceptual approach to the solution of the issues of rural development. The current support, particularly the legislative one, is not adequate to the importance of that issue. Possibilities are identified of using the management staff of local action groups as an animator in the given region, who thanks to detailed knowledge of the region can target various forms of financial support where it is really necessary and at the same time they can initiate such a cooperation at different levels that will contribute to the actual and complex targeting of support. The prosperous rural region is such region in which local businesses function with support of local governments and where the level of the local (or regional) education system is successfully maintained or increased and to which educated persons return after studies in larger towns. LAG may substantially contribute to the solution of the above-mentioned issues.

Keywords: LAG, rural regions, local governments, animator

JEL Codes: R10, R19

Introduction

In the Czech Republic, local action groups (LAG) launched their activities on a larger scale in 2003. They were established spontaneously and almost geometrically. It is the very evidence of the uniqueness of an idea that rural development should be influenced mainly by those who are living their lives there. There finally appeared a method in the Czech Republic that facilitates the cooperation of public administration, business sector and non-profit organizations when decisions on all crucial issues are taken on the basis of the consensus across these so different sectors (place-based decisions) (Wade, Rinne, 2011, p. 2).

In the programming period 2007 – 2013 local action groups were supported by the Rural Development Programme of Ministry of Agriculture of the CR. In 2008 the first 48 local action groups were selected in the framework of this programme that were subsequently allowed to allocate financial resources among applicants from their regions on the basis of the LEADER Strategic Plan (LSP). This was carried out by working groups (WG) whose task was to define priorities in the given area and to implement the original strategy of sustainable development in the territory of interest of the respective LAG (Wokoun, Malinovský, 2008, p. 358).

The allocation was primarily based on the population figures and on the size of the LAG territory. In 2009 another 32 local action groups were selected that satisfied the conditions and could also take part in the Rural Development Programme. The assumed number of supported LAG in the territory of the Czech Republic was complied with in this way. A similar procedure was adopted also in 2010, when another 32 LAG were selected and the number of groups that received the allocation in the framework of the Rural Development Programme was increased to 112 LAG based on a decision of the then minister of agriculture. It documents solid anchoring of the LEADER principle in the Czech environment and increased concern of municipalities in involvement in LAG activities in the CR rural space.

Material and Methods

A methodical approach is originally based on the analysis of a selected sample of LAG with regard to their contribution to development of the Czech countryside with simultaneous description of principles and rules underlying their activity.

As a testing sample of the above-mentioned research a representative sample was selected in the South Bohemian Region of 10 057 km^2 in size (12.8% of the country's area), which ranks as the second by its area

behind the Central Bohemian Region. Its specificities are lower population density (62 people per km^2 against 102 people in the Central Bohemian Region), lower average wage and the level of GDP per capita. The South Bohemian Region can be defined as a historically rather poor territory, less developed, which is given mainly by historical development influenced by geographical factors. There are not any larger mineral resources in the territory of South Bohemia. Mostly agricultural landscape is typical of this region where the soils of lower quality are utilized to the highest extent possible while the industrial sector is concentrated practically in several localities only. Hence the landscape resembles such landscape that was there many tens of years ago. Forests take up a substantial part of this landscape while pond systems were built on soils of the poorest quality hundreds of years ago that brought about at least some profit from fish sales to the surroundings. It is to state that it is a landscape where relaxation and recreation are easy to experience but to spend the whole life in an appropriate way there is less easy to imagine compared with opportunities offered by city life.

The correctness of the selected sample is accentuated by a theoretical consideration and/or assumption that the people in such region have always had to pursue various activities to a different extent in clubs and special interest groups, etc. in order to take their lives as socially valuable. However, it is to assume at the same time that these trends of different intensity can be identified also in the other regions of the Czech Republic. The specificity of the given region is emphasized by the fact that the population of the whole region amounts to 637 000 people: 93 000 people live in the regional town while the remaining 544 000 persons live in 622 towns and municipalities (there are 875 people per municipality on average). 134 000 inhabitants live in the former district towns (with the exception of České Budějovice). It is to conclude that the population density per representative type of the South Bohemian rural settlement would be much lower if municipalities with extended competence were included. Human settlements are mostly small there, and as a result of historical development they have to cope with a low level of public utilities and services, and similarly like the other rural areas they face the continuous exodus of young people to towns. They leave the countryside to study and to work in towns, but it is alarming that they have left and only scarcely they return back. The highest transfer of human resources was recorded in the population with a higher education level, which is one of the limiting factors of development of the South Bohemian region as a whole.

Results and Discussion

The results of performed analyses can be summarized into three basic stages: establishment of LAG, the period of activities in the stages of 2007- 2013 and the current period 2014-2020.

Period of establishing

Local action groups came to existence as an initiative whose objective is to solve this situation by assisting to the actually permanent improvement of the countryside. They have never claimed to take up an exclusive position in regional development, but they have only wanted to be a part of all developmental trends and to influence them according to the wishes of the people living there. This is just the success and contribution of local action groups. The LEADER method (LEADER is an abbreviation of “Liaison Entre Actions de Développement de l’Économie Rurale” or “Links between the rural economy and development actions”) allows the local actors to participate jointly in development of their region because they understand this territory in the best way. This statement proved successful in practice, and in the European Union it has been continually developed since 1991. So LEADER has 24-year history. Its expansion in the Czech Republic started in 2004. Its targeted support already began in 2006 under the Leader CR Programme, a programme supported from national resources. Over the whole period the Regional Authority supported local action groups in their territory by the total amount of almost 23 million Czech crowns. It is 4.2% of the amount that was brought by LAG to this region. It is to add that the support by the Regional Authority was used to pay the expenses that could not be demanded in the framework of overhead costs. It was particularly the payment of interest on credits because LAG always had to pre-finance their activity.

Period of activity in the stages of 2007-2013

From 2007 to 2013 the activity of LAG was supported by the Rural Development Programme of Ministry of Agriculture of the CR. Out of the fifteen active local action groups in the territory of South Bohemia 12 LAG

were supported by the Rural Development Programme in 2007-2013, the remaining three implemented at least cooperation projects (see Figure 1) and hence they could take over the necessary know-how. This activity brought to the South Bohemian Region the total allocation of 543 599 Czech crowns. It is the value of subsidies, not the value of the total costs of projects that is undoubtedly more than twofold. Table 1 shows these contributions to the South Bohemian Region.

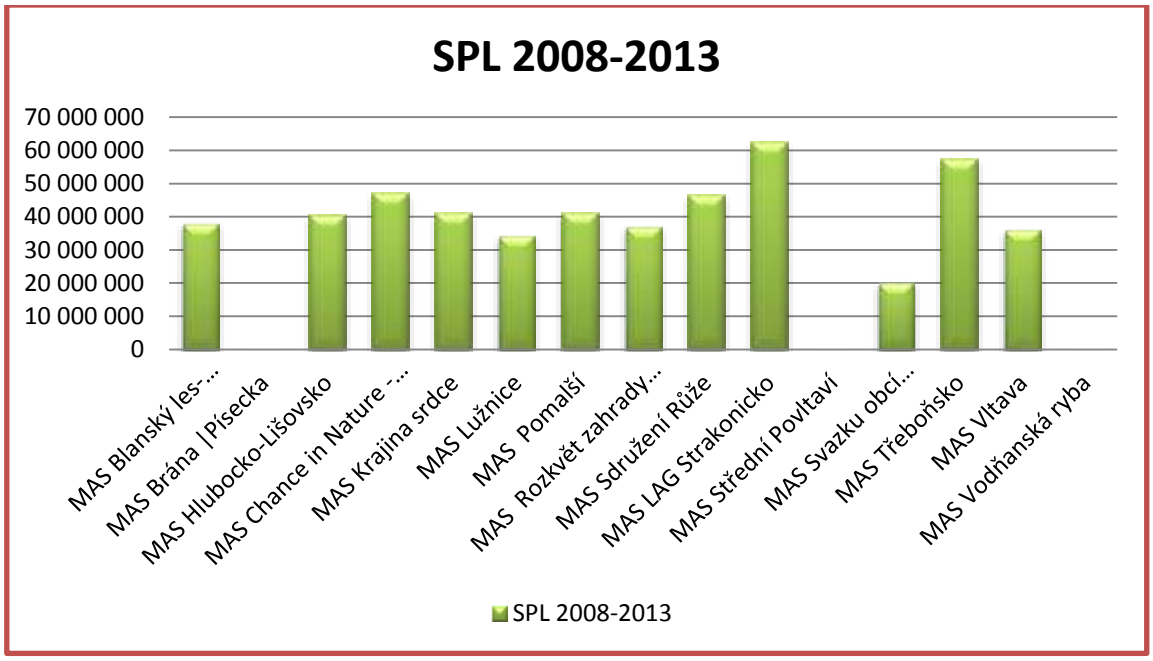

Figure 1 Leader strategic plan in 2008 - 2013
Source: Own processing based on own data collection

Table 1 Cooperation projects (CP) in 2009 – 2013 (contributions in the particular years)

COOPERATION PROJECTS									**CP 2009 - 2013**
	5th round	**7th round**	**8th round**	**10th round**	**13th round**	**15th round**	**17th round**	**19th round**	**IN TOTAL**
MAS Blanský les-Netolicko	0	0	412 180	0	0	1 215 000	0		1 627 180
MAS Brána Písecka	0	0	517 050	0	489 456	0	0		1 006 506
MAS Hlubocko-Lišovsko	0	0	0	0	0	0	0		0
MAS Chance in Nature - LAG	1 529 735	0	0	0	0	0	0		1 529 735
MAS Krajina srdce	782 946	133 000	0	1 485 469	1 031 454	1 350 000	1 783 021		6 565 890
MAS Lužnice	556 250	500 000	350 680	0	290 268	1 344 060	329 328		3 370 586
MAS Pomalší		0	529 380	0	1 350 000	285 660	0		2 165 040
MAS Rozkvět zahrady jižních Čech	4 271 644	0	0	0	0	1 447 200	0		5 718 844
MAS Sdružení Růže	706 116	1 831 757	2 490 260	0	675 000	1 293 210	424 170		7 420 513
MAS LAG Strakonicko	558 666	0	2 010 100	0	944 172	0	0		3 512 938
MAS Střední Povltaví	730 250	0	631 210	0	0	0	207 630		1 569 090
MAS Svazku obcí Blatenska		0	518 350	0	464 472	0	0		982 822
MAS Třeboňsko	0	0	1 056 000	0	0	0	0		1 056 000
MAS Vltava	588 000	1 082 500	421 630	0	337 775	964 890	0		3 394 795
MAS Vodňanská ryba	0	0	519 150	0	315 000	991 800	0		1 825 950
South Bohemian LAG in total	**9 723 607**	**3 547 257**	**9 455 990**	**1 485 469**	**5 897 597**	**8 891 820**	**2 744 149**		**41 745 889**

Source: Own processing based on own data collection

It is the third highest allocation in comparison with the other regions of the Czech Republic. As the maximum expenditure of local action groups was strictly limited in the overwhelming majority of cases, that amount accounts for hundreds of individual projects and tens of cooperation projects (see Figure 2). It is to note that the support was mainly aimed at development of agriculture and its diversification (Pártlová, Váchal et al., 2009) and also at development of mainly smaller municipalities and their public utilities and services, i.e. at the sphere it was urgent to support in small municipalities. By this effort the local action groups often strengthened their positions in mayors' consciousness. They started to recognize them as part of the subsidy system that enabled to support very needful development plans through smaller projects and at the same time it was found maximally transparent and basically immune to various financial and corruption scandals that unfortunately accompanied some other more important, as for the amount of the allocation, subsidy programmes.

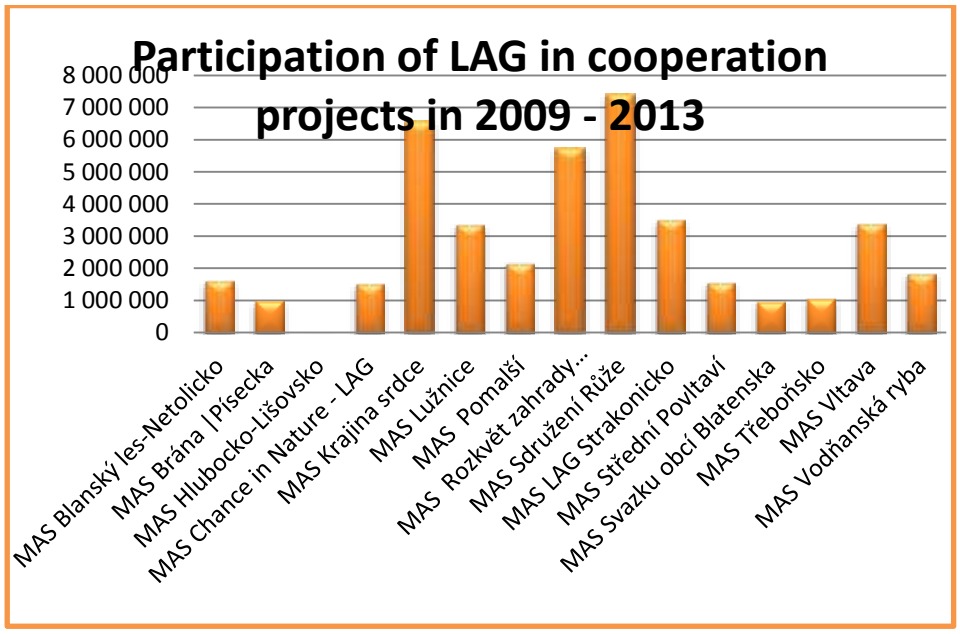

Figure 2 Participation of LAG in cooperation project in 2009 - 2013
Source: Own processing based on own data collection

Current period 2014 – 2020

After the successful stage of LAG activities in 2007 – 2013 there was a time when the Rural Development Programme 2007 – 2013 was terminated but the form of particular operational programmes for 2017 – 2020 was not completely agreed, yet. It is to state that such a situation has persisted until now. Therefore since mid-2014 the local action groups have had to pay their activities from resources they gained on their own. But they are in a position when in the past period they were practically banned to gain resources by pursuing alternative activities. Ministry of Agriculture and Ministry for Regional Development attempted to make up for this gap in financing the LAG management by two isolated projects to which all local action groups had common access. Nevertheless, the majority of LAG faces a very difficult financial situation in these months. Obviously, the restrictions strictly imposed on these groups by the controlling authority were not chosen appropriately while LAG were forced to take the role of mediatory payment agencies that can do only what they are paid for and if they do something else, they are not eligible for the relevant financial income.

Currently, one of the negative factors influencing the rural space development has manifested itself to the full extent. These are centrally defined methodical procedures and instructions that basically concern all spheres of LAG activities. Similarly, there is a negative perception of the disproportional paperwork burden particularly in the sphere of project administration and statistical reporting. In the sphere of rural development support it is evident that nobody in central institutions can identify all regional disparities, individual needs of particular areas and of the people living and working in these areas. But if somebody tried to do so, they would have to have at their disposal a unique information network that would work in a

sufficiently small territory so that it could explore it in detail and at the same it would be able to process such knowledge from the territory of the whole country and to enable the definition of common problems and spheres in what one region is however different from another. Until now, the ministries have typically chosen the policy of the work of narrow expert commissions that are composed of highly erudite specialists in the given problems. Thus they lose a chance of listening to other opinions that, maybe due to a broader approach than that offered by a specialist, may bring a great innovative or synergistic effect (Galvasová, 2007, p. 14). It often happens that the particular activities of different bodies overlap to a larger or smaller extent, or that they even act antagonistically. And to avoid such a frequent practice, the aims in some spheres were adjusted in such a way that all people "could find what they need". It resulted in the diffusion of a limited amount of resources, and as a matter of fact, only isolated projects could come to existence and many necessary and interesting plans remained only "on paper".

These centrally taken measures have basically abandoned a chance of detailed aiming of expended resources at the actually most urgent problems of the particular regions. It is applicable e.g. to the sphere of social policy, employment, and last but not least, naturally to the rural development itself. It is fair to say that in some cases the state administration has already recognized that individualization on the basis of qualitatively revealed needs is a good way of assisting the particular regions. It is to mention the initiative of Ministry of Education, Youth and Sport that, in the framework of the Ministry patterns for drawing resources from the Operational Programme Science, Research, Education, will be aimed at their differentiation (at least on the level of particular regions) according to the clearly identified needs arousing from so called local action plans. These plans will be devised by representatives of schools, founders as well as parents and representatives of non-profit organizations, and in many places the realization will be covered by local action groups, when in the South Bohemian Region it will be so in all cases with the exception of one, when a microregion is the actor. However, the coming months will show whether the competent apparatus of the ministry will be able to actually apply this interesting idea in practice.

In the course of 2015 local action groups in the Czech Republic started to devise new strategies of community-led local development (SCLLD; previously LEADER strategic plans). During the preparation of a new programming period other operational programmes were made accessible to the LEADER method. While in the preceding programming period 2007 – 2013 local action groups were an element in the scope of the Rural Development Programme of Ministry of Agriculture, in the current period their management faces quite a different challenge because the allocation from four operational programmes will be available in the CR. Local action groups will have access to operational programmes supported by European Rural Development Fund and European Social Fund (ERDF and ESF). Besides the Rural Development Programme, the integrated tool CLLD will be used also by OP Employment, OP Environment and Integrated Regional Operational Programme. At least 5% from the European Agricultural Fund for Rural Development (EAFRD) will be allocated in the Rural Development Programme. From the European Regional Development Fund (ERDF) 4.95% will be indicatively used for CLLD and from ESF 2.17% will be indicatively used.

Conclusion

In the Czech Republic the countryside takes up 90% of the territory. Therefore it deserves maximum attention that has been paid to large towns until now. This is the reason why all actors participating in its development should be involved in a more intensive way. It will be particularly representatives of public administration, business and non-profit sectors including local action groups. Their role, as animators of the territory, has not been fully appreciated on all levels by the controlling and administrative bodies before now. Obviously, nobody has yet played a similar role in the rural space to such an extent when, at the same time, it is actually necessary. To support these statements, demonstrable contributions of LAG to rural development can be summarized in brief:

- in 15-year history they have proved sustainability and reasonability of the LEADER method,
- in the framework of their activity experts in rural problems have been "trained" who are willing to work for the countryside besides their current employment,
- they have managed to allocate subsidies without scandals,
- they have demonstrated a possibility of functional cooperation on the level: inhabitant – municipality – region – regional government,
- they have developed strategic plans that could identify the basic needs of the region,

- in many cases they have been mediators for data collection for public administration,
- they are able to repeatedly bring to “the table” representatives of different sectors and to motivate them for common work to the benefit of the region,
- they are able to comment on centrally devised strategies in a qualified way,
- they are able to communicate with inhabitants of the region, to promote not only themselves but also the countryside as such,
- they are able to actively create a system of training of new employees, to realize the informal transfer of know-how also between the particular LAGs,
- last but not least, they are able to establish a national organization (national network).

The government has already invested sizeable financial resources in local action groups that were used in a reasonable way. A functional apparatus has been established in this way that offers great opportunities for utilization. It manages to do what the countryside and central authorities need – to animate the life in the regions. It is demonstrated just now in the course of finalization of their new strategies, and also by their active involvement in the establishment of destination management in regions or when they intend to animate the development of local action plans in the sphere of the education system problems. If they are allowed to do so, thanks to previously fixed mechanisms they will be able to “train” new employees who will become experts, and at the same time, to maintain the high level of transparency by means of standards of local action groups. It should be the structure highly resistant to cronyism and subsidy frauds. The countryside has already accustomed to its presence and relies on it. Local action groups should continue expanding their activity in the future period. They would become an anchored structure in the legislation of the country that would essentially manage the rural environment development by two basic methods – animation and subsidies.

Acknowledgement
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THE THEORETICAL BASIS AND PRACTICAL COURSES FOR SUSTAINABLE DEVELOPMENT OF RURAL TERRITORIES IN UKRAINE

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Abstract

At the present stage, the idea of sustainable development of rural territories plays a very important role, especially in the processes of globalization of the society. During the research of this issue the ideas of many scientists concerning such notion as «rural development on the sustainable basis» were analyzed. Taking into consideration the fact that Ukraine has a sufficient resource potential, the government has worked out the legislative document, which introduces the priority of aims of rural territories sustainable development. The initiated measures concerning decentralization of power of local governments are also of great importance in the strategy of local sustainable development. It was determined that local (territorial) communities are the motive power in the development of the rural economics and improvement of living conditions of people within rural territories. The statistical material was cited as an example, which shows the positive experience of introducing of the common project of the European Union and the Program of Development of the United Nations Organization – «Community Based Approach to Local Development» on the territory of Ukraine. On the basis of the above-mentioned material, a series of measures concerning providing of the sustainable development of rural territories in Ukraine, were introduced.

Keywords: sustainable development, rural territories, local government, rural (territorial) communities.

JEL Codes: R11, R12, R58

Introduction

A number of economic, social and ecological problems of rural areas in Ukraine during a long period of time indicates the necessity of scientific investigations concerning the peculiarities of their functioning and development on the sustainable basis, and also a search of innovative forms of rural management. Modern conditions of the rural development demand the refusal of the approach of evaluation of the rural territories solely as a resource base for agroindustrial production in favor of the conceptions, which unite the functions of social development with economically effective multifunctional production and providing of ecologically favorable condition of rural territories.

In recent times, in agricultural science some new categories, the initial origins of which concern village, have appeared: rural region, rural sector, rural territory, rural district, rural development, etc. In the world science these concepts are analogous to such a category as «rural development», which, in its turn, is often used and has been widely adopted. In Ukraine, in the second half of the XXth century, the overcoming of socioeconomic differences between city and village was declared to be one of the tendencies in state politics.

The founder of this course in agro-economic science, which got the name «socio-economical development of the village», is Professor L. Shepotko. This course focuses on the interests and actions of people, who, cultivating land, preserving and improving it and the whole rural vital habitat for the next generations, create the most important product for the society – food stuff. Today its initial definition has been considerably enlarged and enriched, and it has been gradually getting its true meaning and it is named according to its foreign analogue – «development of the rural territories», «rural development».

From the scientific point of view, the category «rural development» embodies the combination of knowledge about modern, the nearest, available for examination and strategically distant future of Ukrainian village, peasantry and the whole rural society, and also about the tendencies, ways and mechanisms of bringing agriculture to the principles of sustainable development. As it is noted by such scholars as O. Onyshchenko and V. Yurchyshyn, from the point of view of the applied characteristics, the rural development must be viewed as materialization of the systematic national, regional and directly local

measures and practical actions, subordinate to modern strategic interests and needs of each particular rural territory, each rural settlement, each industrial economic structure, each peasant, and other rural inhabitants. (Onyshchenko and Yurchyshyn, 2006).

The rural development is the demonstration of the development of rural territories in process, thus, the one which includes all the components of the rural territory subsystem of the society, which is found in a close contact with the local subsystem. The rural development is associated with rural territories as its object and sphere of the course of events of social process and contrasts with urban development as dichotomous. Nevertheless, according to O. Pavlov, firstly, it is not limited by agrarian branch only; secondly, it is spread also in urban settlements as a certain way of vital activity, and according to functionality, it is dominant in the fields of union of rural and urban territory subsystems of the society, i.e. in suburban areas (Pavlov, 2013).

M. Malik considers rural development to be a process of formation of a viable system, a complex of knowledge about the rural society, mechanisms of the rural industry keeping on the basis of the sustainable development on the whole rural territory, in which political, social and economic aspects are deeply interconnected (Malik, 2008).

Materials and Methods

The fundamental principles of Economics and the works by the leading national researches concerning the questions of the sustainable development of rural territories, and also laws and legislative acts of Ukraine, became the methodological basis of the research.

The methods of economic investigation, which contributed to the achievement of the most complete and reliable results, were used during the research: systematic approach and generalization – in the process of investigation of the theoretical basis, laws and other legislative acts regarding the sustainable development of rural territories, the reforms of the system of local authorities; monographic – while comparing different approaches of the scientists concerning their interpretation of nature of the sustainable development of rural territories; historical and economic analysis (for identification of the main stages of politics of the sustainable development in the context of the Program of Development of the United Nations Organization and the European Union).

Results and Discussion

Today the problem of the sustainable development is one of the most urgent in modern world, the solution of which demands a great number of governmental, international programs, conceptions, strategies, and which is controlled by world leaders and the most influential international organizations.

For the first time the notion «sustainable development» got its official status in 1992 during the Universal conference of the UNO concerning the environmental development, which took place in Rio de Janeiro. It became the result of the long-term scientific, research and political work concerning elucidating, coordination, formulation and acceptance of the new conceptual ideas on the general basis.

The sustainable development started to be viewed as the development of the society, which satisfies present requirements, without threatening the ability of the future generations to satisfy their own requirements. Thus, the sustainable development of the society is such a development, during which no harm to natural systems is done and they have time to restore themselves (Savchenko et al., 2011).

The interest of most national scholars towards the scientific provision of balance and sustainable development of rural territories has grown at the beginning of the XXI century. A number of works, dedicated to a range of problems of the sustainable development have been published during the last years, including the works by M. Malik, O. Onyshchenko, O. Pavlov, P. Sabluk, V. Yurchyshyn and others.

One of the main peculiarities of our country is its possession of considerable human potential, first of all, highly-educated. Therefore, Ukraine has sufficient favorable conditions for the sustainable development, taking into account the geographical position of the territory of the state, the resource potential (black earth, minerals, climate and other natural factors).

During 2005-2007 the Institute of the Applied Systematical Analysis of the National Academy of Science of Ukraine has worked out the measuring metric for the processes of the sustainable development in the context of economic, ecological and social components; though the approaches and indexes, which were

used, differ a little from those proposed by the Commission of the Sustainable Development of the UNO, they reflect the fixed mechanism concerning interdependency of the main components in full measure.
According to the data of the Global Data Centre concerning geoinformatics and sustainable development, in 2013 Ukraine took the 74th position in the world according to sustainable development indices. Unfortunately, the whole complex of the realized programs and strategies of development on all the levels of management was based only on complete use of the available resources, without transformation of system of industrial relations according to adequate requirements of the sustainable development. Therefore, new reforms in the sphere of economic and administrative decentralization, financial markets, systems of social services and participating of the citizens in the governing process and development, must be held for solving these problems.
Today the Ministry of Agrarian Policy and Food of Ukraine has worked out the unified complex Strategy project of agricultural and rural territories development in Ukraine for years 2015-2020, which is aimed at solving their problems through the all-embracing process of consultations with the parties concerned, especially with the civil society and business representatives, and also with the international donors. The strategy outlines urgent and prolonged measures, presumable results, and also includes the detailed action plan.
The general aim of the Strategy is the increase of competitiveness of agriculture and assistance in rural territories development on the sustainable basis according to The European Union and international standards. The approval and adoption of this strategy will become one of the first attempts to consolidate on legislative basis the priorities of the aims of the sustainable development, which by its nature is the process of long-term actions with an aim to get financial and material resources, which in its turn are rather limited; and also to attract attention of the population, which lives in rural areas.
The main aims of the rural territories development on the sustainable basis are the next:

1. The support the small farms, which includes encouragement, concerning diversification of farms towards alternative cultures; improvement of production and methods of production of innovative market distribution, direct marketing; besides farming, the development of other kinds of economic activity due to support of initiatives concerning eco-tourism; other forms of organization and kinds of activities which could supply the additional source of income, especially for the young farmers, whose aim is to develop small and medium-sized agrarian business; improvement of legal regulations concerning functioning of personal farms; facilitating of access to industrial and financial resources; stimulating of integration on the basis of partnership, collective actions and cooperation development; reinforcement of function of personal rural and farm economies support in activities of institutions of farming and village state regulation; establishing of a number of public and other organizations and unions with an aim of protection of their interests and economic rights of the rural communities.

2. The rise of the standard of living in the rural areas due to:

- diversification of economic activities in the village (foundation of pilot infrastructure projects in the spheres of modern telecommunication, Internet-services, local water-supply network, power supply, motorways, etc.; stimulating of development of non-agrarian activities: rural housing, producing of building materials, providing industrial and consumer services, rural tourism, traditional national handicrafts, etc.; development of rural power economy, restored energy, stimulation of diversification of power supply sources and forms of power consumption, etc.);
- formation of the conditions for the increase of the rural population wages (creating of educational and further training system for adult rural population with an aim to increase its skills regarding rural industry and competitiveness in the labor-market; increase of social responsibility of the agrarian business due to establishing of transparent mechanisms and applying of the best social partnership practices between agrarian business and rural communities with an aim of strengthening the positive impact in the process of creating new jobs in rural areas; assistance in uniting and self-organizing of the owners of land areas (shares) with an aim to consolidate their efforts for getting more economic benefits from the usage of their lands);
- improvement of accessibility of high-quality prizes of life (decentralization and deconcentration of public services, diversification of their financial sources; creation of conditions for providing village children

with pre-school education, qualitative secondary education on the level of the established requirements and challenges of the labor-market; providing the inhabitants of all the villages with medical care of high quality; establishment of regular clinical examination of the rural population in order to prevent diseases; establishment of healthy lifestyle, family values, legal behavior propaganda; re-orientation of house-building support programs in the village to improvement of living conditions of the youth on the most vulnerable rural territories, where rural economy is the main source of income (owners of family farms; education, health protection and culture workers etc.);

- improvement of agrarian landscapes and increase of life safety in the village (increase of drinking water safety due to development of local water-supply network, establishment of control of water quality in group and individual wells, boreholes; establishment of usage regulations concerning open reservoirs, marshlands and proper maintenance of water-protection zones; establishment of economic mechanisms of environmentally-friendly disposal of industrial wastes, and also domestic garbage in order to prevent environmental pollution; regulation of rules of chemical substances usage in manufacture, which action is spread on rural habitat (particularly, carrying out chemical-aviation works in rural districts); rationalization of agrarian landscapes structure with expansion of natural frame elements (forests, meadows, pastures, etc.) at the expanse of removing of degraded, underproductive pasture lands from active cultivation; assignment of lands of high natural value with a rich bio-diversity and establishment of special regulations of their usage).

3. Improvement of the rural local governmental system due to establishment of local control practices for local initiative development and decentralization of decision making process in order to establish transparent management, taking into account local needs and initiatives of the civil society. The formation of governmental system of rural development: decentralized approach «upwards» which is based on self-development of the communities; formation of local development capital; providing realization of self-governmental rights for rural communities and granting them constitutional rights.

The level of material well-being and quality of life of people, who live in rural territories, directly depend on ability to solve particular daily problems connected with vital activity of people. Thus, the question of planning and realization of strategies of local sustainable development are very urgent. Solving the problems concerning socio-economical development of the rural territories demands much effort not only from the government, but, first of all, from local communities and villages.

One of the first steps concerning decentralization was passing the Law of Ukraine «About Collaboration of the Territory Communities», which determines legal and organizational collaboration basis of the rural communities, principles, forms and mechanisms of such a collaboration; its stimulation, financing and control. The positive moment of the given legislative document is providing the territorial communities with the opportunities to unite their own resources for more effective solving of local problems, upkeep of communal objects, providing of services today.

The present system of institutions of local government, taking into consideration modern administrative and territorial system of Ukraine, does not always allow forming all-sufficient territorial communities, which could maintain appropriate material and financial resources, territory and objects of social infrastructure, necessary for an effective fulfillment of tasks and functions, which the indicated organs are responsible for. As a result, the Law of Ukraine «About Voluntary Uniting of Territorial Communities» was passed, the aim of which was the formation of active, all-sufficient territorial communities, which could maintain appropriate material, financial resources, territory and objects of social infrastructure, necessary for an effective fulfillment of tasks and functions, which institutions of local government are responsible for; and improvement of quality of administrative, social, and public services supplied to inhabitants of the territorial communities.

The world experience shows that local (territorial) communities can contribute to solving of such problems as: poverty, establishing of rural economy and development of socio-oriented small business.

One of the examples of management strengthening with the assistance of communities aimed at improvement of dwelling conditions of people, living in rural territories in Ukraine, is the project «Community Based Approach to Local Development» established in 2007 and financed by the United Nations Development Programme (UNDP) and the European Union. With the assistance of UNDP, the local

communities establish and support partnership relations with central and local authorities, private sector and international donors, thereby they improve local infrastructure, contribute to employment and enterprise, and also improve the quality of the most important social services, which are provided (in education, medicine, etc.).

The common project of the European Union and the United Nations Development Programme «Community Based Approach to Local Development» actively functions on the whole territory of Ukraine since 2008. More than 2.6 million people in more than 2000 villages have improved their lives due to realization of micro-projects concerning renewed kindergartens and schools (664), medical centres (118), access to qualitative water (110), preservation of the environment (9), power-preserving street-lightning (706).

The components of rural territories economical development of the project «Community Based Approach to Local Development» are aimed at supporting the existing unprofitable multiple-oriented agricultural co-operative economies and founding new ones in order to create new workplaces and to get income in rural areas.

In general, from the moment of beginning of the project (2007-2015), 17 agricultural cooperative economies were created, with the total number of 1491 persons, and these are 1018 households, moreover each co-operative economy gets 62 households in general. Within the framework of the project, agricultural cooperative economies establish their own economic initiatives – micro-projects concerning fruit and vegetable growing, producing of milk. The project expects purchasing of equipment (for example, tractors and its spare parts, tanks for milk cooling) or creating of structures (for example, «ecological house»), which contribute to either production or processing of agricultural products due to usage of new technologies.

By the end of 2014, the total cost of such micro-projects was 6.1 million hryvnias, or 218 455 hryvnias per project in general. Moreover, 73.8% of the total financing sum belongs to UNDP «Community Based Approach to Local Development», 17.5% are the investments of the cooperative economies members, 8.3% - money from local governments and 0.9% - from private donors.

Conclusion

To conclude, the sustainable development of rural territories is such a development of society, which answers requirements of the present time, without threatening the ability of the next generations to satisfy their own requirements.

For providing of the sustainable development of rural territories, it is reasonable to introduce the system of measures, the most important of which are: support of small farms; increase of life quality in rural areas, improvement of local governmental system. The measures mentioned above are many-sided and require intensive and purposeful work.

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SOME EMERGING CHALLENGES IN RURAL DEVELOPMENT IN VIETNAM

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Abstract
After nearly thirty changing years since “Renovation”, the rural economy of Vietnam no longer has motivation to spur the development. Rural areas in Vietnam is also facing many negative effects of social processes in socialist-orientated market economy mechanism such as land-use issue, asynchronous rural policy system, complicated public administration, migration from rural to urban areas.
The purpose of this study will discern and analyze fundamental challenges in rural development in Vietnam in recent years in order to partly contribute to the development of rural areas in orientation on modernization and industrialization. In this paper, descriptive statistical and comparative method will be used to analyze secondary data from the General Statistic of Vietnam, some reports from ministries and other organizations.
The finding illustrates the fundamental and emerging challenges in rural development in Vietnam. A range of rural development problems including: complicated local administration, inefficient agricultural production, asynchronous land policy, infrastructure, and human capital are presented and analyzed on the basement of recent rural development studies and published documents for Vietnam.

Keywords: rural development, agriculture, local administration, land policy

JEL Codes: R10, O53

Introduction

Resolution 10/1988 of Central Communist Party on managerial renovation in agriculture has officially recognized the role of household economic unit attaining as a self-control economic one in the agriculture. This resolution had fundamentally set free for the majority of the peasant, pushing ahead fully motivation of the peasant, thus making the agriculture developed continuously to guarantee national food security and to enhance the standard of peasants’ living. Consequently, the agriculture of Vietnam have been released from traditional planned economy to open the door of market for agriculture and to become one of the top of exporters in agricultural products such as rice, pepper, cashew nut, coffee, fishery, etc. This rational innovation decision of the Central Communist Party has taken Vietnam from an underdeveloped country to become an income-average country with the work of eradication of hunger and alleviation of poverty impressive and highly assessed by international communities.
However, after nearly thirty changing years, the rural economy of Vietnam no longer has motive force to spur the development, many break-through policies in the past have become resistances to the development and the peasants have taken a poor view of the agriculture. Meanwhile, the economy have many difficulties and challenges as economic institution reform not meeting the demand of the development, yet, the pressure of joining the World Trade Organization and Trans-pacific Strategic Economic Partnership more and more increased while the global economy trending complicated developments and finance crisis have not recovered, yet.
Recently, the government has a range of efforts to develop rural areas such as: alleviating the poverty, building new infrastructure in rural areas, reforming of land-use policies and credit policies, implementing national target program on building new countryside and so on. However, after many years experimenting and deploying in many provinces, the achievements has not met the demand of the people and policy makers.
In the front of those challenges and difficulties, the rural areas and the development of rural economy in Vietnam need a full, deep and comprehensive study that analyzes systematically the emerging issues of rural development so as to find solutions to remove problems and to boost the agriculture and to develop rural areas.

In this paper, author tried to systematize the fundamental challenges hindering the stagnation of the rural development in Vietnam including: the agricultural development, land use policy, rural infrastructure, human capital and administrative institution of local governments.

Aims and methods

As the goals of the paper are concerned, the author would try to make clear the predominant challenges in rural development in Vietnam. The paper discerns to the limitations of agriculture development, some challenges in developing rural infrastructure, overlapping land-use policies, low income of rural residents and complicated local administration.

Regarding to methods, firstly, the study uses general and overall approach for all of rural regions in Vietnam to recognize the predominant challenges of rural areas. The study designed and carried out is based on the evaluation report and combination of data sources to analyze. Secondly, the figure is collected by secondary data from the General Statistics Organisation of Vietnam, Vietnam Academy of Social Science, Vietnam National Academy of Public Administration, Organization Economic Community Development and some other previous studies in order to analyze generally social and economic aspects of rural Vietnam. All of collected data is synthesized and processed by Microsoft Excel. Analysis methods are descriptive statistics and comparison mainly used in the process of the study.

Findings and discussion

Building the modern agriculture – the challenge in rural economic development

Agriculture is primary sector of Vietnamese rural economy. Near 30 years ago, when Soviet Union broken, many countries faced political and economic crisis. Only Vietnam did not witness social and political unrest. One of the most important reasons is that Vietnam started innovative stage of agriculture. Agriculture production growth had been fast with about 4-5%/year in a long period. Agriculture development secured food security, attracted foreign investments, developed private economy. It created motivation to improve standard of living, increased a large saving of the economy and is being the main pillar of social stability. However, after 30 years of innovation, the agriculture is facing a lot of challenges.

Firstly, the majority of farm structure is smallholders. By July 1, 2011, 9.5 million units occupying as household ones work for agriculture (Table 1). Each of household has about 0.8 ha on average. This structure makes total productivity growth of agriculture slow. Because of small-sized agricultural production as household units, it is difficult for a farmer to apply modern technology and to reduce the cost of production. According to findings of GSO (2011), nearly 17% farms is not enough of the production land, 50% is lack of science knowledge, 60% of capital shortage, 30% of the deficiency of market information, 15% of seed scarcity and 20% of labor absence (Figure 1).

Table 1 Figures and percentages of agriculture, forestry and fishery units

	Enterprise		Cooperative		Household	
	Units	%	Units	%	Units	%
Total	2,536	100	6,302	100	10,462,143	100
Agriculture	955	37.66	6,072	96.35	9,591,696	92.51
Forestry	434	17.11	33	0.53	56,692	0.55
Fishery	1147	45.23	197	3.13	719,755	6.94

Source: General Statistic Organization, 2011

Secondly, export prices and value added in exports is still low. Vietnam's agricultural products for export are mainly low value commodities. Agricultural product export in Vietnam is mainly based on quantity growth but not on quality and added value. The increase of value addition for agricultural products will allow the exporters and the farmers to receive higher prices. Recently, agricultural policies primarily focus on improving quality of basic farm commodities and taking food processing into innovative products.

Thirdly, food safety regulatory regime is not effective. Although Vietnam has a lot of efforts to control food safety from production to consumption, the asynchronous management regime in food safety reduces the quality of agricultural products. According to figure from OECD (2015), about 400 documents issued by the

central government and about 1000 documents issued by local government are relating to food safety, thus making overlapping and lack of a clear focus. Besides, multi-level government coordination on food safety it does not almost not exist. Furthermore, the capacity of risk analysis and identification system of agencies is limited. Consequently, Vietnam has to face a lot of difficulties when accessing export market for agricultural commodities.

Fourthly, the development of traditional handicraft villages creates many environmental issues in localities. In many rural areas, many villages developed as additional economic sectors, many old handicraft villages were restored. By 2011, there were 1322 handicraft villages including of traditional handicraft villages compared with 1077 villages in 2006 and 710 ones in 2001. However, there are many disadvantages of the development of traditional handicraft villages, particularly the situation of environmental pollution, sewage and waste materials from these villages were not treated generally. According to the survey in 2001, the rate of handicraft village using sewage and waste materials treatment machines was only 4.1%.

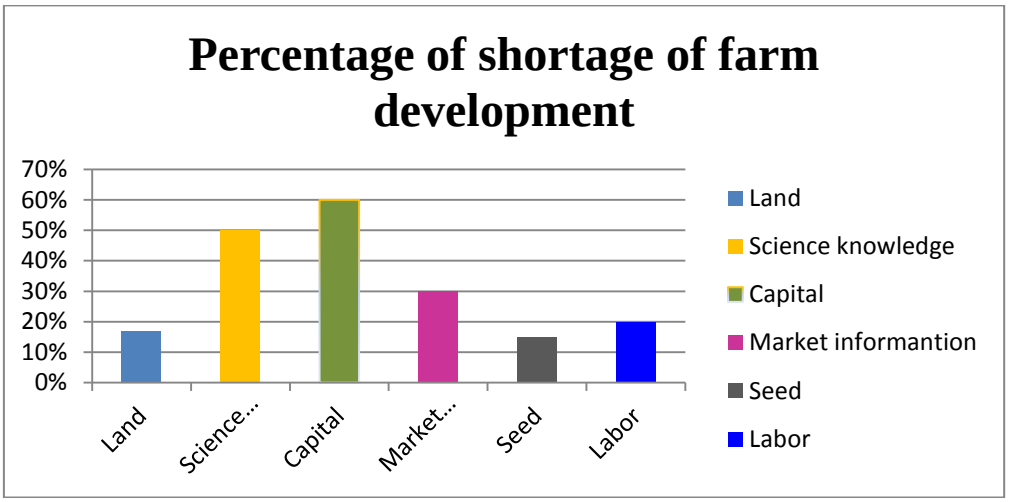

Figure 1 Some shortage factors of farm development
Source: Vietnamese General Statistic Organization, 2011

Finally, environmental pressure reduces productivity growth. Recently, Vietnam has been suffering much more from natural disasters and rural areas. It is the easiest vulnerable areas mainly depending on agricultural production. Trends in global warming also enables for epidemic and pest development in horticulture. As a result, a lot of agricultural land areas have been lost by extreme weather phenomena and changes in climate make farmer's income on the whole country unstable. Furthermore, rapid economic growth, using chemicals in agriculture and deforestation makes pressure on environment.

Synchronization of land-use policy – the challenge in developing agriculture

As for land use policies in agricultural development, Resolution 10/1988 assessing as land distribution form promoted the right of people's self confidence to create motive force to mobilize the potentials of the people and the land, thus developing the agriculture at home, and boosting the development of the economy during thirty bygone years. However, in the thirty past years, the system of law on the land have not followed timely the fast development of the economy in which there are some predominant following reasons: the system of laws and polices relating to the land still being insufficient, the organization of implementation of those polices being intangible, the shortcoming of land policies in the rural areas not guaranteeing the legitimated benefits for the people in weak groups, especially peasants, the poor and ethnic minority people.

Firstly, the system of laws relating to the land is still deficient and overlapping. Exception for the Law on the Land, there are many other documents of National Assembly and the Government having contents regulated the land, thus causing difficulties of the implementation of the law in the whole country. The low feasibility in practice was caused by some provisions adjusted many times while having not full reviews and assessments, yet. For example, many investment projects was implementing very slow its land or transferring to the other but there is no provisions regulating these problems. Further, The State's

stipulations on the rent of the land and the time using the land of foreign investors is more beneficial than the regulations on the domestic investors. Moreover, there are no self- agreement mechanism between the investors and the people being called the land in. Additionally, the building of land use plans following administration units did not guarantee the connections among inter-regions, not promote the advantages of regions. Due to partial benefits, there are some localities suggesting plans asynchronous, having bad impacts on the common advantages and the harmonization of the region.

Secondly, the organization of implementation of the law relating to the land is not good. The time of solving the administration procedures such as registration, certification on land –use right in some localities is still very low, even ever prolonging the agony without reasons. The system of informatics infrastructure relating to the land is still based on handicraft draws, thus being asynchronous between administrative levels. Another problem is that the coordination among ministries in building the documents having contents relating to the land is still loose and asynchronous. The tools of plan using the land are not really effective. The prediction of the demand of using land for the investment projects in localities have not been estimated in science-based manner. The procedures of building these plan are not being standard and many other plans such as sector-developed plans and local-developed plans being overlapping leads to the efficiency of plan using land being still low. Moreover, there is also not supervision system to check the execution of the land use plan of localities and a number of land-managing officers have not met the demand of requirements and tasks in the work of land management.

Thirdly, in local areas, the benefits of peasant have not been guaranteed. Many local authorities used agricultural land without a cautious manner in large scale. The compensation and resettlement of people being call the lands in have not been taken care in a proper way, even some localities assume that it is the enterprises' obligation, thus not preparing the necessary conditions of the infrastructure to change the people's vocations, not guaranteeing the necessary conditions of people's living. Moreover, the weakness of Resolution 10/1988 being fragmented of the land is no longer suitable in practice, thus not meeting the demand of the modern agriculture with goods production. So as to change this situation, the State carried out the orientation of land accumulation to deploy in a lot of localities. However, this deployment is not effective because after assigning the lands, the number of these land units did not decrease.

Building the infrastructure – the challenge in building new countryside in rural areas

Rural infrastructure continues to build the new and to upgrade both in width and in depth, facilitates for the production developing, the face of rural areas has much renovations. However, in order to meet the demand of building new countryside in Vietnam, it needs to improve much more in both quality and quantity aspects for transport, water supply system and sewage.

Firstly, electrification in rural areas is the light spot worth to record in the overall picture of building and upgrading rural infrastructure in the 2006-2010 stage. This was a significant achievement as for developing the rural society and economy, thus raising material and spiritual life for rural people and contributing to narrow the gap between urban and rural areas. However, beside those achievements and improvements, electrification system in rural area also has limitations that need to get the better. The electricity supply for rural people is not guaranteed, the amount of electricity is not enough to serve rural living as well as industrial and services. Many villages, small hamlets of communes in uplands, remote areas, ethnic minorities' areas as Hòa Bình, Tuyên Quang, Sơn La, Yên Bái, Nghệ An, Quảng Nam still have not had electricity yet.

Secondly, in recent years, rural transport has much better change in the quantity and quality of commune roads, commune-across roads and agricultural paths. However, due to the spread of Vietnam's geography, rural Vietnam has many differences in rural territorial, the two most underdeveloped regions including the mountainous region of the North and Central Highland. These two regions have complicated topology and extreme hard climate, therefore, the transport of mountainous provinces developed slowly and there are not the development strategies for transport system to enable the development of the rural economy in direction to large-goods productions. Moreover, the quality of transport degraded fast, not being able to repair timely. Besides, uplands, remote areas and sea islands even have not had roads.

Thirdly, water supply system and sewage in rural areas is not proactive to meet the demand of agriculture. By 2011, there are nearly 16,000 water pump stations serving agricultural production, increased 7,130 stations in 2001. In 2011, averagely, each communes has 1.8 water pump station in which the most is in

Red river delta (3.7 stations/ commune), Mekong river delta (2.5 stations/commune), North Central and Central Coastal Areas (1.4 stations/ commune), the fewest is Central Highlands at 0.2 stations/ commune. Beside, the quality of water supply system is degraded promptly.
To sum up, building new rural infrastructure has consolidated much more in the rural areas, unfortunately, it has still been fragmented with little financial capitals from local budgets. It really need to comprehensive investments to develop the rural economy.

Employment and income of rural citizen – the challenge in sustainable development of rural society
Human capital is a decisive factor of the country's development, especially high qualified human capital. Currently, the model of Vietnam's growth is based on a crowded and cheap human resource and large scale investment. Therefore, the development of the economy is limited by the productivity that unskilled labors making. In total 49,071,636 people joining in the labor market, only 17.6% of those were educated, in which 5.2% of those graduated and training in higher education. The labors joining in agriculture, forest and fishery occupied 47.6%.
In the rural areas, by July 1 2011, the rate of labors having elementary degree in technical level occupied 2.95% (2,48% in 2006) in total agricultural labors, secondary level at 1.23% (0.89% in 2006), graduated level at 0.21% (0,11% in 2006) (GSO, 2011). This is an area having a crowded labor forces but the quality of those was still low, thus making low productivity and quality. The system of vocational schools is very scatter and overlapping, lack of unified management in syllabus, teaching conditions and lack of an organic body of teachers, thus leading to the low quality not suitable for labor market. This also leads to the capacity of transfer to other vocation from the agriculture to the industry and service being still slow and unequal in regions and localities, particularly in mountainous and remote areas and the settlement of ethnic minority people.
Although the share of agriculture in GDP decreased only about 20%, there is a majority of rural people living on the agriculture**.** The income of rural people is low, thus decreasing labor productivity and consumption demand of the whole of the society. According to recent report of OECD (2015), the per capital monthly income of rural residence was only about 20USD in 2002 and about 30 USD in 2012 (Figure 2). From the figure 2, there is a steady increase both in real income of rural and urban people. However, the per capital income of rural residents are really too low to compare with GDP per capital about 1750 USD in 2012 in Vietnam. Moreover, the gap between income of urban residents and rural citizens has been significant wide for ten year and this trend is increasing.

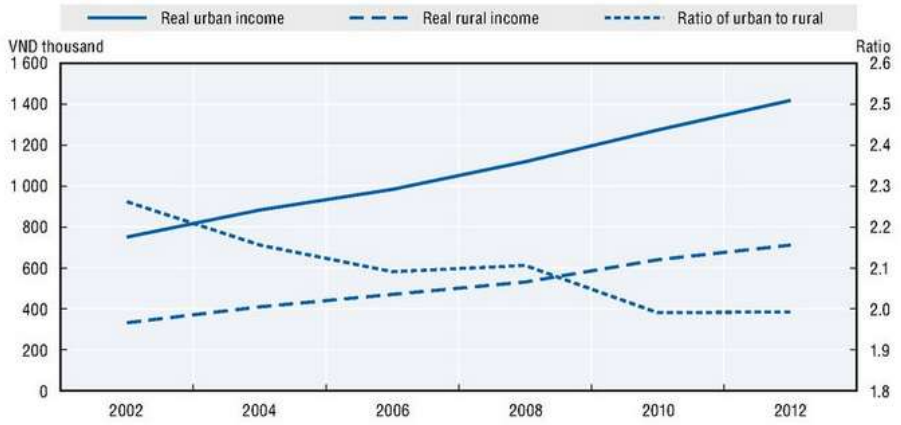

Figure 2 Monthly income per capital for resident, in 2005 prices, 2002-2012
Source: OECD, 2015

A high unemployment rate in rural areas and the development of urban labor market are as a result of the outflow of young workers between 20 and 35 years from rural to urban areas. It also changes rural age pyramid in thinner manner. Remittances from them help alleviate poverty and increase rural household's income and rural expenditure. Besides, because of the low income from agriculture (Figure 2), most of rural people make the best use of free time in agricultural cultivation to do traditional handicraft vocations as

additional work to complement rural household's income. From the Figure 3, there is a significant decrease in agricultural incomes of rural residents.

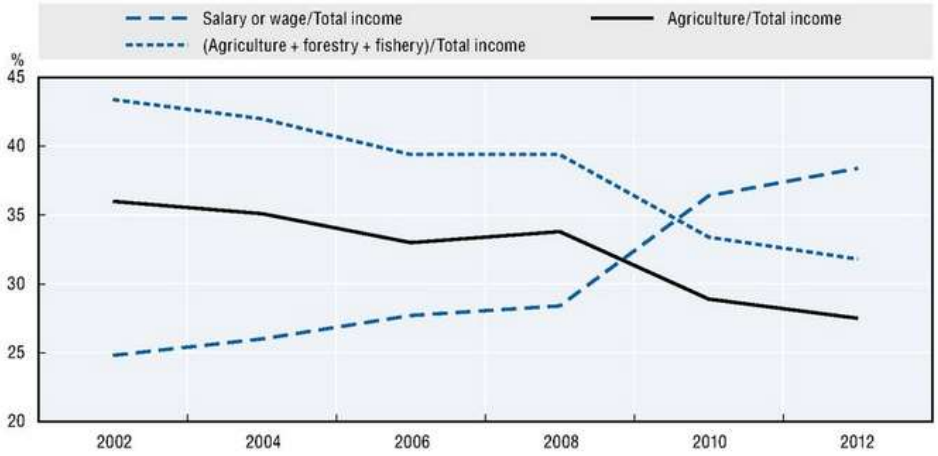

Figure 3 Monthly income per capital for rural resident by source, 2002-2012
Source: OECD, 2015

Administrative institution of localities – the challenge in local institutional reform
Local authorities in Vietnam are divided into three levels including: province, district and commune level. Currently, Vietnam has 63 provincial-level administrative units 697 unit at district level, 10,109 commune level unit (Table 2). The local government structure in Vietnam consists of People's Councils and People's Committees at three level; provincial, district and commune levels (except the selected localities which are piloting the abortion of People's Councils at district and ward levels). Therefore, Vietnam has total 11,789 territorial administrative units with 11,789 People's Councils and 11,789 People's Committees at all levels. In the process of operation, the administration apparatus has some predominant issues following as below.
Firstly, the right of the local governments was transferred fully by the Central Government, therefore, not enable the local administrative activities to meet the local reality requirements. A prime example is that People's Committees at all level are under both the leadership of Central Government and the management of People's Councils at correspondent level, thus making the implementation of the resolutions of the People's Council less important than the obedience of the administrative orders set by the superior organs in the hierarchy. Therefore, local authorities are lack of the autonomy and self-determination of local authorities on economic, social and environmental affairs at localities, thus leading to the overall plan of economic and social development being ineffective. Currently, Vietnamese researchers on discipline of public administration also try to clarify the managerial hierarchy between Central Government and local authorities.

Table 2 Structure of territorial units in Vietnam

Territorial units	Kinds and the number of territorial units				Total (unit)
Provincial level	Central cities	Provinces			
	5	58			63
District level	Urban districts	Rural districts	Provincial cities	Towns	
	47	554	46	50	697
Commune Level	Communes	Wards	Townships		
	9011	1391	627		11029
All					11789

Source: Nguyễn Đ.T. et al (2012)

Secondly, operation of public administration is not favorable for rural development. The organization and operation of all administration levels has no distinction among different territories, between urban areas and rural ones. The organization structure and the operation of inferior level is the copy of the superior level. All of local authorities at all levels is organized in the same way, thus having no difference on specialities of each administrative level, no distinction between civil territorial communities forming naturally, sustainably and artificial ones.

As for finance issue of local administrative level, Vietnam does not develop regulation on the right to set up the local tax system; therefore it applies a unified tax system and reallocate tax revenue to localities. The local budget in Vietnam is under a high centralization by the central government. Although according to the Law on the State budget, Vietnam has four budget level including: central, provincial, district and commune budget, but the autonomy and self-determination of local government budget are limited. All resolutions of the People's Councils are only for estimation. To deploy resolutions of People's Councils into concrete execution, People's Committees depend on budget allocation decisions from the central and provincial level.

Conclusions

Over the years, Vietnam has positive and comprehensive reform in the agriculture and rural development such as: the almost completed eradication of illiteracy, the alleviation of poverty and poverty highly evaluating by international communities, the agriculture releasing from central plan model and the standard of rural people's living improving in both material and spiritual aspects.

However, the motivation to boost the rural economy no longer is strong enough to continuously grow, there are too many resistances to peasants and the rural people as presented above. It needs a range of full, strategic and break-through policies in every aspect of rural areas such as: agricultural development, building new rural infrastructure.

Besides, the implementation of assessments and accountabilities for rural development policies is very necessary to carry out more effectively and partly to improve. Rural economic institution and administrative institution of localities need to reform. Rural labor market needs to be paid more attention.

Moreover, the equity among regions and between urban and rural areas may be perceived much more by the government. Rural development needs to become an important part for economic development and each rural person will be a real consumer for domestic market. Therefore, the government needs to have wider and more comprehensive view in rural development to continuously develop in direction to rural modernization and industrialization as the point of view of the Party appointed.

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POSSIBILITIES FOR POPULATION AGING ASSESSMENT IN NITRA SELF-GOVERNING REGION

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Abstract
Age structure delivers important information about population such as demographic and geographic characteristics to which also belongs population aging. A number of analytical evaluations and study methods are based on age structure. The aim of this paper is to point at the possibilities to evaluate the aging of population in the villages of Nitra self-governing region by selected indicators that provide to a significant extent exact and accurate information on population aging of the analyzed region. Standard geographic methods, analysis, synthesis, mathematical-statistical methods as well as cartographic methods were applied in this study.

Keywords: population aging, age structure, Nitra self-governing region, aging index, hexagonal diagram

JEL Codes: P42, Q56, O52

Introduction
The issue about the process of aging nowadays plays a crucial role among several research disciplines and its monitoring at different geographical levels (global, regional, local) is a central theme for experts in demographics, sociology, as well as medical geography.The topic of the population aging process plays currently a central role in numerous science disciplines. It is one of the most preferred topics in demography, sociology as well as medical geography
One of the main symbols of an economically developed society is its aging. It is often being discussed from the economical, social, demographic, health point of view. Evaluation of objective and subjective life quality play also an important role in the dialogue.
Observation and analysis of this development on various geographic levels (global, regional, local) represents the central topic of experts from diverse science disciplines.
Concept of the population aging is in the different context often used together with population growth and demographic development. It is often understood as the increase in the number or share of older population (top aging) as well as decrease in number of child population due to decrease of birth rates (down aging).
Additionally to these two types, absolute and relative aging of population can be analyzed. According to Brezák (2005), Walker (2002) absolute population aging is a natural process that occurs as a result of decreasing mortality and increasing life expectancy resulting in higher age categories of living population. There is an absolute increase in older population because from the same born generations more and more people reach higher age. Relative population aging is a demographic process that is based on an increase in relative representation of the older population due to decrease of children and people in the so-called middle-age (Muffels, 1998).
Population aging is the result of previous demographic development and it is mainly caused by decline in natality levels (Černič-Mali, Koch, Koch, 2014; Fischer, 2009; Fischer, 2014) Several experts raised a question: Is population aging a tragedy? This question can be analysed from two perspectives. The option is presented e.g. by Loužek (2008), who according to Eich (2004), reports that increased life expectancy and the associated health standard should be welcomed as one of most admirable successes. A similar standpoint is presented by Kovács, Jeszenszky (2006) who define the aforementioned phenomenon as one of the greatest social achievements as well as one of the greatest social challenges of the current age.
The second perspective represented e.g. by Loužek (2008) Rechel et al. (2013) is presented by the opinion that aging brings with also a number of problems mostly in the area of financing of pension and social system, in the public policy sphere as well as in demographic policies. Two different approaches are being applied in order to study population aging. First approach, the focus is on a comparison of several regional population structures (Mládek, Káčerová, 2008). The second approach was applied in this study that is

based on an aging analysis in different time horizons within one geographic unit. Studied area represents the Nitra self-governing region. The individual aging process and its changes were observed in 2000 and 2014 as well as between 2000 – 2006, 2007 – 2014.
The aim of this paper is to point at the possibilities to evaluate the aging of population in the villages of Nitra self-governing region (NSR). Development of this phenomenon is evaluated in different time horizons through selected indicators, which provide to an significant extent exact, consistent and accurate information on the population aging of the defined region.

Material and methods
Mládek et al. (2006) divides an extensive set of methods and techniques to study population age structures into three categories. The first category comprises simple, one-component indicators, e.g. indicators of absolute and relative number of age categories such as postproductive age (65 and older), post-reproductive age (50 and older). The second category includes more complex indicators of aging population – the aging index, the age index, Billeter's index, average age. The third category consists of graphic outputs, such as age pyramid and hexagonal diagram.
All three methods were applied in this study. Simple aging indicators were expressed by a percentage to the overall number of inhabitants. The interpretation of individual indicators in the studied period was processed in the form of map outputs using the ArcGIS software.
The aging index, index of age and Billeter's index that belong to more complex aging indicators were based on the following formulas:

$$Iv = \frac{\mathrm{P}\,(0-14)}{P\,(50+)} \qquad Is = \frac{\mathrm{P}\,(50+)}{P\,(0-14)}\ x\ c$$

$$\mathrm{Bi} = \frac{\mathrm{P}\,(0-14) - \mathrm{P}\,(50+)}{\mathrm{P}\,(15-49)}\ x$$

Is represents the aging index, Iv indicates the age index, Bi stands for the Billeter's index, P is age and "c" is a constant value of 100.

The interpretation of individual indicators in the studied period was processed in the form of map outputs.

Hexagonal diagramm is one of the methods used to study territorial differences in population aging that was originally applied by Sonis (1981). The main idea is to characterize regions based on the relative share of three main age categories of population: (less than 14 years, 15 – 64 years and 65+ years) and its changes over the course of the estimated time frame, in this study 2000 – 2006 and 2007 – 2014. It evaluates age structures over the time. Its changes characterize the aging process. The result of such comparisons is vector (Δ p, Δ q, Δ r) characterized by three characters which provide information about relative population aging. Vector Δ p indicates age category less than 14 years, vector Δ q age category 15 – 64 years and vector Δ r age category 65+ years. If Δ p < 0, it is down aging, if Δ r > 0, it is top aging.

In order to study described aging processes, municipalities of Nitra self-governed region were selected. Three main categories of main types of changes in aging structures are identified by the interpretation of individual combination of changes: populations with majority of aging population, population with majority of young population and mixed populations.

In case of predominance of aging population in Nitra self-governing region, up to 11 combinations can be set by combining of vectors Δ p, Δ q, Δ r.

In case of top aging as well as down aging, 7 combinations can be set (- + +, - - +, - 0 +, - 0 0, - - 0, 0 0 +, 0 + +). There are two possible combinations (0 - + a 0 - 0) in case of top aging and 2 combinations (- + 0, 0 + 0) in case of down aging.

The second category of age structure changes can be described as a process of its rejuvenation. It is defined by an increase in the share of child component and a decrease in the post-productive part of the population. Based on the comparison of vectors both down rejuvenation as well as top rejuvenation can be identified (+ + -, + - -, + 0 -, + + 0, 0 0 -, + + 0), down rejuvenation (+ 0 0, 0 0 -, 0 - -) and top rejuvenation (0 + -).

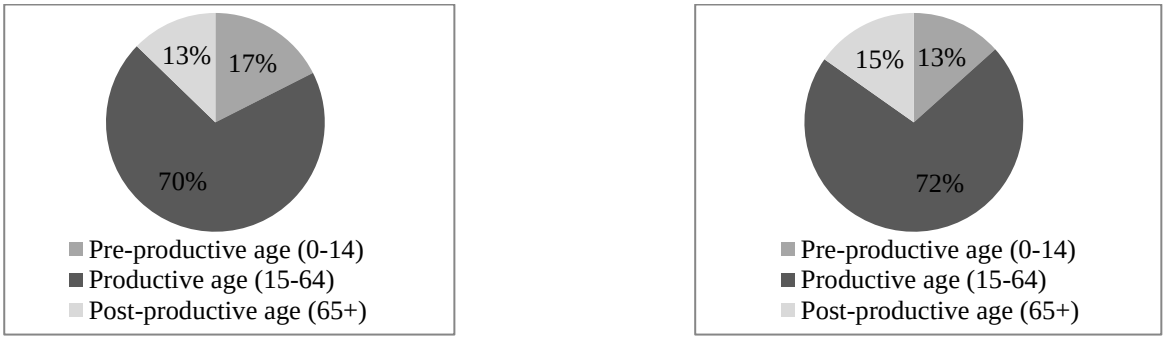
The third category comprise characteristics changes that highlight a relative stability of age structures. Stable populations with combinations belong to this category. Moreover, populations with combinations of contradictory development changes in age categories (+ - +, - + -, - 0 -, + 0 +, + + +, - - -).

Indicators of population aging in Nitra self-governing region

Changes in the demographic development can be observed in Nitra self-governing region. These are the reflection of economic, health and social situation of population in the region. Long-term trends such as population reproduction slow down, decrease in natural increase of population, constant growth of populations of higher age categories and consequent decrease of child category of population can be observed. As a result, the share of older population is growing.

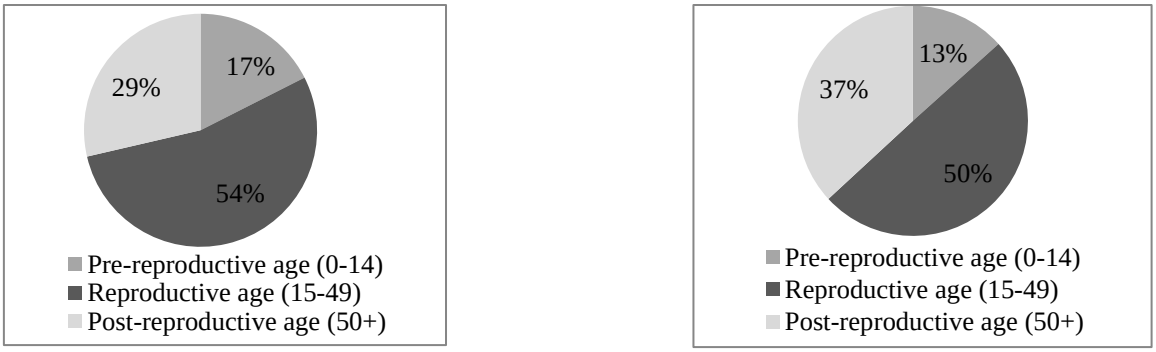
Simple indicators of aging

The population age structure of Nitra self-governing region similarly as the age structure of other Slovak regions shows the dominance of productive age category. There was a decrease in child's category and an increase in older age population within productive age categories in years comparison 2000 and 2014 (Figure 1). A similar situation can be observed in reproductive categories where post-reproductive age in category is 50 and more. There was an increase in post-reproductive age category of 8 % between 2000 and 2014 (Figure 2).



2000 2014

Figure 1 Productive age categories in Nitra self-governing region



2000 2014

Figure 2 Reproductive age categories in the Nitra self-governing region

Within the individual groups of rural municipalities from 2000 to 2014 came to an increase of a post-reproductive age structure within each group (Table 1), this clearly shows the gradual aging of the population. Similarly, within the frame of post-productive age comes to an increase of elderly population over 65 years among the medium-sized and large rural municipalities of NSR. Among individual rural municipalities of NSR was recorded in 2000 the lowest post-productive age (10 %) in villages around the town of Nitra, Topoľčany and Levice. By the year 2014 the percentage of post-productive age increased in almost every village of NSR (Figure 3).

Post-productive and post-reproductive age belong to simple indicators of aging. These are one component indicators that characterize only one typical age category. There was an increase in post-reproductive age structure in all dimensions in individual size groups of rural municipalities from 2000 to 2014. Significant

changes can be identified only in case of post-productive age categories resulting as in small rural municipalities and medium sized rural municipalities up to 999 inhabitants a decrease in population above 65 years is observed (Table 1). The lowest post-productive age (up to 10 %) in the individual rural municipalities of Nitra self-governing region was observed in 2000 in 2 towns close to Nitra, Topoľčany a Levice (Figure 3).

Table 1 Post-productive and post-reproductive age categories of population in Nitra self-governing region based on size categories of municipalities in 2000 and 2014

Municipality type	Size category of municipality		Number of locations		Number of inhabitants				Post-productive age (65 +) in %		Post-reproductive age (50 +) in %	
			2000	2014	2000		2014		2000	2014	2000	2014
					abs	%	abs	%				
Rural	Small	< 199	10	16	1,483	0.2	2,606	0.4	22.0	18.6	40.1	41.3
		200-	85	80	29,423	4.1	28,369	4.1	19.0	17.6	36.3	38.3
	Midsize	500-	96	99	69,221	9.7	70,090	10.2	16.4	16.2	33.2	36.8
		1000-	101	101	142,29	19.9	143,78	21.0	15.3	15.7	32.0	36.5
	Large	2000-	40	40	111,03	15.5	111,72	16.3	14.2	14.8	29.9	35.3
		5000-	3	3	15,435	2.2	15,435	2.3	13.2	15.1	29.7	36.1
Urban	Small	< 4999	1	1	4,376	0.6	3,712	0.5	11.4	17.9	28.5	40.9
		5000-	8	8	81,993	11.5	74,091	10.8	11.0	15.0	26.6	37.7
	Midsize	20000-	5	5	171,91	24.1	156,73	22.9	9.2	14.2	24.0	37.4
	Large	50000-	1	1	87,575	12.3	78,033	11.4	10.3	15.3	25.7	37.6
summary			350	354	714756	100	684584	100	100	100	100	100

Source: Statistical Office of Slovak Republic, 2015

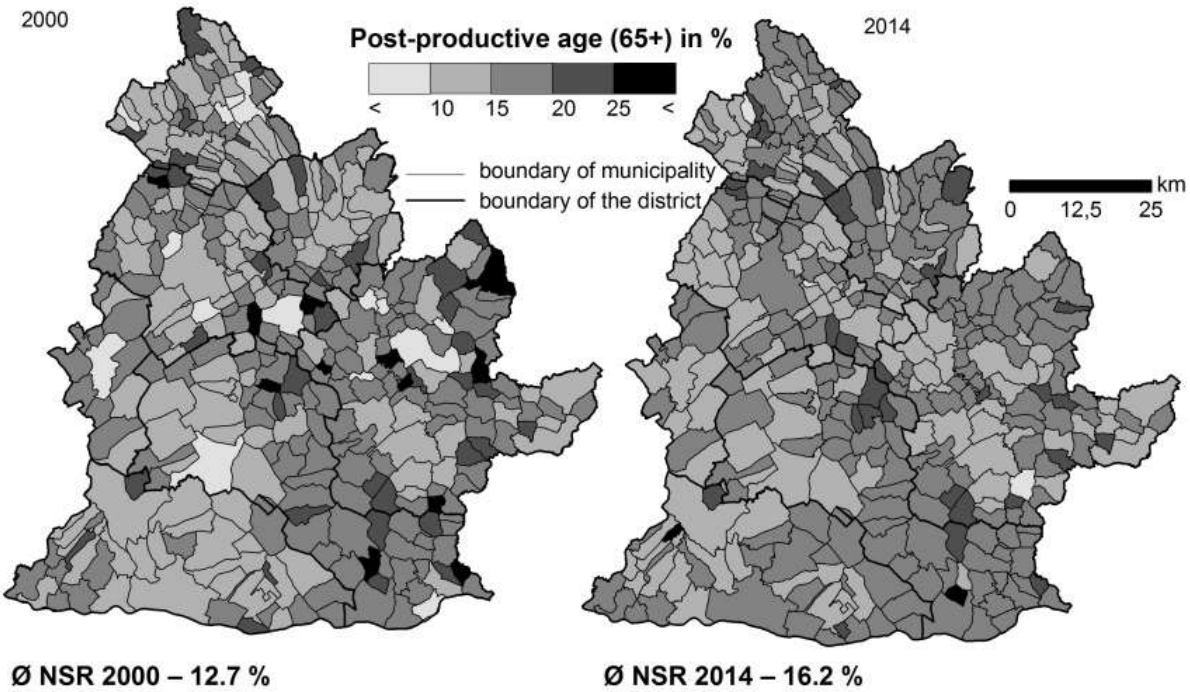


Figure 3 Population in post-productive age in municipalities of Nitra self-governing region in 2000 and 2014

Within the frame of post-reproductive age in NSR can be found significant diversity, which means that individual rural municipality within the same region recorded the increase of post-productive age (Fig. 4). There are more significant differences within post-reproductive age in Nitra self-governing region. While in

2000 the post-reproductive age category was represented by a relatively high share (28.6 %), by 2014 this share significantly increased (36.9 %). The lowest post-productive age in 2014 occurred in the municipalities of Nitra and Šaľa districts. The oldest population with the highest post-productive age is located in municipalities of Levice, Nitra and Komárno districts (Fig. 4).

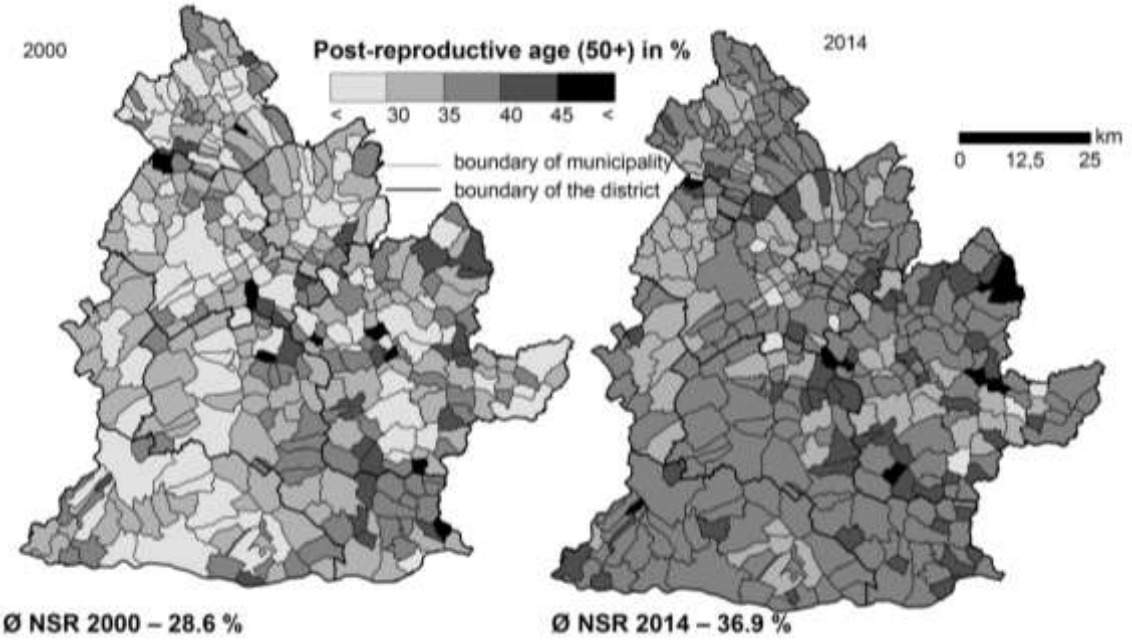


Figure 4 Population in post-reproductive age in municipalities of Nitra self-governing region in 2000 and 2014

Complex indicators of aging

More complex indicators of aging include statistical dimensions. Several characteristic population age categories are taken into account by its construction or all age categories are considered. More complex indicators of aging are e.g. age index, aging index, Billeter's index, average age (Mládek et al., 2006).

The **Billeter's index** enables an identification of indirect correlation of relation and aging population. The higher is the Billeter's index, the younger is the population. If the Billeter's index values are negative, the occurance of post-reproductive age categories are higher that pre-reproductive age categories. In case of Nitra self-governing region the index value fell from -27 to -47, resulting in consequent aging of the population and low rate of inhabitans in pre-reproductive age category. Previously mentioned feature is also possible to observe in the various size categories of municipalities among which between 2000 and 2014 a decline of Billeter's index is marked meaning the increase of elderly population over 50 years (Table 2).

The **average age** of the population of Nitra self-governing region increased slightly from 2000 to 2014. In 2001 it had the value of 37.28 years, compared to 41,38 in 2014 resulting in an increase by 4.1 years.

Table 2 Billeter's index, age index and aging index in Nitra self-governing region based on size categories of municipalities in 2000 and 2014

Municipality type	Size category of municipality		Number of locations		Number of inhabitants				Billeter's index		Age index		Aging index	
					2000		2014							
			2000	2014	abs	%	abs	%	2000	2014	2000	2014	2000	2014
Rural	Small	< 199	10	16	1,483	0.2	2,606	0.4	-	-	38.	27.	143.	161.
		200-499	85	80	29,423	4.1	28,369	4.1	-	52.1	45.	33.	115.	136.
	Midsize	500-999	96	99	69,221	9.7	70,090	10.2	-	-	50.	36.	97.8	120.
		1000-1999	101	101	142,295	19.9	143,787	21.0	-29.3	-45.8	53.9	37.3	88.5	115.5
	Large	2000-4999	40	40	111,036	15.5	111,723	16.3	-23.2	-41.5	59.4	40.9	79.7	103.1
		5000-9999	3	3	15,435	2.2	15,435	2.3	-24.7	-44.1	56.4	39.4	78.6	105.8
Urban	Small	< 4999	1	1	4,376	0.6	3,712	0.5	-	-	58.	27.	69.2	156.
		5000-19999	8	8	81,993	11.5	74,091	10.8	-16.1	-50.4	66.4	33.6	62.5	118.4
	Midsize	20000-49999	5	5	171,919	24.1	156,738	22.9	-10.7	-49.5	72.2	33.8	51.4	112.1
	Large	50000-99999	1	1	87,575	12.3	78,033	11.4	-13.6	-49.3	70.2	35.8	56.9	114.1
Summary			350	354	714,756	100	684,584	100.0	-27	-40	57	35	84	124

Source: Statistical Office of Slovak Republic, 2015

Age index shows spatial differences in the age structure of population. If the age index has greater values than 100, it shows rejuvenation of the population. If the value is lower than 100, it is aging of population.
In Nitra Self-governing Region, the age index has a downward trend reflecting the increase of aging population. Every size category of municipalities shows a decreasing trend while the most significant decrease is identified in large size rural municipalities above 2000 inhabitants (Table 2). The development of age index be divided into 3 stages. The first stage is the period between 2000 – 2001 where its increase is recorded. The second stage 2001 - 2002 reflects the stagnation and the third stage from 2003 reflects the steady decline until 2014 (Figure 5).

Figure 5 Age index in Nitra self-governing region in 2000 - 2014

Significant differences can be observed by comparing 2000 and 2014 in individual municipalities of Nitra self-governing region. While in 2000 the age index had the average value of 52.8 %, in 2014 it plummeted

to a value of 36.6 % showing the aging of population in the analyzed period of time in almost every municipality of Nitra self-governing region (Figure 6).

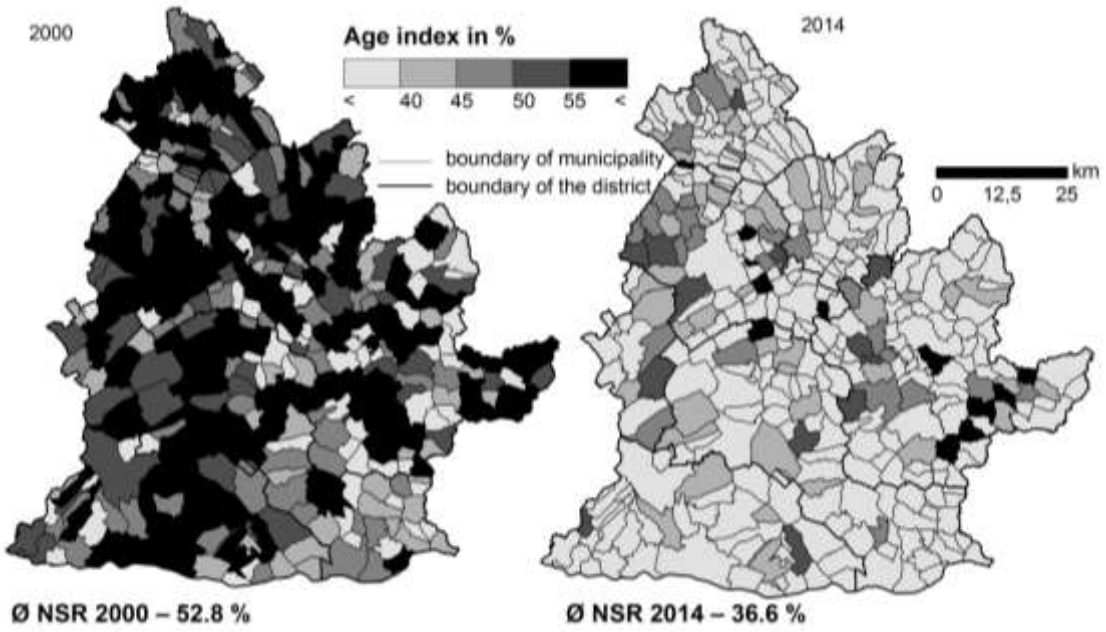


Figure 6 Age index of population in the municipalities of Nitra self-governing region in 2000 and 2014

Low values of age index show an aging population. The aging population can be expressed by **aging index.** If the value of aging index is greater than 100, it shows the aging process of population. If its value is lower than 100 it shows the rejuvenating process of population.
The aging process in the region intensified in the course of recent years. The value of aging index in the analyzed period of time is constantly growing in every size category of rural municipalities highlighting an increasing amount of inhabitants older than 50 years per 100 children aged 0-14 years (Table 2). In 2000 over 84 inhabitants aged 50+ accounted for 100 children. However, there were already 124 inhabitants aged 50+ in 2014. The reason for this trend is mainly the low level of reproduction of population in the region complemented by an increasing life expectancy (Figure 7).

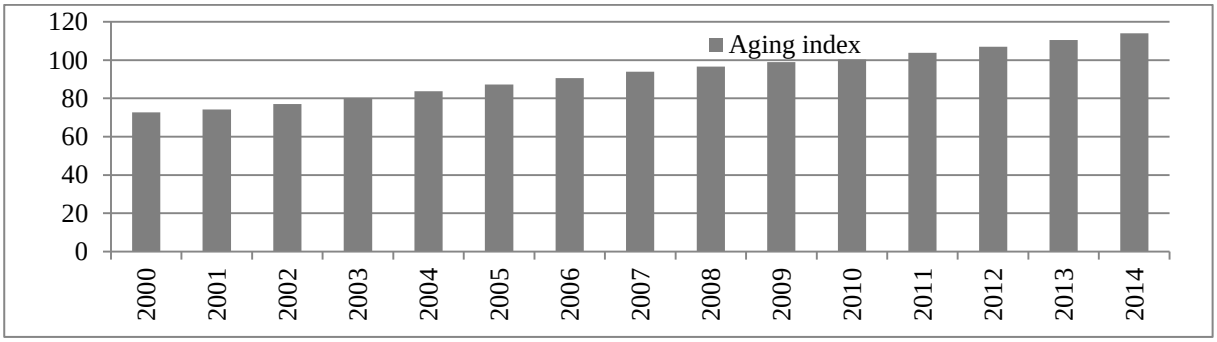


Figure 7 Aging index in the Nitra Self-governing Region in 2000 - 2014

In municipalities of the Nitra Self-governing Region, we can see an increase in the aging index until 2014. The highest values are in the south and east of the studied area. The territory of the Nitra Self-governing Region currently belongs to the regressive population age structure since up to 99 % of the municipalities of the region ranges over the value of the aging index 125 (Figure 8).

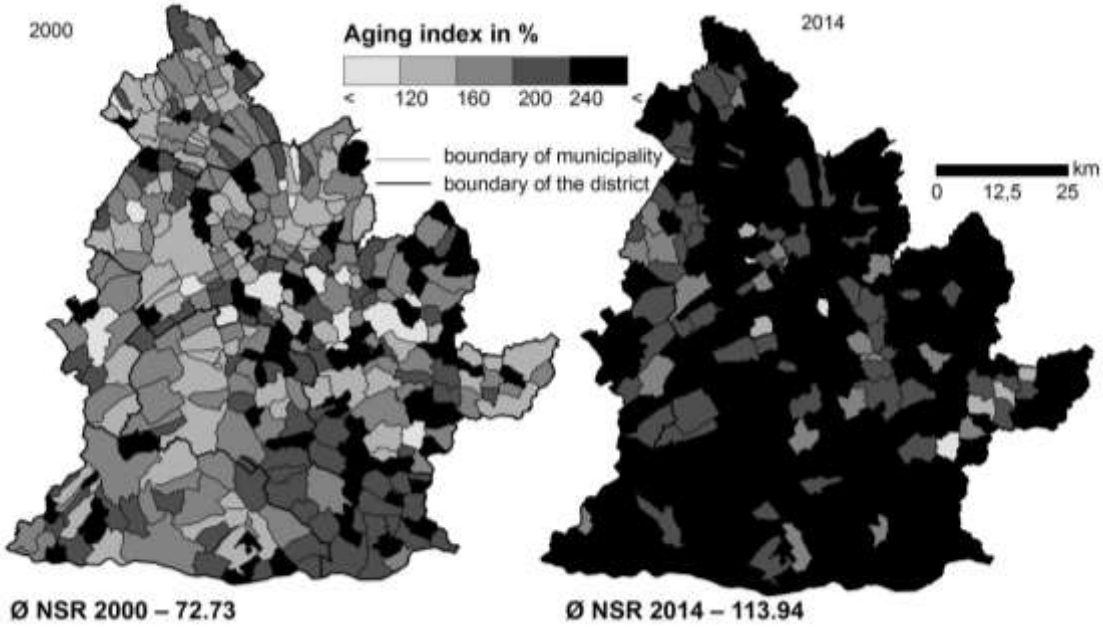


Figure 8 Aging index of population in Nitra self-governing region in 2000 - 2014

Graphic indicators of aging

The third category of aging indicators is represented by graphic indicators that include the age pyramid and hexagonal diagram. The **age pyramid** is considered the best way of expressing the types of population. The regressive type of age pyramid represents the aging of population. The Nitra self-governing region has the regressive type of population in both compared years although in 2014 the children component narrowed (Figure 9). While in 2000 the share of children component reached 36.9 % (127,591), in 2014 it was only 27.5 % (91,748). Post-productive part of the population recorded increase from 26.3 % to 30.9% which means that about a third of the population of the region consists of old population. This shape of age pyramid is a result of the events of the previous century. During the war there was a significant reduction in the population and increase of the number of deaths. The period after the war, however, led to an increase in the birth rate which caused the increase in the number of inhabitants. At present, the Slovak population is in the period of realization of deferred deliveries of very specific generation of women from the 70s. It is the people of this age who are moving the economy. Boomers of the 70s are entering the most productive phase of their life and they stimulate the economic growth by their consumption.

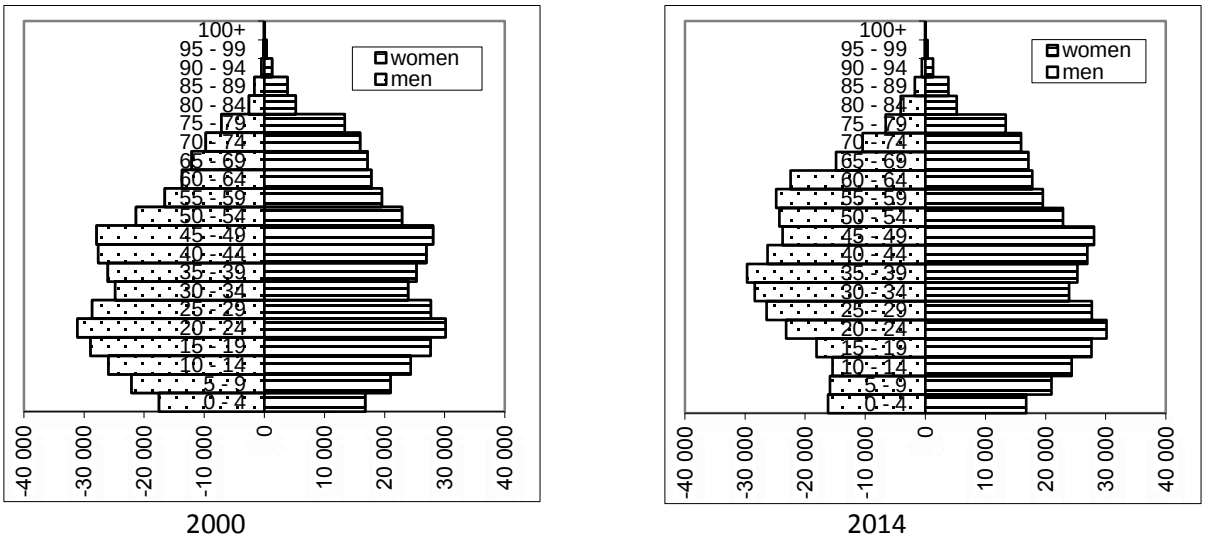
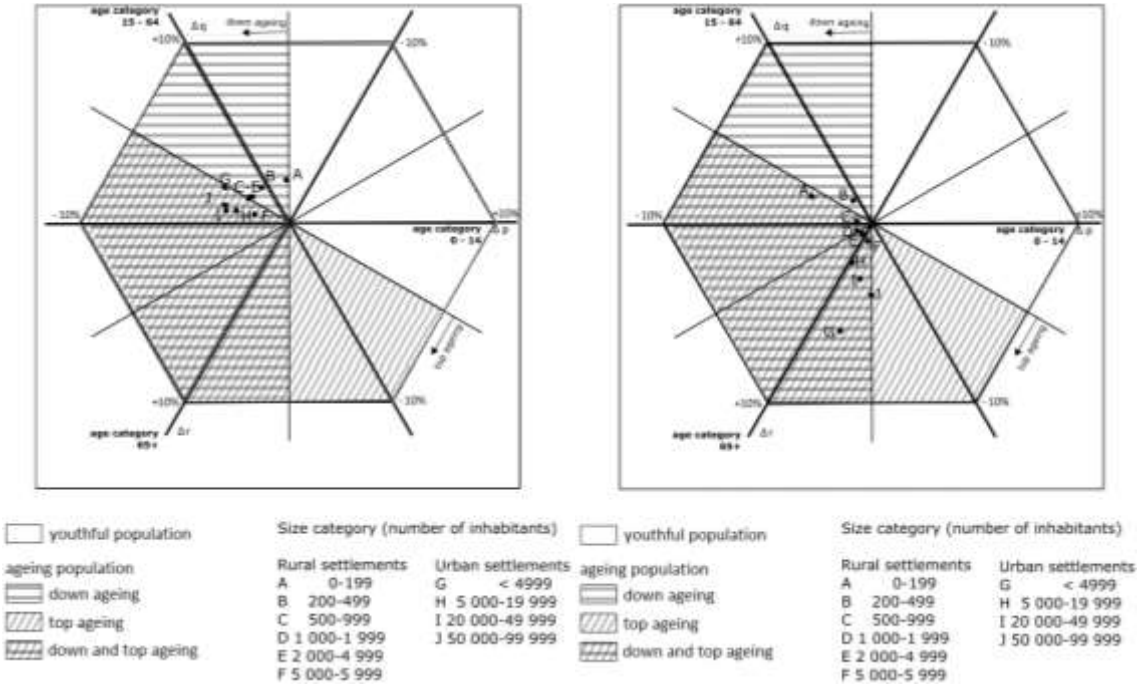


Figure 9 Age pyramid of population in Nitra self-governing region in 2000 - 2014

Hexagonal diagram identifies changes in population age structures within a certain period of time. Two time periods 2000 – 2006 and 2007 – 2014 were compared in case of Nitra self-governing region. 3 types of population were classified: population dominated by aging inhabitants, population dominated by rejuvenating inhabitants, mixed population type. Only aging population can be identified based on the municipality size categories in both periods of time. No category occures in the quadrant represented by the rejuvenation of population (Fig. 10). Whereas in 2000 – 2006 the municipality size category of small municipalities up to 199 inhabitants and 200–499 inhabitants was characterised by down aging, in 2007 – 2014 the small size municipality category up to 199 moved to a population characterized by down and top aging (Fig. 11).



2000-2006 2007-2014

Figure 10 Hexagonal diagram of municipality size categories

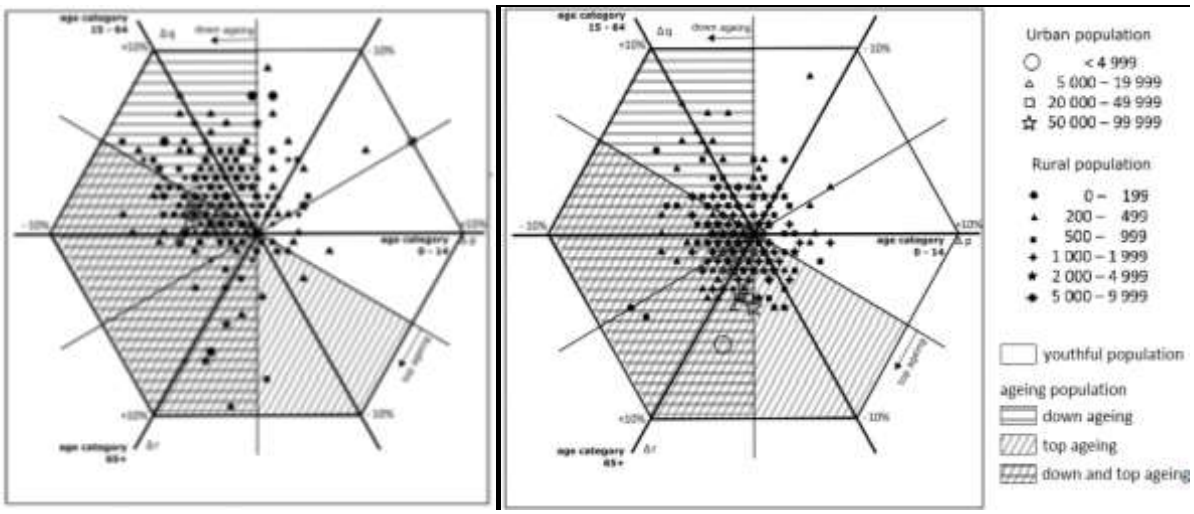
Table 3 Population types in Nitra self-governing region in 2000 – 2006 a 2007 - 2014

Population type	Number of municipalities				Number of inhabitants			
	2000 - 2006		2007 - 2014		2000 - 2006		2007 – 2014	
	abs	%	abs	%	abs	%	abs	%
Population dominated by aging	185	52.3	207	58.5	538,827	76.2	559,465	81.7
Population dominated by rejuvenating inhabitants	53	15.0	69	19.5	38,914	5.5	59303	8.7
Mixed population types	116	32.8	78	22.0	129,564	183	66154	9.7
In summary	354	100	354	100	707,305	100	684,922	100

Source: Authors‘ calculations, 2015

Municipalities with aging population prevailed within all municipalities of Nitra self-governing region (Table 3, Table 4). They represented 52.3 % of all municipalities between 2000-2006, in 2007-2014 its amount increased to 58.5 %. This type of population covers more than three quarter of the population in Nitra self-governing region. Municipalities dominated by rejuvenating population represented only 20 % and only 8.7 % of the population live there (period 2007-2014). Municipalities between Levice, Šahy a Želiezovce were dominated by rejuvenation of the population. The area of rejuvenation of the population starts to form also between municipalities of Vráble and Levice district in the north. Mixed types of populations (stable

population, down rejuvenation – top-aging, top rejuvenation – down aging) include less than a third of municipalities in Nitra self-governing region and only 9.7 % of the population lives there. They are irregularly distributed throughout the territory of the entire region, while the area of mixed population was identified between the municipalities of Štúrovo a Šahy in 2007 – 2014 (Figure 12).



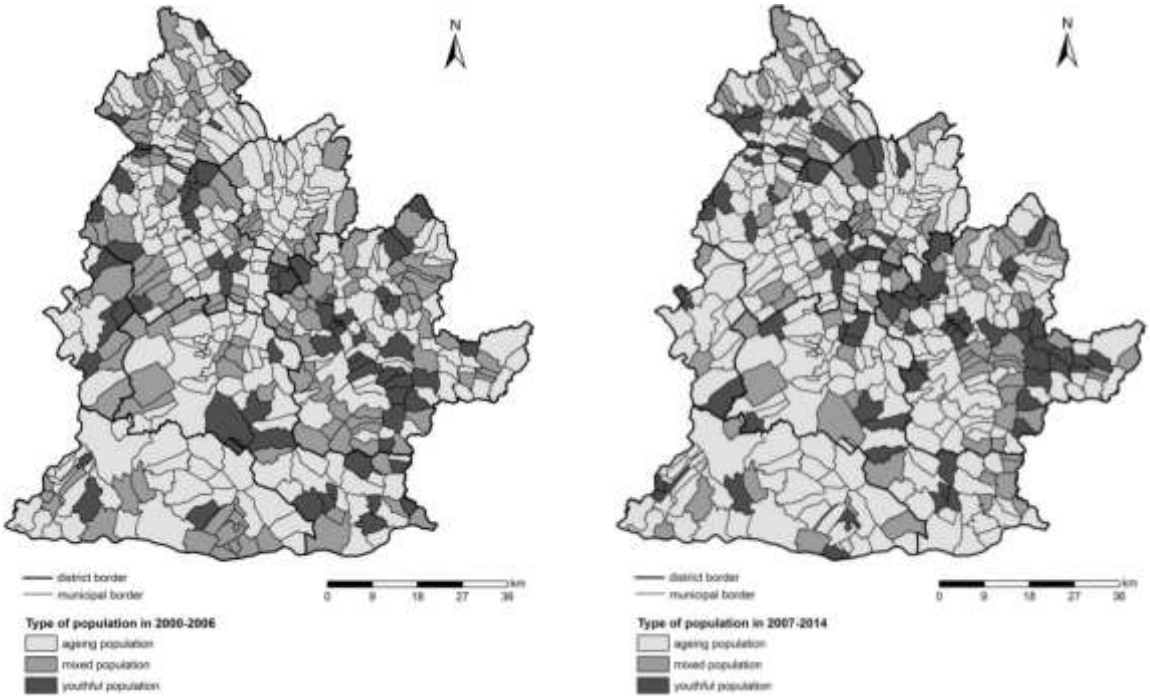
2000-2006 2007-2014

Figure 11 Hexagonal diagram of municipalities in Nitra self-governing region

Table 4 Population types in Nitra self-governing region based on size categories of municipalities in 2000 and 2014

municipality type	Size category of municipality		population dominated by aging inhabitants								population dominated by rejuvenating inhabitants								Mixed population type							
			number of lacations				number of inhabitants				number of lacations				number of inhabitants				number of lacations				number of inhabitants			
			2000-2006		2007-2014		2000-2006		2007-2014		2000-2006		2007-2014		2000-2006		2007-2014		2000-2006		2007-2014		2000-2006		2007-2014	
			abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%	abs	%
rural	small	< 199	3	1.6	7	3.4	466	0.1	1 071	0.2	4	7.5	3	4.4	556	1.4	519	0.9	3	2.6	3	3.8	477	0.4	475	0.7
		200-499	32	17.3	34	16.3	11 098	2.0	12 051	2.1	25	47.2	24	35.3	8 692	22.6	8 350	14.8	28	24.1	25	32.1	9 507	7.4	8 742	12.1
	midsize	500-999	52	28.1	51	24.5	36 323	6.7	35 742	6.3	10	18.9	23	33.8	6 767	17.6	16 823	29.8	37	31.9	25	32.1	27 486	21.3	17 848	24.6
		1000-1999	56	30.3	70	33.7	79 932	14.7	100 370	17.7	12	22.6	12	17.6	17 516	45.5	17 067	30.2	34	29.3	17	21.8	46 621	36.1	22 529	31.1
	large	2000-4999	24	13.0	28	13.5	61 820	11.3	79 775	14.1	2	3.8	6	8.8	4 972	12.9	13 730	24.3	14	12.1	8	10.3	44 997	34.9	22 826	31.5
		5000-9999	3	1.6	3	1.4	15 347	2.8	15 452	2.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
urban	small	< 4999	1	0.5	1	0.5	4 242	0.8	3 903	0.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
		5000-19999	8	4.3	8	3.8	80 256	14.7	76 205	13.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	midsize	20000-49999	5	2.7	5	2.4	169 130	31.0	161 122	28.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	large	50000-99999	1	0.5	1	0.5	86 188	15.8	81 238	14.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
spolu			185	100.0	208	100.0	544 800	100.0	566 929	100.0	53	100.0	68	100.0	38 502	100.0	56489	100.0	116	100.0	78	100.0	129 087	100.0	72420	100.0

Source: Authors‘ calculations, 2015



2000-2006 2007-2014

Figure 12 Spatial distribution of individual population types in municipalities in Nitra self-governing region

Conclusion

The population aging is based on the age structure of the population that affects all residents. It is reflected in the birth rate, death rate as well as the process of migration and other demographic indicators. The population of Nitra self-governing region is older than the rest of the population of Slovakia from demographic aspect. This conclusion is also supported by Billeter's index that shows negative values in all size categories. Negative values of this indicator confirm the predominant component of post-reproductive inhabitants. Residents of municipalities in Nitra self-governing region are still characterized by regressive age pyramid with a high share of older people and low representation of child component. The population aging processes run intensively in Slovakia that is also demonstrated by a characteristic of the age structure of municipalities in Nitra self-governing region. A negative trend can be assumed in recognition of demographic processes associated with aging processes in municipalities of Nitra self-governing region. It can be expected that external changes associated with social as well as economic situation in the country play an important role in improvement as well as deterioration of demographic situation. Currently, the growing number of inhabitants in the post-productive age in municipalities is usually solved by mass construction of houses and flats that attract new and particularly young population. Process of rejuvenation of population can be identified in sub-urban areas of municipalities in Nitra self-governing region NSK.

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SWOT ANALYSIS OF TOWNS AND RURAL MUNICIPALITIES

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Abstract
A strategic plan setting long-term goals and priorities that are important for a municipality and a SWOT analysis identifying strengths, weaknesses, opportunities and threats in a municipality is an important tool for the development of a municipality. In such plan, the management of a municipality may assess the development possibilities and set the strategy leading to the objectives and to the increase of local competitiveness. The SWOT analysis should define factors that significantly influence the direction and the dynamics for further development of a municipality. The paper specifies the most common factors of the SWOT analysis, defined by the municipality managements in their strategic plans.

Keywords: SWOT analysis, strategy, municipality, rural, management

JEL Codes: R11, R50, R58

Introduction

The analytical descriptive part of a strategic plan is followed by a summary or thematically focused part (e.g. infrastructure, tourism, environment) of the SWOT analysis. Either, it is a separate chapter, or it is included at the end of the analytical part. This analysis summarizes strategically important strengths and weaknesses, the opportunities and the threats of the data from previous external and internal environment of a municipality that have a fundamental impact on the future development of the municipalities or micro-regions. As Trainer (2004) reports, the organization analysis through the SWOT analysis gives a systematic way of evaluating internal and external forces of the environment and thus is a part of strategic planning.
SWOT is an abbreviation of Strengths, Weaknesses, Opportunities and Threats (Košťan and Šuleř, 2002). The SWOT analysis is a classification method that enables a summary evaluation of social and economic analysis (Řehoř, 2007a). It is a useful, immediate and easy-to-use tool to describe the overall situation of a region (Řehoř and Pešek, 2008). It is suitable for the formation of a future strategy (Johnson and Scholes and Whittington, 2012). Its task is to detect information (strengths and weaknesses) and to enable the designated authorities identify on the one hand, the possibilities for development of a municipality, on the other hand to point out potential problems (risks) and specify the necessary steps for their removal - to formulate a strategy (Janečková and Vaštíková, 1999). Furthermore, it should analyse the current and expected future situation, determine the direction of development and find the means to achieve the mission (objectives) (Kadeřábková, 2004). Its outcome is defining a strategy that seeks to use the strengths and opportunities and to eliminate weaknesses and threats (Tyll, 2014). A comprehensive view might look as follows: The comprehensive SWOT analysis builds strengths and weaknesses of the organization or its part against the identified opportunities and threats arising from the environment, and determines the position of the organization or its parts as the basis for defining a development strategy (Grasseová, 2010).
Everything what the municipality can do or offer better than other municipalities (environment, better government, cheaper and more qualified workforce) is considered strength. Weakness represents everything that a municipality lacks in comparison with other municipalities (poor infrastructure, poor image among visitors, investors). Analysis of the opportunities and threats may include the growing importance of services and tourism, declining importance of agriculture, the outflow of population to the cities, attracting new businesses, supporting development programs (subsidies, grants) (Hálek, 2006).
An appropriate strategy (see **Table 1** below) can be chosen related to the SWOT analysis results.

Table 1 SWOT matrix

	Weaknesses (W)	Strengths (S)
Opportunities (0)	WO strategy of exploiting	SO strategy of use
Threats (T)	WT strategy of avoiding	ST strategy of confrontation

Source: Tichá a Hron, 2009

A disadvantage of the SWOT analysis is that it is too static and very subjective (Jakubíková, 2013). Hussey (2002) quoted that the SWOT analysis has a wide range of disadvantages such as the dependence on organizational representatives and providing analytical results without any empirical analysis.

Material and Methods

This paper aims to identify the most important strengths and weaknesses, opportunities and threats of towns and rural municipalities in the South Bohemian Region.

The paper analysed 28 strategic plans in the South Bohemian Region that were available on the Internet (2/3 of which were towns, 1/3 were the rural areas). The most important factors of the SWOT analysis were reported into charts.

Results and Discussion

The most important source of the SWOT analysis is a social and economic profile of a municipality that summarises the most important facts about the situation in different areas. The basic principle is that accepting the strengths and highlighting removing or at least reducing the weaknesses increases the possibility of use of opportunities and reduces the impact of identified threats. The SWOT analysis may be defined as a summary or in different strategy areas. The SWOT analysis, that forms a kind of a bridge between the analytical and strategic part, is one of the most commonly used methods of synthetic evaluation.

Almost one fifth of the documents analysed for this paper did not include a SWOT analysis – mostly in a half of plans in rural areas. In the group of towns, the SWOT analysis was not included in the plan of Strmilov. More than a half (56%) of plans included the summary SWOT analysis.

Strengths

The most common strength as reported in 71% of plans is the presence of cultural and natural sites. Approximately 2/3 of plans reported a good traffic accessibility (rural and urban) and an attractive landscape and environment (micro-regions, towns). In towns, the existence of schools, good location and potential for tourism were also reported as strengths. The table 2 reveals other strengths and their occurrence.

Weaknesses

The most common weakness as reported in 82% of plans is an inadequate technical infrastructure (water supply, sewerage, wastewater treatment plants). The second most common is the poor condition of roads (see table 3). In rural areas, a lack of jobs and deteriorating facilities were also reported. The towns have problems with a lack of parking places. The rural municipalities often deal with poor transport infrastructure and low awareness of interest groups.

Table 2 Strengths of rural, urban and micro-regions- frequency of responses

Strengths	Rural, n=9	Towns, n=19	Overall, n=28
Cultural, natural sites	8	12	20
Access to transport	7	12	19
Environment	4	11	15
Areas for living, business	5	9	14
Potential for tourism	3	10	13
Attractive landscape	3	9	12
Location	2	10	12
Existence of schools	0	11	11
Community life	3	7	10
Cooperation between municipalities	2	6	8
Information Centre	0	7	7
Cycle lanes	3	3	6
Economic entities - Business	0	6	6
Closeness to the centre	4	0	4

Source: Author, based on strategic plans available on the Internet

Table 3 Weaknesses of rural, urban and micro-regions- frequency of responses

Weaknesses	Rural, n=9	Towns, n=19	Overall, n=28
Inadequate infrastructure	7	16	23
Poor condition of roads	5	13	18
Problems with parking	1	16	17
Deteriorating facilities	5	10	15
Poor offer of leisure time activities	5	9	14
Low capacity in accommodation and catering facilities	1	10	11
Social services do not comply	4	6	10
Lack of cycle lanes and their marking	1	8	9
Poor transport infrastructure	3	5	8
Low awareness of interest groups	3	4	7
Non-cooperation with entrepreneurs	0	7	7
A lack of jobs	5	1	6
Seasonality	1	4	5
Elderly age structure of the population	2	3	5

Source: Author, based on strategic plans available on the Internet

Opportunities

The biggest opportunity as reported by 80% of plans is seen in financial support through subsidies. In rural areas, the support of businesses was reported as the most important. The towns also see the tourism as a possible advantage and development of their area. The most common opportunities are revealed in the table 4.

Threats

More than a half of plans (53%) reported depopulation and aging of population as the biggest threat. Rural areas are more worried about a lack of financial support. The towns are also worried about worsened access to transport – see the table 5. The towns are also worried about the outflow of young and qualified people.

Table 4 Opportunities of rural, urban and micro-regions- frequency of responses

Opportunities	Rural, n=9	Towns, n=19	Overall, n=28
Subsidies	6	16	22
Development of tourism	5	12	17
Support of businesses	6	9	15
Use of deteriorating facilities	3	10	13
Highways, expressways	0	10	10
Renewable resources	3	6	9
Promotion, awareness	4	5	9
Cross-border cooperation	0	9	9
Cooperation between municipalities	4	5	9
Building of cycle lanes	2	5	7
Development planning	0	7	7
Agro-tourism	0	5	5
Lifelong learning	0	5	5
Development of infrastructure	3	0	3
Diversification of agriculture	1	2	3

Source: Author, based on strategic plans available on the Internet

Table 5 Threats of rural, urban and micro-regions- frequency of responses

Threats	Rural, n=9	Towns, n=19	Overall, n=28
Depopulation and aging of population	4	11	15
Lack of financial support	7	6	13
Changing legislation	2	9	11
Outflow of young and qualified people	2	8	10
Closing of SMEs	2	8	10
Environmental pollution	3	5	8
Worsened access to transport	5	2	7
Growth of unemployment	2	5	7
Higher expenditures of municipalities	3	2	5
Competition of towns and municipalities	0	5	5
Lack of interest of citizens	4	1	5
Conflicts with the interests of the PLAs	1	2	3
Deteriorating facilities	2	0	2
Floods	0	1	1
Cancelling schools	1	0	1

Source: Author, based on strategic plans available on the Internet

Conclusions

The SWOT analysis should show major potential for development of municipalities (internal strengths and external opportunities - i.e. utilization strategy), which municipalities may use for its further development and key issues (internal weaknesses and possible external threat - i.e. strategy of avoidance), which need to be addressed and rapidly eliminated or removed.

Based on the SWOT factors, the management of a municipality should define strategy priorities of further development. The strengths and weaknesses are the result of internal analysis:

- strengths include the competitive advantages of a municipality for any type of development activities,
- weaknesses are all factors that limit or threaten these activities.

Opportunities and threats are the result of the analysis of the external environment. Many external factors would not influence the future strategy; however, to determine their likely effects is important for defining the strategy. An important aspect of the external analysis is to assess which factors and trends are important for the implementation of the strategy and which response would they require.
In strategic plans of rural municipalities and towns of South Bohemia is the cultural and natural heritage reported as the most frequently mentioned strength. On the other hand, poor condition of local roads is the most common weakness. Subsidies are the biggest opportunity. Aging population and depopulation is seen as the biggest threat.

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POSSIBILITIES FOR A POST WAR RURAL ECONOMIC DEVELOPMENT IN ANGOLA

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Abstract

Forty years after gaining independence of Portugal, thirteen years after the end of the civil war, the devastation of a half a century long conflict is still a key factor of the Angolan economy. Angola's national income depends mostly on oil production, but recent phenomena on the global market has shown the vulnerability of this one sided economic structure. Previous analyses warned the decision-makers to expand the diversity of privileged sectors towards agriculture among others. The objective of our essay is to give a progress report about the promoting and impeding factors of re-establishing and restarting economic activity in the vast uncultivated territories, introducing new technologies ensuring sustainability for those who invest, and work in this sector.

The essay reveals the specific circumstances of rural areas, such as infrastructural, financial, technological, social and logistic deficiencies, the lack of research and information, or the on-going demining process. Furthermore, the study mentions the important role of cooperation with national and international organizations, describing their projects in order to fight poverty and regain independency of national food supply to promote productive development of Africa's Sub-Saharan region.

Keywords: investment, agriculture, sub-Saharan region, demining

JEL Codes: Q18, R11, R58

Introduction

Angola possesses a wealth of a number of natural resources such as mineral oil, diamond, valuable and rare minerals, water, forestry, fisheries, and also has vast uncultivated territories covered with natural vegetation. Due to the results of national census in 2014, the number of inhabitants is above 24 million, and further increase is predicted. The capital, Luanda has to cope with heavy overpopulation with an estimated 7 million residents.

Over the last 13 years since signing the peace agreement the government struggled to reach substantial progress in re-establishing the basis of a growing economy and to improve the living conditions of its citizens. About 4 million people were internally displaced and nearly 500 000 refugee fled to neighbouring countries during civil war, and while tens of thousands are returning to rural areas, they have to face considerable shortages restarting their lives. The rural economy has all, but collapsed. Social and physical infrastructure (roads, bridges, rail network) are badly damaged.

Knowing, that prior to independence the country was self-sufficient in all key food crops (except wheat) and was an exporter of coffee and sugar among others, it is sad to declare, that pre-war structure of rural economy, plantations, technology and commercial relations were disrupted and neglected.

An estimated 80 per cent of farmers are smallholders with the lack of access to agricultural inputs like seeds, adequate tools, land, fertilizers, animals for traction or financial resources to elevate their low productivity. The result is poverty, which affects 94 per cent of households in rural areas, 68 per cent of the whole population and 15 per cent of households are categorized living in extreme poverty. In 2010 the life expectancy at birth is estimated at 47 years, among the lowest in the world. (IFAD 2014)

Material and methods

This qualitative research examines the present position of agriculture, its participation in Angolan economy and rural development considering historical, political, economic and social issues. Studies the impact of national and international perspectives, the promoting and impeding factors of the possibilities for improvement mentioning recent actions through programmes and projects with a holistic perspective.

The data were collected from governmental sources as well as recent studies of international organizations working in the field. Personal experience also arouse interest to investigate thoroughly the

current circumstances and difficulties of the citizens of rural communities. The author also had the opportunity to participate in completing a monograph studying the impact of demining a particular territory with its economic consequences.

Results and discussion

Angola has experienced rapid economic expansion over the period 2003 to 2008 due to increased oil production combined with high global oil prices, with the average growth rate in gross domestic product (GDP) of some 17 per cent. The global economic crises of 2008-2009 resulted in sharp drops in GDP, and decision makers turned their interest to public investment programme, targeting non-petroleum sectors. In 2014-15 as oil prices seem to stabilize on a reduced level resulting increase of budget deficit, other sectors of economy would have to equilibrate the shortage.

The combined contribution of crops, livestock, forestry and fisheries to GDP between 2001 and 2003 was about 8 per cent, by far less than decades before. Recently the figure increased to 12 per cent by 2011, although this growth wasn't the result of an increased productivity, but the expansion of cultivated land. Still only 10 per cent of the arable land is under cultivation and per hectare productivity is one of the lowest in sub-Saharan Africa.

Growth in GDP over the next 5 years is projected to range between 6,4 and 6,9 per cent but significant deviations may occur.

According to the 1975 Constitution, the economic system has been established as a socialist-type, nationalized, one party led structure, with centralized, plan-based economy and politics. Lands were taken into public ownership. After the civil war, the new constitution has recognized the right for private property, however it maintained the right of the state over main national resources.

Governmental initiatives demonstrate the commitment to expand the share of the agricultural sector in GDP. This process needs regional, national and also international cooperation.

National initiatives

Under the direction of the Ministry of Agriculture and Rural Development (MINAGRI), the government announces annual agricultural campaigns transmitting its intention to force and increase food production, diversification the Angolan economy and decrease import dependency.

The campaign in process for 2015/2016, started in September with resources for cultivating 4 million ha in 10 provinces, producing manioc, corn, massango, massambala, vegetables, fruits and leguminous plants. Directors of each participating province would lead the local campaign organizing planification, resources, implementing actions. (Minagri) According to the data of former campaigns, some farmers could obtain seeds for cultivation only from the resource of the campaign.

PAPAGRO is a special program announced in 2013 for purchasing agricultural products directly from farmers in rural areas through an assignment with a commercial bank (Credit and Savings Bank – BPC). Under the direction of the Ministry of Commerce, with the intermediation of BPC, Papagro organises the purchase, storage, transport and trade of local products. The bank itself may finance the purchase or can provide a maximum of 1.500.000 Kwanzas (10.000 US$) credit for private investors to collaborate with the programme. Government provides US$ 50 million for 3 years to realize the objective of facilitating trade in rural regions.

International cooperation

From the 1970's Angola began to build close cooperation with several organizations understanding that the state alone hasn't got the resources to recover from the devastating consequences of war. Two of these have huge impact on Angola's recovery.

The International Fund for Agricultural Development (IFAD), is an international financial institution and a specialized United Nations Agency, based in Rome. The organization built a unique partnership of 173 members from developing countries, the Organization of the Petroleum Exporting Countries (OPEC) and the Organization for Economic Co-operation and Development (OECD).

IFAD started its first project in 1991, but suspended operations several times during war. One of its primary objectives is to help increase income through increasing smallholder production of basic food crops, particularly in the poorest areas of the central highlands. They also ensuring access to services (e.g. Developing rural finance systems), promoting efficient market linkages and pro-poor politics,

strengthening rural organizations influence local and national institutions. Their efforts has shown already, that the rehabilitation of infrastructure in rural areas can have a rapid positive impact on the lives of poor rural people.
The organization has completed 3 projects, has got one on-going operation and has got new projects in design phase as well. These operations are funded by the organization itself, as well as the Belgian Survival Fund (BSF), the World Bank or certain countries, like Japan. (Table 1, 2.)

Table 1 IFAD's completed operations in Angola, 1991-2008

	Malanje Smallholder Sector Rehabilitation Project	Northern Region Food Crops Development Project (PRODECA)	Northern Fishing Communities Development Programme
Duration	1991-1996	1997-2007	1998-2008
IFAD loan (US$)		10.0 million	7.3 million
SPA loan (US$)	7,2 million	3.4 million	
Total cost (US$)	12.0 million	18.8 million	9.3 million
Directly benefiting	15.000 households	44.400 households	4.000 households

Source: IFAD, 2014

Table 2 IFAD's on-going and planned operations in Angola, 200

	Market-oriented Smallholder Agriculture Project (MOSAP)	Artisanal Fisheries and Aquaculture Project
Duration	2009-2015	To be decided
IFAD loan (US$)	8.2 million	9.5 million
World Bank:IDA (US$)	20.0 million	
Cofinancing (US$)	Japan 4.0 million	To be decided
Geographical area		Bengo, Kwanza, Malanje, Luanda
Directly benefiting	126.000 households	15.000 smallholders

Source: IFAD, 2014

IFAD's new business model for the region is a new approach to rural project management. Rural management is the study of planning, organizing, directing and controlling of economic activity, the agribusiness, co-operatives and allied fields. It merges the knowledge of management studies and applying it in the rural context (Sriram, 2007). This economic approach is almost unknown for the smallholders, therefore they cannot use economical calculations before their decision of investment or applying for credit, thus these would help profitability and sustainability of their businesses.
In this new model of IFAD, country management units (CMU) are formed fostering cross country linkages and support, stimulating sub-regional trade and opening up beyond the borders, allowing assessment of risks and problems for successful implementation and sustainability as well as monitoring changes requiring the need to adjust original project design (IFAD 2014).
One of the first acts of the independent Angolan government was joining Food and Agricultural Organization (FAO) in 1977. Early interventions were focused on emergency assistance, including resettling households and the provision of agricultural inputs for the rapid resumption of food production. Through the years the focus shifted towards longer term goals, such as institutional capacity building, training, research and extension facilities.
As a pilot country of FAO's Regional Initiative (RI1) for the Eradication of Hunger and Malnutrition in

Africa, a concerted effort is being made to accelerate the development objectives agreed under the Country Programming Framework (CPF). Their on-going method is merging the regional and country-level FAO field programme processes into one road map, and with the contribution of the government and other national counterparts FAO envisages reinforcing assistance and expertise to reach CPF/RI1 objectives, thereby rising the country's food security and development challenges (FAO 2015).
Main medium-term priority areas for technical support of FAO's Country Programming Network (CPF) from 2013 to 2017:

- Strengthening smallholder production and productivity to improve food security and nutrition, enabling farmers to apply improved production techniques through Farmer Field Schools (FFS), founded by the Global Environment Facility. A second faze, founded by the European Union (EU, is under development.
- Strengthening sustainable management of natural resources, strengthening local authorities and community groups capacity in the uptake and application of improved technologies and practices
- Increasing resilience of rural livelihoods to climatic shock and climate change, through the development and application of an integrated Disaster Risk Reduction and Management Plan

Joint development policies in cooperation with the Government of Angola, considering key national interest

- Medium-Term Development Plan for the Agricultural Sector 2013-2017 (PDMPSA)
- Municipal Integrated Programme for Rural Development and Fighting Poverty (MIDRCP)
- Long Term National Plan (PNLP)
- Angola United Nations Development Assistance Framework (UNDAF)
- FAO's global Strategic Objectives
- FAO's project, Regional Strategy for Food Security and Nutrition towards the establishment of a hunger free Community of Portuguese Language Countries (CPLP) in partnership with the Assembly and Council for Food and Nutrition Security (CONSAN) of CPLP.
- FAO's joint initiative within the CPLP between Angola and Brazil's Agricultural Research Corporation (EMBRAPA). A South-South Cooperation project

For boosting the implementation of the CPF, FAO to date has organized two roundtables between the Government and its development and founding partners accelerating and sharpening the focus of resource mobilization, which is a top priority for implementation of the current CPF and associated road map. Discussions resulted in formal calls more than US$ 100 million in funding for agriculture and fisheries over the period 2016-2017.
Also facilitated by FAO, the South-South Project also resulted an agreement co-funding the cooperation with Angola covering financial costs of US$ 2,2 million and Brazil providing an in-kind contribution of US$ 875 000 through EMBRAPA specialists. To date, exchange missions have been carried out; sixty researchers from Angola's Agricultural Research Institute (IIA) and forty five from the National Veterinary Research Institute (IIV) are being trained under the project, which is also formulating a national strategy for agricultural innovation.
FAO's contribution is essential since 1977, with wide range of assistance delivered through more than 230 development projects. Their mission is to declare and support the concept of the human right to food. With the words of José Graciano da Silva, Director-General of FAO: "Fighting hunger is not charity, nor should it be dependent solely on a government's good will." (FAO 2015)

The demining process

Angola is heavily contaminated with landmines and explosive remnants. The majority of them were laid in and around towns and villages that now have growing economies and expanding populations. A high concentration of landmines in areas with high concentrations of people can be a devastating combination. Landmines deny the ability of people to safety collect water, grow crops, graze livestock, fetch firewood, and build homes. Anti-tank mines on road deny vehicular access to entire areas; disrupt the movements of people and goods, civilians, aid organisations and the government.

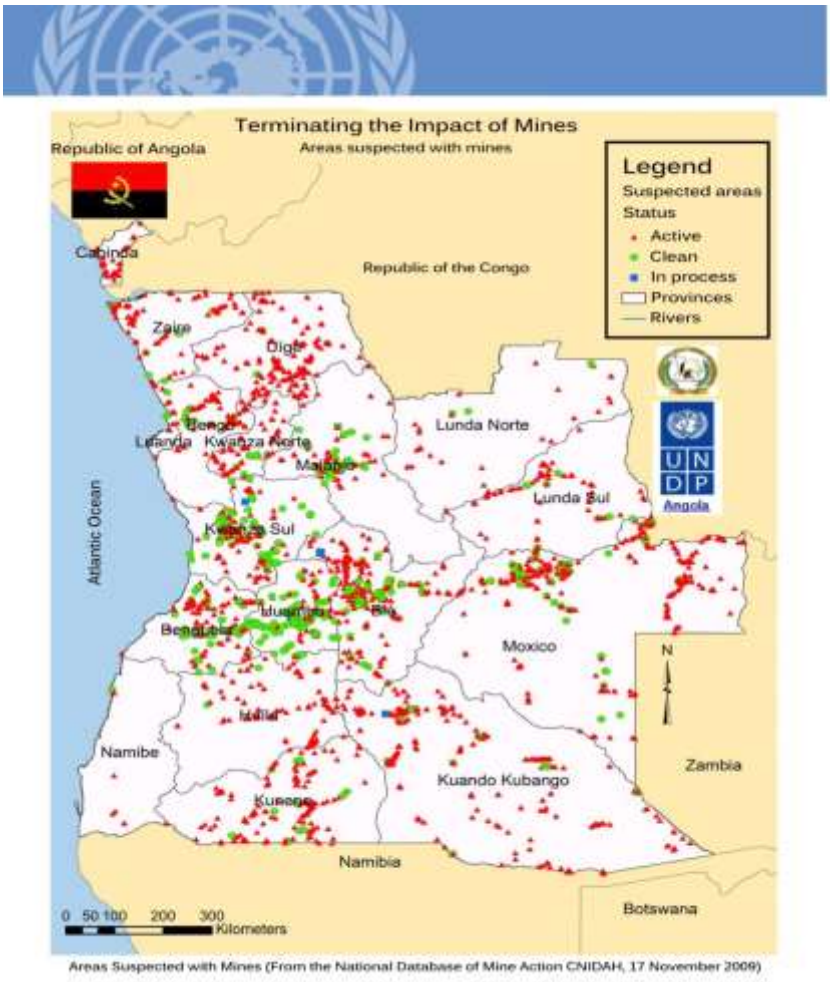

Figure 1 Terminating the impact of mines
Source: UNDP, 2009

Since its activity began, UNDP identified 3293 suspicious areas directly or indirectly affecting 2,4 million inhabitants of 1988 communities of different regions of the country. (Figure 1, Table 3) (UNDP, 2009).
The government of Angola ratificated the Ottawa Convention in 2002, about supporting the identification and destruction of stockpiled anti-personnel landmines. It is to benefit the whole population, including returning refugees and internally displaced persons, families. The government established CNIDAH, the National Intersectional Commission of Demining and Humanitarian Assistance, with the support of the United Nations Development Programme (UNDP) and Angolan Armed Forces (FAA) under the direction of the Ministry of Defence (MOD). Also the National Demining Institute (INAD) was put into action under the guidance of the Ministry of Social Assistance and Reintegration (MINARS).
Above governmental sources, HALO, the oldest and largest humanitarian landmine clearance organisation has started to work in 1994, with its operations in four provinces on the south. It has conducted an extensive survey and has identified the number of minefields that require clearance, their location, size, the impact they have on the affected communities and their relative priority for clearance. While very considerable progress has and is being made, at the current rate and capacity, clearing Angola of landmines will take at least a decade (HALO Trust, 2015).

Table 3 Demining and rehabilitating activity progress between 1996 and 2013.

Description	Period		
	1996/2005	2006/2013	1996/2013
Anti-personnel landmines (unit)	70456	372189	442645
Anti-tank landmines (unit)	10068	14692	24760
Explosive devices not exploded (unit)	1 332926	1 398906	2 731832
Ammunition (unit)	no data	8 034475	8 034475
Extension of high voltage powerlines (km)	56	4472	4528
Extension of railways (km)	191	3027	3218
Extension of roads (km)	78614	26522	105136
Clean land (ha)	54480,22	128712,59	134160,61

Source: Almeida, 2015

Longa – an example of success

The Plantation Agro-Industrial Longa (Figure 2.) was established in 2014 by the company Gesterra in Cuando Cubango Province, Cuíto-Cuanavale region, one of the most mined regions of Angola. The project for cultivate rice on a 1500 ha territory was founded by the Angolan government under the direction of MINAGRI and Cuando Cubango Provincial Government, via a credit line of the China Development Bank with the cost of US$ 77,6 million. It is part of an agro-livestock programme to increase food production mainly for local consume.

Figure 2.: Plantation Agro-Industrial Longa. Cuando Cubango Province, Cuíto-Cuanavale
Source: Angop, 2014

Before cultivation started, an obligatory demining process had been completed all over the planned territory, discovering mines on 30,4 ha (2 per cent) before the liberation and permission of cultivation. INAD with collaborating partners demined, reconstructed and elongated 17 km road section in the

region and also participated in the reopening of the Moçamedes Railway, connecting the region with the Port of Namibe, with an extension of 772 km, providing access to other national and international markets.

By using advanced methods, like laboratory tests, or permanent watering systems and draining canals throughout the dry season, the firm could reach a reasonable 2,6 ton rice harvested per hectare. Also 3 silos with a storing capacity of 3000 ton of rice, 5 drying instruments and a peeling and packing line in operation, their aim is to extend their plantation over 5000 hectare with the estimated production and processing of 13000 ton of rice per year. Employing 300 workers, the firm directly supports the subsistence of about 1500 inhabitants in the region, contributing the national directive creating opportunity of work in rural areas with high rates of unemployment and poverty (Almeida, 2015).

Conclusion

With the wealth of rural areas in East and Southern Africa (ESA), the region has enormous potential for improvements in rural economy benefiting not only local people, but national economy as well. Promoting smallholder agriculture offers the most immediate practical opportunity to reduce rural poverty and stimulate broad-based growth. In the last decade Angola showed the strongest performance in GDP growth in the region, and although government expenditures on agriculture has increased, but expenditures on agriculture as a portion of all government expenditures has decreased. In ESA, agriculture's contribution to GDP is far lower than the percentage of people engaged in it, reflecting low agricultural productivity. Only an estimated 10 per cent of farm work is mechanized, 25 per cent done by animal power, and 65 per cent is dependent on human muscle, which is the greatest break on rural economic and social development. (IFAD 2014)

Rural areas are highly distinctive from one another, therefore a high variety of rural development approaches are available in different regions. In developing countries the centre of attention is still on the exploitation of land-intensive natural resources, such as agriculture, forestry and fisheries, however changes in global trends and evolution of the approach of rural regions show direct effects on development projects, like recent investments in tourism. (Ward 2009)

The field of development cooperation is changing. The programmes have evolved from top-down managed infrastructure projects into broad based rural development programmes (Eskola, 2003), aiming poverty reduction. But programme based aid is a very limited tool for coping the complex problem of the underdevelopment of rural regions in ESA. The lack of social security systems cannot be solved by the current programme structure.

Rural development especially in the ESA region is a complex challenge, with the need of cooperation between different sectors. Water projects, health, education and forestry or fishery programmes including the importance of demining in rural areas are closely linked to the security and well-being of the local population. Still agriculture is the key factor in enhancing food security, employment opportunities and income generation for the rural people. Further rural development strategies have to consider the status of agriculture and rural development as a whole (Eskola, 2003).

Programmes organized by international organizations themselves are also extending the scope of their activities supporting more diversified production, marketing, the enhancement of good governance, democracy as well as the fight against corruption (Eskola 2003).

On the other hand, local populations themselves have to participate in their sustainable development, bringing up endogenous initiatives for development in cooperation with national and international organizations. Concording local and national politics, the decision makers can succeed to satisfy the required need of a population of a particular area.

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SUSTAINABLE DEVELOPMENT POSSIBILITIES OF TOURISM IN RURAL AREA (THE CASE OF SAMARKAND REGION, UZBEKISTAN)

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Abstract

The main purpose of the article is to find out about development ways of the tourism in rural area of Uzbekistan, and positive conditions and sustainable development possibilities for the tourism sector. In addition, there are described favorable for eco-tourism and agro-tourism activities and ways of rural areas. Tourism represents as one of the primary industries with potential to support rural areas in development economic diversity.

Tourism industry is increasing quickly in worldwide, and one of the most important incomes for rural area. Uzbekistan has extremely favorable conditions for rural tourism, especially for eco-tourism and agro-tourism. It can attract to foreign and local tourists with its geographic location and natural richness, such as mountains, caves, mineral waters, springs with healing effects, rich fauna and flora, also historical buildings, archeological, architectural, and many live traditional handicrafts. Cultural tourism is the main touristic product in Uzbekistan. It has been providing to visitors since 1991. In this article, we will describe briefly types of ecological touristic resources as reserve house, state ordering, national park, eco-tourism and agro-tourism.

Keywords: tourism, cultural tourism, eco-tourism, agro-tourism, rural area, reserve-house, national park.

JEL codes: Q26, Q56, Q57

Introduction

Agro-tourism is a relatively new direction of the tourism industry in Uzbekistan. It refers to rest, which involves the use of agriculture and also called rural tourism and eco-tourism. However, rural tourism is a much broader concept and eco-tourism is characterized by the fact that the holiday held on the territory of national parks and landscape parks.

The development of rural areas and agriculture were the subject of analyses of many scientists in the world wide. These researches pointed focused on sustainability on rural areas. The study of rural areas in Uzbekistan is now an important area of tourism researches. The development of agro-tourism brings the new and perspective option for rural areas and agriculture. Rural area development is determined by various natural, social and economic conditions in Uzbekistan.

We believe that the Agro-tourism is a very powerful tool for developing of rural areas and agriculture. For the first time this kind of tourism appeared at the beginning of the XIX century, but began to develop rapidly in the second half of the XX century. So, in 1955 in France was established Association of Agriculture at Tourism, and in 1965 started its activities of the National Association of Agriculture and Tourism in Italy (https://en.wikipedia.org/wiki/Agritourism). Now, in many European countries there are associations of rural tourism, which are supported by the state.

Agro-tourism has been developed in Europe, primarily due to lower economic importance of agriculture. In fact that the countryside is beginning to lose its attractiveness due to high unemployment and low incomes, owners of small rural farming systems had to resort to such means to obtain additional earnings. In recent years in Uzbekistan this trend is also very actively developed, thanks to lower costs for the organization of agro-tourism and one of the few opportunities to earn income in rural areas.

The development of tourism promotes the preservation of cultural traditions, the history, the revival of traditional crafts, and the economic development of remote agricultural areas, local employment in the service sector and in the production of organic food. More and more tourists prefer this type of tourism, tired of urban life style.

Agro-tourism offers a person the opportunity to plunge into the rural way of life, spending some time in nature, to get acquainted with the values of national culture, arts and crafts, national songs and dances, local customs, to participate in traditional rural labor, national holidays and festivals.

The actuality of the paper is explained with followings: first of all, it is increasing the interest of the people to nature year by year and the objective necessity appears for developing the agro-tourism; second is existence of big agro-touristic base, enough potential for developing agro-tourism; thirdly, the development of agro-tourism is very necessary for our economy and for our social life. Because, this field does not demand much funding but it plays an important role in solving the problem of rural areas by organizing new job places. By means of this welfare of rural people will be increased, the income of currency and enhanced the income to budget.
Naturally, and just to enjoy a relaxing holiday on the lakes and rivers, engaging in fishing, walking in a clean air, getting peace and quiet measured life away from the cities.

Literature review
Developing agro-tourism in our country has peculiar features. Therefore, it is appropriate to investigate this matter in the correspondent way to us. Some scientists of Uzbekistan (Aberkulov K.N. *et al.* 2003), (Aberkulov K.N., Hojimatov A.N. 2003), (Berdiyorov B.S. 2010), (Egamberdiyev R., Eshchanov R. 2004), (Egamberdiev R. 2004), (Hayitboyev R., Matyokubov U.R. 2010), (Hoshimov M.A. 2009), (Hoshimov M.A., Hoshimova M.M. 2010), (Jumaev T.J. 2004), (Mamatqulov X.M. 2010), (Matyokubov U.R. 2011), (Salimov X.B. 2009), (Tuxliev I.S. *et al.* 2010), (Tuxliev N., Abdullayeva T. 2006) and some foreign scientists (Pomple W. *et al.* 1993), (Armando M. *et al.* 1995), (Allan M.W. et al. 1998), (Martha H. 1999), (Erlet C. 2004), (Tazim J. et al. 2009) studied on the theme of ecological touristic resources and eco-agro-tourism. But the matters which presented by them are not enough for reformation the field, because the strategic direction which aimed to long term period and based scientifically are not produced in the country and in its separate areas. All of them inform that this theme is actually.

The development of agro-tourism in Uzbekistan
Agro-tourism principally focuses on connecting the visitor to activities related to agriculture, farms and food. This can include local food festivals, seed swaps, picking your own food, visiting farmer's markets, etc. Both activities bring money to local economies but only one focuses directly on food and agriculture (http://www.arc2020.eu/2014). Agro-tourism began to develop in the 70s of the last century in Europe. The appearance of this type of tourism due to a primarily decrease in the economic importance of agriculture. Products cultivated by private farmers could not compete with the large agricultural complex, and the owners were forced to seek other sources of income. One such source of income was the arrangement of tourists in their own homes, where they got acquainted with agriculture, farm products tasting, resting on the lap of nature, and, if desired, and can help with the housework.
In order to maintain the rural population states have developed programs to support agro-tourism, which allowed this kind of tourism to develop rapidly over the past 40 years. For the most part of agro-tourist estate in Europe were organized on the basis of the existing farmhouses (WTO, 2004).
One of the main tasks of multifunctional development of rural areas represents agro-tourism (Zmija J. *et al.* 2004), and it in Europe dates back to the nineteenth century when the only form of accommodation in rural areas was offered mainly by farm holders. In the second half of the twentieth century, with a more widespread availability of private transport and generally greater amounts of leisure time, tourism grew to be one of the biggest and most significant global industries (Huska J. 2003). Agro-tourism is successful because it shows the lifestyle of the people in the past, when they had strong contact with the nature and the environment, as they were working on the fields, harvesting crops and caring for animals.
Nowadays, there are so many types of tourism in Uzbekistan. They can be classified according to some of their features. We look at the type of tourism coming out from the point of touristic resources.
Following, it is described about agro-tourism. As Eco-touristic resources are developed enough. Agro-tourism is becoming more and more diverse in our country. Some scientists are conducting investigation in this paper.
The total area of the places specially protected in Uzbekistan is 1355,6 thousand hectares(Aberkulov K.N. *et al.* 2003). One part of the protected zone consists of the forest economy, Reserve Park and state–orders. In this case, the information given in the work of Egamberdiyev R. and Eshchanov R. can be base for the scientific summaries (Egamberdiyev R. et al. 2004). They approached to this matter from the general matters of ecology. In addition, we want to approach to them as eco-touristic object. There are 13 forest economies and 14 reserve parks in our country nowadays. The total area of them is 460 thousand hectare.

However, they are not being used as eco-touristic resource in the ecotourism. They are not implemented eco-touristic routes, which aimed for protecting the nature and providing the security of tourists and based scientifically.

Besides them, the laws and normative documents aimed to protect the environment and use the nature are not appropriate to the laws and normative documents, which devoted to develop ecotourism.

For example, the above-mentioned ideas were not reflected in the Law "About the Tourism" which was amended and adopted on August 20, 1999. Accordingly, the problem of using special territories as eco-touristic areas was not reflected in the amended and adopted Law of the Republic of Uzbekistan "About protecting the environment", the Law amended, changed, and adopted on December, 2004 "About protected environment" on 3^{d} December 2004 and other similar normative documents. That is why it is necessary to make them be appropriate to each other, because in the normative papers about protecting the environment and using the nature the citizens' right to enter national parks is shown (The law of the Republic of Uzbekistan. December 3, 2004). They also imply protecting the reserve areas, do not have information about using them as the sources for ecotourism was not aimed to use as touristic resource.

One of the new types of the tourism is agro-tourism. According to A.Nigmatov and Sh.Yakubjonova`s(2007) account the area of our country is divided into three large zone from the point of agro-touristic: *Mountain and mountain zone; Irrigating agriculture zone and area of desert of the continent consists of 60 % of the country*

In Uzbekistan the mountain and mountain zone is equal 4,3 million hectares. It consists of more than 20 % part of the area of the republic, and Irrigating agriculture zone. This is equal to 4,3 million hectares, this also forms about 20% the area of the country, and Area of desert of the continent consists of 60 % of the country, it is equal to 12,9 million hectare.

In our country, the following species of plants are grown: cotton, cereal, and rice plant, vegetable, sowing fields and horticulture takes possession a plenty of the area. Each area of our country grows particular agricultural products. For example, the rice plant is grown in Khorezm and farmers of Republic of Karakalpakistan, the hemp grows in oasis Chirchik of Tashkent region and tobacco is grown in Urgut district of Samarkand region. If horticulture develops at the mountain and under the foot of the mountain, other types of Agriculture have developed at the place abounding in water.

Nowadays, in our country successive actions based on growing the agriculture productions, increasing the sowing areas have been working out. Almost in all regions of our country intensive gardens are being grown, hens are grown which is planned for the meat. The cows are brought from foreign countries giving much milk, thorough bred, and their types are increased suitable for local condition. All of these are based on to prevent the safety of food that is global problem at present. We must supply with our food necessity on any time and we must make the possibility of export. It predisposes to act in particular agro technical conditions. It is also one of the main causes of developing agro-tourism.

One of the particular features we can say that areas of the desert. These make possibility for developing the type of exotic eco-tourism. This area is suitable in Bukhara, Navoi, Kashkadarya, Republic of Karakalpakistan and central part of Fergana valley. In this area is not only cattle raising, the tightly curled dark pelt of an Astrakhan lamb and fur, which is rare type of them. It is interesting both internal and for the foreign tourists. Finally, there are opportunities to develop agro-tourism because of enough touristic resources.

Material and methods

According to available data, published in literature, emphasis was put to evaluation of tourist possibilities in Uzbekistan using method of decomposition. Chosen components of decomposition as a parts or activities of tourism were as follows: components connected with natural environment, components connected to surroundings originated in human activities, components bounded to organizational expectations and activities. There was used an adapted method of SWOT analysis according to criteria suitable for rural tourism and agro-tourism.

It is possible to evaluate Strengths, Weaknesses, Opportunities and Threats (e.g. SWOT analysis) on the basis of monitoring and decomposition of initial components in the area of interest.

Results and Discussion

Agro-tourism and rural area in Uzbekistan.

Agro-tourism is a relatively slow growing tourism in Uzbekistan, especially when we compare it with other fields: cultural tourism, industrial tourism, eco-tourism, medical tourism and religious tourism. Agro-tourism, which is based on the formation of tourism resources are mainly located in rural areas. Large numbers of farms involved in rural areas in Uzbekistan is approximately more than 60 thousand. The country has both very large agricultural enterprises and numerous small ones, which are family owned. The number of the tourist farms has been increasing particularly, when the non-governmental associations were established to promote rural area and agro-tourism.

SWOT analysis for rural area and agro-tourism in the Uzbekistan. This analysis with the aim to determine the opportunities for rural area and agro-tourism and other related conditions to be created is designed as follows:

1. Strengths: *natural and geographical location; attractive environment and favorable infrastructure; ecological zone in the rural areas; agricultural and agricultural festivals; premises suitable for rural area and agro-tourism; handicraft arts; hospitable of the people of rural; wide range of sport facilities.*

2. Weaknesses: *low of the relations between rural areas and agro-tourism; lack of infrastructure for the vacations of agro-tourists; shortage of finances for forming new facilities of agro-tourism in rural areas; weakness of finances of farmers and household farms dealing with agriculture.*

3. Opportunities: *many agricultural settlements well suited for agro-tourism; large number of farmers with private property; possibility of getting money from government and chance to get information about agriculture and experience from agricultural farms and possibility of utilization of the natural environment, and then development of activities for the well-off clientele (e.g. horse riding, etc.)*

4. Threats: *lack of interest on the side of governmental institutions; low support of local authorities; competition (other tourist places); impact of unemployment in some of the regions, lower standard of living.*

Conclusions

Just as tourism is prospering nowadays, agro-tourism is developing too. According to the research, it is obtained following conclusions:

First of all, the laws about protecting the nature should be appropriate to the documents of developing agro-tourism and other normative documents. Because only protecting the nature is mentioned in the laws about protecting the nature, the attention is not paid to ecological touristic resources in those documents.

Secondly, in order to develop agro-tourism scientifically, the transportation that provides tourists' safety should be organized and it shouldn't be against the laws about protecting the nature.

Thirdly, it will be a good advantage to open agro-tourism firms specialized in ecologic tourism by peculiarity of ecologic tourism, because they differ from ordinary tour tourism by many peculiarities. Current tourism should not break the protecting rule of nature as well as make necessity of ecological tourists which will take place in nature.

At fourth, organizing development of organizing-ecological mechanism, a new agro-tourism in the tourism system and gives a great attention to developing of scientific and knowing tourism. In this case, it should be acknowledged by the point of developing stability of agricultural economy and safety of food production in our country.

To summarize, there is a great opportunity to develop agro-tourism. It remains a problem to organize effective usage of it. This problem still requires many organizational and economic measures as well as scientific – research works.

The successful development of the rural area in Uzbekistan need help small and medium businesses all the way to the development of agro-tourism, and it is a style of vacation in rural and farms. This may include the opportunity to assist with farming tasks during the visit. For instance, agro-tourists are often practiced in agricultural and rural growing areas. As a support structure may be a direction of agro-tourism in Uzbekistan. It will be structured, certify and standardize the services in this area. Under favorable conditions in there will form a new branch of domestic tourism – agro-tourism. Local and foreign tourists will choose holidays and preferring their vacation in rural area.

Therefore, this activity will be very important part of farm income in our country as well as in many other agriculture productive countries. Agro-tourism promotes the economic growth of rural areas, and it improves the living styles of local population. It seems to be an appropriate tool to revitalize the declining

rural areas and to ensure their sustainable future by job creation, farm support, landscape and nature conservation or the maintenance of rural arts and crafts as tourist attractions.

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INFRASTRUCTURAL BACKGROUND AS A FACTOR OF ATTRACTIVENESS FOR ENTERPRISES

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Abstract
Infrastructural endowment is a crucial factor when we talk about the development levels of regions. Theoretically, well-maintained and high quality institutional and other infrastructural elements attract smaller and larger enterprises as well to settle down in certain regions, while failing and insufficient ones discourage companies to choose certain towns and villages as their homes. In our study we intend to take a step in finding out whether the theory above is true or not in practice. To this end we have chosen a Hungarian LAU-1 level district, which is attractive as a tourist spot, but is lagging behind in many other senses. During our investigation we applied a scoring method to create an infrastructural index which we compared with another indicator we designed to measure the relative gross value added per one employee. This way we could analyse the relationship of the infrastructural endowment of the settlements of the selected district with the number and size of companies situated in the area.

Keywords: infrastructure, enterprises, economic development

JEL Codes: D01, D22, R12

Introduction

Measuring the relationship between infrastructural endowment and economic activity is a very difficult task. There are many reasons for that. According to Oosterhaven and Knaap (2003), when assessing the impact of infrastructure the basic problem lies in establishing the 'anti monde', that is, the economic development that would have occurred without the investment in infrastructure. The two authors also argued that besides the problem mentioned there is a certain level of uncertainty about the direction of the impact of new [transport] infrastructure on the regions or nations affected. As infrastructure reduces the cost of both imports and exports of goods and services, the net effect is not clear.

But what is infrastructure exactly? It is said to be the backbone of any economy. Without infrastructure it is unimaginable to produce goods, to transport them and therefore to compete with others. The importance of infrastructure was not discovered recently, but a long time ago. If we think about the famous roads or viaducts of the Roman Empire, the artificial channels built by the ancient Egyptians, or the fine Greek or Phoenician transport ships in their respective ages we can establish that peoples found out really early on how important it is to have a good, well-maintained infrastructure, which is the basis of economy and social activities.

Infrastructure is a Latin word, which means „basic structure". The expression „infrastructure" can usually be easily understood and has not changed much related to the economy throughout the past one hundred years. The definitions can be different based on different schools and researchers; however, there are many common points. According to the approach of Hirschmann (1958) infrastructure contains all the basic services without which the primary, secondary and tertiary production activities could not function. The approach of Király (1979) is basically very similar, however, in his opinion infrastructure is not only the basis of production activities, but it provides community services as well through certain facilities and organizations. Also, in his view infrastructure is also considered to be the potential which can provide community services on a long term. The opinion of Kőszegfalvi (1976) about the topic was slightly different; he did not considered infrastructure elements only separate parts, but also networks, which have social and technical purposes as well. His approach is closer to Király's, since he believed that these networks provide community services (in which it is different to some extent from the definition of Hirschmann). Later Kőszegfalvi writes in another publication with Sikos T. (1993) that, in a wider approach, except for the land, every factor (and their technical characteristics) can be considered to be infrastructure which is related to the activities, work and life of people, while in more limited approach, the supplement of settlements and some sectors of the services for the population can be considered infrastructure. In the latter approach the emphasis on the technical view remains, but in my opinion the two authors did not

consider significant importance to the „placing“ of infrastructure among the factors of socio-economy, therefore, the concept did not necessarily appear as a basis.
There was a definition which is connected mostly to one branch of the economy: tourism. Jancsik (2007) wrote that infrastructure means a basis which does not only determine the options of touristic development, but their directions, efficiency and volume as well.
The definition of Abonyiné Palotás (2007) is a summarizing type; it combines many elements of different definitions from the past. Thus, in her opinion, infrastructure consists of networks or from certain objects, facilities, equipment and knowledge, and these elements are necessary for the economical operations. In his view it is not about only the basic operation of the economy, but infrastructure is a determinant of growth, sustainable competitiveness and welfare.
In 2007 Káposzta et al formed a similar approach. In their opinions, infrastructure is a highly important factor of regional development. In their view the definition is not much different from the one Abonyiné Palotás wrote about. As such, they said the definition contains a very wide range of resource-system; transportation networks, vehicles, telecommunication, energy supply systems, business services, as well as the supply system of housing areas such as water and sewer systems, educational institution systems, public services, healthcare systems, environment-protection and sport facilities are also parts of it. In their definition infrastructure is made up by two subclasses: production (technical) and social infrastructure. The former provides a background for the operation of economic organisations, while the latter contains the elements which provide services for the population. They also points out that the two subclasses are not separated from each other since certain parts provide services to both the population and the business sector.
One example is transport infrastructure: while it is part of the production infrastructure when the product are being transported to market, or the input materials are being transported to the production plant, it can also be used by the population when they are on a trip to visit a touristic attraction for example, or to provide the means for students to reach their schools, as written by Káposzta et al (2007).
As seen above, infrastructure influences economic activities, but it has a certain effect on the social development as well. Aschauer D. (1990) thought that some of the possible gains to the quality of life and to economic performance that might arise from increased infrastructure investment. Numerous past infrastructure investments have been responsible for significant improvements in the overall quality of life in terms of health, safety, economic opportunity, and leisure time and activities. His point is very similar to a study published in 1988 by the National Council on Public Works Improvement of the USA, which said that the quality of a nation’s infrastructure is a critical index of its economic vitality. Reliable transportation, clean water, and safe deposit of wastes are basic elements of a civilized society and a productive economy. Their absence or failure introduces a major obstacle to growth and competitiveness. However, maintaining infrastructure can prove to be very costly. Tóth (2002) wrote that the development level of infrastructure can be very different even in one country, and improving the quality of infrastructure takes significant time and costs. This is more emphasised by his statement that the developed capitalist countries’ rate of infrastructure investments among all investments can reach 50-60%, which is exceptionally high, but perfectly understandable if we consider the potential benefits of such investments.
To sum it up, infrastructure is a basis for socio-economic flows, although it is very difficult to measure how much impact it has on these flows. Still, there are some basic correlations which seem to be obvious at first glance. For example, the better the infrastructural endowment in a settlement is, the higher the relative gross value added per one employee is, since well-developed infrastructure should be attracting more companies and companies with higher value added production. To decide whether this is true or not, we have chosen a Hungarian district on which we conducted secondary research.
The chosen area is called Tapolca District. The district is situated in the Central Transdanubia Region in Hungary, at the Southern coast of Lake Balaton (Figure 1.). Veszprém County since 2013, its seat is Tapolca. Its area is 540.30 km², it population number is 34 689. The population density is quite low, only 64 people per km², making the district a part of rural Hungary. From the 31 settlements belonging to the district only two of them are towns: Tapolca and Badacsonytomaj.

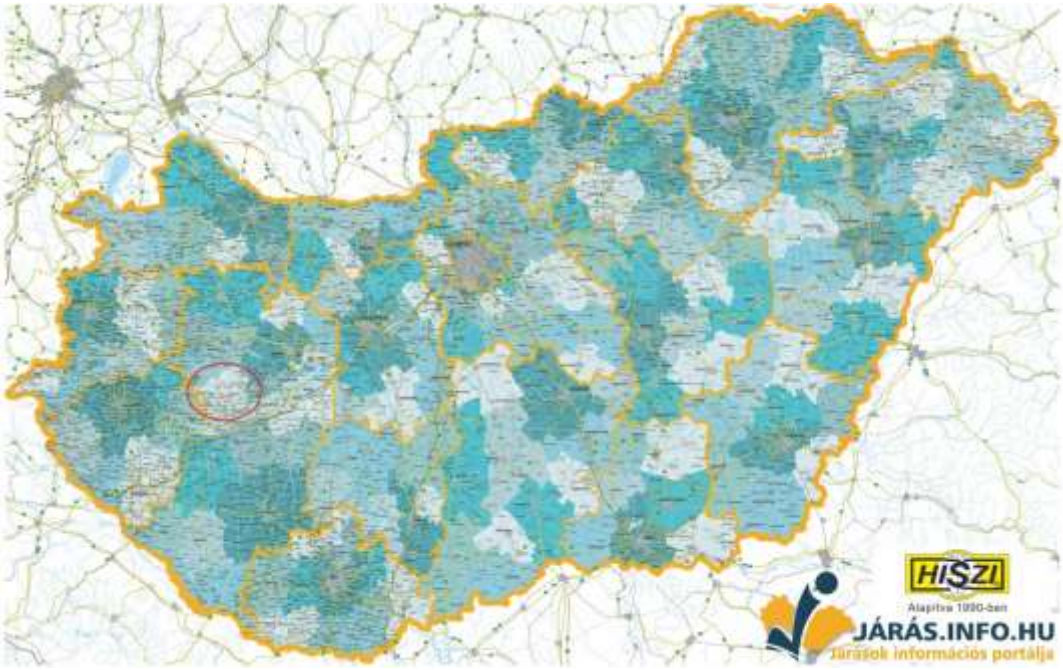

Figure 1 The Tapolca district in Hungary
Source: www.jarasok.info.hu

Aim and methods
Our aim was to identify the relationship between the development level of infrastructure and the relative gross value added per one employee. This way we anticipated to see how much infrastructural elements attract companies, and therefore generate growth.
For this study we created a new and specific index called 'General Infrastructure Index' (GII). The index consists of 43 indicators organized in four pillars. The idea behind collecting the indicators was to gather a sufficient number of indicators which are capable of expressing the infrastructural endowments of the settlements in the district. We analyzed the settlements and the district as a whole as well, and we compared the GII index with three indicators in order to see if there is a relationship between them. The three other indicators are:

- the relative gross value added per one employee,
- domestic income per one inhabitant,
- domestic income per one inhabitant in working age.

The four pillars and the indicators of the GII are the following:

Table 1 The indicators and pillars of the GII index

	Indicator
Transportation	Distance from the capital
	Distance from closest motorway exit
	Ratio of paved roads
Environment	Public utility gap
	The rate of households being part of selective waste collecting
Public services	The number of public services available in 30 minutes by public transport (containing data for 28 different services)
Social	The rate of primary schools using computers
	Relative unemployment rate
	Automobiles per capita
	Households per internet subscription
	Gas-consuming appliances per capita
	Electricity-consuming appliances per capita
	Houses with modern convenience
Economic	Population number per retailers
	Bank branches per 1000 people
	Industrial areas/industrial parks

Source: Own editing

The first pillar is about transport infrastructure, and the very first indicator is *distance from the capital city*, Budapest. It is a very important factor, because Hungary is one of the countries where the capital city is much more developed than the other areas. It seems to be logical, since the population number of Hungary is approximately 10 million, Budapest has about 1.7 million inhabitants, and the second largest city (Debrecen) has only about 200 000 residents. Besides population, the capital and the majority of FDI are also concentrated in Budapest. It has an ambiguous effect on other regions: the closer they are to the capital, the more opportunities they have, usually, for example in business. On the other hand, Budapest tends to draw away investments from regions situated nearby, in which case it is sometimes better if a region is farther from the capital. However, we still consider it to be a disadvantage to be far from Budapest, because it is the economic center of the country, and because it is also a central point of transportation (the starting point of all motorways in the country, and the largest transport hub, too).

The second indicator, *distance from the closest motorway exit* is also very important; motorways connect together settlements and makes market processes go smoothly. It is not a surprise that the EU have also been improving its transport network (the TEN-T) continuously, because it provides new business opportunities and it helps creating the Single Market. Therefore, this indicator was an obvious choice in the index.

We included one more transport infrastructural indicator, *the ratio of paved roads compared to all the roads in the region* into the index, as it tells much about regional development levels.

Public utility gap is the first indicator of the environmental pillar. Public utility means the rate of water and sewage systems. The sewage and water systems are important for any modern settlement infrastructure; its quality is an important factor for the inhabitants and businesses alike, similarly to the next indicator, *the rate of households being part of selective waste collecting*. Along with the previous one, this rate also helps understanding the situation of the environment in a settlement.
The next indicator *the number of public services available in 30 minutes by public transport* is of key importance. The successfulness and competitiveness of a settlement depends highly on how many services are available for its inhabitants and businesses – the more, the better. However, smaller settlements cannot afford (or attract, in the case of the majority of private services) all the needed services. The examined services are the following:

- waste management company customer service
- gas provider customer service
- solid waste customer service in the settlement
- district heating provide customer service
- nursery
- kindergarten
- grade school
- high school
- dormitory
- hospital
- general practician
- library
- cultural facilities
- museum
- theater
- catering
- home support
- family support
- other basic social support
- social specialized care
- child welfare services
- temporal homes for families/children
- police
- tourinform office
- post office
- swimming pool
- sports facility
- solid waste customer service in the settlement

Similarly to infrastructure, education is one of the basic factors of the economy; its quality and accessibility determines the future of regions and settlement. Therefore, we deemed it important to include in our index an education-related indicator as well. The *rate of primary schools using computers* was chosen for this purpose, because, due to the globalisation and other trends, teaching children to the proper usage of computer can undeniably help them in their future, both in their private lives and possibly in their workplaces.
By measuring the *relative unemployment rate* we intended to see the burden the settlement and the country have to carry, because unemployment is a challenge has to be met by local and national infrastructure. *Automobiles per capita* and *households per internet subscription* both indicate the infrastructural status of the settlement and its inhabitants. The importance of automobiles is closely related to the first two indicators (distance from Budapest and from the closest motorway exits), by which we mean that owning cars broaden one's possibilities to find jobs and services compared to those who can only use public transport. Internet, with all its disadvantages and negative effects, is still a considerable

opportunity for many great things: finding jobs, self-education, paying bills cheaper, distance work, etc. It is a sort of window to the world, and by opening it we provide the possibility of all the great activities we can carry out with its help.
Gas- and electricity-consuming appliances per capita were covered also, since they are some of the basic needs of every household. Housing situation was explored further by introducing *houses with modern convenience* into the index as well.
There are three more indicators left: *the population number per retailers*, *bank branches per 1000 people* and *industrial areas or industrial parks*. Retailers are some of the most important elements of local economies. They provide services and offer job opportunities. Bank branches do the same, basically, since both retailers are bank branches provide goods to the inhabitants, whether being ordinary residents or businesses, therefore making the settlement more attractive. Designated industrial areas and industrial parks also attract businesses and provide job opportunities.
After choosing and measuring the GII and the other indicators we used a scoring method to give scores to the settlements. All the data was categorized in five classes, all of them having same intervals. Then the GII scores were compared to the other indicator score of every settlement. In every case the scores follow 'the higher, the better' pattern and the expected result (based on the reviewed literature) was that settlements with higher GII score will also have higher scores regarding to the other indicators. The scores range from 1 to 5, where:

1=Underdeveloped
2=Failing
3=Average
4=Developing
5=Developed.

Results
During our research we gave scores to the settlements of the Tapolca districts. First we will present the results of comparing the GII index with the relative gross value added per one employee. The average score of the latter was 2, which means that the district does not perform as it should. The average value of the GII was 3, which is not a low value, neither is high. The two results show not much difference, however it shows that there is a certain disparity between them. We can see it even more if we compare the deviation between the two index values of the group of settlements. After accumulating the difference between GII and the domestic income per one inhabitant in working age values, we could see that the result was 56. The equation works by the following principle: the calculation included 30 settlements, and if there was maximal disparity between the two indicators (4, if one being always 1, the other being always 5, or vica versa), the accumulated would have been thirty times four, which is 120. Maximal disparity would have meant that there is no correlation between the two indicators, and minimal disparity would have meant the opposite, which is that there is 100% correlation between the two. Having been acquired the result of 56 which is approximately halfway between the minimal and maximal value, we can establish that in the case of the examined settlements the correlation between the GII and the relative gross value added per one employee is not strong at all.
The same investigation was conducted concerning the GII and two other indicators. The maximal disparity between the GII and the indicators was, again, 120. The domestic income per one inhabitant shown less difference, since there was only 38 points difference between this indicator and GII index of the settlements. The situation was similar in the case of the domestic income per one inhabitant in working age indicator, where the difference was only 35.
To illustrate the differences four maps were created for the study. The first one (Figure 2) shows the GII points given to the settlements. On one hand, it shows that the majority of the settlements belong to the 'failing' category. We can also see that even in a small spatial unit there are huge differences in the infrastructural endowment. However, the real purpose of this map is to provide visual comparison next to the other maps.

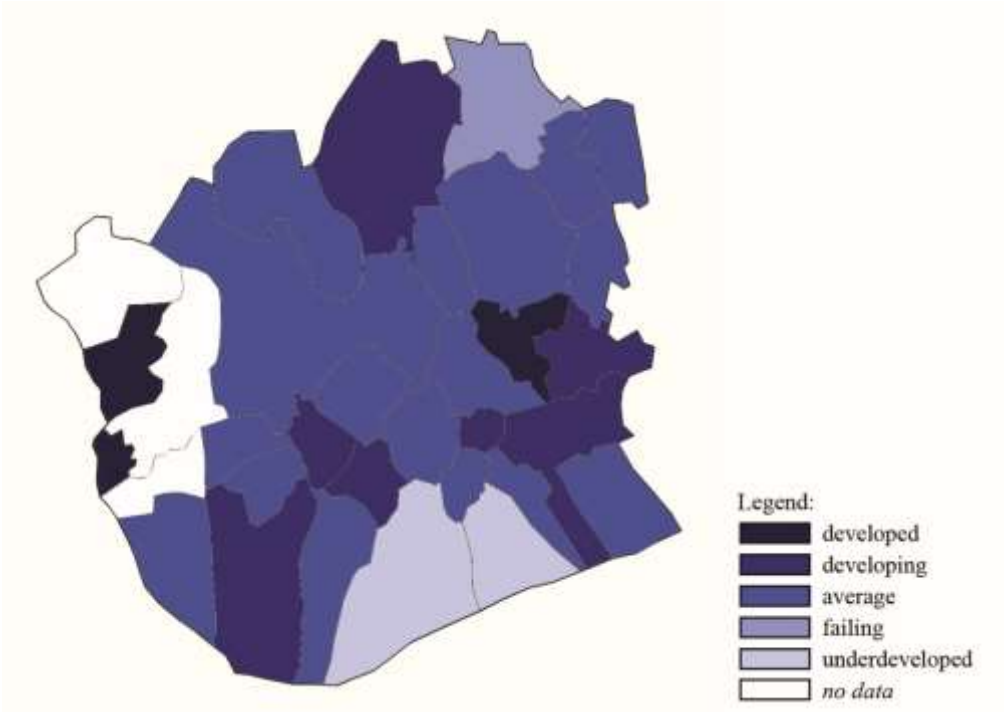

Figure 2 The GII scores of the settlements in the Tapolca district
Source: Own editing based on TeIR (2015) data

On Figure 3. we can see the map of the same district, colored by the differences in the relative gross value added per one employee. By comparing the two maps above we can establish that the difference is striking. Almost all of the Southern and Eastern settlements belong to the underdeveloped or failing category, even though we could see that many of them are at least on the average level, regarding to their infrastructure.

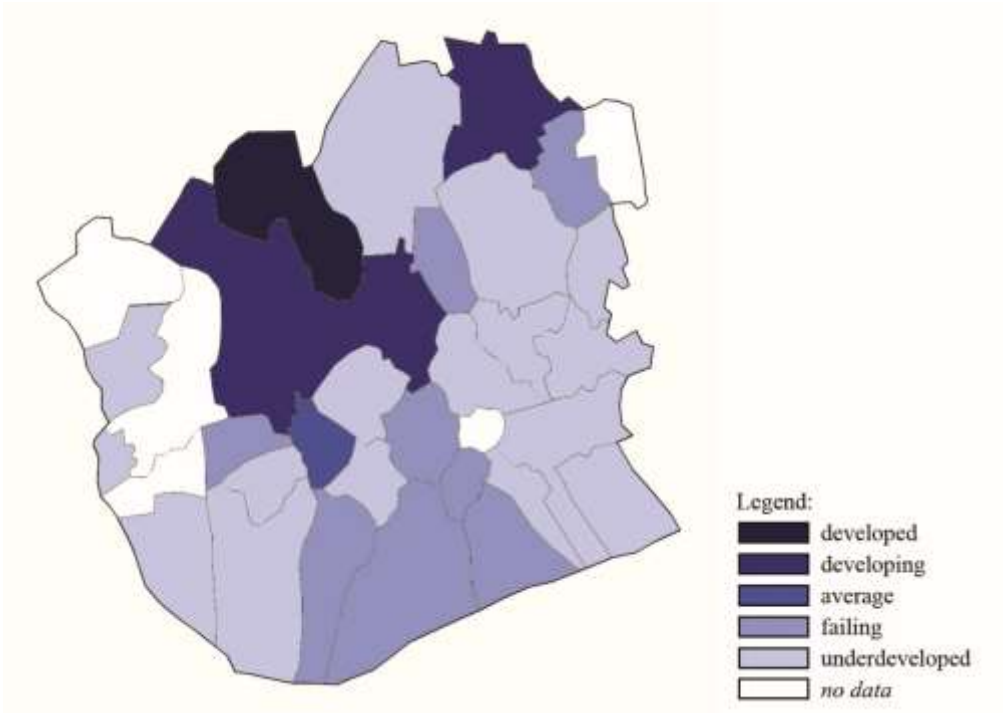

Figure 3 The 'relative gross value added per one employee' scores of the settlements in the Tapolca district
Source: Own editing based on TeIR (2015) data

Figure 4. shows the scores of the settlements regarding the domestic income per one inhabitant. As discussed before, in this case the difference from the GII is not as significant as in the previous case. But on the figure we can see that in some settlements the GII and the domestic income per one inhabitant seem be each other's inverse.

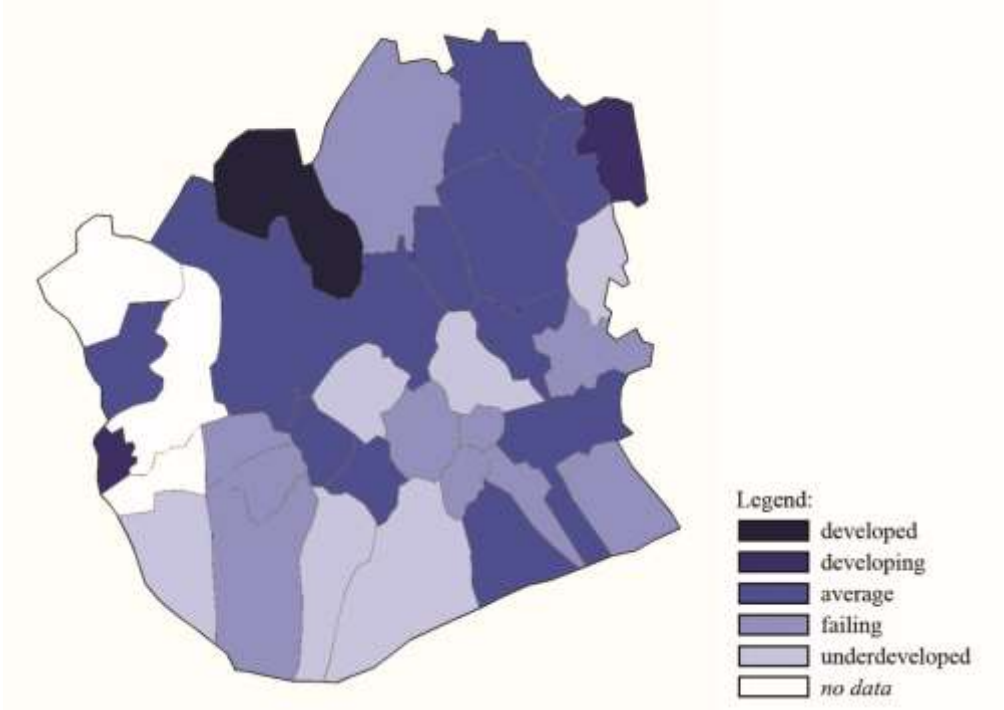

Figure 4 The 'domestic income per one inhabitant' scores of the settlements in the Tapolca district
Source: Own editing based on TeIR (2015) data

On Figure 5 we can find the scores of the settlements based on their domestic income per one inhabitant in working age. As mentioned above, this indicator was very similar to the previous indicator in regard to the extent of disparity with the GII, which means that there are differences here, too. At this point we can also notice that there is one settlement, in the Northern part of the district (Zalahaláp), which belongs to the developed category in all the last three maps, but was only on the average level in the sense of infrastructural development. Zalahaláp is a small settlement with only about 1 200 inhabitants, but it has an industrial park. This industrial activity makes the settlement a special place among the others, and it is logical to assume that it would have good infrastructural endowment. However, the data shows the opposite.

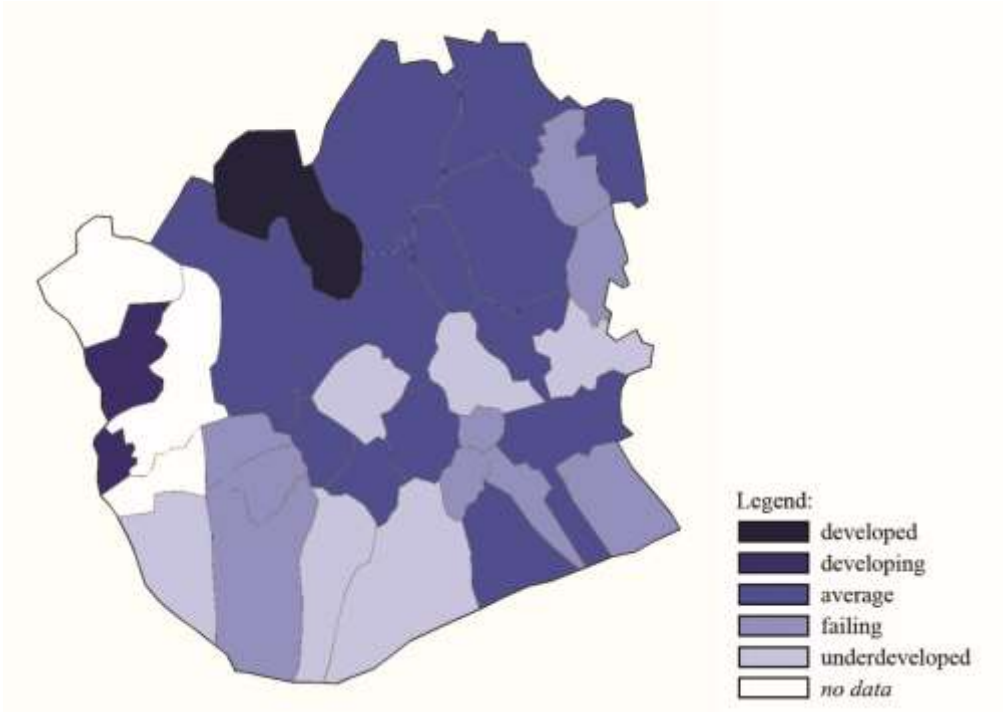

Figure 5 The 'domestic income per one inhabitant in working age' scores of the settlements in the Tapolca district
Source: Own editing based on TeIR (2015) data

Conclusions

In the study we intended to find out if there is a strong relationship between infrastructural endowment and a few chosen economic indicators (generated added value and income per inhabitants). Although we could have chosen traditional correlation calculations, we decided to test a scoring method on the district to see if the result would be as we expected it (namely that the better the general infrastructural status of a settlement the higher its income and added value generation becomes). However, based on our study we can conclude that the relationship between the GII and the other examined indicators is not strong.
It raises questions about the importance of infrastructure: how much is it needed? How developed it has to be to make settlements attractive to investors and companies?
We believe that through our study we got one step closer to solve this puzzle, but we intend to carry on in later studies. The next step will be to compare the results of the current study with other correlation calculation, and to go deeper in the analysis of the elements of infrastructure, investigating them one by one. Also, the data we acquired was all from databases; however, to get more relevant information in the future we consider it highly important to gather primary data, which we would also compare to our calculations.

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POLITICAL RESPONSES TO SOCIO-SPATIAL INEQUALITIES IN RURAL ROMANIA

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Abstract
Romania's current state of territorial development, the new spatial structure of the economy and the population are mostly determined – in addition to the process of path dependency – by new political, social and economic circumstances. Along the transition from a planned to a market economy, the post-communist socio-economic changes have left their mark on the evolution of the rural population not just in terms of structure and quality, but also in terms of numbers. Deindustrialization and the restructuring processes which have occurred in the late 1990s have had a series of negative effects that manifested themselves not only in the rise of unemployment, structural economic transformation but also in the deepening of socio-spatial inequalities between urban and rural areas. The aim of the paper is to present the process of peripheralisation in Romania, highlighting the new patterns of territorial disparities between metropolised core regions and rural areas. Based on the analysis of income levels in order to delimit the peripheral areas and using the technique of spatial auto-correlation for drawing up spatial patterns of local income, the paper will focus on future possibilities of rural areas, considering the present political responses to socio-spatial inequalities and rural development.

Keywords: socio-spatial inequalities, peripheralization, local income, political responses

JEL Codes: R11, R23, R58

Introduction

The political and economic changes that have incurred at the end of the 1980s have brought about considerable changes in the territorial structure of the post-socialist countries (in Romania as well), making the reorientation towards the west possible once again. The first steps have mainly been represented by the integration into the Western European and North-Atlantic economic, political and defense systems, contributing at the same time to spreading democratic principles and increasing the globalization of the area. Due to the positive impact of western societies the macro-economic and social conditions of these countries have been significantly improved, although the goal of achieving rapid economic growth has in most cases overshadowed the objectives of social equality and economic and territorial cohesion, contributing thus to the alarming increase of territorial disparities. As we know it, the long-term presence of the phenomenon can lead to the rapid break-away of peripheral, disadvantaged areas, resulting in increased social tensions and constrained development paths. Unfortunately though, despite the ever increasing number of strategies, development plans elaborated for different territorial levels in order to deal with these processes, backed by an impressive financial support for fostering economic growth in less developed regions (Dachin, 2008; Goschin et al., 2008; Boldea et al., 2012) territorial inequalities have continued to increase more and more.

In the last two decades the effects of inequality on economic growth as well as political responses to existing socio-spatial polarization tendencies have become one of the most popular research topics among scholars and policy makers. It is important to point out, that despite the accumulated theoretical and empirical literature on this issue, there is still no conclusive result, which could identify a clear and stable relationship between inequality and growth. The literature in the field has taken into account the different impacts of inequality on economic growth, some of them negative (socio-political instability, market size and fertility, political economy) some positive (higher aggregate savings) (Neves and Silva, 2014), but the main differences are usually related to the used estimation methods, data quality and sample coverage which greatly affect the impact of income inequality on economic growth (De Dominicis et al., 2008). Also, recent evidence at national level shows that while on the short run there is a positive relationship between inequalities and growth, in the long run there is a reverse relationship between the two (Halter et al. 2014).

Growing inequalities have also represented one of the main concerns of the EU Member States. Although European Regional Policy specifically addresses the issue of regional inequalities, so far empirical research

has shown its constant persistence, with a deepening tendency in the last two decades at smaller territorial units (Willaverde, 2006). It is worth mentioning that after the 2004 and 2007 EU enlargements both academics and policy makers were concerned with the further increase of inequality and its negative effect on development. But interestingly, studies examining the convergence process in the EU from a multidimensional perspective before and after the accession period and at different territorial levels have shown that economic growth has been much higher in Eastern European countries showing a more homogenous spatial structure (Goschin and Constantin, 2010; Szendi, 2013). This can also be attributed to the fact that the above mentioned countries' economic growth rate has started from a relatively lower level, thus the increase seemed to be more dynamic compared to the more developed counties. This has also been the case with Romania, managing to achieve convergence at NUTS1 level with the EU average, although this has been achieved at the cost of an increasing internal divergence within the counties (Török, 2013). Furthermore, the recent economic and financial crisis has aggravated the pre-existing regional problems even more, not only at regional but also at local level.

Although in the last decades a series of studies have dealt with the issue of social inequality, in Romania there is a large research gap especially considering the smaller administrative territorial units: rural and urban areas. The main purpose of this study is to examine how income inequalities influence the socio-spatial polarization process at local level, trying to detect a spatial pattern in the relations of income level by analyzing the main features of the neighborhood effects.

Material and methods

The analysis of socio-spatial inequality in Romania was based on existing territorial statistical data obtained from the Romanian National Institute of Statistics, including the 2011 Census, the Tempo Online website as well as the database obtained from the Regional Directorates General of Public Finance. These databases enable us to use data at levels of settlements corresponding to the EU NUTS 5 level, in our case the level of the 2 861 communes and 320 cities.

The identification and delimitation of peripheral areas according to the income per capita was based on the use of exploratory spatial data analysis. The most interesting feature of spatial autocorrelation is its ability to analyze location and attribute information at the same time (Goodchild, 1986). The analysis of spatial autocorrelation is based on the calculation of a global and a local Moran's I criteria. To measure spatial autocorrelation, first we use the global Moran's I statistic (Moran 1948, Cliff and Ord, 1992; Anselin, 1995; Griffith, 2003).

This is calculated as:

$$I^s = \frac{\sum_{i,j} w_{ij}^s \left(x_i - \overline{x} \right) \left(x_j - \overline{x} \right)}{\sum_i \left(x_i - \overline{x} \right)^2}, \text{ where} \qquad (1)$$

I is the global Moran's I; x_i is the value of the monitored variable in unit *i*; x_j is the value of the monitored variable in unit *j*; *x* with stripe is the arithmetic average of the monitored variable;

w_{ij} is the generic element of contiguity matrix.

Since the expression of spatial dependence refers to the connection between the nearest units, it is important to express the degree of proximity of the areas by defining the concept of spatial contiguity (O'Sullivan and Unwin, 2003). The concept of contiguity can be defined as a generalized matrix of W weight, usually symmetrical, representing the pattern of connections or ties and their intensity (Badaloni and Vinci, 1988), where w_i weights denote the effect of the territorial unit on unit *i*. In this study, a dichotomy matrix of contiguity was used where $w_{ij} = 1$ if the *i* area touches the boundary of *j* area, otherwise $w_{ij} = 0$. This definition of neighboring areas is based on K nearest neighbor.

Moran's I reaches values from -1 to +1. The negative Moran's I value indicates negative spatial autocorrelation, the positive value of Moran's I indicates positive spatial autocorrelation. The closer the value of Moran's I to -1 or +1, the stronger the spatial autocorrelation. This index represents the global indicator of spatial autocorrelation, giving an indication about the presence of autocorrelation. The exact location of the values of autocorrelation is provided by the local spatial autocorrelation statistics. One of

the most frequently used indices of local autocorrelation is the Local Indicator of Spatial Association (LISA) developed by Anselin (1988, 1995), being considered as a Local Moran's Index.
This index is calculated as follows:

$$I_i = \frac{(x_i - \bar{x}) \sum_{j=1}^{n} w_{ij}(x_j - \bar{x})}{\sum_{i=1}^{n} (x_i - \bar{x})^2} \quad (2)$$

The sum of all local indices is equal to the global Moran's I (Krejníková, 2013). Thus, five scenarios occur (Borruso and Murgante, 2012):

- locations with a strong presence of the phenomenon and high level of similarity with their surroundings (high-high H-H), defined as **hot spots**;
- locations with low values of the phenomenon and low level of similarity with their surroundings (low-low L-L), defined as **cold spots**;
- locations with high values of the phenomenon and low level of similarity with their surroundings (high-low H-L), defined as potentially **spatial outliers**;
- locations with low values of the phenomenon and high level of similarity with their surroundings (low-high L-H), defined as potentially **spatial outliers**;
- locations completely lacking a significant autocorrelation.

It is worth mentioning that high-high and low-low types of spatial associations indicate positive spatial autocorrelation and vice-versa, high-low and low-high types denote negative spatial autocorrelation (Anselin, 1995). The values resulted from the spatial autocorrelation analyses have been calculated and illustrated with the help of the GeoDa Software version[1] 1.6.2 and are explained in more detail further.

Results and Discussion

Understanding the pattern of socio-spatial inequalities between urban and rural areas over the last decades: challenges and consequences

With 9,262,851 inhabitants living in rural areas (46% according to the 2011 Census) covering 207,522 km^2 (87.1%), Romania has one of the largest rural communities of the EU, after France, Germany, Poland and Italy. The rural population is far from being equally distributed, some regions sharing a higher proportion (South Muntenia 58.6%, North East 56.8% and South West Oltenia 51.9%) or a higher density like North East region (63.2 inhabitants/km^2), in contrast with the Western part of the country where the density of the rural population is just 26.5 inhabitants/km^2).

The uneven distribution of the population influences not only the social-economic development of the areas in question but also the quality of life of the rural population, representing an important element of the existing disparities. If we consider the characteristics of the country's population we can safely say that there is a relatively high share of elderly people living in the rural environment (representing 23% in 2014), this having a negative effect on demographic aging index. While in urban areas the mentioned index is only 1175, in rural areas it reaches 1365. However, due to the relatively poor performance of the Romanian economy the negative social impact of these figures is significantly higher. Resources to support the older population are being very limited. Taking into consideration the quality of life of the rural population, Romania has the highest incidence of rural poverty in Europe (over 70%), and one of the largest gaps in living and social standards between rural and urban areas.

In 2010 the absolute poverty rate was four times higher in rural than in urban areas. Furthermore, the gap between the two areas has also tended to deepen in the last years: in 2000 the absolute poverty in rural areas was less than two times higher than in urban areas, while in 2010 it was already four times (Precupeţu, 2013). Most exposed to poverty risks are the Roma minority, children, youth, single persons, the unemployed, self-employed in subsistence agriculture and those with a low level of education. Studies show, that one of the main reasons for rural poverty in Romania is the low education level and the

[1] This software was developed by the Center for Spatially Integrated Social Science (CSISS) at the University of Illinois, Urbana-Champaign, Urbana, IL, USA.

relatively high rate of illiteracy. According to the 2011 Census, only 4.7% of the stable population (10 years and older) living in rural areas has had a university degree (the percentage was 22.4% in urban areas) while more than 3% has had no education whatsoever, 1.4% being illiterate.
Furthermore, the quality of life in rural areas is also influenced by the lack of infrastructure, having a negative impact on economic development. According to the 2011 Census, 62.1% of households had access to running water, provided that today, having access to at least drinking water is no longer a vital interest in health or a luxury, but one of the basic human rights. If the public running water network is poor and requires an extension and repairs, the situation is even more critical in the case of the sewerage system where Romania is well below European standards, the network coverage being even less developed than that of the running water. The last Census has indicated that only 42% of rural households have access to the sewage network, while in the urban environment this index is 94.1%.
Considering the average income level, in 2011 Romania has had a median equivalised income of 2 037 Euro, which was the smallest value in the EU and around ten times lower than that of some developed western countries (Eurostat, 2010). As we could expect there is also a large gap between urban and rural income levels: in 2011, the average income for urban households was 33.4% higher than that of rural households. This gap is a consequence of the differences in employment opportunities: in urban areas 62.3% of households have had a head of the family as employed, compared to 26.5% in rural areas. In consequence, the strong connection to agriculture as a means of survival which – after the decline of extractive and heavy industry in the late 1990s – has transformed into subsistence agriculture, along with the high share of not just the elderly-, but also the population living in poverty has foreshadowed the high degree of future socio-spatial polarization of the rural population.

Delimiting peripheral areas by cross sectional analyzes of income inequalities
Analyzing the level of income inequalities at settlement level lets us delimit the most peripheralized areas. According to the 2011 Census, incomes in rural areas have been around 503 €/household (compared to 621 €/household in urban areas), so it is normal that almost all households compensate for this income difference with an equivalent value of consumption of agricultural products from own sources. Agricultural production is for the majority of households a means of survival and not a way of profit maximization (Dachin, 2008). Considering the lowest territorial units, communes, it must be mentioned that with some exceptions, the most peripheralized localities appear in the Eastern and South Eastern parts of the country, which mostly fits the social and economic development structure. These settlements have a low intensity of development accompanied by a high population density (including the average number of people per households), limited access to resources, lack of infrastructure, a high proportion of illiterate people which contributes to increased inequalities and induces a strong peripheralization process. The only exceptions to the rule are the suburban localities where job opportunities, quality of life and educational opportunities were much more developed, thus lowering the chances of people being exposed to socio-spatial peripheralisation process. It must be mentioned that a number of 695 settlements (21.8% of the total) have been classified as being part of the lowest income category, including settlements which have recently changed their status from rural to urban areas. Localities characterized with the highest income per capita are concentrated in the agglomeration area of the capital, the Southern axis of Transylvania along with Constanta County in the east and Cluj County in the Northwestern part. These areas stood up even in the 18th century as being the most developed counties in Romania. In rural areas of Constanta County the relatively high level of the income per capita is mainly due to the advantageous geographical location (near the Black Sea) and the favourable economic context (well developed services sector serving the port). The county is also renowned as one of the most important tourist region in Romania, attracting around 200,000 tourists each year.
The spill-over effects of the capital's agglomeration economy are very well outlined in the immediate surrounding areas of the city, giving birth to the for the first suburbanisation process in Romania, where the high purchasing power of inhabitants, easy access to most important services, housing conditions and the overall quality of life of people have reinforced their advantageous position.

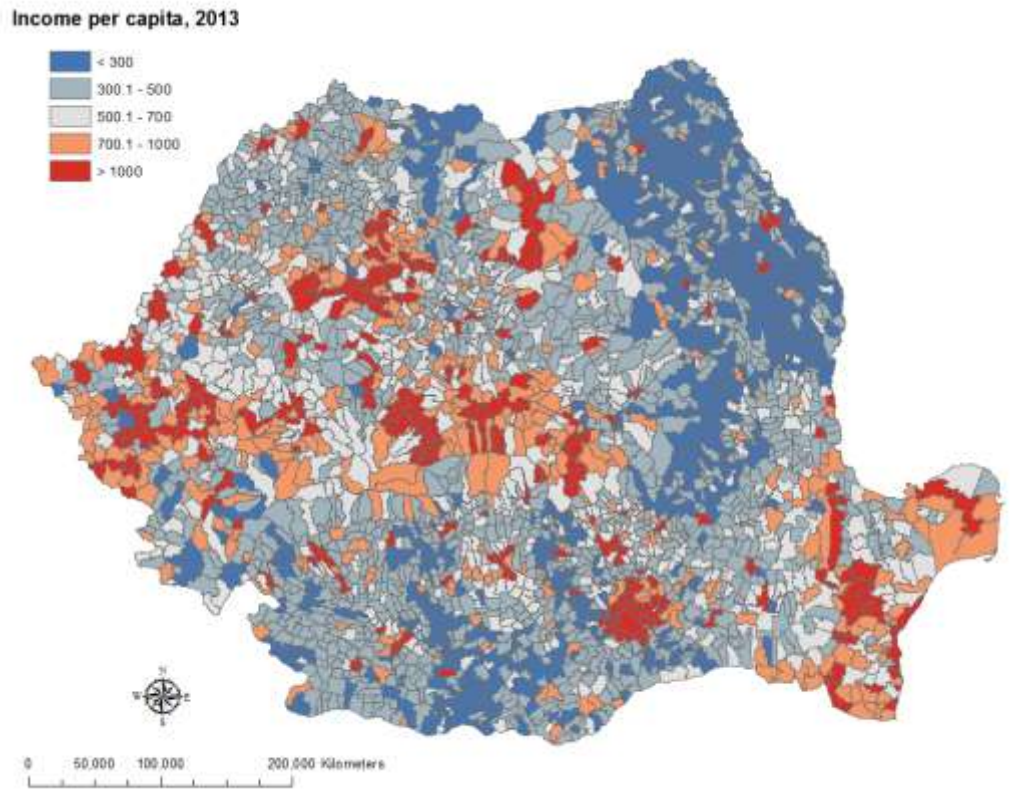

Figure 1 Territorial distribution of income per capita
Source: Regional Directorates General of Public Finance, 2013

This is also the case with Cluj and Timis County where in the last decades the suburbanization process has advanced, a relatively high number of people have moved in the nearest communes contributing to increase of local income level. Usually, rural areas, which have recognized the possibilities offered by local endowments and had the necessary entrepreneurial spirit have become the winners of the last two decades.

Spatial patterns of peripheralization
Analyzing the Spatial Autocorrelation of income per capita in Romania – The Global and Local Moran Scatter Plot
The main question addressed in this section is whether the observed pattern of income inequalities in Romania is similar to other spatial patterns or not. If there is a tendency, for example, those communes with low (high) income level tend to be surrounded by communes with low (high) income level, or vice-versa, this would indicate a positive spatial autocorrelation among the settlements (Torres et al., 2011). The GeoDa software allows us to build a Moran Scatter plot with the calculation of Moran's I (Anselin, 1995) (Equation 1). The graph represents the distribution of the statistical units of the analysis (Figure 2 left corner).

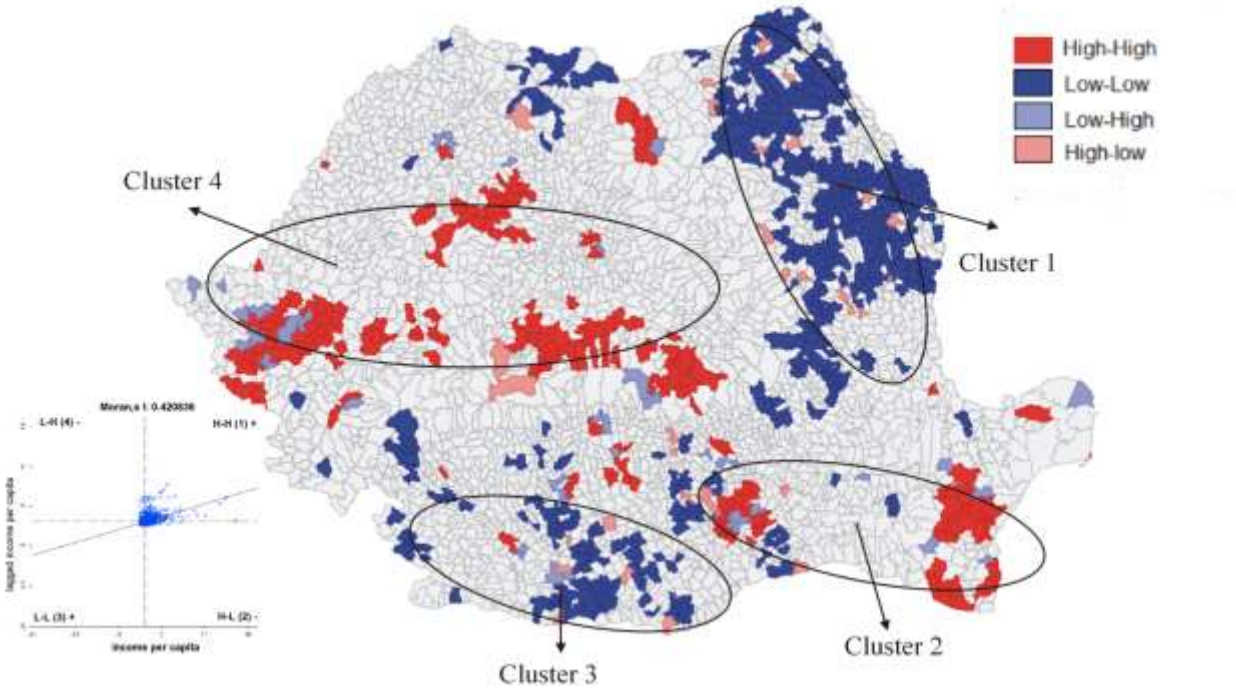

Figure 2 Cartogram of clusters representing income inequalities in 2013
Source: original representation with GeoDa 1.6.2 software based on Regional Directorates General of Public Finance (5% significance level and K-nearest neighbour weight).

As Figure 2 shows, the value of Moran's I calculated for the income level is equal to 0.42. Since the value is higher than zero, it suggests a positive spatial autocorrelation for the analyzed variables. Thus, we could reject the null hypothesis as the *p* value is statistically significant (p = 0.0001 in both cases) and the z-core is positive (26.7). One should mention that global Moran's I statistic does not exactly show us the communes characterized with a high (low) income level, but rather suggests that the spatial pattern of the analyzed index we observe is not random – there is more similarity by location than would be expected if the pattern was random (Torres et al., 2011). On the other hand, the Local Indicator of Spatial Association (LISA) allows us to consider local effects related to the phenomenon. In order to calculate LISA we used the same matrix weights we used to build the Moran scatter plot (Equation 2). In the significance filter, the value of *p* was determined as 0.05 and the software was using the permutation test in order to delimit the significant spatial units. Thus, the number of permutations was set at 999.
After determining the local Moran's I statistics for each of the communes, there is a possibility to classify them in homogenous groups, in clusters. During clusters identification, the most important decision criterion is to track down how it relates to the income level of a settlement in the neighbouring areas. After conducting the computations and the graphic representations of the results, we could identify 4 main clusters. Cluster 1 and 3 are the income inequality "cold-spots" and correspond to a positive but low-low spatial autocorrelation, indicating spatial clusters of communes with low-income level. Clusters 2 and 4 are "hot-spots" and correspond to a positive high-high spatial autocorrelation indicating spatial clusters of communes with above-average income level (Figure 2).
First of all, we can conclude that the spatial differentiation is very well outlined, localities exposed to high socio-spatial polarization being found mainly in the Eastern and South-Western parts of the country, especially in Botoşani, Vaslui, Giurgiu, Teleorman and Olt counties (Cluster 1 and 3) which have come forth as the least developed areas of Romania. High demographic dependency ratio, high poverty rate, numerous households with female breadwinners and high share of people working in subsistence agriculture confirm their disadvantaged position in a multitude of ways. Of course, there are also a few hidden champions in hidden regions marked with light red, which in the case of spatial autocorrelation analyses show the high outliers among low neighbours. Unfortunately, due to the fact that their numbers are so reduced, they could not counterbalance the overall position of these regions. Clusters 2 and 4 indicating high income levels could be found in the immediate surroundings of the already mentioned large urban areas:

Bucharest, Constanta, southern axis of Transylvania as well as Timis and Cluj Counties. The low level of peripheralization in these areas could also be attributed to their more homogenous spatial structure, where social resources like education opportunities, medical services and job opportunities distributed much more evenly between urban and rural areas.

Conclusion

In the last two decades Romania has acted upon the European spatial planning documents, as the main guidelines and principles have been introduced into the national spatial planning system. One of these initiatives has been represented by the selection of main urban centers as urban growth poles, having a great influence on the delimitation of the metropolitan areas. The main objective for appointing and supporting growth poles has been the reduction of territorial disparities, hoping that the development of certain regions could be increased by concentrating resources on selected "centres" which – through the effects of radiation and attraction – would trigger the development of the whole area.

In 2001 a new law for newly established metropolitan areas has seen the light of day, emphasizing the importance of local initiatives and multi-level cooperation networks, although the first of such initiatives has appeared only in the first part of the year 2004. Since then, the 'metropolization' process has advanced, with 10 metropolitan areas being created, while many others have been proposed and are still in a pilot phase. So far, empirical analyses have shown that growth pole strategies have actually contributed to a new concentration of productive functions into urban areas and have not represented a solution for the problems of peripheral areas which have not been reached by the expected development impulses. Further on, there is still a problem related to the effects of metropolitan development on adjacent areas, thus the reluctance on behalf of the areas outside of the delimited metropolitan areas, fearing the fact that the aggressive promotion of the metropolitan regions concept could lead to the decreasing importance and the weakening economic power of the surrounding rural settlements. Potential outcomes are many, but the main question remains: do rural settlements gain significance by participating in metropolitan regions or do they lose their specific character and endogenous development potential?

Therefore, beside this strategy, one of the most important initiatives for diminishing the high inequalities between city and village was the elaboration of the National Rural Development Programme for the 2014-2020 periods. The main purpose of this programme is to modernize small farms and create market-oriented units in order to improve the quality of the rural environment, to encourage rural development initiatives as well as to diversify the local economic structure. The last two decades have shown that one of the most important opportunities for the Romanian rural development is agri-tourism. Starting from the various natural landscapes and continuing with the good conservation of customs and popular traditions, most of the rural areas can rely on their endogenous potential for tourism development. Previous experience has shown, that with the help of adequate management strategies rural tourism can be the key component of economic development, avoiding the high dependence on farming activities and countering the weak diversification of the rural economies.

Another important instrument for diminishing urban-rural disparities and promoting local development is strongly related to the decentralization process and bottom up initiatives. One of the main supporting actors in this sense are the LEADER axes which have started as European initiatives for rural development, the main aim of the LEADER program being to improve local governance, boost economic and social development through local action groups (LAGs). In Romania there are currently 163 Local Action Groups, covering areas with a total population of 6.77 million inhabitants and a surface of 141.000 square kilometres. In fact LAGs are considered to be the most important solutions and the biggest chance to improve urban-rural indicator ratios.

Therefore, a much more powerful strategy for increasing income levels in rural areas would have to consider the advantages resulting from an existing endogenous development potential, like the low labor costs, the natural environment promoting agro-tourism, to name but a few. Also, in order to be able to harness the resulting advantages, cooperation links between local stakeholders and increased management capacities are indispensable for speeding up the structural evolution of these communities. In this way many of the disadvantages characterizing Romanian rural settlements could be avoided, like the lack of horizontal links between communes as well as the difficult collaboration with cities. The involvement of local stakeholders in developing these areas could largely contribute to a dynamic development in these

areas, supported at the same time by locally elaborated development strategies implemented and managed by LAGs.

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MEDICAL TOURISM IN THE MATRA REGION

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Abstract
Medical tourism – individuals crossing international borders in order to access medical care – is now a common practice. Many countries around the world have an interest in the medical tourism sector because of its potential benefits for the economy and the health care system. However, medical tourism does not only pose challenges to individual countries: it could also be a great opportunity for the regions as well. In fact, in the near future we can focus on a new business term as medical tourism destinations. This study focuses on the challenges brought by medical tourism to the Matra region. Currently, the Matra region is Hungary's most up-and-coming region of tourism and hopefully local investors can move forward to invest in long-term ideas as well. There was a huge government program for the wellness tourism sector a decade ago, which had a positive impact on Hungary's economy. It seems different in the medical tourism so far because there was no big support from the government, except naming the Matra region a medical region, and not even from the foreign investors who have a lot of invest in this sector of tourism. In this study, data are collected from a review of available research, policy documents and secondary data, and from in-depth interviews conducted with experts in Hungary. We conclude that the Matra region will able to join the medical tourism sector on its own basis.

Keywords: medical tourism, health, wellness tourism, Matra, Hungary

JEL Codes: R11, Z32, Z38

Introduction

The harmonisation of health services and evaluating systems of different countries has long been a topic of focus within the European Union. The necessity to reshape member states' rules and methods of evaluation in a way that they be compatible with the way patients, health insurance companies, and ministries of health think about healthcare is a constant subject at expert and professional forums in Europe. Setting up standards of comparison has become imperative, for "high-tech" healthcare today is not only an internal matter for member states, but also one of the most dynamically developing lines of business in the world.

There have been a number of excellent examples all over the world in the past 50 years of comparable standards being met by accredited healthcare providers on different continents. Designing an insurance-based system of purchasing services has been among the prime goals of health policy in Hungary for over a decade. The most important part of a system like this would be the preferential treatment given at contract procedures to service providers able to prove quality care on a consistent and long-term basis.

Western-type, welfare-based healthcare systems, which used to work well in the past do not, cannot work with only the state to sustain them anywhere in the world. Rather, they operate partly on a commercial basis. As the economic experience is that the state is not a good steward, and that there are massive extremes in both the quality and accessibility of services offered by state-maintained providers, we conclude that it is high time the economic efficiency of services is measured. Unfortunately, in present-day Hungary, in no part of the healthcare sector do tendencies indicate a decrease in state interference. Countries, which so far have been famous for their loose social and healthcare safety net, such as the USA, handle the establishing of state dominance as a priority. At the same time as Obamacare was introduced, different national governments were also forced to attend to the quality assurance of healthcare services and to create the conditions of operation. Medical tourism adapted to this international tendency in healthcare. Within the framework of medical tourism, not only Hungarian services and service providers are in competition, but the entire world.

In popular interpretation, medical tourism indicated patients traveling abroad to undergo some sort of medical procedure. Patients use medical services abroad for a variety of reasons, such as lower costs, the different cultural background of professionals, or simply because the service in question is not available in their country of origin. The number of these medical tourists will increase exponentially in the next years.

Aim and methods

The research is extraordinarily goal-oriented, for the actors within medical tourism, both on the side of supply and demand, have different national regulations according to their location, and there are comparatively few international standards based on well-established practice, not counting international franchise rights. The fact that medical tourism, piling success on success in the world's industry, does not clarify or regulate whether destinations are aware of patients' rights and duties, and the fact that patients, in the absence of a united practice, wander lost in the maze of different quality assurance systems, raise serious questions.

It is to be expected that medical – and wellness tourism will grow and expand further (Aubert & Berki, 2007; Botterill et al., 2013). How big an impact tourism has depends on the level of development of tourism, the types of tourist, and the attitude of the locals (Murphy, 2013). Due to the extraordinarily complex nature of medical tourism, it has no internationally accepted definition (Rulle & Brittner, 2011). Health tourism comprises health tourism, and travel for preventative or recreational purposes the aim of which is health improvement and/or maintenanc, i.e., cure and/or the prevention of illness, for the sake of which the tourist avails themselves of services offered by medical tourism during his stay at the destination (Cassens et al., 2012). During medical tourism, the tourist uses medical (e.g.: dentist, ophthalamogistical, or plastic surgical) services (Bookman & Bookman, 2007).

The irony in the issue lies in the fact that in Hungary, talks have been ongoing about the necessity of passing a law on tourism and creating its legal environment for 30 years. However, in the absence of these, the prestigious place of Hungary on the top list of medical tourism is all in vain, for the situation can easily take a turn for the worse. Therefore, my hypothesis is that the Hungarian system of medical tourism in practice is not yet ready to receive patients.

During my project, I did both primary and secondary research. As the topic's currency also required a summing up of personal professional experiences, I conducted many interviews with leaders in the profession involved in the topic. In the Hungarian medical tourism industry, medical tourism is such a complex concept that there hasn't been an agreement in the health and tourism sectors to this day. There are significant differences on the international market and on certain Hungarian markets. There is some agreement, inasmuch as medical care is invariably present within medical tourism, whereas it is more of a supplementary option within wellness tourism. Hungarian professionals note that in their interpretation, the term health tourism has been replaced by the more modern medical tourism.

We can confirm that from the point of view of tourism, medical tourism is better placed within the health industry, together with spa and wellness services. This, in itself, may be true, for these have grown into buzzing services at tourist destinations, and in some places they have become much more profitable than the greater development projects of conventional tourism. More importantly, establishments of fashionable spa-wellness franchise networks have appeared in hotels as a new tendency, beside hotel franchises.

At the present moment, according to the statistics of welcoming countries, orthopedic operations, cosmetic surgery procedures, cardiologic treatments (heart surgery), oncological services, and dental treatments are the most popular in medical tourism. Thailand, Mexico, Singapore, India, Malaysia, Cuba, Brazil, Argentina, and Costa Rica are among the most popular destinations. Together, these enjoy the majority of the industry's worldwide traffic, mostly due to their unbeatable prices.

Typically, tourists availing themselves of the services end up at private institutions in different countries; therefore it is advisable for institutes to possess suitable contracts, international documents, and appropriate medical management. From the point of view of patients' rights, it is a particularly interesting aspect of this situation how insurance companies evaluate services used by their clients, which they cannot learn about because of patient confidentiality, private institutions not being authorised to divulge any kind of information. Due to some error, retroactively patients are able to deny having used these services.

Health resorts in Hungary and the healing region

In the system of medical tourism it is vital that the destination should have an appropriate legal environment. In Hungary, the destination actors of medical tourism are first and foremost those health resorts, which possess suitable qualifications. (www.antsz.hu)

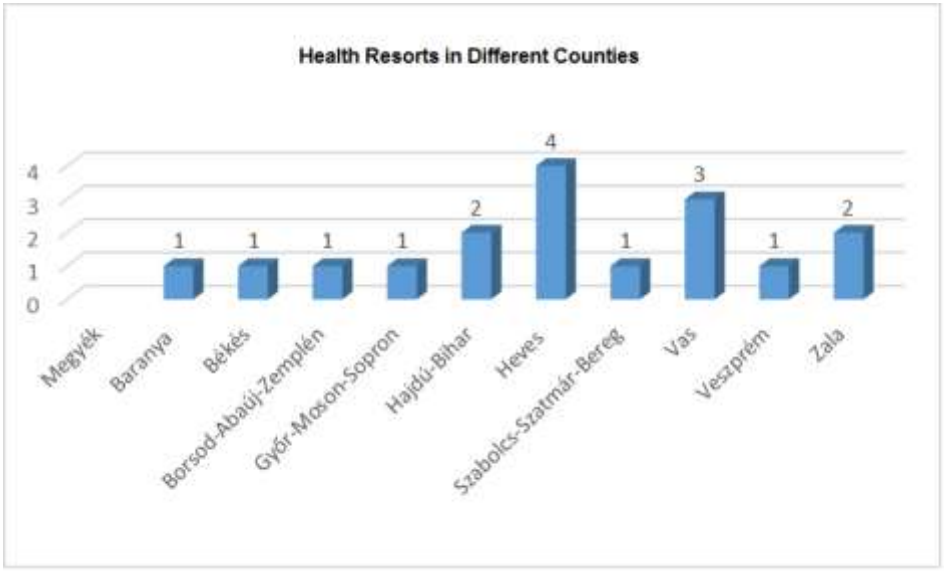

Figure 1 Health resorts in Hungary in different counties
Source: Own processing based on own data collection

The competition between well-run destinations of medical tourism is huge. It is telling of the huge market demand and the competition between service providers that the illustrious Forbes magazine published valuable data. According to the article, in 2013 there were 40 million American citizens without health insurance of any kind, and approx. 120 million without dental insurance. In 2012, 1.6 million Americans had treatment in a medical tourist region, for roughly 35 milliard dollars in total.

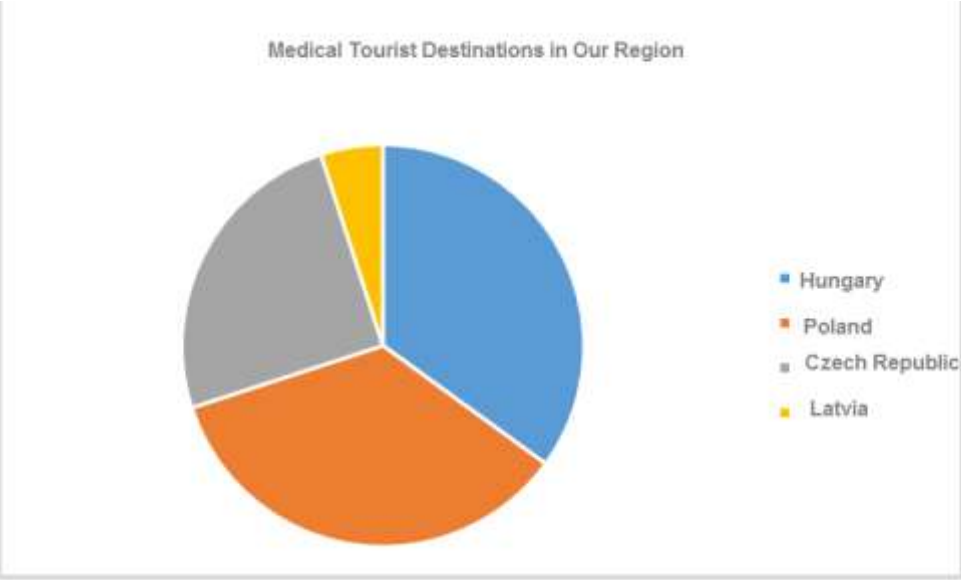

Figure 2 Destinations in Central Europe
Source: Forbes magazine, edited by the author

The forming and re-shaping of medical regions is nothing new. Just thinking of Davos, which used to be a lung sanatorium and is today a conference centre, we can see how variable things previously thought to be constant are.
In the 2007 study on European healthcare, conducted by the Roland Berger Research Centre, the following were formulated as strategic goals for the institutions of the healthcare industry: excellent management, complex mixture of products, creating a conscious way of living, increasing specialisation, measurability of price-value ratio, creating independent institutional standards, creating a shared product according to demand, creating institutional mobility.

It is clear that from these ideas not many were realized by actors in healthcare, but those in medical tourism have achieved significant results.

Creating the North-Hungarian Medical Region

The first Hungarian "medical region" sample project was developed after an interesting idea. According to the planners' intention, exploiting existing state-owned health facilities and local tourist quarters and services would be increased through the strategic cooperation of healthcare and tourism. Within the project, foreign examples were first studied and a sample project was produced according to their experiences, which could be the basis of further projects later on.

On the Hungarian government's behalf, the Mátra Therapeutical Institute and the Debrecen University of Medicine were names as partners in the consortium. Supervised by the Mátra Therapeutical Institute, experts worked for three years with the cooperation of the best medical and touristic experts, and professionals in finance, legal matters, catering, quality assurance, communication, and marketing. Since the Swiss government started the project, experts from the University of Lucerne were commissioned to overview the project.

The Mátra Region had had a traditional role in healthcare before, possessing exceptional qualities. Profiting from these, the prosperity of the Mátra Region can be ensured for the long term. It does seem a good idea to create a product structure under the umbrella term "medical regions", hallmarked by sub-brands and trademarks, which is available in the leading hotels of the region and the Mátra Institute, and can be later successfully sold on Hungarian and international markets of tourism.

The system of healthcare accreditation

Introducing accreditation standards in healthcare can be eminently suitable for realising these goals. After the standards have been introduced, only those patients can be admitted by service providers whose needs can be met by the institute in question, and only if that institute can ensure the continuous provision of the necessary service. According to standards, not only do patients have to be informed, but they also have to be educated about prevention. The process of discharging a patient has to be arranged according to quality assurance regulations in the majority of cases. Directive standards are included in the manual entitled *Hungarian Standards in Healthcare* (Magyar Egészségügyi Ellátási Standardok or MEES).

Although in Hungary the employment of healthcare professionals and other staff, as well as the operation of healthcare providers are strictly regulated and therefore limited, it has been a general goal in the public health sector since 1990 to transfer hospital treatments to a lower level and decrease unjustified hospital admissions or treatments. Given the everyday realities of the sector and the low wages in Hungary, there is very little chance for the introduction of accreditation to be motivating for a group of qualified experts. Therefore, according to the healthcare standards of the European Union, there is already a lack of highly qualified and professionally trained experts. In Hungary there are no doctors who could serve as role models and could facilitate a breakthrough in the quality of services provided: doctors who have practiced their profession abroad, possess excellent English language skills, are capable of filling a managerial position, are empathetic, have good communication and organizational skills. In the absence of extra payments and motivation there can be no chance for healthcare professionals achieving results regarding quality increasing strategies and the "best practice" in healthcare services, considering the circumstances of current public health service.

The "best practice" in Hungary so far started from the ground, similarly to foreign examples. It took shape as an independent idea as a quality assurance activity at a healthcare provider. The first international ISO in Hungary was secured by the Zala County Hospital in Zalaegerszeg in 1995. The certificate won by the hospital preceded the healthcare legislation of 1997, according to the standards of Joint Commission International (JCI). The latest JCI certificate has been held by Saint James Hospital Eye Clinic since the end of July 2014.

Creating international healthcare standards

Just like almost all successful initiatives starting from the bottom up, healthcare accreditation was also born in the USA. Based on European medical traditions, but equipped purely for commercial service provision, the fundamental idea was created by US doctors in the 20th century. Their goal was to guarantee a professional standard and better treatment results. Naturally, a great amount of time was spent on educating patients about the standards. Starting from this ideal of comparativity, on the initiative of the American College of Surgeons in the early 1950s, the American Medical Association, the American Hospital Association, the American College of Physicians, and the Canadian Medical Association together created the Joint Commission on Accreditation of Hospitals (JCAHO). The primary purpose of this initiative was to design the standards of hospital structures and healthcare services, and their evaluating structures, involving all the stakeholders. When Medicare was started in the following decade, in 1965, the JCAHO initiative had grown into an institution. In the late 1980s, the organization's name was changed to Joint Commission Resources (JCR) and its activity was extended from hospitals to most types of healthcare providers. In time, attention was focused on the efficiency of care and the service provider's ability to continuously improve this efficiency. In the plan of the reformulated Agenda for Change many areas were marked for fundamental changes. The revision of standards from a quantitative and qualitative aspect was put into the centre.

Healthcare accreditation standards in practice in Hungary

The policy of the European Union's policy on healthcare spending expects that the quality of care offered by public service providers be guaranteed, in the interest of patient mobility. During the evolution of national accreditation standards, the most important processes with regards to efficiency, success rate, and safety of care, and patients' rights. Anomalies and superfluous bureaucratic phenomena are dispensed with during the accreditation procedure, greatly increasing the program's reliability and credibility.

Led by the Health Services Management Training Centre at Semmelweis University, a team of professionals started to prepare introducing MEES standards within the framework of a contract with the Ministry of Health. In their opinion, the current innovative professional work in the public health sector differs fundamentally from the accreditation system inasmuch as neither disqualification, nor accreditation is in the interest of auditors. External evaluation is not aimed towards analysing the existence of a quality management system, but only towards the operation of a "qualifying system."

I found statements that contradict this in the material:

"There is no organization to examine the results of an audit and decide about granting or refusing accreditation. There are no previously determined and published criteria of decision-making; therefore whether a decision is well founded is not transparent either for the service provider who requested the external evaluation, not the wider public.

The results and experiences of an audit are not public, they are not collected, analysed, or evaluated, and therefore they cannot be used for developing standards.

The audit criteria of certain healthcare services (prevention, basic treatments, ambulant and inpatient hospital treatment) have not been defined or published, therefore they have not been harmonised, either.

Certifying organizations' experiences are not published, these are classified as trade secret. Audited institutions, therefore, cannot learn about best practice, they cannot learn from each other. The transparency of the process is not guaranteed. The results of audits do not contribute to developing standards, since members of teams working on standards – even if they do coaching or audits in practice – can only perceive a narrow circle of problems, and so the audits' results cannot be used as feedback for developing standards. Neither the way of defining auditory procedures, not their methods, not the criteria of accreditation are made available to the service providers requesting accreditation or the general public." (Eü ak p. 23)

Results and conclusions

Professional arguments and counter-arguments about accreditation

Setting up a transparent operation system is in the interest of most private healthcare providers. Such a system would enable them to see each other's market strengths and weaknesses, and with the realisation of accreditation standards, the safety, success rate, and efficiency of services would all develop. A drop in aimless decisions in health policy and a greater market competition would also decrease prices and make

the evaluation of professionals, doctors, measurable. On the other hand, with the creation of databases, objective comparisons would become possible.
It is the common interest of all service providers to decrease the number of medical errors and lawsuits. With the right social education and ensuring opportunities for other national consultations, the population's trust in the system might increase and with a management-style leadership taking control of this system an attempt could be made to involve the counter-lobby as well. "Best practice" would become public, and creditable motivating systems would be published to reduce the prevalence of burnout and overwork among professionals to "expectable" levels. Naturally, for investment projects planned along arguments independent from the government within a comprehensive healthcare programme, and for guaranteeing the initial funding of maintenance and human resources, state participation is also necessary.
The pioneering idea of a patients' trail within the European Union would definitely be very welcome and positively evaluated both in financial and professional circles. A system that would enable world-standard international conformed medical services to be compared to each other would optimise the budgets of participants in the medical industry. Patients' dignity and exposure to information would be equalised and there would be systematic optimising points regarding the investment in terms of resources.

Summary

In the past years, the demand for more transparent and measurable medical services from patients awaiting recovery and their insurers has increased. It has also been requested that the disparities in quality between services offered by different providers be widely comparable. The global introduction of existing accreditation standards can be eminently suitable for realising the above mentioned goals.
A number of counter-arguments have been formulated against accreditation. Some believe that patterns will put people off thinking, motivating them to act mechanically. The freedom of healing will allegedly be lost while conforming to patterns and they will not ensure that requirements will be possible for everybody to fulfil. Others have objected to the fact that accreditation standards, in themselves, did not formulate therapeutical principles, although it is clinical principles that are required for these.
Considering the trends in medical tourism, setting up regulations is necessary as without them, serious errors might occur. It is particularly beneficial that the Hungarian government has recognised the opportunities in this and has undertaken the creation of a sample project. At this moment, the project's eventual outcome is being greatly looked forward to. Unless politicians nail down the boundaries between governmental and private responsibility, historical chances remain missed unfortunately.
The Mátra, having some of the best touristic indicators in Hungary, is perfectly poised in every respect to take a forward step, even joining in an international circulation of medical tourism, thus ensuring the fundamental aim of tourism: promoting the wellbeing of local inhabitants.

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PERCEPTION OF REGIONAL DEVELOPMENT IN THE TERMÁL MICROREGION AT THE BEGINNING OF THE NEW PROGRAMMING PERIOD 2014 – 2020

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Abstract
Termál Microregion, which is located in the north-eastern part of the Nové Zámky District, consists of 13 municipalities which are concentrated around the municipality of Podhájska. In 2014, there were 13,604 inhabitants on 213.09 km^2 in the microregion. A specific feature of this region is the healing geothermal water which is being used during the whole year. The microregion was established in 1999 and in 2008 it became the local action group. As for the planning of regional development, opinions of the local people play an important role. Through the participation of the local population in public affairs, it is possible to indicate the most effective solution to economic, social and environmental problems and determine the future directions of the territory development (CLLD approach). The aim of the article is to compare the opinions of the population on regional development of their territory in 2014 with a similar survey in 2003.

Keywords: Termál Microregion, CLLD approach, perception of regional development

JEL Codes: R11, R50, R58

Introduction

The European Commission offers instruments for the programming period 2014 – 2020 that allow to plan and allocate part of the funds „from below“, at the local level. In the Rural Development Programme, it is the LEADER approach and for the Structural Funds (European Social Fund and European Regional Development Fund) is designed a new tool called "Community-led local development" (CLLD). Both instruments give a part of the funds to the hands of so-called Local Action Groups (LAGs) that divide them on the basis of the local strategy. Local actors assume the role of managing authority (Grambličková et al., 2013).

The Local Action Group of Termal association is one of the local action groups since 2008, which was created on the basis of the Microregion Termal formed in 1999. For almost 20 years of its existence, the individual self-government and their cooperation with partners created modern and internationally known tourist destination in the rural area. Management of the microregion uses also opinions of the population on regional development of its territory in case of development of its territory.

The aim of the paper is comparative analysis of regional development perception of microregion Termal in 2003 and 2014 as the one important information source for updating the integrated local development project or programme of economic and social development of municipalities or microregion.

Material and methods

The sequence of implementation of short-term steps and long-term interests of microregions in regulating the development is based on the regional development programs. In establishing such documents are mostly applied economic concepts equating regional development with economic development and growth (Tvrdoň, Halamová, Žárska, 1995). There are also geographical concepts that assessed regional development as a set of social and economic processes and relations that are influenced by all sectors of the region (Rajčáková, 2005).

The geographic approach to the study and revitalization of the rural landscape at micro-regional level present in their studies, e.g. Klamár and Čermáková (2012), Kramáreková et al. (2009), Oremusová (2009), Klamár (2007), Spišiak and Klamár (2003), Dubcová et al. (2002), Spišiak (2000), Drgoňa et al. (1997), etc.

It is necessary to respect specific principles and approaches in the planning regional development. One of them is the principle of participation, which means the participation of several key partners in making the decisions. It is based on wide public participation in making decisions through public campaigns and events

(Spišiak et al., 2005). It based on the principle that the participation of the local population in public affairs includes the most effective solution of economic, social and environmental problems (Spišiak, 2001).
Perception of the environment is an internal process within the man who through the sense organs receives information about the real world and classes them according to own value criteria. Based on this view on the environment, a man implements choice by that he decides about the place of residence (Krogmann, 2005). The importance of perceptual research lies in the fact that it is the content, quality and intensity of man's relationship to the territory in which he lives has significantly influence on its behaviour and activity. If one has created a positive relation to the territory of his life and work, it will be reflected in the overall range of socially desirable activities in workplace and off-the-job and in lower levels of potential migration. The sense of ownership and responsibility for the development process also will be stronger (Spišiak, Klamár, 2003). For the need of research so-called soft data obtained by empirical research and observation have been implemented two questionnaire surveys in the microregion Termal - in 2003 and 2014. The undertaken research was focused in both cases to the exploration of regional development perception, including the perspectives of the whole microregion, municipality from point of population opinions. During the first survey respondents were asked in 12 municipalities and in 2014 respondents were asked in 13 municipalities that form the current microregion Termal. There were used questionnaires, which were anonymous. Questionnaires were in the introduction focused to the basic characteristics of respondents. It was followed by a part devoted to the municipality as a place of living; other segments were focused on the basic needs of the population and their value orientation and the municipality in terms of job opportunities. Significant was also the assessment of the municipality in terms of tourism and its development prospects. The final part of the questionnaire was devoted to the question of the microregion, its current state and prospects of regional development.
In each of municipalities questionnaires were given to 10% of the economically active population, therefore 670 of respondents were given questionnaire in 2003 (Maňa – 90 respondents, Kolta – 70 respondents, Bardoňovo – 40 respondents, Podhájska – 50 respondents, Dedinka – 40 respondents, Pozba – 30 respondents, Dolný Ohaj – 80 respondents, Radava – 40 respondents, Hul – 50 respondents, Čechy – 30 respondents, Veľké Lovce – 100 respondents and Trávnica – 50 respondents), and in 2014, 775 respondents (Bardoňovo – 50 respondents, Čechy – 25 respondents, Dedinka – 50 respondents, Dolný Ohaj 80 respondents, Hul – 80 respondents, Kolta – 70 respondents, Maňa – 100 respondents, Podhájska – 50 respondents, Pozba – 30 respondents, Radava – 50 respondents, Trávnica – 70 respondents, Veľké Lovce – 100 respondents and Vlkas – 10 respondents).

A brief geographical characteristic of the Termál microregion
Termal microregion is an interest association of 13 municipalities of the Nové Zámky district – Podhájska, Trávnica, Čechy, Kolta, Bardoňovo, Pozba, Veľké Lovce, Dolný Ohaj, Maňa, Dedinka, Hul, Radava a Vlkas. It is situated in the northeastern part of the district in the surroundings of Podhájska. In an area of 213.09 km^2 live 13604 inhabitants (31.12.2014).
The microregion lies on the Danube Upland, specifically in the northwestern part there are Zitava Hills and Nitra River Plain and in the eastern part there is Hron Hills. A specific sign of the area is the occurrence of geothermal waters with the prime location in Podhájska. Highly mineralized water (19.6 $g.l^{-1}$) with sodium-chloride type and heat capacity (80 ° C) are among the warmest waters in the Nové Zámky district. Their chemical and physical composition has a beneficial effect in the treatment of the locomotor system, respiratory and skin eczemas. Population of microregion concentrated on their territory less than 10% of the population of the Nové Zámky district. The average population density (64 inhab./km^2) is in comparison with value of district (106 inhab./km^2) significantly lower. In terms of population structure based on productivity in the micro-region, productive age group has the largest representation (69.19%). Post-productive age group is represented by 18.87% and the pre-productive age group only by 11.95%, what indicates a regressive type of microregion population. In the population dynamics (2014) we can observe in the microregion a significant decline (-77 inhabitants, ie. -5.91 ‰), migration decline of population (-26 inhabitants, ie. -1.99 ‰) and the resulting total loss of population (-103 inhabitants, ie. -7.90 ‰). In the employment of economically active population is dominated the tertiary sector. Subsidiary status has despite natural and social conditions an agricultural activity.

Results of the survey of regional development perception by inhabitants of the Termál microregion
In the evaluation of the potential for regional development has been beneficial knowledge about vital needs of the population and finding about satisfaction or dissatisfaction of the population with selected living conditions. Respondents assessed e.g. possibility of buying food, equipment and level of medical care, equipment and facilities for cultural activities and more. Within the relevant part they also expressed its satisfaction with the work of the local self-government (Figure 1).
While in 2003 was the highest satisfaction observed in Dolný Ohaj (88% very satisfied and satisfied respondents), Maňa (80% very satisfied and satisfied) and Pozba (74% very satisfied and satisfied), in 2014 the greatest satisfaction was in municipalities - Trávnica (89% very satisfied and satisfied), Čechy (84% very satisfied and satisfied) and Radava (78% very satisfied and satisfied). On the contrary, significant dissatisfaction was observed in 2003 in Podhájska (17% unsatisfied and very unsatisfied respondents) and Kolta (19% of unsatisfied respondents) and in 2014 in Bardoňovo (40% unsatisfied and very unsatisfied) and Kolta (29% unsatisfied and very unsatisfied). The positive findings were that a very great dissatisfaction among citizens did not occur at all or only sporadically.

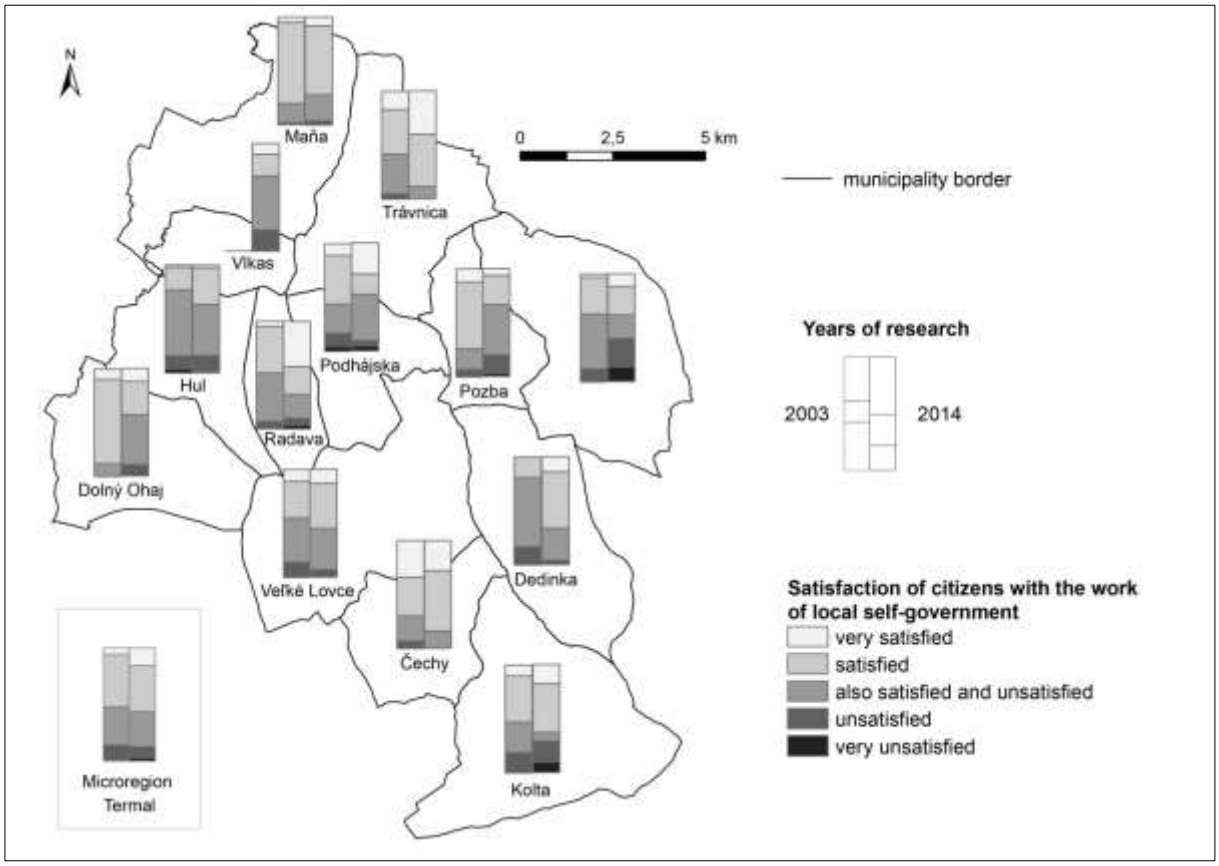

Figure 1 Satisfaction of citizens with the work of local self-government
Source: Own processing based on own data collection

The issue of work and job positions in microregion Termál municipalities was evaluated on the basis of the opinions of local inhabitants who were asked about areas of the most required formation of new job positions in the municipality (Figure 2).
As the most required areas in both observed years were assessed tourism and agro-tourism, which agreed in 2003 31% of respondents with and in 2014 it was 23% of respondents; trade with services together, which were preferred in 2003 by 16% of respondents and in 2014 it was 26% of respondents. The highest interest in jobs in tourism and agrotourism was observed in 2003 inhabitants in Čechy (51%), Podhájska (43%) and Radava (29%) and in 2014 in Bardoňovo (86%), Trávnica (34%) and Pozba (33%). Creation of job positions in trade and services was preferred in 2003 by inhabitants in Trávnica (32%), Hul (32%) and Dolný Ohaj (30%) and in 2014 in Vlkas (50%), Radava (48%) and Dolný Ohaj (40%). The population of microregion

expressed the lowest interest of job creation in the state and public sector (3% in 2003 and 5% in 2014) and forestry (6% in 2003 and 3% in 2014).

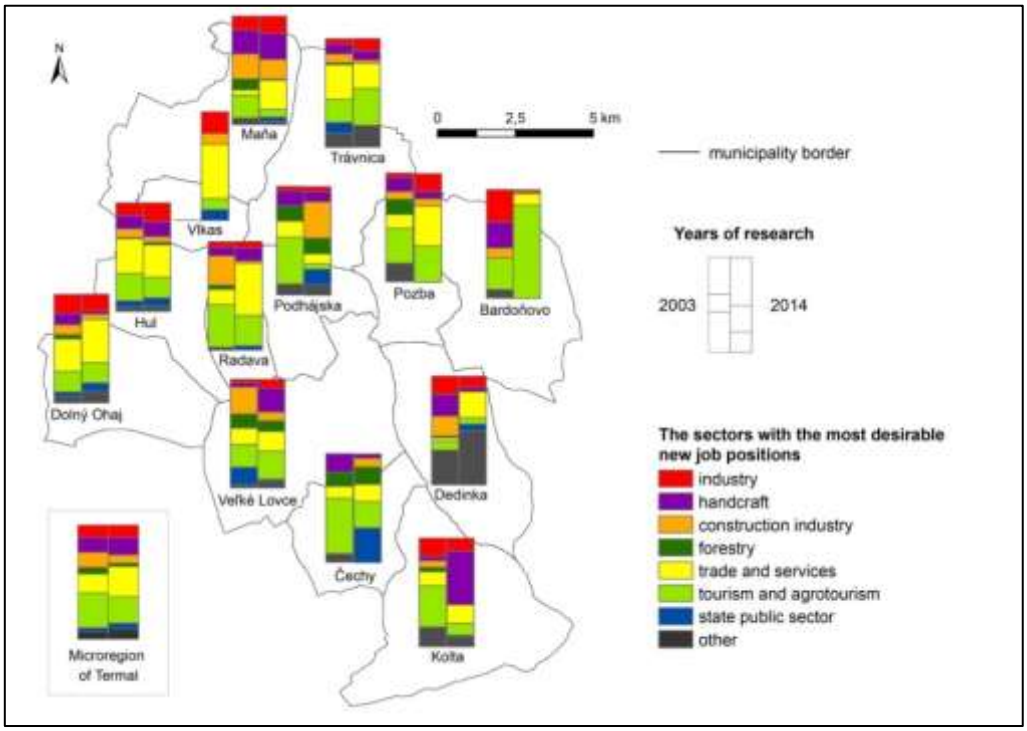

Figure 2 Opinions about the creation of new job positions in Termal microregion
Source: Own processing based on own data collection

In connection with the evaluation of the Termal microregion and individual municipalities in terms of job and employment opportunities we observed the interest of population in making business interest (Figure 3).

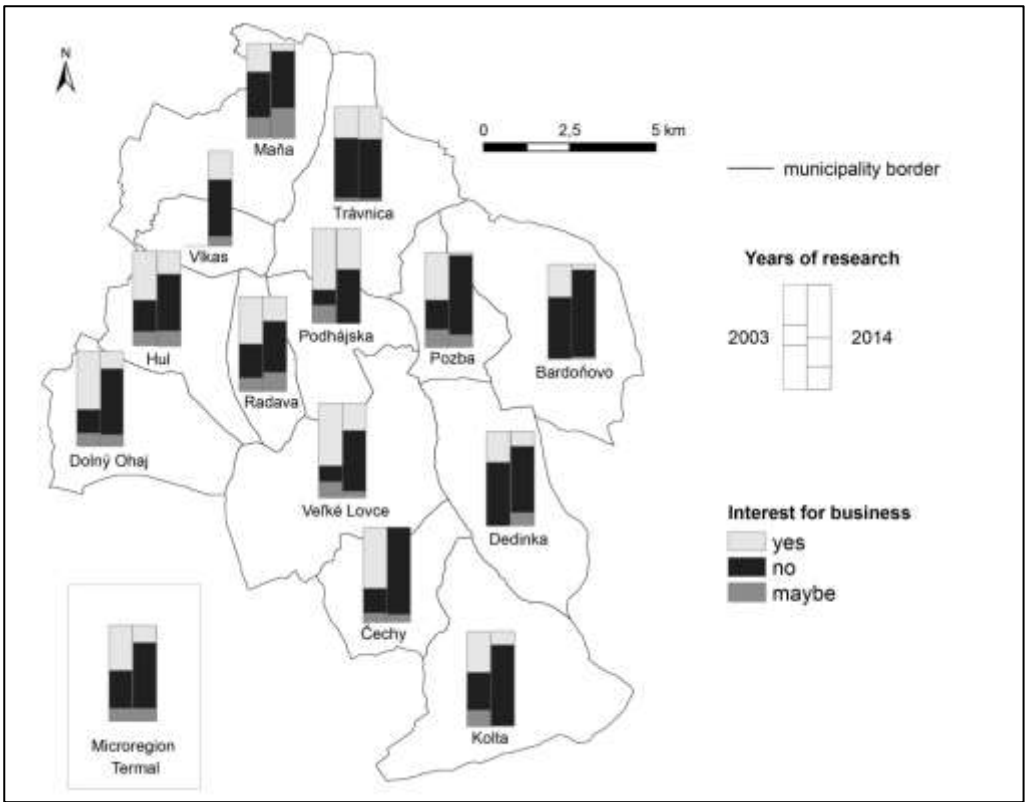

Figure 3 Interest for business in Termal microregion
Source: Own processing based on own data collection

Compared with 2003, in 2014 an evident decrease in interest of population in making business was observed. While in 2003, interest in business was observed in 47% of respondents, in 2014 it was only 18% of respondents. Within each municipality, there was visible a higher interest in business in 2003 in more than half of the municipalities with the highest values recorded in Veľké Lovce (66% of respondents), Podhájska (65%) and Čechy (64%). In 2014, interest in business did not dominate in any of the microregion municipalities. The highest lack of interest was observed in Bardoňovo (92%), Čechy (92%) and Kolta (86%). Only 13% of respondents in Termal microregion considered to make business in 2003 and in 2014 the same.

On account of the priority interest of Termal microregion in promotion and development of tourism, which was also the impulse of its formation, obligingness of inhabitants to tourists was also observed (Map 4). We were also in questionnaire interested in fact, if the residents were obliging to accommodate tourists in private. In the results of the microregion as a whole, inhabitants obliging to accommodate tourists prevailed in 2003 (86% of respondents).

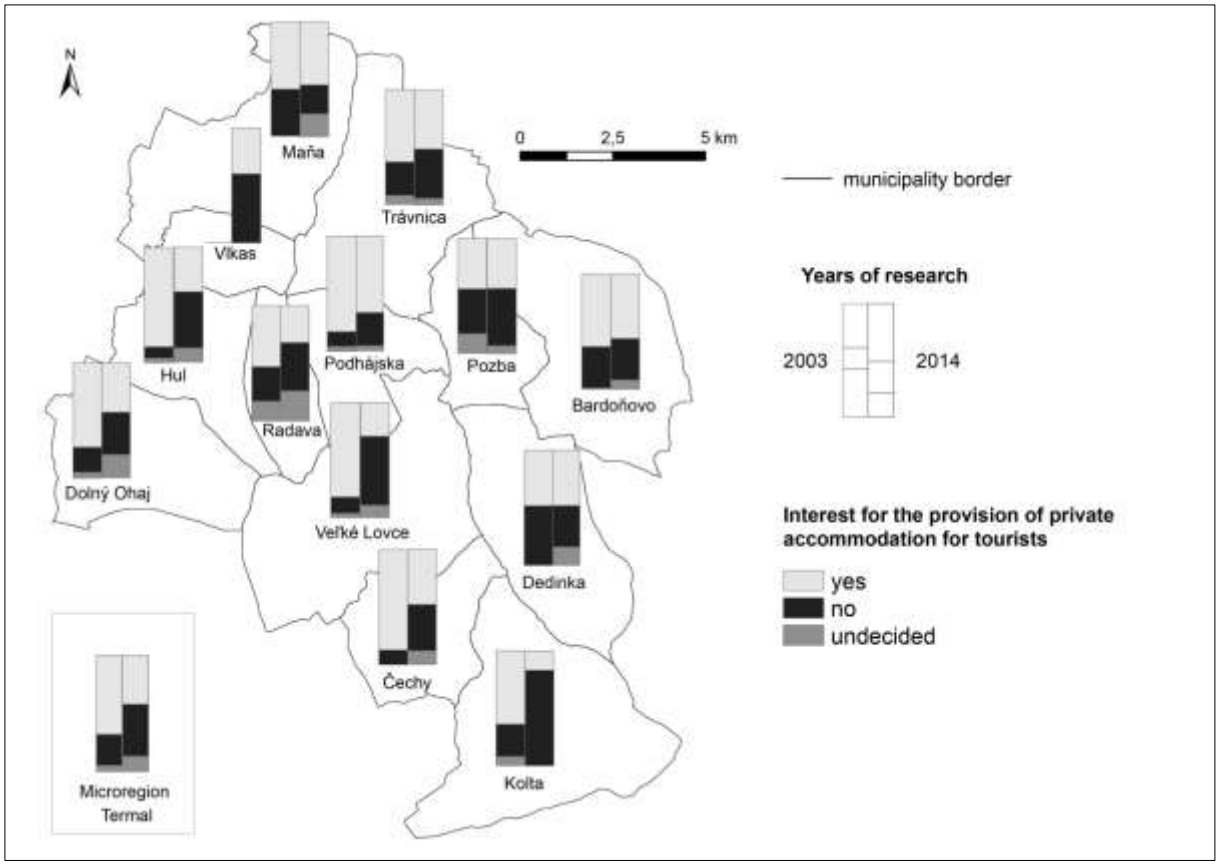

Figure 4 Obligingness of inhabitants to tourists in microregion Termal
Source: Own processing based on own data collection

In the microregional assessments in 2014, there was approximately the same proportion of residents who would accommodate tourists in private (42% of respondents) and those who are not interested in providing accommodation for tourists (45% of respondents). In 2003, private accommodation would be provided by inhabitants of municipalities Čechy (87% of respondents), Hul (86%) and Podhájska (83%). In 2014, there is observed significantly lower interest and efforts to provide accommodation for tourists and the largest interest was observed in Podhájska (67% of respondents), Bardoňovo (56%) and Trávnica (51%). The lowest interest in the private accommodation of tourists was expressed in 2003 by inhabitants of Dedinka (52% of respondents) and Pozba (39%) and in 2014 inhabitants of Kolta (83% of respondents), Veľké Lovce (60%) and Vlkas (60%). An overall evaluation of the microregion Termal was a part of the questionnaire survey as well as his perception of the inhabitants of each municipality. For example, there were surveyed opinions on co-development activities of microregion activities and proposals for new activities. Through respondents it was also determined the most attractive place of Termal microregion (63% of respondents). Within both observed years, Podhájska Thermal Spa was considered as the most interesting place. In 2003, that place was dominated in all of municipalites, especially in Hul (88% of respondents), Dolný Ohaj (84%) and Radava (83%). Podhájska Thermal Spa with Aquamarine and Wellness center achieved a similar evaluation in 2014, when 69% of respondents corresponded with this view. For the most attractive was that place considered in Dedinka (100% of respondents), Podhájska (100%) and Trávnica (100%). Inhabitants of microregion saw development potential and development prospects of microregion in 2003 especially in increasing accommodation facilities (29% of respondents), in organizing cultural events (17% of respondents) and in the completion of infrastructure (16% of respondents). Within other activities, the higher rankings achieved segments aimed at increasing the promotion of microregion (14% of respondents) and the building of cycle routes (10% of respondents). In 2014 respondents considered activities for tourists as priority (33% of respondents). It was followed by activities dedicated to building a spa (31% of respondents), construction of recreational facilities (21%) and completion of cycle routes (14% of respondents).

Conclusion

Opinions and suggestions of inhabitants play an important role in planning the regional development of area. It is possible to indicate the most effective solution of economic, social and environmental problems and determine the future direction of development of the area through the participation of local inhabitants in public affairs. Even more interesting ideas and opinions we can get in longer-term researches in the regions. In the case of questionnaire surveys in Termal microregion we can observe the development, stagnation or negative trends in the various fields of regional development.

Studying of opinions on creation of new job positions after more than ten years confirms the significant interest of the population for employment opportunities especially in tourism and agrotourism. Results confirm primary intentions of Termal microregion that were focused and are focusing to promote tourism in an attractive environment of tourism with resort in the Podhájska. Likewise, Podhájska represented the most attractive place in microregion during both observed years thanks to the thermal spa and wellness center.

More problematic field became the business field in comparison with 2003. On account of the current economic and legislative conditions interest of inhabitants in business is very markedly reduced. Decrease of interest from 47% to 18% of respondents interested in business may in the future significantly endanger the economic development of the territory, which may have negative impact on employment opportunities.

Descending trends were within the surveys also recorded in relation to the obligingness of the population to tourists. While in the year 2003, 68% of respondents would accommodate tourist in private, in 2014 it was only 42% of respondents.

Evaluation of satisfaction of the population with municipal self-government pointed out to the overall increase of satisfaction of the population. The results are therefore reflects of the activities and efforts of municipal self-governments, who are at the present time trying for effective development of municipalities and their progress in the microregion or region.

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RURAL TOURISM AND AGROTOURISM AS AN INTEGRAL PARTS OF RURAL DEVELOPMENT

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Slovakia is a country with a huge potential for the development of rural tourism and agrotourism, particularly in mountain and sub-mountain areas that cover over 2,000,000 hectares of acreage of the country. These kinds of tourism bring indisputable economic as well as social advantages for the particular regions. It is precisely the development of rural tourism and agrotourism which is a necessary precondition for the sustainability and further development of rural areas. The paper evaluates quality of services in rural tourism and agrotourism in 21 regions of tourism. Constituent tourism regions were compared and subsequently ranked via certain indicators of quality of services as well as economic benefits provided by these services. The comparison shows that rural tourism and agrotourism are the most developed in Tatras region and Liptov region. The quality of services is the highest in these regions as well.

Keywords: rural tourism, agrotourism, quality of services, rural development

JEL Codes: L83, R58

THE APPLICATION OF THE CONCEPT OF SUSTAINABLE MARKETING IN THE PRACTICE OF FOOD COMPANIES IN SLOVAKIA

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Many companies are actively integrating sustainability principles into their businesses to improve processes, pursue growth, and add value to their companies rather than focusing on reputation alone. Sustainability is an emerging megatrend that is vitally important for today businesses especially in the food sector. Food manufacturing companies are confronted with numerous sustainability challenges which can involve both positive and negative implications. These pressures are caused not only by governments but mainly from consumers. Due to this fact marketing managers try to understand and implement these principles into their everyday practice. The triple bottom line of sustainability includes not only looking at economic performance, but also considering environmental and social impacts as well. The present paper refers to the application of the concept of sustainable marketing in the practice of food companies in Slovakia. In order to fulfil defined objectives of the paper were collected and used primary and secondary sources of information, as well as the method of interview with company executives using a questionnaire (total number of respondents was 74 food manufacturing companies).

Keywords: sustainable marketing, food company, sustainability

JEL Codes: M31, L66

SESSION
NEW ENVIRONMENTAL APPROACHES IN MANAGEMENT OF RURAL LANDSCAPE

NATURAL RISKS AS LIMITING FACTORS OF RURAL DEVELOPMENT

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Abstract
Czech Republic as a Central-European country faces a typical set of natural disasters repeatedly attacking the environment. The regional and flash floods have reached the largest extend in comparison with landslides, avalanches, rock falls, fast subsidence and others with exception of the drought. Such problem has been studied in the last two decades in some projects at academic and applied institutes. The main attention was paid to the meteorological, climatic, agricultural, hydrological, social etc. droughts. We have focused on the so called geographical drought caused by an integral impact of representative factors of all natural landscape components and human land utilizing. Using GIS technology, we have carried out an exemplar research ignited by the hot wave and the precipitation deficit in the 2013 summer. Using detail component and land use data at the resolution 1:50 000, five territorial classes of drought risk were distinguished. Some of the most endangered areas cover large territory in the most fertile agricultural land in Southern Moravia. The artificial irrigation has to be planned here to ensure acceptable harvest after hot wave has started.

Keywords: natural risk, drought, land utilizing planning, mitigation scenario

JEL Codes: Q01, Q54, R11

Introduction

The key issue among natural hazards in the Czech Republic is represented by floods, whether regional or flash. They have traditionally received considerable attention in professional and general public. In recent years, the increase in frequency of other natural extremes a significantattention was turned also to the problems of drought. Repeated episodes of drought affect more and more frequently the Czech Republic in the last decades. A number of nearby European countries with similar natural conditions experience also suffers from the drought. Increasing aridity and a continuing process of desertification with many accompanying negative phenomena especially troubled countries within a all continental climate zones. Affected are also countries in the vicinity of large deserts and on cold coast near the two tropics. The aridisation trend, whether long-term – climatic drought, and short - seasonal drought, has resulted in changes to the natural environment, and often in severe economic and social consequences. The aridisation is partly attributed to the current extraordinary wave of migration from the affected area (Cílek, 2015), where a difficult situation in the availability of water resources is one of the causes of conflicts and the consequent insecurity leading to deep social and political turbulences.

Generally, the drought indicates a lack of water in the nature (Rožnovský, 1998). The drought is also an integral part of climatic conditions and always affects human society and its activities. The agriculture is the most penalized human activity by impacts of droughts, and because it provides a food source for the population, fluctuations in food production may have direct consequences for the human society. Brázdil and Kirchner (2007) consider the drought as the state of the landscape, presented by a relatively short-term negative deviation from the normal water balance, where it is the period, when the loss of water in the landscape outweighs the acceptance of water.

The drought is not a random or rare phenomenon, but a normal recurring situation in relation to climate fluctuations. We encountered the drought in all types of the rain climatic zones in a form of transitional weather anomalies. This distinguishes it from aridity, which we consider to be a permanent feature of climate (Munzar, 2004). The effects of drought are cumulative, because drought intensity increases with the length of the dry period. Losses caused by drought may reach a considerable size, and it can take many years to return to the normal rainfall.

A quite general and universally accepted definition of the drought does not exist (Blinka, 2002). Critchfield (1983) reported that drought is the lack of water, which occurs when soil moisture is insufficient to meet the requirements of the potential evapotranspiration. The drought can be classified in three categories: the permanent drought in arid climates, the regular seasonal period of the drought and the drought caused by an extreme rainfall deficiency. Many authors presented own typology of the drought. According to the dominant demonstrating factor following types can be distinguished: the meteorological drought, the agricultural drought, the hydrological drought and the socio-economic drought (Brázdil, Kirchner, 2007). It is clear that there is a time sequence among these four drought types, regardless their various manifestations can occur simultaneously. The drought is typically followed by other adverse effects on humans, such as above-average air temperatures, a low relative air humidity, a smaller cloud sky coverage, a higher wind speed and a longer day sunshine duration, all of them increase the evapotranspiration (Heatchcote, 1999). This reduces the efficiency of photosynthetically active radiation (Earl Davis, 2003). Trnka et al. (2009) identifies two main processes that enhance the drought – the desertification and the aridisation. The desertification is a land degradation in arid, semi-arid and sub-humid areas (Reynolds, Stafford-Smith, 2002). The aridisation is a long-lasting process of drying.

Numerous indices are used to evaluate the intensity of drought: the Palmer Drought Severity Index - PDSI (Palmer, 1965), the Standardized Precipitation Index (McKee et al, 1993), Standardized Runoff Index (Shukla, Wood, 2008), the Surface Water Supply Index (Dezman, et al., 1983) and the Vegetation Condition Index (VCI), etc. In the case of working with a large number of parameters in the calculation of indices, their quality drops. Some researchers (e.g. Hayes, 2003; Tsakiris and Vangelis, 2005) nevertheless recommended to work better with complex indices, and not only with the precipitations.

Wilhite (Wilhite, et al., 2000) mentions other drought indices. The periods without rainfall are then considered as periods of at least ten consecutive days without measurable precipitations or with a very small amount of total precipitations, which has interrupted the drought and reached a maximum of 5 mm within 1-5 days.

Geographical drought

The climate, respectively meteorological factors of drought represent obviously triggers that start the subsequent events that led to the current lack of the water in the area. A long-term or a seasonal lack of rain in the area, the deficit of groundwater or surface water can be amplified or attenuated by an effect of other factor if the geographical environment - both of the natural and anthropogenic origin. The geographical drought is perceived as a drought, respectively the area susceptibility to the drought as a result of the interaction of all the factors in a given geographical area.

In addition to the established terms of the long-term (climatic) and the seasonal (meteorological) drought, it is necessary to distinguish a drought, which is the product of variously combined effects of all components of the landscape, of course, including atmospheric factors. This means that the actual deficiency of water in the area may be locally and specifically increased or decreased by their effects. The Czech Republic is located in the temperate climatic zone in a transitional position on the border between the oceanic and continental climates. The geographical position in the centre of Europe is causing local different amount of usable water, which should correspond to the potential climax vegetation with. However, the case when the necessary amount of water is not occurs quite commonly and the site begins to suffer from drought.

The relief is the main differentiating factor of features and values of other natural components of the landscape and also factor in the selection and deployment of forms of land use. In particular, the site moisture management can be deduced as the affect of the relief morphometric parameters. Slope, exposure, absolute and relative elevation etc. affect the redistribution of rainfall, runoff and transpiration ratios. Available geodata, technology and knowledge allow with a considerable reliability to model the available precipitation amounts with the respect to the prevailing wind directions contributing to the site moisture, temperature and evapotranspiration conditions, relief ventilation and the susceptibility to the formation of atmospheric inversions with respect to the terrain composition. By combining the calculated values of the redistributed rainfall amounts, the intensity of evaporation, water runoff and infiltration values with regard to the nature of the geological environment, soils and the active surface (land cover) we can identify areas where despite the occurrence of climatic or meteorological drought, there no

geographical drought makes the threat, and vice versa to locate well areas where are dry there, although it does not indicate any rain deficit.

Identification of the geographical drought in ArcGIS for Desktop

The geographical drought risk assessment methodology was realized in the test area Hustopčesko (named after the central place – the small market town Hustopeče) (South Moravian Region) and its data processing in GIS is based on the principle of spatial decision making. In the preparatory phase the key factors with significant impact on the occurrence of the drought were chosen. They are as it follows: the maximum daily air temperature, the total precipitation before the expected dry period indicated by tropical day temperatures (daily maximum above 30°C), the geological environment, soils and the land use. The temperature and precipitation conditions were further converted (adjusted) according to the created digital elevation model (DEM) for the the determination of the temperature field in the dry periods and for the distribution of rainfall with respect to the slope and aspect with resolution given by the ground pixel size of 20 meters. These two layers were reclassified into the five corresponding risk categories (1 – the highest, ..., 5 - the lowest risk) using methods multi-peak division. Soils and rocks represent important local factors that can significantly alter the rainfall situation based on the precipitation and temperature conditions. The effect of rocks and soils, there are several ways in which the essential role is played by their physical properties. With respect to the given characteristics, the layers of soil types and rock types were also reclassified into five categories. The land use, or the land use of susceptibility to drying was based on data from the CORINE Land Cover 2006 database, when it was considering that the evapotranspiration nature of the vegetation cover and land use cover was assigned to a value indicating the ability of the cover to the water retention in the landscape. The quantitative scale (0 - nothing and 255 is the highest possible) was chosen on the basis of the recommended numerical variance for the fuzzy standardization of data (Eastman, 2009). Data were also standardized for the more accurate reclassification using by the fuzzy method of the Large in the ArcGIS 10.1 package, and it was as with previous factors reclassified into five classes of the drought risk. The above mentioned reclassification into 5 categories indicating the degree of the drought risk was performed with the layers of the air temperature, the precipitation and the land use after removing those parts of the territory, which constitute constrains for the drought. They can make the overall result more precise and avoid inaccuracies when using the reclassification algorithm. In our case, it was going on permanent water bodies and on the territory adjacent to watercourses, where they affect the moisture in the surrounding area. In the case of water bodies both the natural and anthropogenic water bodies have been identified. In the case of watercourses, the extent of the territory along the watercourse was defined using the local altitude of 10 m above watercourses. This altitude has been conventionally defined and it outlines an area on the both sides of the watercourse affected by the infiltration or by the naturally flowing ground waters. The drought is not likely expected here. The identification of these areas (by the so called *Vertical buffer*) was performed using the tool extensions for the *Spatial Analyst* within *ArcGIS 10.1*. At the beginning, the DEM was transferred into an image of integers. The strip (the buffer zone) was delineated along the watercourses, which was subsequently using the tool *Extract by Mask* removed from the DEM. This raster layer also served to distinguish the area adjacent and distant from watercourses (so called Euclidean allocation). Using the map algebra tool (*Raster Calculator*) the pixels greater than or equal to the pixels of the adjacent area were increased by 10 meters. The both layers of constrains were unified and used to remove pixels from the layers of the individual factors. This approach has clarified the application of the method of multi-peak division for the necessary reclassification.

The WLC method was used for the final modelling and the map visualization (Fig. 1), which is based on the sum of the partial values of factors. The different shares of factors in the formation of the drought were distinguished by the determining their preferential weights. These weights were calculated based on the Saaty´s matrix of pair wise comparisons in the program complement AHP 1.1 The resulting picture was created using by the tool *Weighted Sum*, which has 10.1 program ArcGIS *Spatial Analyst* in its structure.

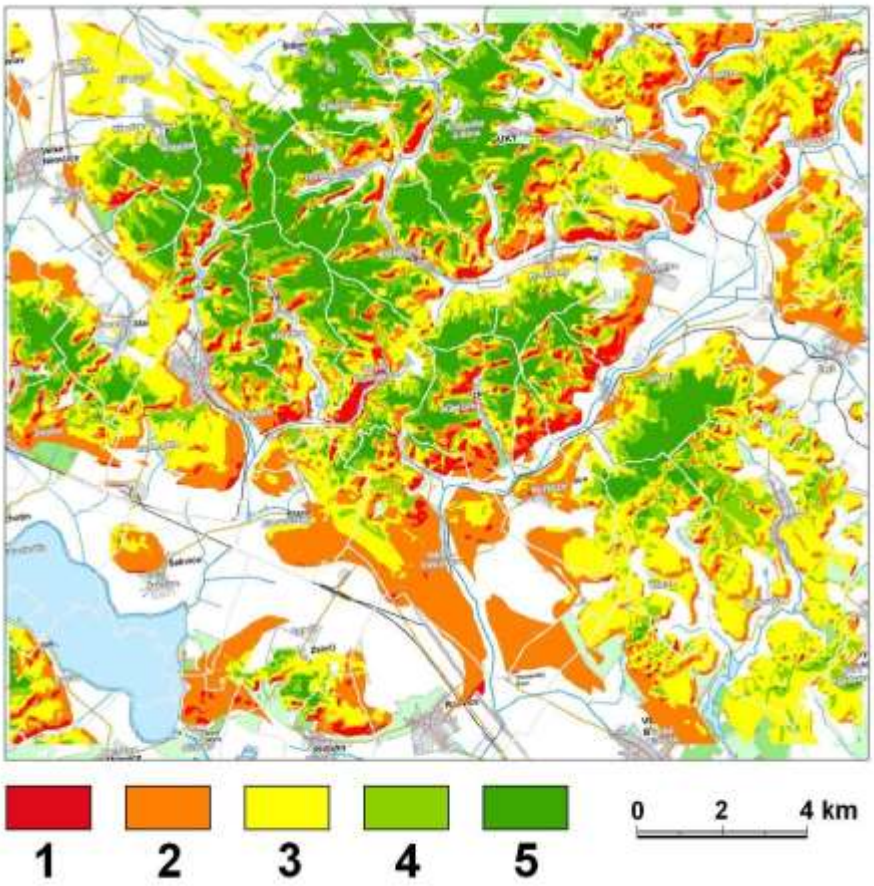

Figure 1 The results of the geographical drought risk assessment in Hustopečsko during the dry period of tropical days in the summer of 2013.
Source: Own processing based on own data collection

The risk classes: 1 – the highest, 2 – high, 3 – average, 4 - low, 5 - the lowest, other areas are without the risk (white lines represent cadastral boundaries, the topography from ESRI Base Map)

Practical use of drought risk assessment in landscape management
The compiled method of the geographical drought risk assessment is applied in a situation where the condition of the antecedent least 10-day dry period (with max. 5 mm rainfall total in this period) adopted and starts the time of extreme temperatures (max. daily air temperature of 30° C and more). These conditions evoke quite without additional measurements a situation of high evapotranspiration when minimum water is available. The robust methodology is applicable in any area of the temperate climatic zone and it is based on easily accessible data. Data represents both stable conditions of the area (topography, geological environment, soil, land use) and time-varying characteristics of the trigger (precipitation, air temperature).
The attention of the user of the result, of course is normally focused on the highest risk classes of the geographical drought risk (Fig. 2). The areas with these risk classes will require the application of relevant mitigation measures.

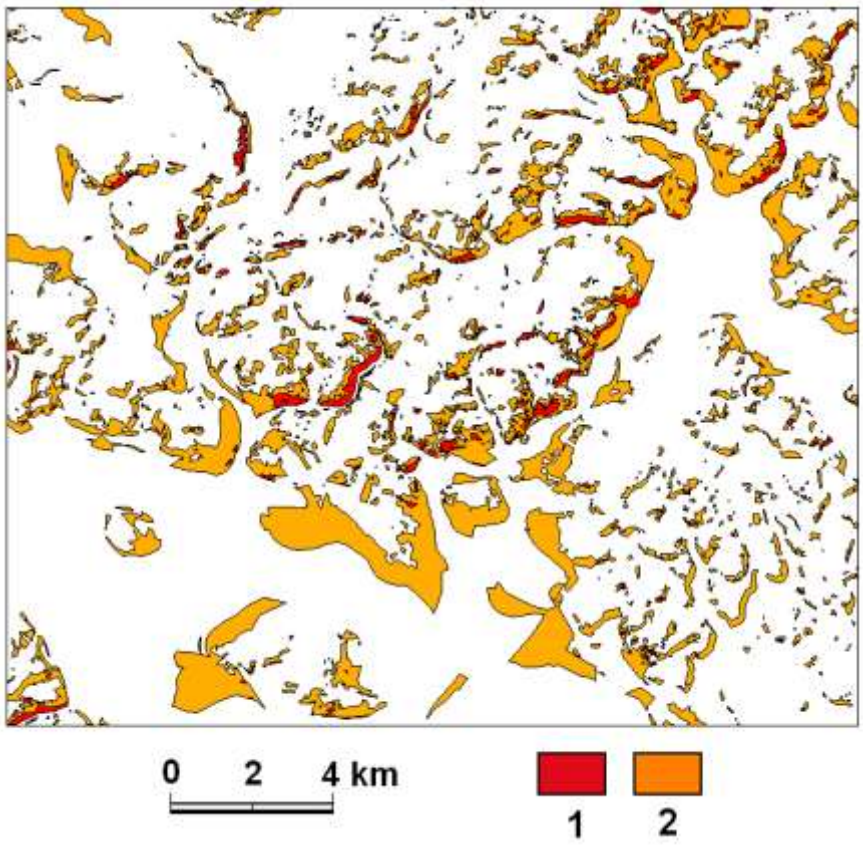

Figure 2 The territorial distribution of areas with the two highest degrees of drought risk in Hustopečsko during the dry period of tropical days in the summer of 2013.
The risk classes: 1 - the highest 2 - high.
Source: Own processing based on own data collection

The identified geographical drought risk areas or locations in the area of interest Hustopečsko can be divided into several groups:

a) large flat areas at low altitude along alluvial plains
b) narrow flat areas at low altitude along alluvial plains
c) sloped areas at foot of slopes and on slopes
d) small sites in flat terrain
e) small sites in dissected terrain

These parameters greatly impact the selection of necessary measures. Tiny sites in dissected terrain (generally elsewhere) require stabilization by a permanent vegetation, whether close to nature (forests, shrubs, grass) or cultural (orchard, vineyard). Usually such sites are suitable for the residential or recreational development.

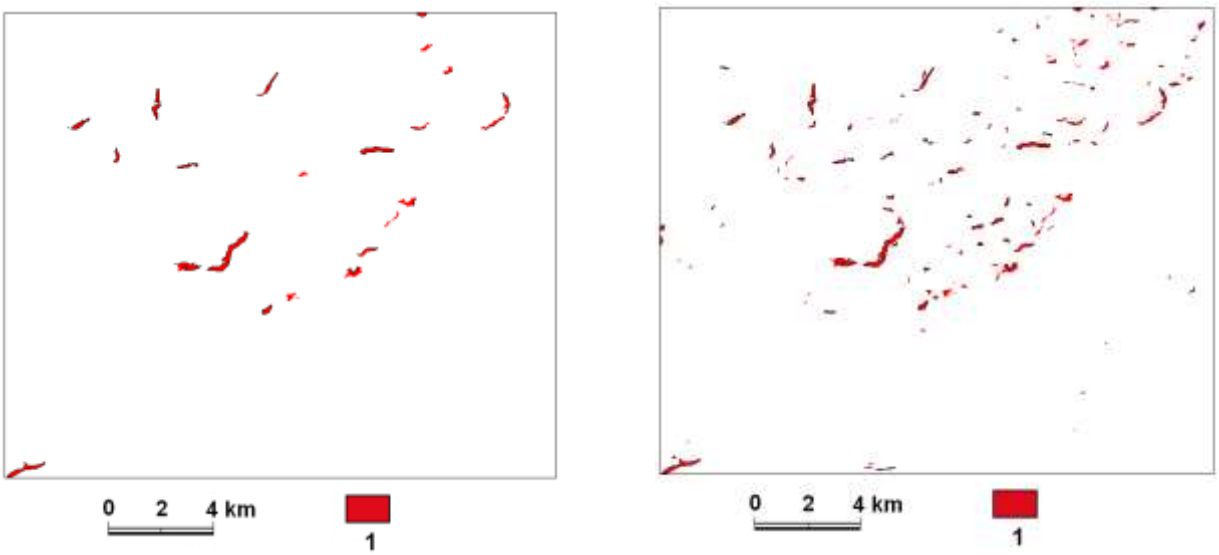

Figure 3 The territorial distribution of sites of the highest geographical drought risk class in Hustopečsko during the dry period of tropical days in the summer of 2013.
1 - the highest risk class. Areas with an extension of 5 ha or more (left), 1 hectare or more (right)
Source: Own processing based on own data collection

These sites (Fig. 3) do not need any the operational short-term measures, since their properties predispose them to repeated drought. Their economic importance is lower due to their smaller sizes and generally their position on steep slopes. Their stabilization by permanent vegetation is multi-purpose: it contributes to the improved water conditions by reducing evaporation through the protective vegetation cover, thus reduces the soil erosion risk.

Far more important are numerous and larger areas with the high risk geographical drought. These include both the large flat and sloped areas, as well as a wide spectrum of smaller areas on slopes (Fig. 4).

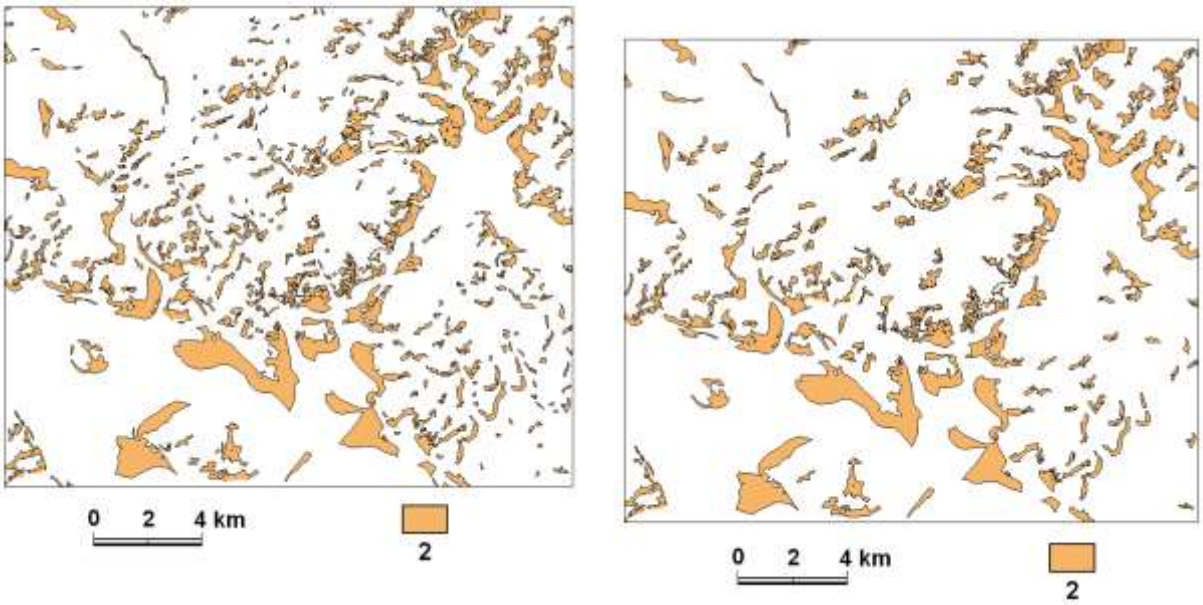

Figure 4 The territorial distribution of sites with
the high classes of geographical drought risk in Hustopečsko during the dry period of tropical days in the summer of 2013.
2 - high risk class. Areas with an extension of 5 ha or more (left), 1 hectare or more (right)
Source: Own processing based on own data collection

The largest areas covering an area of hundreds of hectares exhibit location in flat terrain. They have considerable economic significance, and usually of good quality chernozem soils. It is worth to build artificial irrigation systems in these areas. Smaller areas are suitable for various forms of utilizing, from

residential, recreational, manufacturing and others to planting permanent crops or for pastures and grain production without irrigation. Large areas together with tiny sites of the same (high) risk drought class occupy around 10% of the study area, they are mostly open areas without permanent vegetation. It is necessary to remark, that after minimum antecedent precipitations and long-term tropical temperatures, the area of this class of risk may spread to sites still with an average risk even a part of the average risk class may turn into the highest risk class when the urgent deployment of irrigation will be necessary precondition of rescue of crops in the fields.

Conclusion and discussion

The geographical drought is undoubtedly one of the factors limiting the land use efficiency. Its recurrence has a major impact on the economy of the rural areas. If the above demonstrated methodology results the identification of the most vulnerable areas, the person responsible for land use planning has at his/her disposal the key spatially localized information that supports the relevant decision on the choice and deployment of suitable mitigation measures. The repeated drought even of greater extent, which hit the same area in the summer of 2015, supports the idea of creating a nation-wide (regional, national) system serving not only the monitoring requirements but also supports a warning release of impending geographical drought risk. Such an approach also helps reveal areas that may be posing significant meteorological and hydrological risks, but from the viewpoint of the geographical drought risk there is no reason for alarm, as other natural area features suppress effects of hydro-meteorological conditions. The opposite is true where topography, soil and the geological environment even intensify the negative effect of the total water deficit, regardless these areas remain out of the attention, and such sites are becoming critical, although the hydro-meteorological drought assessment does not indicate such fact.

The relatively high localization accuracy of areas with a specific geographical drought risk class naturally respects the quality of the basic data. Their continuously growing quality thanks to the detail mapping of soil ecological units (BPEJ), to the more detail geological mapping (up to a scale of 1:10 000) and to the application of the digital elevation model based lidar data (4th generation DEM in the Czech Republic), but eventually also an improved land use register (e.g. in the latest version of the ZABAGED geodatabase) will lead both to more accurate determination of the geographical drought risk, and to the more precise localization of identified risk classes.

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THE INFLUENCE OF ENHANCING BROILERS WELFARE ON THE ENVIRONMENT

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Abstract
Polish broiler production is constantly growing as a result of the increasing market demand and availability of fodder. The farmers increasingly often aimed at specialized production. As a consequence, the number of animals kept is increasing, as well as the number of intensive breeding farms. However, the intensive production leads to many social and environmental problems. The study analyzes the impact of improving animal welfare i.e. lowering broilers density on environment, using boiler production as an example. The problem of animal production in the light of environmental protection, in the world and in Poland, has been treated increasingly seriously by the general public. Thus, the study estimates the pollution level on the basis of normative values, for different levels of broilers density which means different levels of animal welfare. The source of material for research were environmental impact reports of selected chicken farms. Pollution balances were prepared on the basis of normative values for different levels of stock density. The results were sufficient to determine the environmental benefits of reduction of stock density. A prerequisite for maintenance of environmental benefits is withdrawal from investment decisions concerning construction of additional broiler houses to compensate for production limitation.

Keywords: environmental impact, welfare, broilers**,** density

JEL Codes: Q01, Q16, Q17

Introduction

The objective for conducting any agricultural activity is to produce food materials, however, agriculture, apart from many obvious benefits, is currently the cause of numerous environmental and social problems. One of the most discussed topics is the negative influence of intensive agriculture on the natural environment and animals used in the production process.

It is assessed that agricultural production emits big part of greenhouse gases responsible for climatic changes. Methane (CH_4) and nitrous oxide (N_2O) are the main gases produced by agriculture. They are generated, above all, as a result of storing and using animal faeces in fertilising. According to the report of the Intergovernmental Panel on Climate Change (IPCC) issued in 2007, global agriculture is responsible for 13.5% of emissions, it is 9.2% in Europe and it is at the level of 8.7% in Poland (Staniszewska, 2013).

Emission of gases in agriculture cannot be controlled directly as the agricultural activity is related to complex biological processes. However, some activities can be undertaken, which will enable to counteract excessive emission of these gases. The level of gas emission depends on concentration of animal production and the system of maintaining animals. A general wish of farmers to increase both livestock density and also the scale of production follows from economic realities. Farmers are not currently interested in reducing the production level due to the loss of profit resulting from it. However, consumers, in particular in the European Union, while expressing their opinions and making purchasing decisions, initiate significant changes in the scope of the methods of agricultural production (Malak-Rawlikowska and Gębska, 2010). Therefore, numerous legal acts have been issued in the European Union and also in individual member countries, which regulate issues related to rearing conditions and welfare of farm animals.

As a result not only production level matters, but also the conditions, in which it is conducted, the way it impacts the natural environment, animals, as well as social opinions and results, which occur in this respect. The key issue is to ensure high level of farm animal welfare (Runowski, 2013). The term animal welfare refers to animal condition, its health and its widely understood relations with the environment (Reinholz-Trojan, 2007). Taking care about animal welfare, as well as the need to reduce gas emission, often corresponds to reducing production level by farmers. Therefore, we can assume that actions aiming at increasing animal welfare undertaken thanks to e.g. decreasing allowed stocking density will also cause decrease of negative impact of farms on the natural environment.

We focused on boiler production in this paper, as the Council Directive 2007/43/WE determining the minimum principles for protection broiler chickens started to be binding 4 years ago (from the 30th of June 2010), which allowed to track reactions of producers for the change of the law and estimate possible consequences. Moreover, poultry in Poland constitutes over 46% of the total amount of the species structure of the livestock production (Figure 1). In total, poultry density for 100 ha of agricultural areas in December 2013 amounted 884 pieces including hens - 801 pieces (in December 2012 accordingly - 838 and 751 pieces) (Statistical Yearbook of Agriculture, 2014).
Production of poultry broilers will probably keep increasing, as poultry meat consumption becomes more and more popular and much higher growth dynamics is observed. (Bremen et al., 2013). Poland has been the leading manufacturer and exporter of poultry meat in EU for many years. Poultry meat production reached the level of almost 2.1 mln tons in 2014, thanks to which Poland got the first place in EU in this respect. In comparison, Poland was on the 3rd place in EU in 2013 and on the 6th in 2010.
Such a huge advancement can be attributed to fast pace of growth in poultry production in Poland, which increased by 10% in 2014 in relation to 2013. The European Commission published the report in 2014: "*Prospects for agricultural markets and income 2014-2024"* (Dillen, 2014).

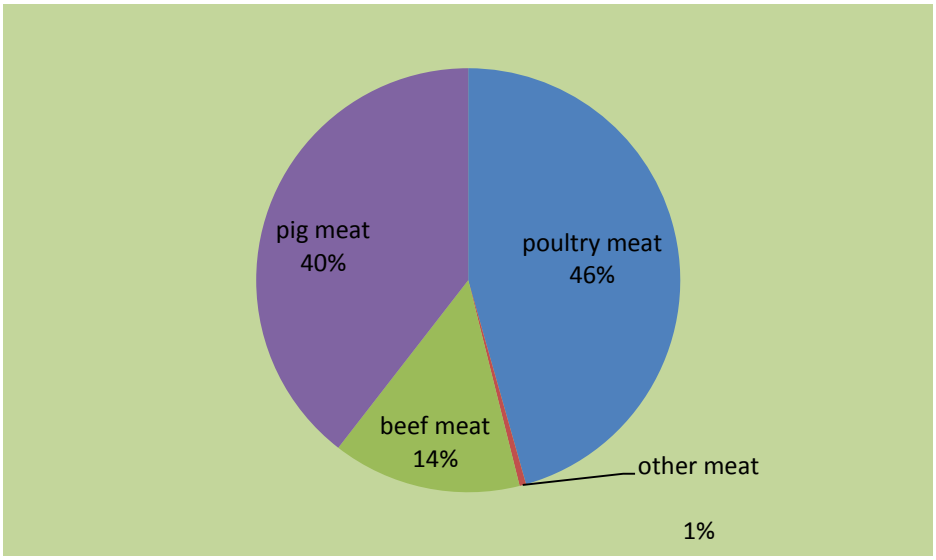

Figure 1. Share of livestock production in 2013
Source: Statistical Yearbook of Agriculture, 2014

As regards Poland, there were 64125 farms maintaining hen broilers, which constituted 11.5 % of all farms keeping hen poultry. The Figure 2 present the structure of farms maintaining broilers as regards areas of agricultural land. 75% of farms maintaining poultry in Poland are characterised by small area (up to 10 ha).

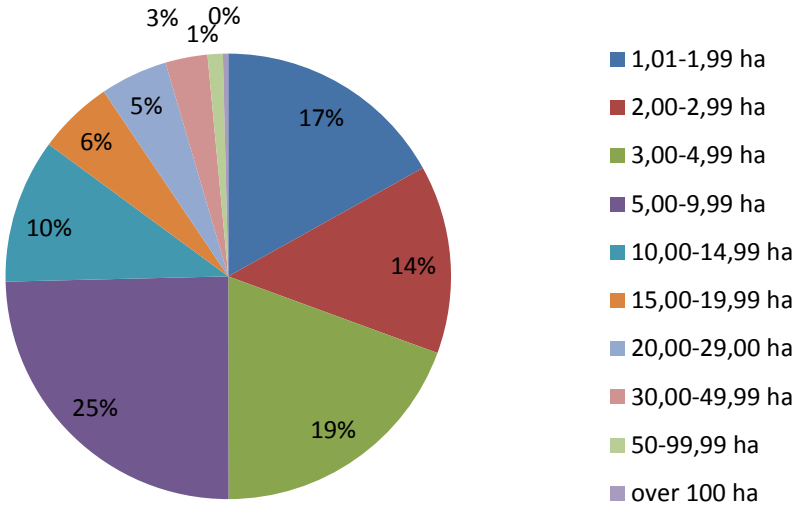

Figure 2 The structure of farms maintaining broilers as regards areas of agricultural land (UR) in Poland in 2013
Source: own work prepared on the basis of the Statistical Yearbook of Agriculture. 2014.

The greatest impact on the environment have industrial poultry farms with the density of over 40000 birds (the Directive of the European Parliament and the Council 2010/75/EU of the 24th of November, on industrial emissions, IED). Such large farms require obtaining an integrated permit.

Materials and Methods
The objective of the article is to define if and to which extent, a change has taken place as regards the amount of emitted pollutions from one farm and in the scale of the country as a result of implementing the directive of the Council 2007/43/EC determining the minimum principles for protecting chicken broilers that is at higher and lower admissible level of density of broilers in a broiler house.
Raising broilers is the source of emission of the following main pollutions: ammonia (NH_3) occurring as a result of bacterial urea degradation and the other substances containing nitrogen: methane (CH_4) and nitrous oxide (N_2O). The substantial pollution is the particulate matter (PM10) floating in the air as a result of bird movements.
The level of pollution emission from farm facilities has been defined on the basis of the data from the literature. The calculations have been made with the method of emission factors prepared by Institute for Building, Mechanisation and Electrification of Agriculture (IBMER). This is the method used for preparing reports of impact on the environment, according to the requirements of the art. 66 paragraph 1 of the act of the 3rd of October 2008 on sharing information about the environment and its protection, public participation in environmental protection and environmental impact assessment (Journal of Laws No.199, item 1227 of 2008 with further amendments); The assumed indicator of pollution emission is presented in the table 1.

Table 1 Indicator of pollution emission according to IBMER

Specification	1st stage of the cycle	2nd stage of the cycle	3rd stage of the cycle	4th stage of the cycle	5th stage of the cycle
Emission of NH_3 kg/bird	0.00039528	0.00062160	0.00210332	0.00165120	0.00287760
Emission of CH_4 kg/bird	0.00009720	0.00015456	0.00025200	0.00042240	0.00093720
Emission of N_2O kg/bird	0.00003456	0.00005502	0.00009072	0.00015840	0.00036300
Emission of PM10 kg/bird	0.00022248	0.00040152	0.00072576	0.00135168	0.00285912

Source: Mihułka et al., 2009

Calculating the level of each emission takes place according to the formula:
Emission of pollution $=\sum_{k=0}^{\text{and}} \text{ni} * \text{ai}$;
Where:
n*i* – number of broilers in *i* stage of the cycle
a*i* – coefficient of pollution emission in *i* stage of the cycle

Results and Discussion

The number of industrial poultry farms rose systematically from 609 in 2010 to 710 in 2014 and was diversified in individual viovodeships. The highest number of farms was located in the following voivodeships: wielkopolskie (174), then mazowieckie (112), zachodniopomorskie (55), kujawsko-pomorskie (63) and łódzkie (67) (Figure 2). As Waligóra and Pater indicate, the tendencies in buildings for poultry aim at improving density and eliminating equipment, which is not good for birds (Waligóra and Pater, 2001). The data presented in the Figure 3 indicates that the number of industrial farms in Poland kept increasing from year to year. Farmers more often specialise in poultry production and aim at conducting it on a great scale. As a consequence, there is an increase of the number of animals maintained in single farms with usually small area of arable land. As poultry production is conducted by using purchased feed, however, it causes serious risk for the environment due to the possibility of exceeding admissible standards of contaminating the environment with faeces.

Activities undertaken in the scope of reducing broiler density per 1 m^2 are contradictory to the expectations of the producers, however, they can bring improvement not only in the scope of bird welfare, but also environmental protection, thanks to reducing emission of pollution to the environment.

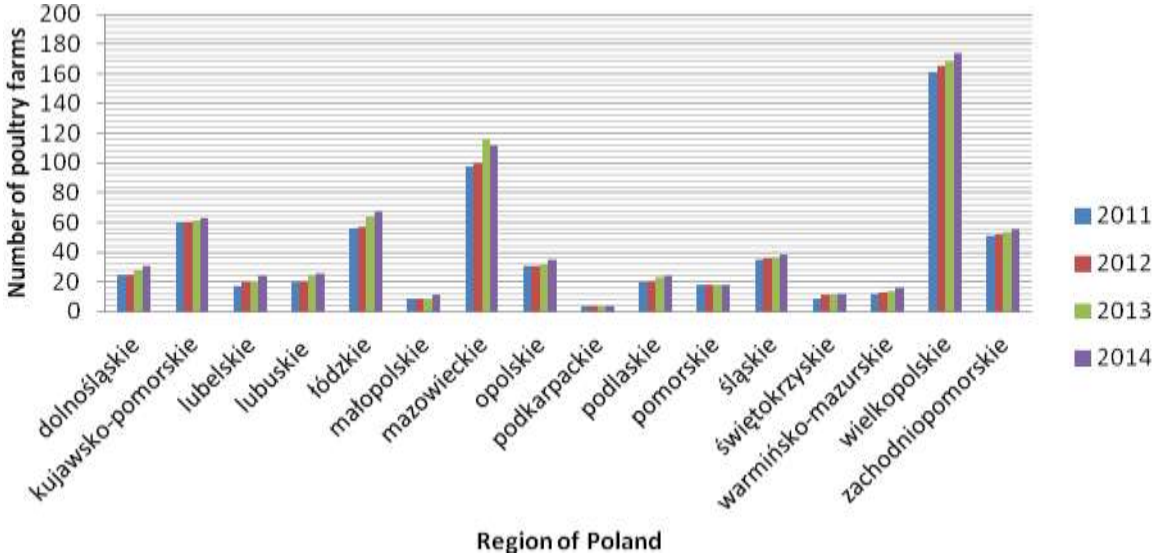

Figure 3 The number of heavy industrial farms of broilers in individual viovodeships in Poland in the years 2011-2014
Source: own work prepared on the basis of the issued integrated permits for poultry production from the years 2011-2014.

The statistical data indicate the implementing standards for density per 1 m^2, on the one side, are conducive for improvement of animal welfare and on the other side, they also let reduce emission of harmful substances. Therefore, they have impact on improvement of the environmental condition, if they are observed in a proper manner by the producers.
Twenty-one industrial broiler farms were studied. They were selected from those whose owners had the report on the broiler farms' influence on the environment, obtained after the introduction of the directive limiting broilers density (2010). On average, in the studied farms there were 2,8 broiler houses, but their ranged from 1 to 12 a farm. The number of broiler houses didn't change in 10 farms, in 11 farms the number of broiler houses increased including 8 farms started broiler production (Table 2). After the Directive implementation an average number of broiler houses increased to 3,9 per farm.
Before introduction of the Council Directive 2007/43/WE the average size of a broiler house was 1602.9 m^2. The average number of broilers was 126507 per one cycle a farm that makes 506 livestock unit (LU) per cycle.
After introduction of the Council Directive 2007/43/WE the average size of a broiler house increased to 2144.8 m^2 (33,8%). At the same time the average number of broilers decreased, and it was 117248 per one cycle a farm, which makes 469 livestock unit (LU) per cycle.
On average, the end-weight of a broiler was 1.9 kg and ranged from 1.5 to 2.4 kg. The production cycle most often lasted 6 weeks, only in two farms it was longer and lasted 7 weeks and in one farm it was shorter and lasted 5 weeks. In 4 farms in the 5th week, some broilers were sold from each broiler house to maintain the required density and in the other ones farmers didn't introduce the procedure because their initial chicken number was lower and they met the required density without such intervention. Results show that pollution from one cycle of broiler production was lower after the directive implementation. The average amount of ammonia (NH_3) was 945.78 kg a cycle before and 922.41 kg a cycle after the directive implementation. According to this, the average annual amount of ammonia produced by one farm was 5281 kg before and 5150 kg after.

Table 2 Changes at studied farms before and after introduction of the Council Directive 2007/43/WE

Specification	Nb of farms	Number of broiler houses		Average size of a broiler house (m^2)		Average size of a broiler production (psc/farm/year)		Broiler production (thousand psc/year)	
		Before	After	Before	After	Before	After	Before	After
Farms with constant number of broiler houses	10	42	42	2228	2228	786350	764553	7853	7639
Farms with higher number of broiler houses	4	17	25	1326	2502	461837	842648	1847	3370
Farms which started broiler production	7	0	15	0	2091	0	424885	0	2974
Total	21	59	82	1603	2145	693632	666206	9700	13983

Source: own work.

Similarly, the average amount of methane (CH_4) was at the beginning 267.47 kg a cycle and 210.24 kg a cycle after the directive implementation. Whereby the average annual amount of methane generated by one analysed farm was respectively: 1493 kg and 1174 kg.
The same situation concerned the average amount of nitrous oxide (N_2O). First it was 114.40 kg a cycle; later it was 94.9 kg a cycle. As a result, the average annual amount of nitrous oxide was 639 kg and 530 kg from one farm.
The same was observed in case of suspended particulates in air (P10). Before the directive implementation it was 680.55 kg a cycle, and 598.95 kg after its implementation. Yearly it was respectively 3800 kg of P10 and 3344 kg of P10.

Table 3. Changes of ammonia and methane pollution generated from all studied farms before and after introduction of the Council Directive 2007/43/WE

Specification	Emission of ammonia (NH_3 Mg/year)		Emission of methane (CH_4 Mg/year)		Emission of nitrous oxide (N_2O Mg/year)		Emission of suspended particulates (P10 Mg/year)	
	Before	After	Before	After	Before	After	Before	After
Farms with constant number of broiler houses	59.66	58.14	14.40	13.59	6.50	6.16	42.86	40.26
Farms with higher number of broiler houses	14.27	27.17	6.51	7.48	2.45	2.82	10.33	19.35
Farms which started broiler production	0	22.84	0	3.58	0	2.14	0	10.62
Total	73.93	108.15	20.91	24.65	8.95	11.12	53.20	70.23

Source: own work.

Data for one cycle shows that pollution decreased, because decreased density of broilers. From this point of view the directive implementation had a positive effect on environment.
But, at the same time the result shows that total broiler production in the studied farms increased significantly. Many farmers decided to start broiler production, and some farmers invested in additional broiler houses. In the analysed group 23 new broiler houses were build – 8 by farmers who already had broilers production and 15 by farmers who didn't have such experience.
Broiler production in the studied group of farms increased by 44%, and thus the gas emission increased too o – ammonia by 108.15 Mg a year (46%), methane by 24.65 Mg a year (17.9%), nitrous oxide by 11.12 Mg a year (24%). The total amount of suspended particulates in air grew up by 70.23 Mg. The detailed results of gas and suspended particulates emission is presented in the table 3.
Study showed that many farmers trying to maintain the previous level of production and income introduce higher number of chickens at the beginning of their fattening and later sell some of the broilers gradually to keep the required density. In such cases the amount of emissions doesn't differ much from high density production.
In many farms the emission increased, because a big number of producers didn't accept the decrease of their previous level of production and income which would follow if they lowered broiler density and didn't compensate their losses by additional practices. That is why they decided to develop their farms adding new buildings.
Gas emissions from broiler production have been the subject of intensive research. Numerous researchers have previously evaluated various aspects of environmental performance in broiler production, in particular point-source eutrophying emissions from poultry litter management (Pope, 1991, Reynells, 1991, Sims and Wolf, 1994 and De Boer et al., 2000), and gaseous emissions from poultry houses (Wathes et al., 1997, Chambers and Smith, 1998, De Boer et al., 2000, Ullman et al., 2004 and Wheeler et al., 2006, Leinonen et al.2012) or concerning the environmental impact using Life Cycle Assessment (Leinonen et al.2013). However, little information exists for farms under the particular management such as different levels of animal welfare. The results of study published by Leinonen et al. (2014) underline that it is not always possible to lower pollution from one cycle of broiler production under lower density system. The lower density system slightly increased the global warming potential (GWP) of broiler production (by 2%), compared with the standard indoor system, due to increased heating requirements. However, when combined with the heat exchanger, the GWP was actually reduced by 3% when compared with the standard system.
Information on PM10 emissions for poultry houses has been rather limited due to the inherent difficulty associated with real-time and continuous measurement of PM concentrations in animal feeding operations.

Conclusion

Emissions from broiler production to the environment result from feed consumption, feed processing, and transport, farm electricity, farm gas and oil and housing. In the study only direct emissions of NH_3, CH_4, and N_2O from housing, manure and bedding, where analysed.
Result shows that enhanced broilers welfare by reducing broilers stocking density can reduce the amount of generated emissions and thus can have positive impact on the environment. But, the study shows that not always possible. It is only true if farmers maintain their facilities unchanged and do not implement the procedure of selling some of the heaviest broilers earlier. If they introduce this procedure the amount of generated emissions is almost the same as with high broilers density.
In the study of Vergé et. al (2009) direct emissions of CH_4, N_2O, and CO_2 from birds, their facilities, and the avian crop complex of Canadian poultry, were estimated using poultry diet surveys. Results show that gas emissions from the poultry industry increased by 40% between 1981 and 2006, because of the strong growth of broiler production.
Due to the market demand and farmers' willingness to maintain their level of income total Polish broiler production is growing, which is generating the increase of the gas emissions.
When evaluating the amount of emissions coming from the broiler production, we have to keep in mind that in comparison with other kinds of meat production the emissions per a kg of meat are lower. The problem of animal production in the light of environmental protection, is treated increasingly seriously by the general public. Therefore, we are of opinion that it is a valid and significant issue, which requires constant monitoring.

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LIMITS FOR GREEN GROWTH ARE BLUE

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Abstract
This paper presents a synthesis of water sustainability issues as the basic part of documents for green growth strategies in many countries. Green growth is a term to describe a path of economic growth that uses natural resources in a sustainable manner. Each development has own limiting parameters. In the last decade, we recognize the terms blue and green water. Blue water availability is a limiting factor for the green water. Due to the changes and processes in the country, climatic, economic or socio-economic, fundamental factor for sustainable development is to secure water. A problem becomes soil water and its availability for crop production during the growing season. Surface water resources created for the additional irrigation in the past are now used for other purposes such as energy or industry. It is therefore important water sustainability in the country and increasing their protection.
Because of the complexity of natural systems and the uncertainties in characterizing them, the current philosophy underlying sustainable management of water resources is based on the interconnected systems approach and on adaptive management. The article addresses the analysis of the availability of water in selected countries and production areas. The optimum provision of the profile with water increases the production, which increases the economic benefits of the producers, provides an increased amount of crops for food or energy. This results in the increase of economic growth of the country, to which are bonded other activities.

Keywords: green growth, water sustainability, agricultural crop, limits, drought

JEL Codes: Q15, Q25, Q56

Introduction

Population growth and development are linked in complex ways. Economic development generates resources that can be used to improve education and health. These improvements, along with associated social changes, reduce both fertility and mortality rates. On the other hand, high rates of population growth that meat into surpluses available for economic and social development can hinder improvements in education and health. In the past, the intensification of agriculture and the production of higher yields helped nations cope with the increasing population pressures on available land *(World Commission on Environment and Development, 1987)*.
If we need evaluate how climate change will affect the balance between water demand and water availability, it is necessary to consider the entire suite of socially valued water uses and how the allocation of water across those uses is likely to change. Water is valuable not only for domestic uses, but also for its role in supporting aquatic ecosystems and environmental amenities, including recreational opportunities, and as a factor of production in irrigated agriculture, hydropower production, and other industrial uses (Young, 2005). To be able to adequately feed and support the world's growing population; our global economy needs to continue to grow. Water is critical to future growth. But it can also become the major limiting factor to growth. For instance, businesses in water-scarce areas are already at risk, and so investors are increasingly taking water supply into consideration during their decision-making processes (UNEP, 2011). Green growth is a term to describe a path of economic growth that uses natural resources in a sustainable manner. Each growth has own limiting parameters. In the last decade, we recognize the terms blue and green water. Blue water availability is a limiting factor for the green water. The concept is closely related to that of sustainable development, but with more emphasis on growth and on mitigating climate change, which is widely perceived as the major long-term challenge to sustainability. But its use amounts to more than just spin (Bowen, 2011). The green economy is defined as an economy that results in reducing environmental risks and ecological scarcities, and that aims for sustainable development without degrading the environment. It is closely related with ecological economics, but has a more politically applied focus

(Sabha, 2015). Over the world 65 countries have embarked on green economy and related strategies, and 48 of them are taking steps to develop national green economy plans (Lynn, 2014). Green growth is about making growth processes resource-efficient, cleaner and more resilient without necessarily slowing them. Environmental protection can make a direct contribution to economic growth because the environment, which we can also think of as natural capital, is an input into the production function, and environmental conservation can lead to increased inputs of natural capital and thus to an increase in income (Hallegate, 2012).

Given today's approach to water management, there is only so much growth that can be sustained. Gains in efficiency and productivity in water management and utilization can reduce these risks and enable higher levels of sustainable growth, but *how much* higher? How far-reaching do those gains have to be? And can we make a difference in a timely enough manner by understanding that the path for sustainable growth requires more than green solutions – but also requires blue ones (UNEP, 2012). Most poor countries are located in regions which have the most droughts, drastic seasonal changes in precipitation, and evaporation. They tend to also face rapid population growth. These growing populations vie for finite water resources (Falkenmark, 1992).

Water is often wasted because it is underpriced. Direct and indirect subsidies (especially for agricultural use) are still common in both developed and developing countries. Removing such subsidies and letting water prices rise can provide incentives for conservation and for the investments needed to spread more efficient technologies (Postel, 1996). More and more governments, businesses and communities around the world are starting to focus on managing ecosystems holistically, in recognition of the many connections within and between them. This same approach goes for the intersection of water, food and energy; actions within one industry have direct impacts on the others (Kyung-Jin Min, 2014). Scientists have estimated that the **wide range of ecosystem services that fresh water provides are collectively valued at more than US$ 7 trillion per year.** Yet in many countries, including the U.S., water is the cheapest utility that people pay for. Fresh water flows over and under our lands in rivers and sits in aquifers and lakes before eventually emptying into the oceans. Everyone knows that rain allows plants to grow; less well known is that plants and forests — especially cloud forests — also give some of the water they use back into the water cycle to make rain (Renzetti, 2002).

The Water and Green Growth initiative, led by the Korean government, is in the process of developing into a new global paradigm. The concept was first introduced in the 6th World Water Forum in Marseille, France in 2012 and went through various discussions and development at different levels and platforms since then. This is the opportunity to let the world know that water is central to environmentally sound and socially inclusive, economic development (Kyung-Jin Min, 2014).

Material and Methods

The fundamental issue at present for governments is to ensure economic growth. To ensure a higher, growing production needs to be more raw materials and natural resources. But the global water balance is a constant, and water source is not rising. Resources that are used for humans are decreasing because people use water as a place for the discharge of effluents. Daily is updated information about the poor water resources quality or completely devastated rivers or lakes.

Why was adopted the name of green growth? Is it really move toward the conservation of natural resources or routing to grow at the expense of natural resources or exploitation of nearby residents attitudes to the protection of nature? We will try to analyze these issues.

The term green growth occurs after overcoming the problems of the financial and economic crisis in 2008. An important impulse for starting the policy of green growth in Slovakia was the adoption of the "Declaration for green growth" at OECD Ministerial Council Meeting in June 2009.

The financial crisis of 2007–08, also known as the Global Financial Crisis and 2008 financial crisis, is considered by many economists to have been the worst financial crisis since the Great Depression of the 1930s (Reuters, 2009).

A way out of the economic crisis, sought the unconventional use of economic principles, as well as natural resources. Green growth therefore open up new sources of growth through incentives for greater efficiency in use of natural resources and natural assets, open up opportunities for innovation, spurred by policies and framework conditions that allow for new ways of creating value and addressing environmental problems, creation of new markets by stimulating demand for green technologies, good and services;

boosting investor confidence through greater predictability and continuity around how governments deal with major environmental issues; and securing a more balanced macroeconomic conditions, reduced resource price volatility and supporting fiscal consolidation - Figure 1 (Poverty-Environment Partnership, 2012).

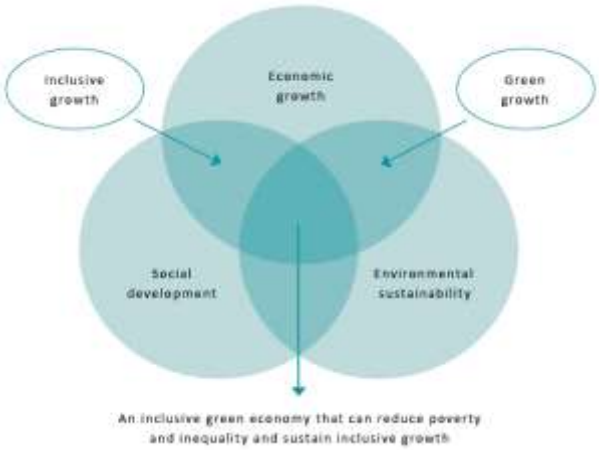

Figure 1 Global context of Green Growth
Source: Poverty-Environment Partnership, 2012

Objective of green growth is to increase human wealth through supporting effective exploitation of natural resources and economic activities that represent a long-term benefit for the society. Reaching these objectives will inevitably call for putting innovations into practice and understanding and appreciating the value of the natural capital (UNESCO, 2006).
Slovak Republic belongs to those OECD member countries that developed their own national green growth indicators. First of the OECD countries to introduce their own indicators was Netherlands, followed by the Czech Republic and South Korea (Slovak Environment Agency, 2014).
Selected indicators characterize Slovakia's initial position as seen from the perspective of the green growth and were to be used as a measuring tool before further steps are taken in the process of implementation of this strategy and for a complex assessment of the future trend of the Slovak economy. Present set of green growth indicators comprises 32 individual indicators that are relevant in Slovakia's conditions. Four of them are national indicators that describe voluntary instruments of the environmental strategy (Slovak Environment Agency, 2014).

The Nexus: water - energy – food security
It is increasingly recognized that water, energy and food security are inextricably linked. The interconnectedness across sectors and in space and time means that solutions to problems in one sector in most cases can no longer be found without impacts in one or both of the other sectors. A nexus approach integrating management and governance across sectors and scales can support the transition to a green economy by reducing negative economic, social and environmental externalities, increasing overall resource use efficiency, and providing additional benefits such as strengthening the focus on human rights to water and food. Rural-urban interaction in a rapidly urbanizing world and many value chains further underscore the importance of an intersectoral approach (Postel, 1996).
Agriculture is responsible for 87 % of the total water used globally. In Asia it accounts for 86 % of total annual water withdrawal, compared with 49 % in North and Central America and 38 % in Europe. Rice growing, in particular, is a heavy consumer of water: it takes some 5000 litres of water to produce 1 kg of rice. Compared with other crops, rice production is less efficient in the way it uses water. Wheat, for example, consumes 4000 m^3/ha, while rice consumes 7650 m^3/ha (Source: Eurostat, 2015).

Figure 2 Green growth and natural resources
Source: Steffen, 2015

Climate change and the hydrological variability of water's distribution and occurrence are natural driving forces that, when combined with the pressures from economic growth and major population change, make the sustainable development of our water resources a challenge – figure 2 (Steffen, 2015).
By promoting green growth based on sustainable management and use of natural resources are countries able to generating sustainable and inclusive economic growth and job creation. The private sector should be a force for economic growth and employment and contribute to sustainable and inclusive development. Both the international and national framework for green growth should be strengthened, and policy coherence for trade, agriculture, environment, energy, climate and development must be enhanced. Green growth will focus on sustainable food production, access to energy and water, and integrated climate efforts (Steffen, 2015).
Over the last decade, water has also been increasingly used for the production of first-generation biofuels. The production of biofuels affects water resources in two ways: directly through water withdrawals for irrigation and the industrial processes of feedstock conversion; and indirectly by increasing water loss through evapotranspiration that would otherwise be available as runoff and groundwater recharge (Ringler, 2012).
Water use and availability directly affect economic growth, with growing water scarcity limiting desirability or potential for investments. To assess this latter linkage is growing water scarcity affecting a country's economic growth. We need know how far can water productivity improvements reduce water overutilization and thus sustain economic growth. Alternative development pathways must be developed and assessed at various levels of economic growth. The well-known criticality ratio or water stress index (the ratio of water withdrawal to internal renewable water resources) can we use to identify development outcomes that put both populations and economic development at risk from water stress. With high criticality ratios (values above 40 %) signifying is connected water stress, as we can see at figure 3 (Ringler, 2012).
The European Commission published its 2020 strategy for sustainable growth in year 2014, a set of initiatives that replaces the Lisbon strategy. The 2020 strategy sets five targets that should be achieved within the next decade in order to meet Europe's energy and climate goals. The Environment Council discussed the EU 2020 Strategy on 15 March 2010. The Ministers welcomed the Strategy and the fact that environment and climate change objectives were one of its priorities. Some delegations wish for these elements to be strengthened in the strategy. Delegations highlighted the added value in terms of growth and jobs that could be derived from all aspects of environmental protection.

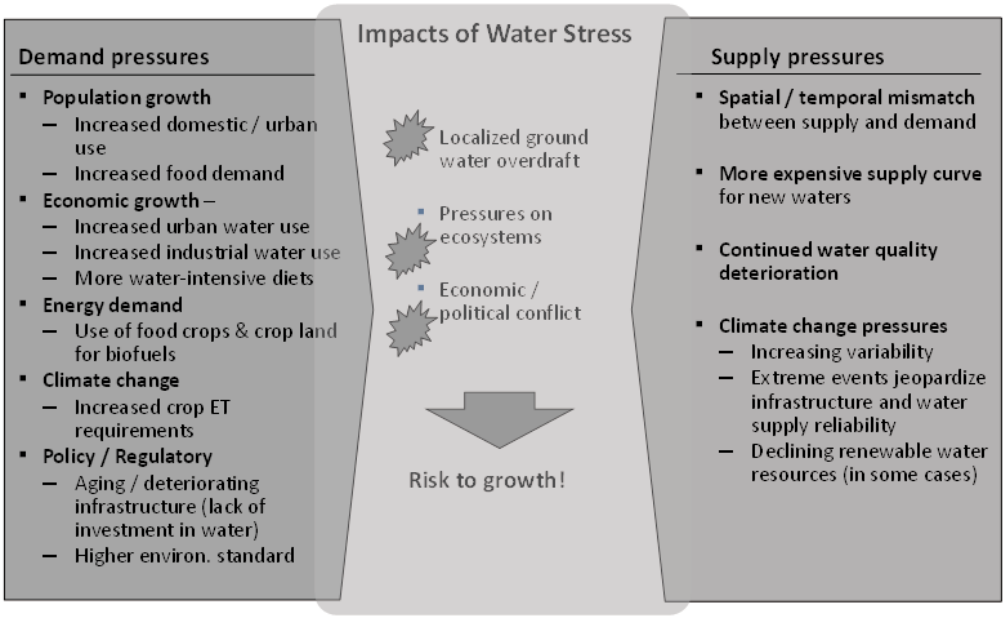

Figure 3 Supply and demand pressures on water availability and use
Source: Ringler, 2012

Many underlined that resource efficiency and sustainability are crucial to reach the EU's climate targets but also to improve its competitiveness and ensure energy security. Ministers agreed that integrating environmental concerns into other policies would be the best way of achieving the targets, while acknowledging the importance of market tools and the full use of financial cohesion instruments and regional policy (The EU's 2020 Strategy).

Water stress
In the present, there are published information about the water scarcity and water stress in the global scale, as well as in individual countries. That information is often inconsequent. The global data rise from average values of water resources volume and its use. The local information is from current observations and real conditions in the landscape. Fig. 4 shows the global evaluation of water stress, and countries as Brazil and Slovakia are marked with colour for areas without water stress.

Figure 4 Water stress around the world
Source: World resource institute, 2014

The global balance in the long term is favourable. This balance, however, have one major problem. There are not specified the amount of useable resources. More and more countries have problems with the quality of surface water or groundwater and some resources are completely destroyed. Nowadays, there are lot of problems of water resources for the population and for agricultural production in both countries. Balance of water resources in the country, region or city is often crucial information for the assessment of opportunities for economic and social growth. We selected 2 countries where the affirmation about

nonvalidity of this statement is actual. The problems with water scarcity occurred in Slovakia and in south part of Brazil in last months. Both countries are characterised by sufficient water resources, even though the drough affected all regions of Slovakia and several parts of Brazil.

Southeastern Brazil drought

Parts of southeastern Brazil (Fig.5), including the cities of São Paolo, Rio de Janeiro and Belo Horizonte, was for long time struggling through the worst drought in 84 years, with 40 million people and the nation's "economic heartbeat" at risk. Reservoirs that supply water to these cities was at dangerously low levels. They're also highly polluted, complicating things even further.

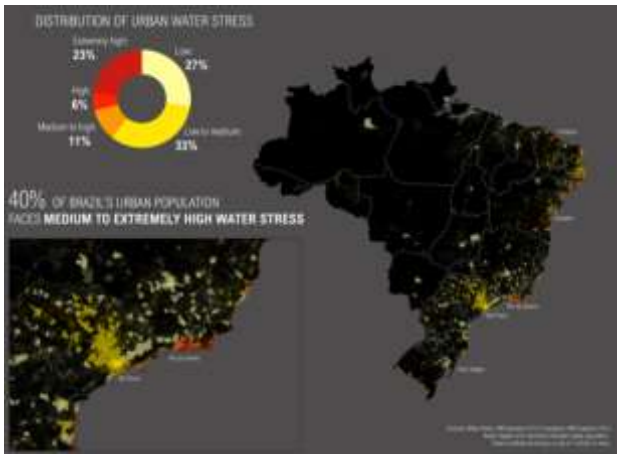

Figure 5 Brazilian population density and baseline water stress
Source: *Global energy network institute*

Typically the rainy season starts in São Paulo in November, but lack of rain in the 2014/15 season led to a major shortfall in the water supply in the states of São Paulo, Rio de Janeiro, and Minas Gerais. With major reservoirs operating at their lowest capacity (the main reservoir system of Cantareira supplying São Paulo being at only 6 % of its capacity in early February) officials at São Paulo warned about extended rationing as water may run out before the next rainy season in November 2015 (Whately, 2015). In response, the water utility of Sao Paulo, Sabesp, has reduced water pressure in the system. It also started to impose punitive tariffs on users who use more than in previous years. By early February residents had started to recycle and hoard water (Garcia-Navarro, 2015).

By the end of February torrential downpours caused flooding in Sao Paulo, but the rain was not thought to be enough to result in significant replenishment of the water reservoirs.

At the beginning of the dry season, by early May 2015, the water crisis continues and water reservoirs in the Sao Paulo area are insufficiently filled. Work is underway to link up various reservoirs to make better use of existing water resources (Whately, 2015).

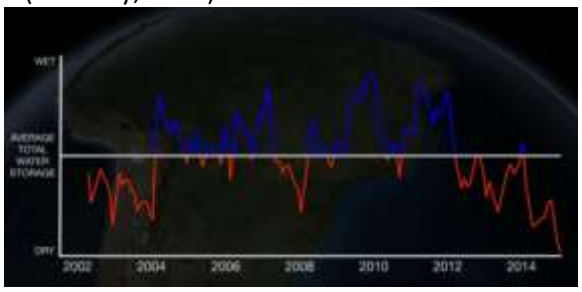

Figure 6 Water storage for São Paulo in last years
Source: Coutinho, 2015

Most people's lives have yet to be really impacted. The water reservoirs of some states are in a very bad shape. The biggest impact is in their energy-generation capacity. Since the economy has been taking a

downturn for some time now, this hasn't really become an issue. But it will. You also need to know the Government and politicians pay lip service to environmental issues. Environmental licensing for large infrastructure projects has become a way for bureaucrats to generate extra revenue in illegal ways.
It's worth noting that the northeast of Brazil is very poor and has struggled with drought conditions for much of her history. That said, the media coverage now is all about the drought in the southeast of Brazil, and specifically in Sao Paulo State. The main reservoirs for the City and surrounding communities of the City of Sao Paulo are dwindling near empty and it has caused severe water rationing in many parts of the city and suburbs. The reservoirs have recovered very slightly from 80 year low levels, but this recovery is very small and has not alleviated current rationing conditions whatsoever.

Central Europe heat waves
Such heat waves in Central Europe while circumventing; it was therefore only a matter of a short time, when also our region will be affected. The current heat wave in summer 2015 was accompanied not only high temperatures but also extreme drought.
There were only very sporadic rainfall events in several places in southern Slovakia from June, 2015. This in combination with the high temperature leads to a more rapid drying land, causing serious problems. Several areas in Slovakia beginning to have problems with water supply and have been reported this summer more than 1400 fires so far October 2015. Based on the analysis of the current unfavourable situation it shows that this year's drought can bring to Slovakia even more serious consequences as a particularly severe drought in 2011, 2012, 2007 and 2003. It is even very likely to be repeated catastrophic drought of 1947.
Climatologists warn on the ever more frequent occurrence of extreme weather or drier and warmer years, become mainly as a result of global warming for decades. However, almost nobody pays proper attention to these alerts. Therefore, we appeal to all politicians to act responsibly. We believe that the support of the Slovak Government provides to the automotive industry should bear in mind the risks associated with the effects of climate change. Adaptation measures to climate change should therefore not remain on paper only and should not be only declarative character. It's not just us - in our country want to live and future generations (Ač, 2015).
Year 2015 tested the many areas of Europe during the long period without rainfall and high temperatures. Farmers and gardeners were desperately looking for ways to save their yield in periods without precipitation, and tried to use the available solutions. Cities and towns also struggled with a lack of water, and many of them proceeded to the restrictions on the use of water in the city.
We manage the interaction of our urban landscape with the natural environment in a way that manages the social, economic and environmental risks arising from extreme events.
The farmers are trying to respond to drought with irrigation. Irrigation may be only short-term solution. In the longer droughts, abnormally high consumption of water indicates that the water reservoirs will not store enough water. In the long dry season does not suffer just plants in the landscape, but also water resources. Far more sustainable solution is to plan land to drought resistance - the ability to withstand drought. The principle is the methodology of the water resources and the landscape sustainability. It is important to plan in the landscape such water consumption for crops grown, which may be in the area ensuring the resources - water in rivers and reservoirs. Groundwater must be primarily intended to ensure to supply the drinking water.
Problems with the drought are most often signifying in agriculture - crop production. If we analyse the yield of essential crops cultivated in Slovakia, we may recognise two possibilities. Significantly decrease the average yield of crops during the drought season in the last 20 years. If we compare today's yields with yields from the period around 1990, the yields form the current dry seasons are still high. According to information of SPPK (9 November, 2015), the average yield of corn for grain in 2015 was 4.98 tonnes per hectare (t/ha), sunflower 2.41 t/ha, sugar beet 51.49 t/ha and potatoes 24.38 t/ha (http://slovak.statistics.sk/wps/portal/).

Table 1 Total yields in selected years in t/ha

	1990	1993	1995	2000	2005	2010	2013	2014	2015
Corn for grain	3.56	4.62	4.90	3.04	6.97	5.53	7.33	5.07	4.98
Potato	14.12	18.15	11.07	15.47	15.77	11.45	20.62	18.15	24.38
Sunflower	1.94	2.01	1.73	1.70	2.14	1.81	2.66	2.33	2.41
Sugar beet	30.82	34.31	34.27	30.37	52.16	54.52	61.04	56.29	51.49

Source: *SLOVSTAT,* SPPK

Year 2015 was extremely dry but high yield exceeded the yields form the period of 1990s. Therefore, the agriculture extremely consumes the soil water more than in the past. The result is an extraordinary drop of groundwater levels. The drought continues in social consequences of population by insufficient water supply of drinking water, despite the fact that the heat has ended.

Conclusion

Water starts as rainfall, later creates streams and rivers, charge lakes and at the end become an ocean. Similar, it is with the economy. Activities of individual persons manage the life in villages, towns, countries, and finally the economic security of the society worldwide.

Water and its cycle are strong because of its recovery and re-grow. Green growth should be a way for people to ensure the nature and society. We need to scientifically explore the processes in nature to learn about opportunities for economic development in line with the sustainability of nature and human health.

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ENVIRONMENTAL CHALLENGES IN RURAL DEVELOPMENT IN THE CONTEXT OF GLOBAL EDUCATION

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Abstract
Global education represents still more important issue, which has been penetrating into the various degrees of education and other spheres of society in all parts of the world. Regarding the spreading of global problems global education acquires a rising importance as the education that raises awareness about the most current issues of this globalized era. Environmental problems and the bad situation in this area belong among the most important.
Rural development is affected by the unsatisfactory condition of environment, too. It faces number of new challenges; therefore, the professionals from various areas create still new attitudes on how to behave towards environment to ensure sustainable rural development.
This work is based on the analyses of the current state of rural development in the context of rising environmental problems, and the priority of its sustainability in various policies and organizations. We will map the general state of rural environment, pointing out the need for change of the attitude towards environment and its improvement. We will describe and analyse the importance of global education in ensuring sustainable rural development. After this we will explore and analyse the actual position of environmental issues in this education and the most important challenges that is environment facing in rural development today. On the basis of received knowledge we will look over the possibilities, which global education provides in the issue of environmental problems and detach the most appropriate methods and ways how to counteract the bad condition of rural environment and improve it with the help of this education to ensure sustainable rural development.

Keywords: rural areas, development, sustainability, environmental problems, global environmental education

JEL Codes: Q56, R11, I25

Introduction
High number of population (of the EU, but also of the whole world) lives in rural areas, which cover a major part of settled territory of the world. This is the reason why the rural policies in the world become priorities. It is important to improve the quality of life and economic well-being of people living in these areas. But it is also important to find the way how to make the rural development sustainable. Countryside faces number of problems and challenges, which are still more often connected with the worsening conditions of environment[1]. Therefore, sustainability in rural development can be reached only with changing our attitude towards environment.
Issue of rural development sustainability belongs among very frequented today at all levels of the societal structure. Every concerned person has to be involved in this action (not only the governments or organizations). All people have to understand their responsibility in this issue and for this purpose they have to be educated too. And here is an immovable place of the global education.

Rural development and the need for sustainability
Sustainable development is a concept that has begun to develop since the 1970s of the 20th century. At

[1] *Environment* means different things to different people. It can be understood as separating the waste, or as saving on electricity or using less water (and other sources), or it can be associated with restoring the vitality of tropical rain forests, maintaining biodiversity and stopping desertification. Or it can be understood as the need for developing healthy, sustainable and safe communities. It can mean agricultural and industrial production that is 'green', or activities against chemical and nuclear hazards. All of these and many other views are right in their own way, and are united in its concern for the effects that the environment has on the everyday lives of current and future generations (Environmental Education).

first, in terms of lasting sustainability as part of social development that respects natural conditions. Later, in terms of development as a process of change towards harmonized use of natural resources, direction of investments, orientation of technological development and institutional changes, and towards increasing potential of satisfying human needs of present and future generations

The ideas of sustainable development are considerably older and they are further developed through the literature from the field of development and Environmentalism, as well as through a number of important international conferences, which solve related problems at the highest political level. At present, one of the biggest challenges for sustainable development is the globalizing world, largely marked by poverty (Elliot, 2006).

In the 1990s of the 20th century stronger protection of the nature values and natural resources was gradually getting into the minds of people and the environmental problems started to be an immovable part of sustainable development concept. Climatic changes are not only the problem of the damaged environment, but they are also making lives of the people – as well as the rural people – much more difficult (they contribute to the poverty, etc.). That is also why the term "sustainable development" must take into account all related aspects – economic and financial, environmental and ecological as well as social. It can be said that the term sustainability was chosen as a kind of bridge between environment and development.

This idea was underlined at the important international Summit in Rio de Janeiro about the environment and development in 1992. It has started the series of international UN conferences, which created a new international development agenda. After the Summit in Rio the *Agenda 21* was adopted as one of the most important documents on sustainable development. Important was that it paid attention also to the differences among rural and urban areas in the field of sustainable development because each part exists in different conditions and „fights" with the different extent of global problems.

Also many other documents are later dealing with the urgent need for sustainable development. Very important are the Millennium development goals (MDGs) adopted at the Millennium Summit in September 2000 by the largest gathering of world leaders. They created a new partnership among the nations with the primary goal to create sustainable place from the Earth. Eight MDGs had a deadline of 2015. Big importance of these goals was that the difference among rural and urban development was highlighted here very strongly and the issue of rural development had an immovable place there. As these goals represented a very important landmark it was necessary to continue in their aim also in spite of the fact that MDGs were set with quite lot of faults and defaults[2]. Number of conferences and documents were adopted after the Millennium Summit. In spite of big efforts of the nations, goals were not fulfilled successfully, but they have created a very important basis for further successes and they heed to highlight the links between global challenges, sustainability and the principle of humanism. These were big advances also on the way for rural sustainability.

Big progress has been made, but the problems have not been ended for all. Important fact was noted in The Millennium Development Goals Report (2015), which stated that disparities among rural and urban areas are obvious also after the year 2015. There are still big gaps that are visible mainly in several factors like in the high lack of access to modern energy services that negatively affect productivity in rural areas, but also in lack of access to quality education and health that contributes towards the poverty. There is also a lack of access to improved drinking water sources, sanitation facilities and skilled health personnel in rural areas much more than in urban areas (Sustainable Development Knowledge Platform). But the difference is also in the environmental issues that is the rural development facing and that effect all the world in the end. All these negatively affect the way for gaining sustainable rural development, too.

Because of not completed Millennium goals there was a need to continue in the efforts in achieving sustainability actively. For this purpose, the new Sustainable development goals (SDGs) were adopted in September 2015 at the United Nations Development Summit. These goals together with the broader sustainability agenda go much deeper than the MDGs, addressing the universal need for development that works for all people. SDGs are focused on sustainable development, democratic governance, peacebuilding, climate and disaster resilience (UNDP).

[2] For example, they were very general and they defined the goals, but not the way or strategy how to reach them. They did not reflect global social justice very much.

Seventeen SDGs are a part of the *2030 Agenda for Sustainable development* and today they represent the highest priority in international community. They are built to facilitate the execution of results achieved at the important summits in the economic, social and environmental area, with emphasis on sustainable development. They pick up on MDGs and they are oriented more to the deepening and closer specification of original objectives. Crucial is also the support of global South countries and the removal of regional inequalities. It is crucial not only for the assurance of sustainable development as a whole, but also for the sustainable rural development.

Rural development in current globalized era

When we are talking about the rural development we can understand it generally like a process of improving the quality of life and economic well-being of people living in relatively isolated and thinly populated areas (Moseley, 2003). Development of rural areas is traditionally oriented especially to the exploitation of land and natural resources mainly in the sector of agriculture and forestry. But in current globalized era with changes in global production and still higher urbanization also the main orientation of rural areas has been changed. It is oriented to the tourism and recreation and this is also because of the rising number of agricultural problems connected with the climate changes and bad condition of the environment. There is a need to return rural development its natural orientation to the agriculture not only for improving the quality of rural people lives, but there are also many responsibilities, which lie on the rural areas. The world population has been growing and it is necessary to look after the quality and quantity of agricultural production.

In contrast to urban areas, rural areas face usually different environmental problems or their extent. Worsening environment condition and its improving for sustainability has belonged among the priorities of international community for decades. These efforts create also an integral part of various international documents and have place among the MDGs and SDGs too. Because of the different environmental problems in rural and urban areas there is a need to pay attention to both of them separately.

There are a lot of serious environmental problems in rural areas today, and they are not only about the dirty air, etc. There are very deep and at first sight hardly visible problems. They are strongly interconnected with the problem of sustainable rural development and so the proper attention has to be paid to their solving.

Environmental challenges of the contemporary world

Environmental issues are very important in the efforts to gain sustainable rural development. We can claim that environment is a cornerstone of rural development. Protecting environment in sustainable and integrated way is not only the goal, but also an essential requirement for sustainable development. The sustainable agriculture and rural development are necessary to increase food production and improve food safety and security. All these have to be acquired in ecologically responsible way with protecting the land, water, forests, energy like most serious rural environmental issues.

Rural environment represents the framework of regulations, institutions, and practices in villages defining parameters for the sustainable use of environmental resources while ensuring security of livelihood and a reasonable quality of life (Sarkar and Chakrabarti, 2007).

All rural activities are realized in some ecosystem, which contains mainly land, water sources and air. Climate changes and especially the careless human activities accompanied by intensive agriculture, influence of urbanization and industrialization, are the results of rural environmental degradation and they endanger future of the mankind at our planet, but also existence of the Earth itself. All these activities brought a lot of negative influences mainly on the rural landscape, human health and life quality of rural residents.

We recognize several most serious environmental problems that confront rural areas and represent a big trouble for sustainable rural development today. The most problematic are the exploitation and poor management of natural resources, loss of productive land because of desertification, land degradation and declining agricultural productivity, deforestation and forest degradation, shortage of fresh water, pollution, loss of biodiversity, emissions. These are the biggest threats for rural development and its sustainability today.

We are losing productive land every day. Mostly it is the result of careless human intervention. The pressure on land leads to soil erosion, waterlogging, salinity, nutrient depletion, lowering of the

groundwater table, and soil pollution. The extent of land degradation, losing the water resources and the declining of head-waters is alarming. Soil erosion from overgrazing, and intensive cultivation and soil degradation from excessive use of agricultural chemicals, have wide-ranging impacts. Improper agricultural activities cause land degradation including other negative activities. Overgrazing and over-extraction of green fodder lead to forest degradation through decreased vegetative regeneration, compaction of soil, and reduced infiltration and vulnerability to erosion. Overgrazing causes a decline in vegetation cover as a primary cause of erosion. Widely recognized are also the pollution of water resources (mainly by industrial discharge, household waste, sewage and agricultural chemicals and excessive wasting of water) and the loss of biodiversity in ecosystems (Sarkar and Chakrabarti, 2007).
These are the most serious environmental problems of rural areas and the list is not full. All of them create very hard challenges for mankind on the way to achieve new and sustainable rural development.

Sustainability of rural development and rural environment
Sustainable rural development can be defined as „Improving the quality of life for the rural poor by developing capacities that promote community participation, health and education, food security, environmental protection and sustainable economic growth, thereby enabling community members to leave the cycle of poverty and achieve their full potential“ (The Center For Sustainable Development).
It has to be emphasized that sustainability must be understood in a multi-disciplinary context and sustainability of rural development has to include not only the sustainability of the biosphere, but also the viability of the economic, social, cultural, and political systems of the human population. But in spite of the multi-disciplinary context we have to underline that rural development can be sustainable only if it does not seriously harm the environment. So the environment and natural resources create one of the most important dimensions of sustainable rural development.
Sustainable rural development has its immovable place in various important sustainable documents and agendas, and the most actual are the above mentioned SDGs, which emphasize its need. More than half of the goals are directly linked with the need for rural development sustainability (see Table 1).

Table 1 SDGs focused on rural development sustainability

SDG no.:	Calls for:
2 Zero Hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
6 Clean Water and Sanitation	Ensure availability and sustainable management of water and sanitation for all
7 Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all
9 Industry, Innovation and Infrastructure	Build resilient infrastructure, promote sustainable industrialization and foster innovation
12 Responsible Consumption and Production	Ensure sustainable consumption and production patterns
13 Climate Action	Take urgent action to combat climate change and its impacts
14 Life Below Water	Conserve and sustainably use the oceans, seas and marine resources
15 Life on Land	Protect, restore and promote sustainable use of terrestrial, ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
16 Peace and Justice Strong Institutions	Promote just, peaceful and inclusive societies for sustainable development

Source: Own work according to UNDP

As we can see, every above mentioned goal is important in ensuring sustainable rural development and they are strongly connected with rural environmental problems. Clean water, modern sources of energy, sustainable industrialization and foster innovation, sustainable consumption and production, climate change and protecting nature – life in water and life on land – and create a good environment in individual societies. All these are very important factors in achieving sustainability in rural development.
For sustainable rural development it is very important to promote investments in environment and its protection, rural infrastructure, health and education. Sustainable rural development can be achieved only if nations cooperate in developing and implementing of strategies to deal with environmental problems in rural areas. Important are also other actions that have to be done or at least supported on the way to achieve sustainable rural development like: Support of small-scale farmers. Promote the equitable access to land, water, financial resources and technologies for rural people, but also to the basic needs so that the poor rural people will have a chance to participate on rural development actively, which will help reduce poverty and exclusion. Harmonize modern technologies with traditional knowledge for sustainable rural development. Promote the access to various mechanisms and resources for farmers and countries, and develop better managing of various risks connected with environmental problems (like, weather, climate change, water shortages, land degradation, natural disasters), etc. Support the links among agriculture and other sectors of the rural economy. Support the development and use of safe and environmental technologies and practices, support sustainable tourism and sustainable natural resources management and promote sustainable forest management and support creation of the green jobs. But from our point of view, one of the most important efforts is developing educational programmes for rural communities and improving access of rural people to information, extension services, technologies, production activities, knowledge and trainings (UNEP).

According to above mentioned information, we may allocate several key environmental challenges for ensuring environmental sustainability in rural development:

- Encourage the use of land resources in a sustainable manner to prevent land degradation caused by unsustainable exploitation of land resources;
- Supports the use of environmentally friendly practices;
- Promote using of sustainable natural resources and management, including ecosystem[3] preservation through various community programmes;
- Promote environmental management practices;
- Provide global environmental education for ensuring above mentioned challenges.

The position of global education in rural development sustainability
Education has becoming one of the most important challenges in achieving sustainable rural development. Support of extensive education and awareness raising in rural communities, and support of global education with emphasis on environmental global education is also one of the current priorities of international community. As it was mentioned, environmental problems are mostly the result of human intervention and careless activity. Therefore, it is important to spread information and support the raising of awareness among people and also among rural population about the problems that are rural areas facing, and which can be successfully solved only through the active approach of all people. So, we can claim that the global education and environmental education play an immovable role in all these and create also basic pillars in current globalized world.
The importance of this relatively new approach in the education is still higher because the approach to the information and knowledge is the first step in improvement, and rural areas with their population cannot be excluded from this educational process.
The world is globalized and its interconnectedness allows us to see the inequalities, and big differences among various countries (most visible are the differences among countries of global North and global

[3] Ecosystems are necessary for the maintenance of sustainable agricultural production including protection and rising stability of agroecosystems. Nutrition of the people is an important ecosystem function with the direct linkage on agrobiodiversity. The biggest limitation of the productivity growth (from the view of ecosystems sustainability) is the access to the water. Because agriculture is one of the crucial water consumers for watering and this water warrants the existence of annual incomes as well.

South). Globalization is the process, which cannot be stopped. The interconnectedness of the world is so deep, that the actions happening in one of its parts, often affect the rest of it today. Therefore, it is very important that citizens of all countries and their particular areas are globally educated and that they can look at the increasing problems of the world, as well as their international causes and consequences, and have the opportunity to search for and identify possible solutions.

Global education has been getting still higher importance in all areas (not excluding environmental one). It responds to the process of globalization, which is accompanied with contradictory qualitative changes (see Sťahel, 2013), and gradually it is getting into all educational levels. It is considered to be one of the tools for attainment of the comprehensive knowledge on global issues, interdependence between the local and global issues, and also for the fundamental "element" of knowledge society.

Global education involves number of different components, for example, development education, intercultural education, education for global citizenship or environmental education, and it represents a sort of effort to reach the whole human responsibility[4], not only for sustainment of life on Earth, but at the same time, for the survival of mankind. Many educational institutions gradually implement this new educational approach into their educational systems, and try to respond to the wide range of challenges, posed by globalization (Svitačová and Mravcová, 2014).

We can summarize that one of the possibilities as how countries and individual communities can "fight" with environmental problems in rural areas, is through educating people, as well as through the implementation of new teaching concepts and educational forms. They should allow people not only to acquire the current and important knowledge and skills from the environmental field, but also to develop their knowledge, skills and attitudes, on which basis are able to understand their position in the contemporary world, more easily and to solve different, also environmental, problems responsibly.

Global environmental education

Environmental problems belong among the most serious and environmental crisis trouble the world very intensively. These problems are visible and notable in every area and every part of individual countries today (more or less).

In spite of the number of actions made by international community up to now the situation is still quite unsatisfactory. As one of the most important goals of the world community is to gain sustainable rural development, the situation in these areas has to be improved much more. But, positive changes cannot be reached without appropriate information, knowledge and skills[5] in this sphere, and so the importance of global environmental education is more than reasonable here.

„Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment" (UNESCO, 1977). Such education can be understood as some process of raising awareness, knowledge and understanding about global problems and associated challenges, which should lead recipients (individuals and groups) to responsible actions. We can say that the most important in this education is providing information and knowledge about global environmental problems that trouble the world and individual communities, and that these problems are connected with lives of all of us in some extent today, as well as promote critical thinking[6], problem solving and making effective decisions. Environmental education is more just the environmental information. Environmental information provides only the basic facts about the specific environmental problems for general public. It is one of the most important elements of environmental education. But environmental education has much broader focus and it is eminent from many points of view. It is very broadly oriented and it equips recipients with a lot of valuable knowledge, skills, values, experiences, and determination, which will help them to behave as responsible global citizens[7] (individually

[4] For example, Špirko (2011: 16) noted that "the exceptionality of human is given by the exceptionality of his responsibility. Man has responsibility not only for the things that he created, but also for the things that were given to him – for the life on the Earth".

[5] Also the life skills like cooperation and communication.

[6] Mainly questioning, investigating, forming hypotheses, interpreting data, analyzing, developing conclusions

[7] See more in Bourn, 2006

and collectively), who care about the problems of the Earth. Thanks to this education people are involved, for example, in observing, measuring, classifying, experimenting and other techniques for gathering important data. All these help them to analyse and interpret the information and knowledge about environmental issues, create motivation and own attitude towards these issues, and choose the way of acting. It is not about environmental advocacy of some viewpoint or the course of action. It is proper educational process when educator is neutral in providing knowledge and skills. This process empowers its recipients to live sustainably in a more environmentally approach.

Environmental challenges in rural development in the context of global education – results

We can summarize that environmental education allows recipients to explore environmental problems, engage in their solving, and act for improving environment. It leads to the deeper understanding of environmental issues and provides the skills to create informed and responsible global citizens.

A lot of activities have been made for last years with the aim to support, spreading and institutionalization of global environmental education, with focus on cooperation, policy, evaluation, sharing practices and professional development, and of course with the aim to improve quality, practice and impact of this education, and expand its reach on wide audience (also ordinary rural people or potential rural inhabitants). When global environmental education is fruitful it fulfills two main tasks in supporting sustainable rural development.

- It informs rural people that the environment is endangered and all of them have own responsibility for its protection. They have to protect nature and its parts, and avoid its abusing. Thanks to this education they should understand their role towards the nature. It is the task with preventive character.
- It informs and teaches rural people how to work with nature, affected and abused by climate changes and human careless activities. They should learn how to support sustainable rural development in spite of the rural environmental problems. It is the task with repairing character.

From the mentioned information and knowledge we can allocate several objectives of environmental education in achieving rural development sustainability (see table 2).

Table 2 Objectives of global environmental education in achieving rural development sustainability

Objectives	Purpose
Raising awareness	Raising general awareness and understanding of environmental problems, their causes and consequences, and of new environmental challenges
New values	Understanding of the need for environmental sustainability in rural areas and setting out values, upon which people can make decisions about the best ways of acting to promote sustainable rural development
Own attitudes	Towards environment and sensitivity for its improvement
Knowledge and skills	To help individuals, groups, communities and countries to identify and anticipate environmental problems and challenges, and act to resolve or minimize and prevent them, and press for sustainable rural development
Active participation	In actions to solve environmental issues towards sustainable rural development

Source: Own work

We can summarize that environmental education disposes with number of positives, which it brings to the students during educational process. We can mention some of the most valuable and important in the way to achieve sustainable rural environment and development.

- It helps create enthusiastic and innovative students. When people learn more about the problems of rural areas, see them, and see their opportunities to improve the actual state of environment, they are motivated to act positively towards the sustainable rural environment.
- It builds critical thinking and motivation for solving rural environmental problems. It opens peoples´ eyes and offers number of attitudes to the problems and their solutions.
- Increases environmental literacy. Before this process people can have some information about the rural environment, but may think that they are too far from them and that they are too small to make a change. But this education shows them that everyone can contribute to better condition of their local environment with responsible acting and that a big responsibility lies also on their heads.
- It makes other courses reach and relevant. Environmental education has a cross-cutting character and it intersects many other subjects. People are able to see the connections and broaden their view on various issues and problems also in rural area.
- It teaches people to be active solvers of the real world problems – also rural environmental problems – and it helps them become self-directed learners. When they learn through a problem, or project-based approach they are able to explore and address rural environmental challenges actively while building skills in teamwork and communication, research, data collection and analysis, community engagement, and reflection. This education enables and requires students go deep into the content and see the local environmental issues that can be improved or solved also by their action.
- It helps develop new learning standards in science, technology, engineering, and math that have gained a place among the most pressing education issues that the countries face also in rural areas. These new learning standards emphasize the development of skills students will need in order to contribute solutions to the new challenges, including those concerning sustainability rural development and sustainable rural environment (for example, through asking questions and defining problems; analyzing and interpreting data; developing and using models; constructing explanations and designing solutions; engaging in argument from evidence; obtaining, evaluating, and communicating information) (NEEF).
- It shows people their position and role in achieving sustainable rural environment through the education. This process goes from lower to higher perspective (from local and regional environment) with focus on comprehensive approaches. All people are involved without distinction.
- It creates new values, needs, priorities and support new direction of the action, best practices, research and evaluation, and design new, safe and replicable interventions to the rural environment.

In all these the role of policy, regulations, enforcement and multi-level collaborative mechanisms are very important. There is a big responsibility lying on the political systems of each country to support sustainable rural development also through the providing global (environmental) education. The willingness and openness of the teachers and recipients to global education is also necessary condition for success of these actions.

Conclusions

Nearly half of the world population lives in rural areas. States and organizations pay still higher attention to the policy of rural development and its sustainability today. Rural areas are very important source for the people from various perspectives. But, there are a lot of problems that nature counteracts today. Not only urban areas are touched with the consequences of environmental crisis. Also the countryside has to deal with number of environmental problems and this situation is getting worse. These problems represent big treats for sustainable rural development. As the rural sustainability is addicted to the environment the condition of the countryside environment has to be improved immediately.

Rural development policies have to take into account these conditions, adapt their actions to ensuring sustainable rural development, more intensively protect productive land, water sources and forests, decrease pollution of the air and many others, and so protect countryside as an important source of subsistence of the people also for future generations. If environment is not improved, reaching sustainability will be inconceivable.

Education should be the first step to make a change. Today the system of global education plays an immovable role in this issue. Concretely, global education opens people´s eyes and minds to the realities of the globalized world and awakens them to bring about a world of greater justice, sustainability, equity and human rights for all. Global environmental education, as important part of global education system, helps people see environmental problems and their own responsibility in improving our world from local perspectives. It brings a new insight onto the world and the new feeling of global citizenship. The aim of environmental education is to care about ensuring environmental stability, which has even bigger importance with adopting of the new SDGs. It is the long-lasting challenge and it has big impact also to the rural development sustainability. Solving of rural environmental problems does not lie only on governments and international organizations, but also on all individuals, who should protect the life on the Earth.

In this context the importance of global environmental education has been rising because it brings a lot of positives on the way to ensure sustainable rural environment. It enables people to raise their awareness about the global environmental problems, start to think critically, solve problems, and act responsibly. Environmental education empowers recipients to live sustainably in the more environmentally approach, what is necessary for sustainability of rural environment.

Support implementation of global education at all educational levels and ensuring its highest transparency is one of the needs for getting sustainable rural development. There is a need to educate full-valued active global citizens, equipped with needed knowledge and skills, aware of their responsibility, and able to act towards the new environmental challenges of the contemporary world. For this purpose education has to support awareness, attitude, and action in ensuring sustainable rural development with active participation of all concerned people.

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CLIMATE CHANGE ATTITUDE AND ADAPTATION CAPACITY OF HUNGARIAN FARMERS

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Abstract
Climate change is a problem realized by most of the Hungarian farmers. The increasing frequency and length of summer drought, the unequal dispersion of precipitation, some missing seasons are the most often mentioned consequences of climate change. The main questions in the questionnaire and also in the interview surveys were focused on the perception of climatic effects on agricultural production, exploring the knowledge on climate change and the adaptation capacity of rural population. Our aim is to define the short-term and long-term solutions, share the farming experiences and ideas that could help farmers in successful adaptation to environmental stress. It is also important to consider factors like spatiality and highlight how successful adaptation techniques vary regionally. On the business side some farmers share their experiences and opinions about the experienced and expected return of their investments in adaptation[1].

Keywords: climate change, adaptation, agriculture

JEL Codes: Q12, Q15, Q54

Introduction

A problem occurs for human when its effects are sensible, visible or there are any ways it can be experienced. The problem of climate change is described in professional literature, in magazines and newspapers. Discussions are explaining or questioning it. Of course there are researchers dealing with climate change and there are several ways of decreasing its negative effects and adaptation.
As agriculture and climate are in strict relation, the survey was mainly concentrating on problem-sensation and adaptation possibilities. One opinion is based on the reception of climate change in media, which influences the knowledge, behaviour and the view of solution possibilities of farmers. On the other hand individuals' own experiences are determining. Do they feel climate change? Do they connect the experienced changes to climate change? Which changes are derived from this phenomenon?
According to our topic it is very important to see the sights of climate change. Urban people view the extreme weather conditions while farmers can measure the changes in crop yields.
The question is always what are the effects of climate change? Is it normal or unusual? Was it experienced earlier too or is it a new symptom? The reports of International Panel on Climate Change defining the possibility of anthropogenic factor in some extreme cases from 2007 to 2013 (IPCC, 2007, 2013). While the climate of Earth is getting warmer the number of extreme weather conditions is increasing.
Is it significant for us to do something against climate change? While climate change is pictured with the decreasing population of ice bears and melting glaciers and so on it seems to be far away. But what are our experiences? How our land is affected? What are the possible solutions? Are small or big financial investments required to these solutions?
These questions gave the base of the research first in Zala County and now we have partial results from the whole country.

Materials and methods

The definition of climate, climate change, land and agriculture are required to base the topic.
Climate is the composite or generally prevailing weather conditions of a given region, including temperature, precipitation, air pressure, humidity, wind, sunshine and so on through a period of time.
From a sociological view, climate is the part of our culture. If it changes, the life conditions of society are also changing and it pressures social actors to react (Formádi, 2013).

[1] The study was carried out in the project VKSZ_12-1-2013-0034, Agrárklíma-2.

People feel the stress of climate if they have their own experiences. It has several factors. Not only the numbers learned on geography lectures connected to the above mentioned conditions as temperature, precipitation, their average level, the number of cold and hot days and so on, but also its psychological and cultural sides are determining. These are transforming from day to day, from week to week according to everyone's experiences, also some moments are rooting in culture and habits, based on collective memories and connected to popular customs. (Hulme - Dessai - Lorenzoni - Nelson, 2009) It means that the examined phenomenon also has different meaning for every individual as the effectiveness of possible solutions is judged variously as well.

If the changes of the above mentioned weather conditions are experienced as a tendency on a longer run or on a shorter-longer run, or these processes seem to be irreversible, it can be defined as ***climate change*** (Lóderer– Rácz, 2011). Climate change has effects which can be sensed and measured and it brings or requires significant changes in the other environments (social, legal-political, technical-technological and economic environment) as natural environment had changed. According to IPCC the average temperature of air close to the surface increased by 0,74 Celsius degree between 1905 and 2005 (Weinhoffer, 2011). The main reason is the growing amount of greenhouse gases in the air, as carbon-dioxide, methane, nitrogen-oxide. For the higher level of carbon–dioxide the burning of fossil fuels and the process of deforestation are made mainly to be responsible. In the case of methane the main sources are exploitation and transport of natural gas, the rot of organic materials and the digestion of cows. Nitrogen-oxide originates from fertilizers containing nitrogen and from fossil fuels, too.

After mentioning some of the *reasons for climate change*, some *effects* should be listed. The most well-known are melting glaciers, extinction of species, rising level of seas and oceans, changing trends of currents, desertification, floods, extreme weather conditions, growing frequency of hails, vanishing seasons, new diseases and so many other factors. Yes, it is often explained as natural process of the Earth where periods are following one another, but the rising speed should be highlighted and its main reason is the extremely quick technical development. After the boom strategies, plans, laws, policies, etc. are working on *solutions*, even on preventive, disincentive and corrective ones. Without the aim of completeness there are international agreements e.g. Kyoto protocol to reduce the carbon-dioxide emission of countries, national ones e.g. VAHAVA –project and the National Climate Change Strategy to reduce emission and work out adaptation strategies. Finally the level of individuals is also significant and can be very active by using renewable resources, cycling instead of driving, recycle, etc. (www. videkfejlesztes.net, 2010).

Finally to base the topic precisely it also seems to be important to clear the definition of land and agriculture. According to Fisher ***land*** is *'the original and indestructible powers of the soil'* (Fisher (1958), pp. 198.). It includes economic resources as mines, forests, seas and fields. Land means something different for all of us. It is not only a moderator to show the globally homogeneous climate change on the same way for everyone, but it is a domain frame for the inhabitants to interpret this phenomenon in their own place and time. ***Agriculture*** was mentioned as using the 'free elements of nature' (Brace - Geoghegan, 2010). This usage can be cultivating land, raising crops and feeding, breeding and raising livestock or farming. The yield of agriculture is the produced crops, livestock or poultry. From another point of you it can be bring closer as a part of the economy next to industry, services (transportation).

Agriculture and climate change, adaptation possibilities

'Agricultural activity emits greenhouse gases through use of fossil fuel-based inputs and equipment, livestock production, soil erosion, and land conversion and deforestation.*'* (Lybbert - Summer, 2012).

Most of agricultural technologies have an effect on climate, but this relation works in backwards, too. As we know the role of agriculture in climate change is behind the role of industry and transportation, but when thinking of adaptation technologies the harm of new technologies on the natural environment has to be taken into account.

The *effect of climate change on agriculture* is a complex problematic. It has to be added that the extreme weather conditions had influenced the yields and quality of crops earlier, too. One problem affects the other, because crop yields spin off to prices of agricultural products and food on the global market, as in longer term the position of them can be modified by climate change. As a weight there is an expectation on agriculture to grow enough and healthy raw materials on a high quality, use environmental friendly technologies, keep biodiversity and supply enough raw materials to biochemistry, bioenergetics and so on.

These expectations could influence the daily farming practises as well as could form a new structure of production systems and regions (Howden et al., 2013; Vermeulen et al., 2012).
The reaction can be double: to decrease climate change or to adapt to climate change. Because this phenomenon is existing and influences the efficiency of farmers, most of them had already realised the need of adaptation, which means a change determined by changing conditions.
Adaptation strategies of agriculture can be divided into two groups. *'Agronomic strategies include changes in crop varieties and species, timing of operations, and land management including irrigation. Economic strategies include investment in new technologies, infrastructure and labour, and shift sin international trade'* (Easterling, 1995).
Many facilities have to be involved in the adaptation process. To name some of them natural resources as land, water, energy sources, but also anthropological factors have to be mentioned as physical infrastructure, human resources, information and political system, economic background, research and development capacity and logistics. This is not a full list the range could be long continued.
Adaptation possibilities could be listed according to the term of adaptation. Short-term adaptation keeps agricultural system resilient, for example new types of crops planted, irrigating or use new land management techniques. Long-term solutions are changing the agricultural system in its base for example that according to less precipitation and use less irrigation water the management could change to dryland farming. According to Olesen – Trnka et al. (2011) in European crop production systems as further adaptation responses the followings were highlighted: changes in timing of cultivation, tillage practises to focus on soil water conservation and protection against soil erosion, changes in the fertilisation schemes both arable crops and perennials, new cultivars are mainly important for arable crops and some zones of grapevine, crop protection, seasonal weather forecasting and crop insurance.
The *method* of the introduced research was partly the personally asked questionnaires (217 farmers were asked in Zala County and 82 in the whole country) and also the interviews.

Results and discussion
The questionnaires were personally filled by mainly students with 217 people from Zala County and 33 people were interviewed. From our current research we have already had results two: 82 filled questionnaires and … interviews. The students were visiting the BA and MA courses of the University of West Hungary.
The interviews were given by croft farmers, by farmers dealing with grapes and vines, fruits-growing farmers and arable farmers with huge fields. There were not any farmers doing traditional ecological farming.
The questionnaires were mainly answered (85%) by farmers dealing with arable farming and the connected animal husbandry. According to the type of field owned by the questioned farmers, 85 % is plough-land, the rest equally garden, meadow and forest. 52 % of the questioned have the aim of self-sufficiency with farming, 17% of them the aim of good production and 31 % of them named both.

Experiencing the problem of climate change
Some former research brought the result that people feel climate change as a problem of further regions.
In this survey 87% of the respondents were experiencing climate change, some of the rest did not believe in this phenomenon and also some did not want to answer this question. 72% felt the negative effects, 14% experienced both positive and negative effects and 14% did not give any answers to this question. Given the possibility to define more changes, the following results can be summarized. The changes were recognised by 28% of the respondents in the changing order of seasons and their soft borders, 37% framed the change in the always warmer summers with more and more droughts. According to the opinion of 25% of the farmers the weather was very changeable and unpredictable, 15% realised unbalanced partition of rainfall, while 13% measured less rainfall. It means that problems with precipitation occurred by the 28% of the responders. Figure 1 shows the problems, which were defined to be the most serious ones. (Only one answer was accepted.)

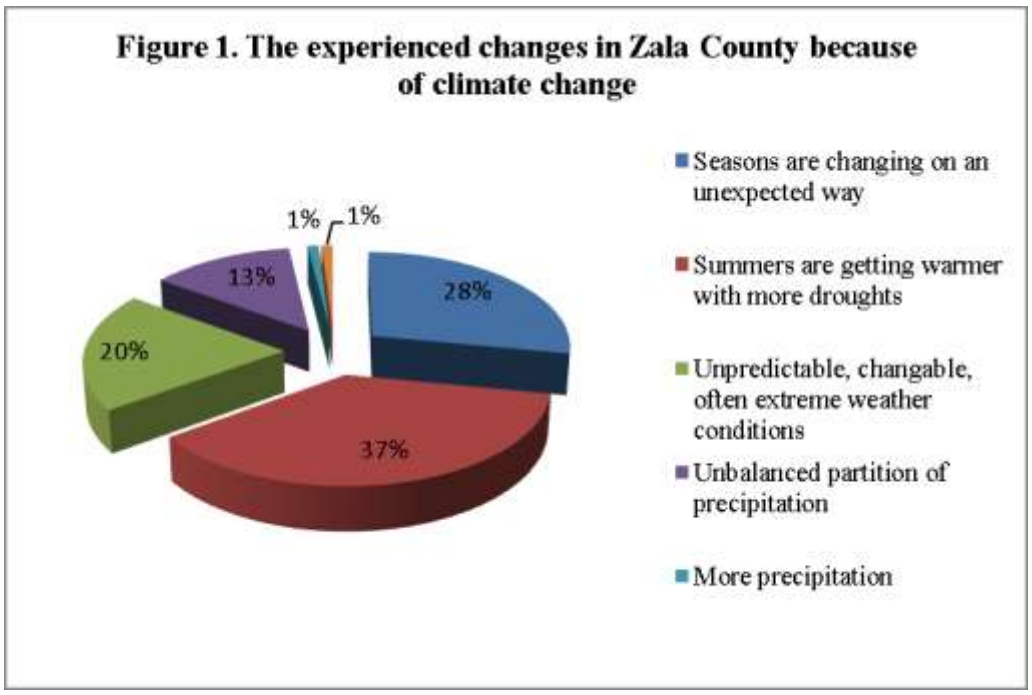

Figure 1 The experienced changes in Zala County because of climate change
Source: Results of the questionnaire survey, Zala County, 2013, UWH

The results of questionnaire widespread to the whole country are similar to the one questioned in Zala county. Among the experiences connected to the changed weather conditions, the most significant is the drought and additionally the bigger pullulating of pests and the increased numbers of hail events.

One farmer over 80 years working together with his son on 20 hectares in Zala County said the followings:
'In my childhood there was no thermometer. … Maybe it was colder in winter with more snow. … I probably feel in connection with weather-change that the seasons fuse and we cannot divide them as much as earlier. The spring was good, summer warm, autumn as it is and winter cold. Now summer comes in early spring.'
The rain is different, too. There are increased number of longer drought periods through summers and then when precipitation comes, it is more and colder then earlier. In an interview, a farmer aged 55 added the followings:
'Summer rains used to be very intensive and warm. As a child I was running in this water with my friends. Now summer storms are cold and often accompanied by hail.'
The period of changes was also awarded differently by farmers. The beginning of changes was mentioned to start in the last 2-3-4 years by some of the respondents or in the last 10 years by others. Some farmers put the borders to the 80s and 90s.
'This orchard has been working for 15-16 years. In the first years we had to water it because of drought. Later there were small problem with the fruit itself. But now swelter and drought are in the same time, which is visible on the fruit. It burns, scorches and drought is in the deeper layers of the soil which is a basic problem for the trees and fruit.' (Farmer over 50 years, Zala County)
Most farmers in Hungary are recognising the trends in climate as also the extremities, for example snow storms in March and April, summer droughts, early frosts in September and October. (We have to add that some of the interviews were asked in September and October 2013 which year was especially famous for its extremities.)

Reasons and responsibilities for climate change
The question of *responsibility* brought different opinions to the surface. Questions were pointing out the role of natural processes and also the human activity. According to the answers, farmers more believe in the responsibility of humans (responsibility and total responsibility of humans was mentioned together by 52% of respondents, while total responsibility of natural processes by 17%).

So as the reason for climate change the environment pollution caused by humans was mainly named, in the form of iconic use of cars, industry, deforestation, sometimes the consumer society, urbanisation and globalisation.
These later ones show a deeper understanding of this phenomenon. Some farmers pointed out acid rain, the tailing away of ozone layer, earthquakes and tsunamis as the essentials of climate change. There were some people who caused mainly natural processes for climate change (volcanos' eruption, the digestion of cows and the used fertilizers).
In many answers the technique called 'cloud-shoot' of our neighbour to prevent hails was named as the main reason.
'Precipitation is not coming in the used repartition. The weather is warmer and there are droughts in the atmosphere and hails threatening. What are the reasons for these changes? According to our watch after the South-Slav war airplanes started to use new routes (above us) which made our weather to change or pushed our cloud zones a bit to another direction. I believe that it is the reason for changeable precipitation repartition.' (Farmer over 50 years, Zala County)
It was experienced in further interviews too, that the influencing role of Serbia and other south neighbour countries had an important role in climate change according to the opinion of people living in Zala County.
To summarize it can be said that some of the interviewed people believed in climate change as a problem all around the world which has to be solved while others listened to the news and recognised it as a problem in further parts of the world (as it is shown is television with former mentioned glaciers, ice bears, hurricanes, etc.).

Possible ways of adaptation to climate change
The last group of questions was concentrating on the adaptation mechanism of farmers. First it was important to see whether they had already realized the necessity of adaptation and if yes what they had already done or what they were planning to change in the future.
56,2% realized climate change as a completely unavoidable and 20,3% as an unavoidable phenomenon to which farmers have to learn how to adapt.
What were the opinions about adaptation? The adaptation is defined as a costly solution, but 39% of respondents believed in climate change and the always closer level of it, so in the point when every farmer has to change their farming methods or the types of planted crops.
According to the results of the questionnaire survey, 31% of farmers were willing to adapt to climate change, 65% did not plan to change anything and 4% did not know yet or did not given any answers. We have to add, that 41% of the ones who were not planning any changes had still ideas about adaptation. The possible ways of adaptations mentioned by the farmers are summarized in Figure 2.

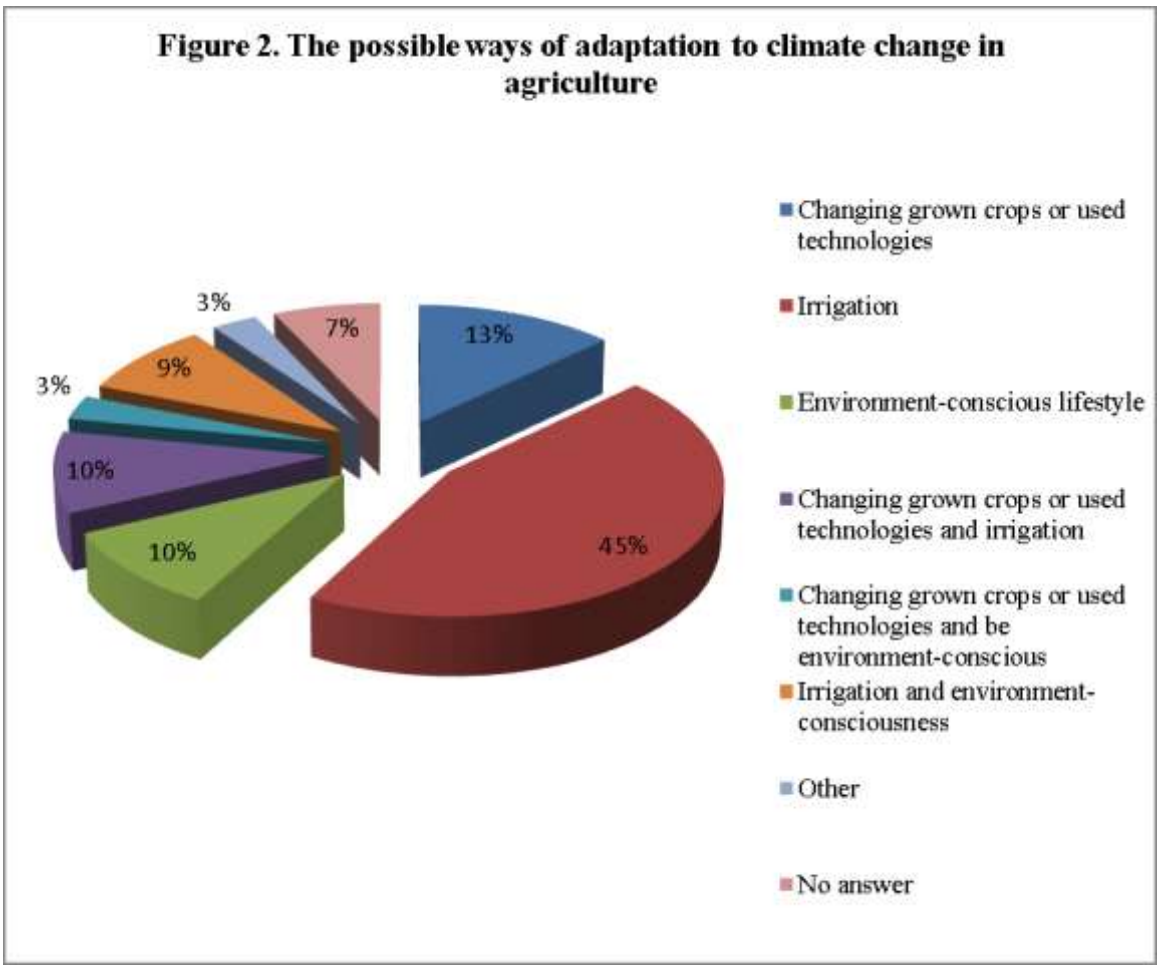

Figure 2 The possible ways of adaptation to climate change in agriculture
Source: Results of the questionnaire survey, Zala County, 2013, UWH

How is it possible to adapt? 31% of respondents thought to be able to adapt privately to climate change and 17% of all the respondents had ideas. They mentioned mainly irrigation and the change of recently used farming habits, while others the environment-conscious lifestyle. As changes, the use of crop rotation, the change of planting time, the change of planned crops, using foil camps against frost, covering, ice-net against hails, collecting rainfall, making trenches to take away water were mentioned next to afforestation. (It means that only a lower part of the respondents defined technical or technological adaptation possibilities.). According to the recent researches examining the whole country, the ability to adapt is more favourable than it was experienced in Zala County. At least 50% of farmers believe in their ability of adaptation to the effects of climate change and have the relevant knowledge to this. Despite this fact only 23% of them have already changed their agricultural habits referring to the inadequate financial conditions. 40% of farmers plan investments in irrigation systems in the future even if they perceive the limited water supply parallel to drought periods.

To examine the correlation between the adaptation concepts, knowledge took the most relevant part (39,3%), money (26,7%) and standing on more feet (18,7%) were mentioned also as significant factors, but suitability (8,4%) and proper insurance (2,3%) were named, too.

It means that attitude was judged to be a bit more important in adaptation than money. These data can be seen in Figure 3.

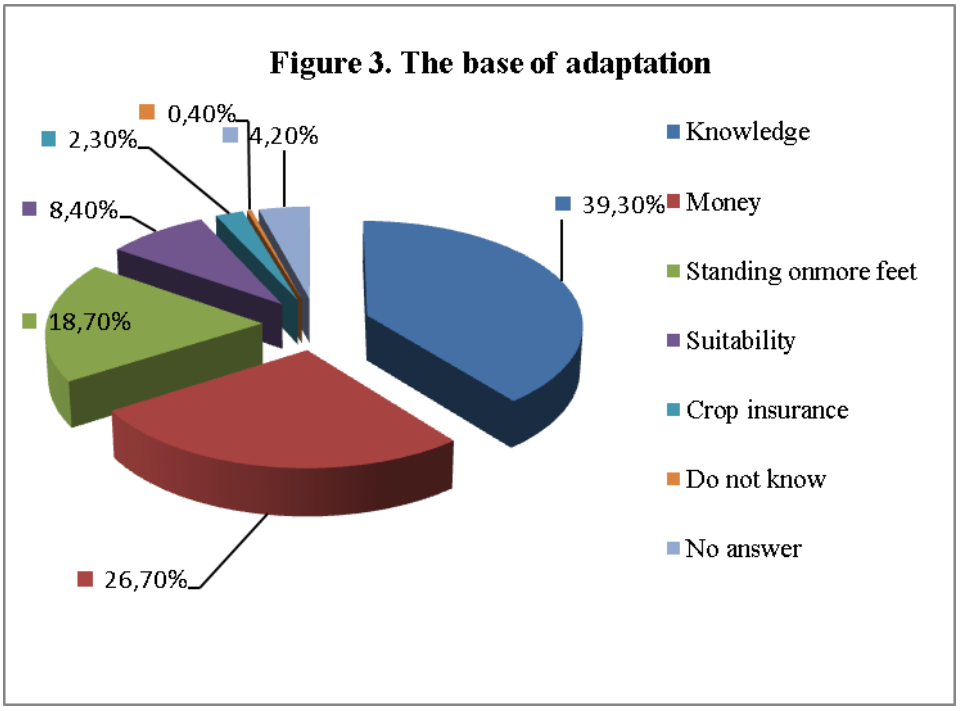

Figure 3 The base of adaptation
Source: Results of the questionnaire survey, Zala County, 2013, UWH

In the basis of experiences farmers started to water their fields in the dry periods, changed technologies, type of plants but also their knowledge, aptitude and creativity were determining factors. Standing on more feet was also highlighted by a farmer over 80 years from Zala County:
'If someone plants different plant species than he got off so there is no catastrophe. At least 3 different species have to be planted and even additionally to keep animals.'
A few farmers conceived about their farms as leader in adaptation. A farmer above 50 years farming on a bigger field than 1000 hectares in Zala County referred to new corn types and said the followings:
'In the reason of low precipitation we did not plant early or middle-early corn types in the last 3-4 years, because they burn early and then dry. It can be seen now walking in the countryside close here. Smallholders' corn who planted early types and did not take into account what was recommended is seeding, no I must say it suffers from being pressured to seed… The ones having huge fields mainly planted the later corn types, so these corn fields are green… As we used to say even if the droughts which came in the 24th hour these corn types could recover, being vivid again and as the fertilizer started to work, the life starts to work in these plants so being seeded gets a bit further….I also have to mention that at the beginning of my farming it was easy to grow corns. Nowadays it is more costly thanks to moth and corn bug. If I am not aware enough, I cannot reap.'
Others base their adaptation on new technologies:
'We had to change our technologies. To protect soil from drought we are not making deep ploughing only move the surface, so humidity stays in the lower levels. If we do deep ploughing, we close the soil immediately. When we open it, we close it and compress it. It is and old rule and we have to remember it. It protects the soil.' (Farmer aged 60 from Győr-Moson-Sopron County)
'Go back to methods applied by our ancestors. To protect fields from heavy rains they simply planted across and used alleys to decrease the destruction of storms and to increase the time of flowing down.' (Farmer aged 55, Győr-Moson-Sopron County)
Following opinions are moving on a wide range, like using organic manure, originally Hungarian seeds, new sowing structure or irrigation (laws and investments mean the most significant barrier to the latest one).

Plans and the financial background of adaptation are also highlighted in our researches. As future possibilities the development or building of irrigation systems, the building of hail and ice protective

infrastructure, new types of seed corns and drought tolerant species, forestation and the application of more soil-protective agricultural technologies were mentioned frequently.
Some farmers are financing these changes themselves but more and more of them are applying for grants and visit professional events or specialised offices to gain information about their financial options. The ones who have already invested in new technologies (for example a farmer aged 33, Győr-Moson-Sopron County) declare that these investments can return in 4-5 years if they take petrol, amortisation and also their time into account, not to mention all of the savings.

Naturally not everybody can or wants to adapt to changing climate. A farmer close to being retired on pension declared that instead of corn he is going to plant less water-demanding plants for example sorghum or millet.
Only 4 % of respondents were thinking on moving out in the near future at the moment of questioning and 13 % deliberated to give up farming. 5 farmers out of the questioned 217 were winding up their farms as a consequent of climate change.

Conclusions

It has to be concluded that people look at climate change on many different ways from not experiencing it to having been experiencing it for many years. The ones who feel the effects of climate change take it either as the problem of their village (as unemployment or mitigation) or as another personal problem (as illnesses or lack of money).
Many farmers see that adaptation is a good strategy and realise the need to manage their farms in the long run while others still think that it is not enough if only they change their behaviour or techniques.
Of course when effects influence the efficiency of farming, the quality of crops and the yield and so the well-being of the farmers' family, adaptation is not a possibility anymore. To change in the right time can open new markets in front of the farmers where they can have even a market-leader and price-defining role.

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EVALUATION OF THE AGROECOSYSTEM POTENTIAL IN THE DEVELOPMENT OF REGION GEMER

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Abstract
The paper is focused on the analysis of the suitability of land use from the perspective of the evaluation of cultural agroecosystem services, natural preconditions for tourism, which can be one of the tools for tackling regional disparities. The model area is a tourist region of Gemer, which belongs to a group of regions with the highest development priority in Slovakia. The territory is rated as a region with a high potential for tourism due to its natural characteristics, especially in the areas of rural tourism, hiking and mountain biking. The potential rating is based on the analysis of the evaluating outdoor recreation as an example of cultural agroecosystem services recreation potential. We presume that each agroecosystem has the potential for carrying out the outdoor recreation. Recreation potential was compared to the production potential of soils determined by the production-typological classification of agricultural soils. The analysis of the region potential pointed to the possibility of more efficient agricultural low productive land use in tourism due to higher potential recreation soil functions while preserving its production functions. From an environmental point of view, it is a positive opportunity to use these areas without the need for withdrawal from agricultural land, which is in line with the EU package of measures on efficient resource using and circulating economy. Acknowledgment: The authors acknowledge the Slovak Research and Development Agency for the financial support via contract No. APVV-0098-12 Analysis, modelling and evaluation of agroecosystem services.

Keywords: regional development, potential of region, Region Gemer, agroecosystem services, recreation

JEL Codes: Z32, R11, R14

Introduction

According to the World Tourism Organization, the tourism is a summary of the activities of persons travelling outside the place of residence for less than one year, for the purpose of leisure, business or other purposes. The complex evaluation of a territorial potential is problematic, because tourism has a complex structure; it is formed by many recreational activities that are realizable in qualitatively different territorial units. It is also influenced by the interventions of the managers in the public administration which should react to the changes in external and internal environment and time (Petríková, Vaňová, 2011). Therefore, in this paper we consider only part of a territorial potential for tourism, namely the potential of those parts of the regions, which are not used for direct economic activity and evaluate the economic benefits of the potential use of these places. As a target area was chosen a tourist region Gemer, which is included among the regions with the highest development priority in Regionalization of tourism in the Slovak Republic (2005). Kožiak (2011), Uramová (2008) evaluated the individual variables within the territory of the Slovak Republic, on the regional level NUTS 3. Their findings clearly confirmed the existence of regional disparities in our country and the significant dominance of the Bratislava region. Košice and Banská Bystrica self-governing regions, under which administration most of the region Gemer belongs to, are the two of the most underdeveloped regions in terms of selected indicators - GDP, employment and regional average monthly wage. Objectives of the regional disparities study include the analysis of socio-economic indicators and also a description of a territorial status, the prognosis of its development and the formulation and implementation of measures that may be necessary to remedy the unfavourable conditions. One of the possible solutions to alleviate the regional disparities is the introduction of strategic innovations at the regional level. However, Šipikal et al. (2010) point out that it is necessary to know the potential of the region and provide the subsequent financial support from the state to the products for which the territory has preconditions. The development of tourism in the Slovak rural areas as a part of the regional development and environmental protection is also explored by Gúčik et al. (2009) in the guide for the entrepreneurs in tourism. He attributes the major importance of five factors affecting tourism (facilities, location and

surroundings, services and activities, atmosphere, reservation) to the place. Also the theory of territorial marketing refers to the location and its characteristics as a significant factor in the development of territory (Petríková, Vaňová, Borseková, 2012). The analysis of rural landscape multifunctionality with orientation to tourism development in this area was conducted by Šimková (2013). Her research results show that the attractiveness of the locality is on the first place in the recommendations to achieve this goal. In another publication she stresses the fact that rural tourism should have "low negative impacts" on the environment, which means that it should not create risks of environmental damage and should not affect the original rural character of the locality, and there should be no misuse of the land, especially the agricultural one (Šimková, 2014).

One form of localization factors analysis in a territory, including the natural potential of a territory, is mapping the places of resting and neglected agricultural land, and its suitable utilization by introduction of the tourism and recreation function.

Within the evaluation of ecosystems' functions at the global level, the biggest deficit of information is in the evaluation of agricultural soils (Constanza at el., 1997). As pointed out by several authors (DeGroot at el., 2002, Bujnovský at el., 2009), agro-ecosystem services are represented by the soil functions from which the humans derive certain benefits. Production function of soil means utility consumption values, non-productive functions of soil are represented by non consumable use, either directly (recreational function), or indirectly (accumulation of water, immobilization of pollutant, carbon reservoir, the transformation of organic pollutants, buffering the environmental changes, biodiversity reservoir). The analysis and evaluation of soil recreational agroservices potential have been not reviewed in the Slovak literature yet. Evaluation of soil is an expression of its values, both qualitative and quantitative, in specific social conditions. In identifying soil functions in ecosystems it is important that the soil functions of specific location are optimal in terms of specific ecoregion (Warkentin, 1995). However, an ecosystem with significantly degraded productive function (Makovníková et al., 2007, Bujnovský, et al., 2009 Bujnovský, et al, 2011) may provide cultural services (recreational function of land) and thus contribute to economic stability and prosperity of the region. Thus, an analysis of recreation soil function may lead to optimum use of the soil and the preservation of its non-productive function.

Material and methods

The aim of this paper is to conduct an economic analysis of one of the natural localization assumptions – agricultural soils in the region of Gemer, based on the analysis and evaluation of soil functions. The model area is the region of Gemer, namely districts of Rimavská Sobota, Revúca and Rožňava (except the cadastral areas of Dedinky and Stratená).

In the analysis we used the dataset of the National Agricultural and Food Centre/ Soil Science and Conservation Research Institute Bratislava (database of Comprehensive pedological survey (KPP) and Soil monitoring database, geodatabase BPEJ (valuated land-ecological units), and LPIS. An identification system of production units on the agricultural land (LPIS) is used for identifying agricultural areas and is also an essential substrate in the system of subsidies in agriculture.

A software package of the geographic information system ArcGIS® was used for processing the input geo-referenced digital data and the resulting maps.

Analysis of soil functions, determination of recreational function

We have divided the soil of Gemer region into nine qualitative soil groups according to Decree no. 59/2013 Coll. supplementing Act no. 220/2004 Coll. Consequently, we have selected the groups 6 - 9 consisting of the soils with lower quality and with lower production potential. These areas are suitable for planting fast-growing trees Act no. 57/2013 Col. supplementing Act no. 220/2004 Col. The areas of agricultural cultivated soil with a slope greater than 12º are economically and in terms of technical and machinery availability disadvantageous also for fast-growing trees, with the exception of cultivation on a smaller area without the machinery use as the supply for houses (Gonda et al., 2010). Within the groups of agricultural soil 6 - 9 we identified the areas that have a significant slope of relief, greater than 12°.

Analysis of natural assumptions on the example of selected model localities

An analysis of natural assumptions is based on a comparison of the productive soil potential with the potential of tourism recreational function. We refer to an assessment of agro-ecosystem services, i.e.

evaluation of benefits for the consumer. The basis for analysing the production function is a point value (BH) of productive potential based on typological and production classification of agricultural soil (Džatko, 2002).

BH = (HPJ + SE + KH + Z) * T , where HP - point value of the main soil unit, SE - sloping score and exposure score, KH - score of skeleton and soil depth , Z - texture score, T - coefficient for climatic regions.

The BH value is a basis for the rationalization and environmental exploitation of natural resources of a particular territorial unit (Džatko, 2002) and its value in Slovakia ranges from 0 to 100.

A potential for tourism (recreational function of land) was evaluated according to the Regionalisation of Tourism (2005). Based on the methodology used in regionalisation of tourism we evaluate four categories of the potential (high - 4 points, good - 3 points, average - 2 points, basic - 1 point) from the view of selected activities. Selected activities are as follows: stay in a mountain area (HP), hiking (PT), cycling (CT) and other sports (TL) (Tarzan park, climbing parks). Scale distribution of the individual actions impact on the potential is determined by the Regionalisation of Tourism SR (2005): stay in a mountain area (weighting coefficient 5), hiking (weighting coefficient 10), cycling (weighting coefficient 6) other sports (Tarzan parks, climbing parks) (weighting coefficient 5). The resulting points CRP are determined by the equation:

CRP= (HP*5 + PT*10 + CT*5 + TL*5) - MF

The modifying factors were selected (Regionalizácia, 2005) as: protected area (- 3 points), proximity of the settlement (-1 point) and intensive agricultural production in the settlement proximity (-1 point).

The point value of the tourism potential CRP can range from 26 to 104 points.

Results and discussion

The tourism region Gemer, which we chose as a model area of our analysis, is based on the Regionalization of tourism in the Slovak Republic (2005) and belongs among the regions with the highest development priority. High unemployment rate in the region reached alarming levels: in the Revúca district 29.55 %, in Rimavská Sobota district 31.24% and 24.83 % in Rožňava district in 2013 (SO SR, RegDat). On the other hand, it is a region with a high potential for tourism, whose advantage is a variety and an attractiveness of the offer in terms of natural environment, historical heritage and the occurrence of caves and spas. Tourism Regionalization rates the potential of the region in four categories (high, good, average, basic) for different tourism activities. The potential is evaluated as high for the activities of stays in a mountain area, good for a stay in the countryside, hiking and cycling , average for water recreation, spa and ski tourism , and basic for water sports . In terms of tourism forms in the long term period the region is suitable especially for cognitive tourism, residential tourism in forest and mountain and rural areas and for spa tourism. In the Regionalization, the region is characterised as little exploiting its tourism potential, and as extremely underdeveloped in the capacity and performance in view of its preconditions (Regionalization, 2005).

The region Gemer includes 120,303 hectares of registered and classified agricultural soils. The groups of soil quality 1-4 accounts for only 18 %, whereas the group of lower quality land (6-9) comprises 82 % of the total area.

Analysis of soil function, determination of recreational function

The Table 1 presents the classification of agricultural soil in the Gemer region by the groups of soil quality. The soil quality in the groups of 6-9 with a slope greater than 12° can be attributed to the soils with a higher potential for recreational function (Makovníková et al., 2012).

Table 1 Classification of agricultural soils in the Gemer region

District (Okres)	Groups of soil quality 1 - 5	Groups of soil quality 6 - 9 with slope less than 12 º	Group of soil quality 6 - 9 with slope over 12 º
	area (ha)		
Rožňava	3695,57	23067,65	10059,28
Revúca	3828,03	17331,19	5833,56
Rimavská Sobota	13812,30	58569,10	16052,48
Summary	21335,9	98967,94	31945,32

Source: Own processing based on own data collection

The prevailing type of soils in the group of soils 6-9, with a slope of more than 12º (Figure 1, Table 1), are Cambisols (61% of land area), followed by significantly lower representation of Regosols (10% of the area), Haplic Luvisols (8.5 %) and Rendzic Leptosols (7.7%). The least represented are Lithic Leptosols (1.9%), Albic Luvisols (0.8%) and Stagnosols (0.3%). A relatively large area of agricultural soil consists of the soil located on the escarpments (9.6%), which is not suitable for agricultural production. Much of it is abandoned with expanding self-seeding communities.
The Table 2 shows the analysis of soils with a higher potential for recreation function divided by the productive typological categories of agricultural land (Džatko, 2002) in the observed Gemer region. Due to the modifying factors for tourism potential we have selected also protected areas.

Table 2 Agricultural soils with potential for recreation function (soils group 6-9 with a slope above 12º) - productive typological categories

District	Productive typological categories				
	Protected areas	Grassland areas			Unsuitable areas for agroecosystems
		Productive	Less productive	Low productive	
	area (ha)				
Rožňava	3013,44	490,88	2487,36	3405,52	662,08
Revúca	286,00	859,12	1524,76	2540,48	623,20
Rimavská Sobota	4726,08	3396,04	2228,56	4668,88	1032,92
Summary	8025,52	4746,04	6240,68	10614,88	2318,20

Source: Own processing based on own data collection

The soils are used mainly as grassland and pastures with different quality of production (productive, little productive and low productive). The largest area of protected areas, but also the productive and the low productive grassland and unsuitable land for agricultural production belongs to the Rimavská Sobota district.

Analysis of natural preconditions in selected model localities
Within the analyses we evaluated agriculturally used soils of Gemer region, focusing on the areas with lower quality of soils, with low productivity potential, classified in groups 6-9 with a slope greater than 12°, with a high potential for tourism. In the region, the area comprises 31945.32 ha. Based on the analysis, soils in the category of productive grassland have the low potential for tourism.
These areas are suitable for setting up centres of rural tourism due to their attractiveness and mountain character of the territory. The product offer of rural tourism for the territory should be based on the needs and expectations of rural tourism participants. The markets in rural tourism are very fragmented and there is no universal model of demand. A success in this territory lies in specialization, in satisfying the demands and expectations of visitors within the overall concept of rural tourism in view of the territorial potential.
We have selected five examples of model localities, which represent all typological -productive categories of soil in groups with higher potential for recreation function listed in the Table 2.
An analysis of productive potential is realised by the point value (BH) of productive potential of soil, which is based on the productive typological categories of agricultural soils (Džatko, 2002).

1. *Example of Protected area – Locality 1 (area 1,4 ha)*

Locality 1, soil type - Cambisol, is located in the National Park Muránska Planina at the altitude of 675 m close to the forest; it belongs to the quality group of soil 9.

BH evaluation

HPJ	SE	KH	Z	T
15	1	3	1	0,59
BH	11,80			

In Slovakia, 8.81% of agricultural soils have BH value in the range from 11 to 20. Land management: extensive management of natural grasslands, extensive grazing (maximum 5-6 sheep per ha) and partly mowing are recommended, which contributes to the preservation of the species composition of plant habitat (Šefferová Stanová, 2011).

The point value of CRP was determined according to the equation:

CRP= (HP*5 + PT*10 + CT*5 + TL*5) - MF

The three modifying factors that were selected are: protected area (- 3 points), the proximity of the settlement (-1 point) and intensive agricultural production in the settlement proximity (-1 point).

	HP	PT	CT	TL	MF
	2	2	3	1	-3
CRP	47				

The selected part of the Gemer Region with the potential for recreation function belongs to the protected areas in Slovakia, which are sought by tourists preferring hiking. Within the extension of tourism offer in these locations it would be appropriate to build wildlife trails with information boards on protected species of fauna and flora of this area, which would contribute to environmental protection in those protected localities. These trails could be used in winter as regional cross-country skiing trails. On these defined territories, it would be appropriate to build a new mountain bike trail or bike parks that contribute significantly to increasing the attractiveness and offers of tourism centres, the development of which is also included in the Strategy of Tourism Development in Slovakia to 2020, and fulfil one of the goals of rural tourism developing, which is to create conditions for the physical activity.

2. Example of Productive grassland area (area 8 ha) – Locality 2

Locality 2, soil type- Regosols, is located at the altitude of 225 m and belongs to the quality group 7.

HPJ	SE	KH	Z	T
23	8	15	7	0,94
BH	49,82			

12.28% of agricultural soils in Slovakia have the BH value in the range from 41 to 50. Land management: intensive management of grasslands. A grassland with sloping (14°), a relatively good accessibility of mechanisms, possible small distance from the place of animal production can be classified as the level 4 of intensive management. It means the opportunity to perform alternating (meadow or pasture), meadow (2-3mowing) or pasture use (4-5 cycles). The hay production at the maximum recommended dose of fertilizer may reach 6 $t.ha^{-1}$, or pasture 24 $t.ha^{-1}$. The soil potential of locality (mainly non-stoniness) provides the possibility to use an arable land, but at high sloping there is a high risk of soil erosion.

	HP	PT	CT	TL	MF
	1	1	1	1	-1, -1
CRP	24				

3. Example of less productive grassland (area 3,1 ha) – Locality 3

Locality 3, soil type - Cambisols, is located at the altitude of 325 m, close to the forest and belongs to the quality group 8.

HPJ	SE	KH	Z	T
14	5	1	10	0,87
BH	26,10			

13.02% of agricultural soils have the BH value in the range from 21 to 30 in Slovakia. Land management: less intensive management of grasslands, this may be included in the level 3 of intensity

using. There can be applied alternating (meadow, pasture, and meadow-pasture), meadow (1-2 mowing) or pasture use (furlongs or a fenced pasture).

	HP	PT	CT	TL	MF
	2	2	2	1	-1
CRP	44				

Selected areas that are not on the escarpments or in protected areas (Examples 2, 3 and 4) can be used in meeting other objectives of rural tourism, such as a stay in healthy unusual environment and its protection, obtaining an additional income (e.g. agro-tourism), thriving preserving traditional architecture and folk customs of the region, stimulating the development and preservation of traditional crafts and the associated appreciation of the products. These are the lands with low yields that are characterized as unproductive. On these lands, it is possible to establish the extensive rural farms with direct participation of visitors in the production of regional agro-products, which may be an additional income for local businesses in the territory. These centres could provide local craft demonstrations with courses in the production of hand crafts with use of natural materials, such as willow wicker, dried plant material for the production of floral arrangement for different occasions related to the local traditions (carnivals, etc.). The crafts production can also recycle various waste materials from these centres, which in recent years are successfully used to produce a variety of souvenirs. Recently, these activities of rural tourism have been particularly popular with foreign tourists, who prefer more and more independent accommodation in a healthy environment. Ehrlich, who analyses the results of European rural tourism published in the Guide for entrepreneurs in tourism in rural areas, refers to 85 % of this type of visitors. Creating “tailor-made" offer based on the potential of the region accompanied with promotion can increase the number of tourists in the region, and lead to the overall improvement of socio-economic indicators.

4. Example of Low productive grassland (area 2,9 ha) – Locality 4

Locality 4, soil type - Cambisols, is located at the altitude of 1050 m, close to the forest and belongs to the quality group 9.

HPJ	SE	KH	Z	T
15	1	1	3	0,59
BH	11,80			

In Slovakia, 8.81% of agricultural soils have BH value in the range from 11 to 20 . Land management: low intensity grassland management of 2nd intensity grade (large value for the slope 17.5 °= limited mechanization availability, distance from the company > 5 km). Maintenance is limited to vacant or hunt grazing of sheep or young cattle, or for mowing of 30% of the area.

	HP	PT	CT	TL	MF
	3	3	3	2	0
CRP	70				

5. Example of an unsuitable area for agro-ecosystems (area 5,7 ha) - Locality 5

Locality 5, soil type – Lithic Leptosols, is located at the altitude of 1000 m, close to the forest and belongs to the quality group 9.

HPJ	SE	KH	Z	T
0	1	1	1	0,59
BH	1,77			

Only 1.45% of agricultural soils in Slovakia have the BH value ranging from 0 to 10 . These soils are not suitable for extensive or intensive agricultural use. The role of grassland is to maintain its erosion control function and to be a prevention of floods and land slides.

	HP	PT	CT	TL	MF
	3	3	3	4	0
CRP	80				

The analyses of Gemer region soils shows that a relatively significant portion of agricultural soils is located on the escarpments (9.6%), and therefore these areas are abandoned and degrade in view of their use because they are expanding by volunteer communities of forest stands. These areas are suitable especially for other types of sports activities in tourism, such as building a climbing or a rope park.
The Figure 1 illustrates the evaluation of the productive soil function in the context of its recreational function expressed by tourism potential.

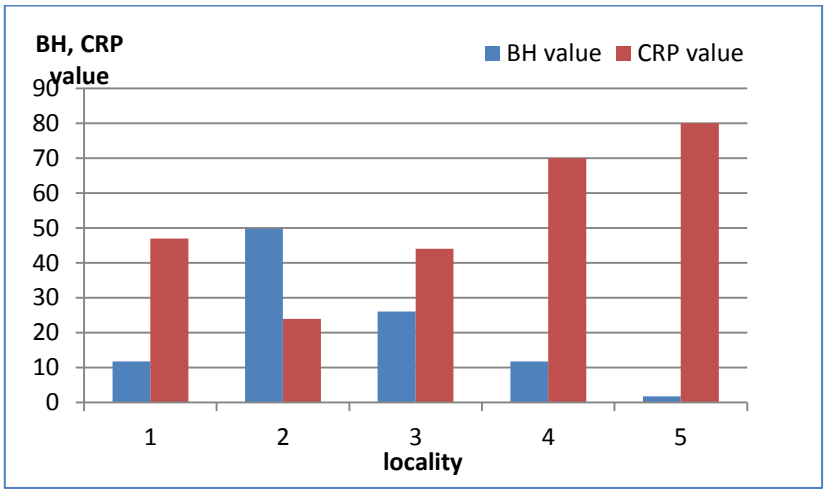

Figure 1 Evaluation of soil production function (BH value) in the context of evaluation with tourism potential (CRP value)
Source: Own processing based on own data collection

Conclusion
Regional disparities and regional development are very closely related to a concept of regional policy. In the Act on regional development (Act no. 539/2008 Col.), a regional policy is defined as a set of development activities, programs and actions undertaken by the State, local authorities and other organized interest groups at the local and regional level in order to achieve a balanced regional economic and social development. The economic analysis of the suitability of using natural localization factor – agricultural soils conducted in this paper, based on the analysis and evaluation of soil functions, can be one of the appropriate means of implementing the objectives of regional policy of Slovakia. The model area - tourism region Gemer is located in one of the least developed regions of Slovakia and the proposed methodology for this analysis can be universally used to assess any region.
In Tourism, the region Gemer is evaluated as a region with a high potential for stays in a mountain area and with good potential for development of rural tourism, hiking and biking. Selected areas that are not on escarpments or in protected areas can be utilized to fulfil other objectives of rural tourism, which include stays in healthy unusual environment and its protection obtaining an additional income (e.g. agro-tourism), preserving folk architecture for example. These are the soils that are not characterized as productive, with the low yields. On these soils, it is possible to introduce the extensive rural farms with direct participation of visitors in the production of regional agro-products, which may be an additional income for local businesses in the territory.
An offer of these centres would be appropriate to enrich by the local craft demonstrations with courses of the product handwork where it is possible to use natural materials. The production can use also various recycling waste materials from these centres. Recently these activities of rural tourism are particularly popular with foreign tourists, which prefer increasingly independent accommodation in a healthy

environment. To create “tailor-made" offer according to the potential of the region associated with the associated promotion can increase the number of tourists in the region, and thus also cause the overall improvement of socio-economic indicators.

The analysis of natural conditions in the Gemer region showed possibilities for more efficient use of agricultural soils in tourism from the perspective of higher potential for recreation soil functions with preserving of the soil non-productive functions. Recommended activities for the region are derived from the analysis as well as from the evaluation of regional potential suitability for tourism, which has been evaluated in the context of the Regionalization of tourism in Slovakia. Positive aspect from an environmental point of view is a possibility to use this land without respecting it as agricultural soils, which is in line with the EU package of measures on resource efficiency and circulating economy, where the soil, its quality and the area included between four proposed "stops" to have to be monitored (raw material, carbon, water, soil) (Stoczkiewicz, 2014).

This analysis can be used also in regional policy as one of the supporting tools of decision making in the allocation of financial resources to support businesses in development of individual regions and reducing regional disparities, as well as by entrepreneurs themselves in creating the offer of its tourism facility. It may be beneficial even for territorial governments as one of the documents in preparing applications for funding from the Regional Operational Programme in order to increase the availability and quality of civic infrastructure and facilities in the regions.

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AIR QUALITY PROTECTION IN EUROPE AND GLOBAL ENVIRONMENTAL SAFETY

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Abstract

Despite considerable improvements in the past decades, Europe is still far from achieving levels of air quality that do not pose unacceptable risks to humans and the environment. Air pollution is the top environmental risk factor, which has caused damaging vegetation and ecosystems in Europe. This represents a considerable loss for Europe, for its natural systems, its agriculture, its economy, the productivity of its workforce, and the health of Europeans. At present, the most problematic pollutants are particulate matter (solid emissions - PM), sulfur dioxide (SO_2), nitrogen oxides (NO_x) and carbon monoxide (CO). The evaluation of the status and trends of air quality is based on ambient air measurements, in conjunction with anthropogenic emissions and their trends. The aim of this paper is to analyze the emissions trends for the last 23 years in Europe and to evaluate the environment quality, the impacts on agricultural production - reduced harvests crops – pollutant concentrations above the limit and target values set in EU legislation. New scientific findings present that human health and the surrounding environment can be damaged with lower concentrations of air pollutants than originally assumed. Highest concentration of $PM_{2,5}$ in Slovakia rates the country after Bulgaria and Poland in the third place (calculated from EMEP stations from 1990-2013). For the last 23 years the emision of SO_2 (industry, transport and thermal powe plants) has been decreased to 50% in Europe. Greenhouse gas has same decreasing tendency, but not to the extent as in sulfur dioxide emissions. Reasons for air pollution and environmental impact are complex, there is not always apparent direct relationship between reducing emissions and concentrations of pollutants in the atmosphere observed.

Keywords: concentration of emissions, agricultural production, poor growth of vegetation, environment

JEL Codes: Q10, Q52, Q53

Introduction

Air is an essential component of the environment for the existence of life on Earth. For this reason it is extremely important to take proper care and protection. The air pollution occurs naturally (fires, volcanic eruptions, fine particles- sand) and human activities. The rate of human activities on pollution is much higher than the natural way. The rapid increase in the proportion of human activities on the pollution can be dated from the beginning of industrialization. Air pollution began to be unsustainable over time, particularly in centralized industrial zones, therefore it was necessary to make the legal protection of air, to ensure good air quality and prevent harm to human health and the environment (HOMER - DIXON, 199). Air pollution can be modeled by various software, the most efficient is GIS (LEITMANOVÁ et al. 2013 using various spatial measured data (KLIMENT et al. 2012)

In Slovak Republic the air protection is included in the Constitution of the Slovak Republic and the Act no. 137/2010 Coll. About clean air, as well as its implementing rules. Legal protection guarantees each citizen the right to good air quality, but also imposes the obligation to prevent and minimize air pollution. Environmental security is defined as "a condition where human society and ecological systems interact with each other in a sustainable manner, individuals have adequate access to all natural resources and existing mechanisms for crisis management and conflict directly or indirectly related to the environment. In this condition are minimized risks and threats associated with the environment caused by natural or induced process, whether intentionally or unintentionally by accident. These threats can cause or worsen social tensions or armed conflict. The absolute majority of them does not respect national borders and often can act globally "for the area regarding environmental safety are the priority legislative instruments, the national and transnational laws and regulations relating to environmental protection (LENÁRT et. al. 2012) . In Slovakia for example: Act no. 17/1992 Coll. On the Environment, Act. 198/2014 Coll. on the protection of nature and landscape protection, Acts of the individual components of the environment (protection of water, air, soil ...) Act. 314/2014 Coll. Environmental Impact Assessment (EIA), Directive 2012/18/EU of the

European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC.

Materials and Methodology

Europe is the second smallest continent. From Asia it is on east divided by the Russian Ural Mountains and on the north, south and west is surrounded by ocean. The whole Europe is crossed by mountains such as the Alps, the Pyrenees or the Carpathians. Coast continent is very rugged (number of islands, peninsulas). Total population of Europe is about 720 million. people and is one of the most densely populated parts of the world. It is home to different nations, language groups and cultures that have evolved over several thousand years due to migration, invasion, war. Currently there is 45 countries in Europe (including Kosovo). Most of these countries have rich mineral resources. The highest standard of living is mainly in the countries of northern Europe (www.eea.europa.eu, 2015).

Compared basic pollutants:

- SO_x formed by oxidation of sulfur (S), mainly through the burning of fuels containing S,
- NO_x are emitted from burning fuels, for example, from industrial and road transport sector, is a group of gases containing nitric oxide (NO) and nitrogen dioxide (NO_2)
- PM is a mixture of the aerosol particles (solid and liquid) cover a wide range of sizes and chemical compositions.

Regional air pollution affects the whole large area, such as Central and Western Europe. Since 1950, regional air pollution in Europe has been growing in parallel with the pollution emitted by energy, industry, heating and transport. The construction of high chimneys showed in a negative way while applying that prolonged residence time of air pollutants in the air. In this great region, strongly influenced by developed industry, the main air problems are caused especially by sulfur and nitrogen compounds and in connection with the acid rain (HALAJ et al. 2013) and acidification (acidification) of the entire environment. Because of uncontrolled emission there was the growth of the acidity of rainwater. Acid rain and ozone are at present in Europe the main stress factors of forest and field ecosystems (ATTITUDES oF EUROPEA NS TOWARDS QUALITY AIR, 2013).

The Slovak Republic is located in the center of Europe on the edge of the area with the highest regional air pollution in the continent. The rate of long-range transport of pollutants on regional air pollution and acidity of precipitation water in Slovakia is around 60%. Negative development along with the alarming growth of ecological damage step up international cooperation. Environmental risk followed by air abiotic components is shown in Fig. 1

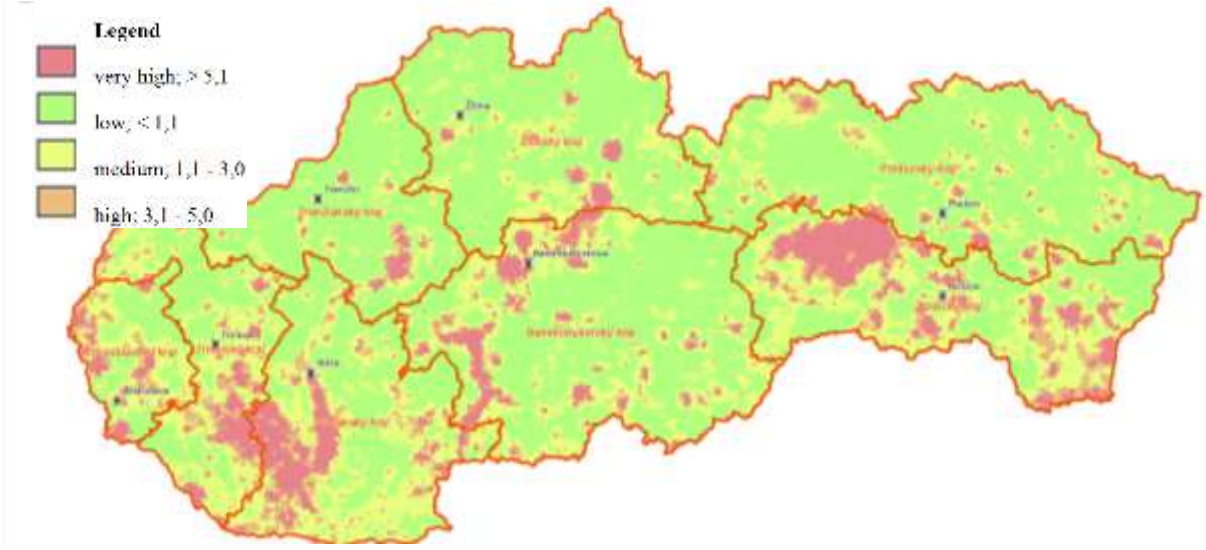

Figure 1 Environmental risk followed by air abiotic components
Authors of map composition: Stanislav Rapant, Jozef Kordík

Results and Discussion

In the final section there is presented a summary of the issues for the past 23 years throughout Europe (including the States outside the Union). The position of the Slovak Republic in the amounts of exhausted throughout Europe is shown in red.

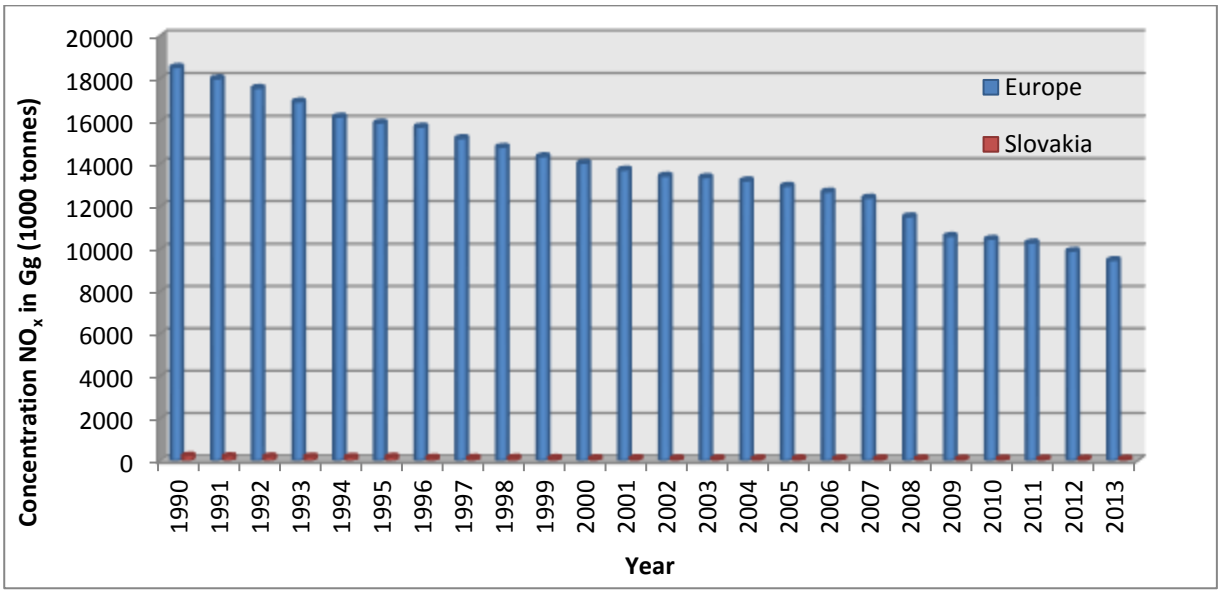

Figure 2 The development of NOx in Slovakia and Europe within 1990 – 2013
Source: Own processing based on own data collection

Fig. 2 shows a range of years from 1990 - 2013 when they were monitored pollutant emissions of NO_x in Gg (1,000 tons) in Slovakia and Europe, where we can clearly see the decrease of NO_x emissions in 23 years. However, even with a decreasing value of the pollutant NO_x there are still problems of negative impacts on the environment and continue to impede the global environmental security. The report of Air situation in Europe from 2012 declares the reduction NO_x and SO_x but unfortunately also evaluates the continuing negative impact on the environment.

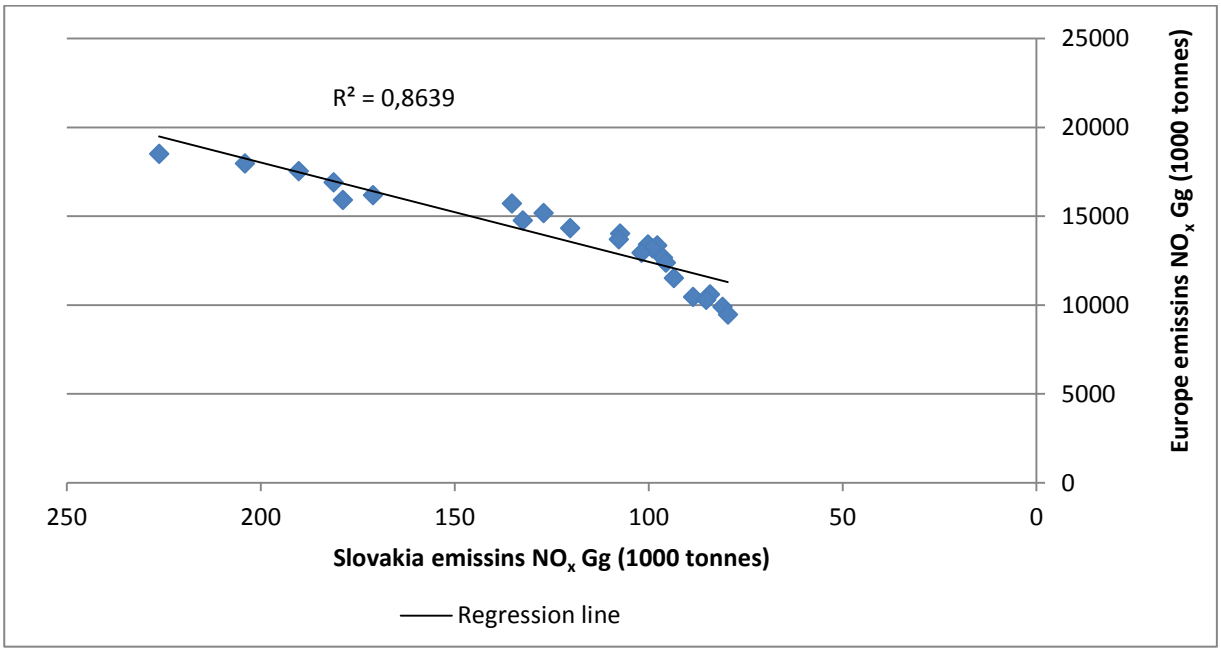

Figure 3 Regression of emissions NO_x in Slovakia and Europe R2 = 0,8639
Source: Own processing based on own data collection

Linear regression of statistical tests for comparison of NO_x emissions in both areas we have identified a coefficient of determination (R2) 0.8639 variance of values is not large (Fig. 3).
In 1979 the Geneva Convention was signed by the European Economic Commission of the United Nations on long-range Transboundary Air Pollution States (the Convention). Protocols to the Convention on the Reduction of Sulphur Emissions (1985 Helsinki, Oslo 1994), to reduce emissions of nitrogen oxides (Sofia 1988) contains the first measures to reduce anthropogenic emissions of pollutants, which are applicable in the long-range transport of air pollution in Europe. The commitment of the First Protocol on sulfur emissions is a reduction of European S0g 30% by the end of 1993, compared to 1980's. Slovak Republic fulfilled this obligation of the Protocol. Reduction of European emissions has consistently demonstrated a decrease in the acidity of rainwater in Slovakia. In accordance with the Second Protocol of the European sulfur dioxide emissions were reduced by 60% by 2000, by 65% by 2005 and by 72% by 2010 compared to 1980's.

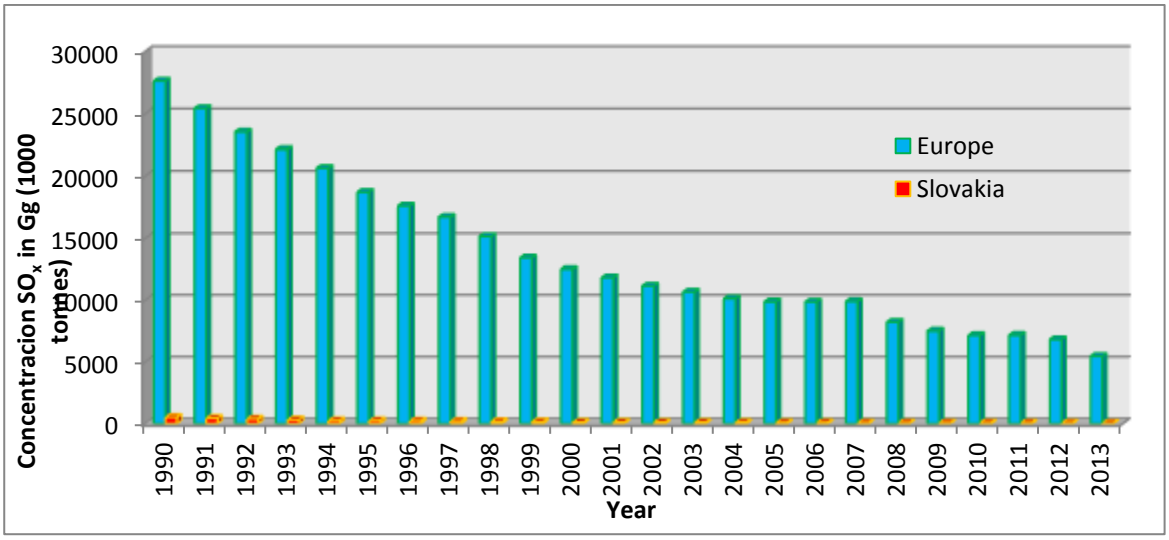

Figure 4 Emission development of SOx in Slovakia and Europe in 1990 – 2013
Source: Own processing based on own data collection

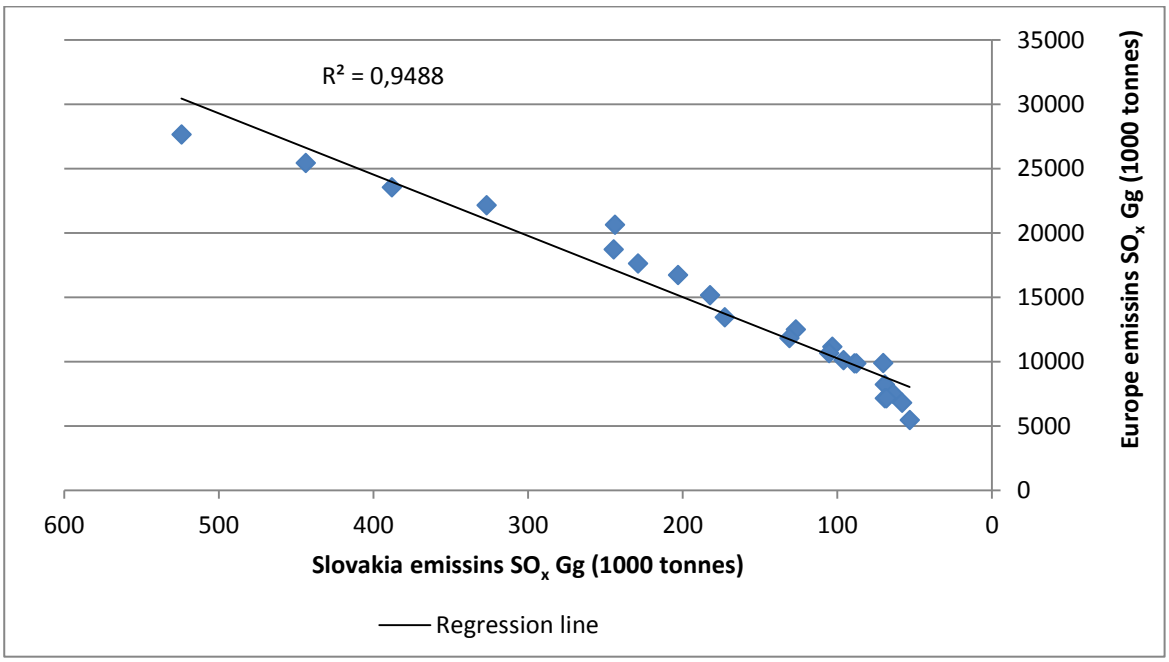

Figure 5 Regression of emission SO_x in Slovakia and Europe R2 = 0,9488
Source: Own processing based on own data collection

Regression tests for SO_x emissions in Slovakia and Europe, showed the coefficient of determination R2 at 0.9488. Dispersion of the correlation array is not large (Fig. 5) and points to a relatively steady decline in the emissions of SO_x. Emissions of SO_x in Slovakia and Europe has a decreasing tendency (Fig. 4).

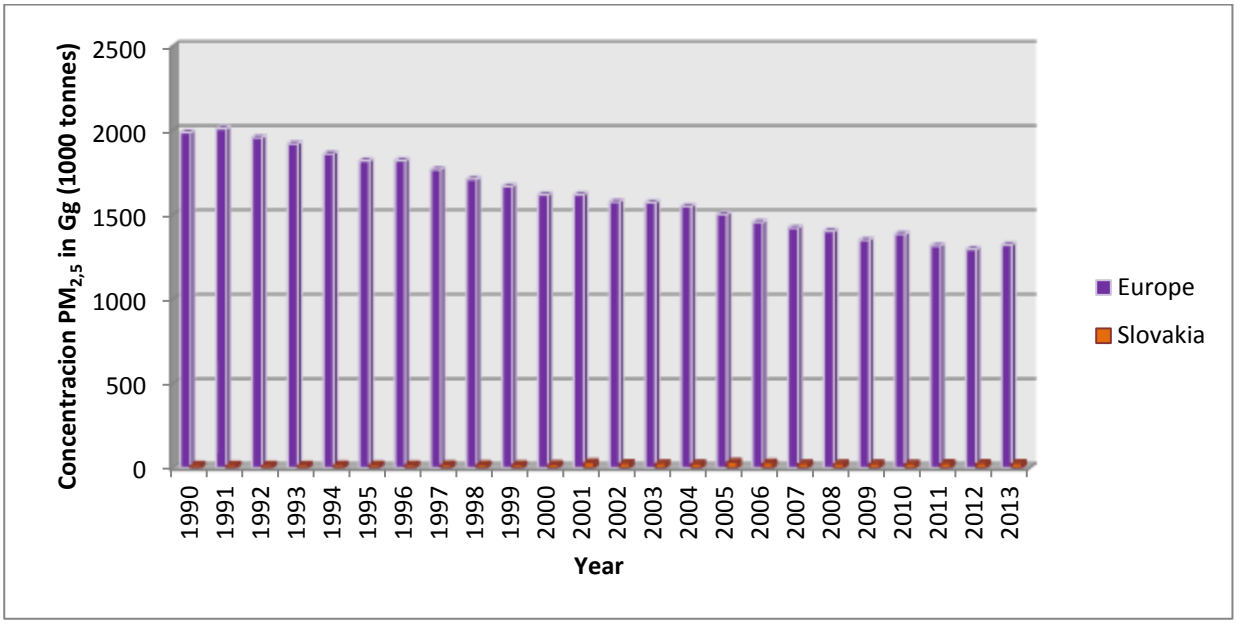

Figure 6 Development of emission of PM2,5 in Slovakia and in Europe for years 1990 – 2013
Source: Own processing based on own data collection

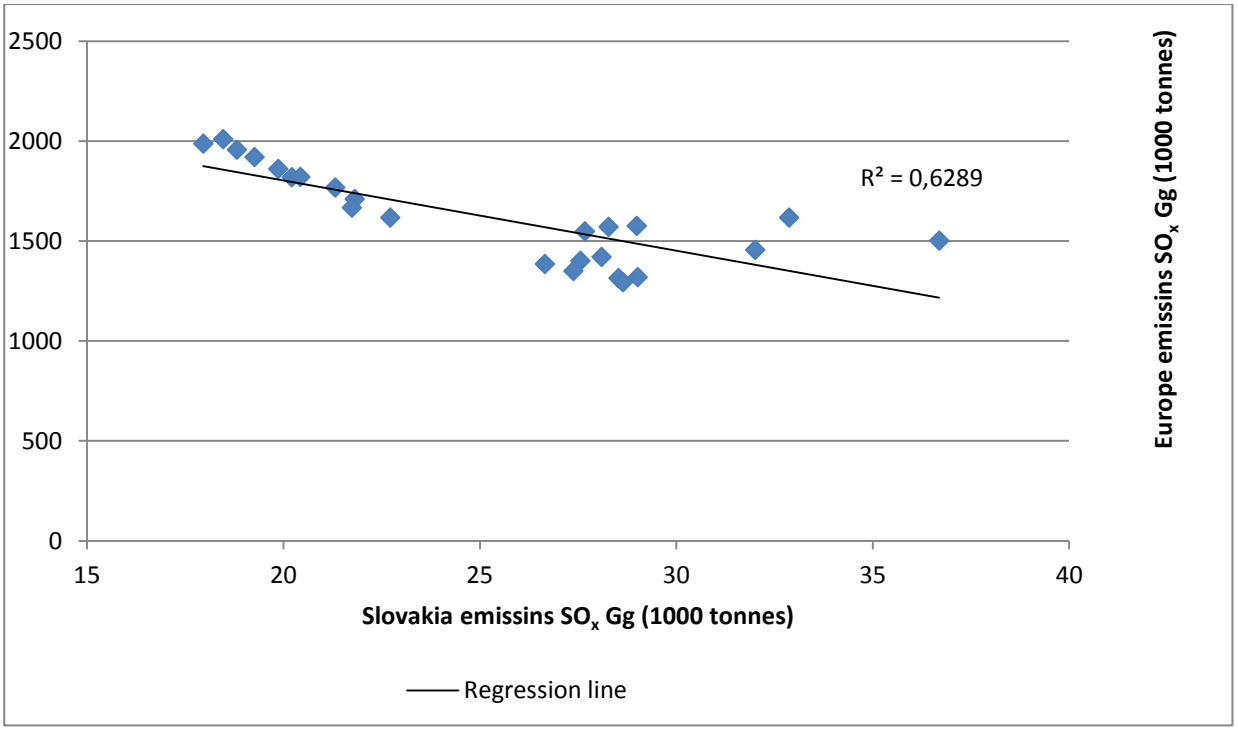

Figure 7 Regression of emission PM2,5 of Slovakia and Europe R2 = 0,6289
Source: Own processing based on own data collection

Statistical tests of linear regression for comparison of the trend of PM2.5 emissions in Slovakia and Europe we have identified a coefficient of determination (R2) 0.6289 which include relatively average dispersion values (Fig. 7). That means that emissions of PM2.5 in Slovakia have rather increasing character compared (Fig. 6) total emissions of PM2.5 in Europe. EEA (2013) pointed out that air pollution is a cross-border

problem - more than half of fine dust particles recorded over the territory of a Member State, in fact, does not come from a source in that country.
The trial in the case of non-compliance relevant standards relating to harmful dust in the air is being on progress against 17 EU Member States, including Slovakia. The government approved a strategy for the reduction last year in February. It includes various measures that need to be done in the future to reduce transport emissions and the combustion of fossil fuels in households. Ministry of Environment introduced a warning system for dust in the air. Slovak HydroMeteorological Institute will issue a warning for this type of pollution. About the serious smog situation, the public is informed through the national media.

Conclusion

Clean air is an important condition for a healthy life. Landscapes untouched by human activities have cleaner air, densely populated and industrial areas are more or less contaminated and thus for humans unhealthy air. Thus air pollution effects on people directly as the cause of their illness and indirectly in the form of psychological and social impacts.
Despite the reduction of emissions of greenhouse gases as well as air pollutants over the last decade, the state of air pollution in the EU still raises concerns. In fact significantly exceeds the recommendations of the World Health Organization, as well as binding ceilings that for certain substances set by the European legislation. Commissioner presented the results at EEA report quoted the words of professor Guy McPherson: "If you think that the economy is more important than the environment, try to hold your breath while you count the money" (www.euractiv.sk, 2015).

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DIGITAL SUPPORT OF ENVIRONMENTAL ENTREPRENEURSHIP IN THE VYSOČINA REGION (CZECH REPUBLIC)

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Abstract
Europa 2020 policy formulation in the European Union has adopted the concept of smart, sustainable and inclusive growth. Specific objectives for promoting renewable energy development were set out in the fight against climate change. In this area, so-called climate and energy package in 2020 established three goals: reducing greenhouse gas emissions by 20% compared to 1990 levels, 20% increase in the share of renewables in overall EU energy mix and achieve savings in primary energy consumption by 20%. Following the implementation of those commitments, it was carried out research of entrepreneurship in the field of renewable energy sources in 5 segments (solar, wind, geothermal, hydropower and biomass energy) in the Vysočina Region (Czech Republic). As one of research findings, need of information support was identified, which is insufficient in the observed region. Based on the findings, the digital platform to promote environmental business in this area in observed region was created. The paper presents a solution in the form of smart maps of various segments of renewable energy sources. This is the proposal of communication channels of regional network and technical support, service and financial database.

Keywords: environmental entrepreneurship, digital tools, renewable sources of energy, regional network

JEL Codes: Q50, O20, O52

Introduction

In the Report on Energy Policy Overall Direction in April 1997, the European Commission sets the following goals (Commission of the European Communities, 1999):

- supporting compatibility of energetically and environmentally oriented goals of various EU development programmes,
- supporting energy savings and efficient use of sources of energy,
- supporting new and renewable sources of energy.

The European Commission Report mentions also the sources of funding this support in the area of renewable sources of energy (RSE) – the structural funds, community programmes, the European Investment Bank, and the European Investment Fund. Most of the goals defined this way concerns directly the public sector both in the area of institutional support and in the area of financial funding, especially in the field of creating autonomous energy sources on the basis of a municipality or a region. Institutionally, this strategic vision of the European Union in the area of RSE was aimed at creating specialized programmes that were to help its gradual implementation.

In the *Communication form the European Commission for the European Council* from January 2007, the Commission (Commission of the European Communities, 2006) states that current energy policies are not of a sustainable nature, i.e. do not meet the goals of the so called sustainable development in a global scale. The document calls for a new energy policy of the Union so that the goals of the Lisbon Strategy would be met and so that the new energy policy would be demanding, competitive and long-term. The energy policy should be pro-growth and should have a social dimension, i.e. create new jobs. It states also an emphasis on local use of sources of energy and larger coordination of national policies in case of threats to energy supplies and also on policy in the field of energy savings. The goal was that by 2020, new technologies will have enabled among others reaching the goal of 20% energy share from RSE especially by increasing the use of less expensive renewable sources of energy.

Priorities from the area of RSE:

- developing second generation biofuels so that they will become competitive alternative to hydrocarbons,

- developing technologies to use vast coastal waters for wind turbines including the related infrastructure,
- developing technologies for increasing the efficiency of photovoltaic electricity from solar energy.

Following the Communication from the European Commission from January 2007 and the proposed European Strategy Energy Technology Plan and the conclusions of the EU summit from the spring of 2007, a package was issued at the beginning of 2008 (Commission of the European Communities, 2008)**,** dealing with energy policy of the Union and commitments to:

- reduce CO_2 emissions by 2020 by 20% compared to 1990,
- increase the share of energy produced from RSE from 7% in 2007 to 20% by 2020,
- increase the share of biofuels in member countries to 10% by 2020.

In the Lisbon Treaty, which came into force in 2009, the common energy policy of the European Union was defined legislatively for the first time. In the subsequently adopted Europe 2020 Strategy, the following goals for the area of energy policy were newly established (European Commission, 2011):

- to decrease greenhouse gas emissions by at least 20% compared to the 1990 levels,
- to increase the share of renewable sources of energy in the final energy consumption of the EU to 20%
- to increase energetic efficiency by 20%.

The state energy concept created in 2004 was the strategic document of the energy policy of the Czech Republic. It set more concrete state priorities and goals of energy sector development in the Czech Republic in the outlook to 2030. It has been prepared in accordance with the analyses of development and the current state of Czech energy sector, possible future development calculations and while respecting procedures and standards of the EU and commitments arising from international treatments. When selecting instruments for reaching strategic goals, economic, energy, environmental and social perspectives are respected (State energy concept, 2004). The State energy concept (hereinafter SEC) defined three basic goals in the area of renewable sources of energy, namely:

- ensuring a suitable needs of primary energy sources including the support of production from RSE, using domestic energy sources and nuclear energy use optimisation,
- ensuring maximal environmental friendliness including minimizing emissions and environmental burden for future generation,
- finishing transformations and liberalization of energy management including optimizing energy sources backup.

As for the first goal, interval optimal values of the energy sources structure were set as follows:

Table 1. Optimal structure of energy sources in the CR[5]

Energy source	*Year 2005*	*Year 2030*
Solid fuels	43-45%	30-32%
Gas fuels	19-20%	20-22%
Liquid fuels	16-17%	11-12%
Nuclear fuel	16-17%	20-22%
Renewable sources of energy	5-6%	15-16%

Source: State energy concept, 2004

In order to meet the goals of the state energy concept and following the above declared concepts of common energy policy of the EU, legislative steps were taken in the Czech Republic after 2005 to meet its goals. By 2020, the Czech Republic committed to cover 13% of gross final energy consumption from RSE. Support of renewable sources of energy development was also incorporated in Regional Innovation Strategy of the Vysočina Region (Chreneková and Jiříček, 2014). These conceptual intentions manifested themselves positively in the development of the renewable sources of energy segment in the Vysočina Region. The situation in the development of this subsidized branch in the Vysočina Region was analysed in the research of the segment of renewable sources of energy and related economic sectors carried out at College of Polytechnics Jihlava 201 – 2012. On 18 May 2015, the government of the CR approved with its

resolution the State Energy Concept for the following 25 years with priorities such as balanced mix of sources for electric energy production based on their wide portfolio and increasing energy efficiency of national economy (State Energy Concept, 2015).

Objective and methods

The objective of the contribution is the design of a digital platform to support renewable sources of energy in the Vysočina Region. In general, the design is based on the objectives and strategies of the European Union in the area of the fight against climate changes and renewable sources of energy support. In the 2014-2020 planning period, the so called smart specialization approach, integrated in RIS3 – Research and Innovation Strategy for Smart Specialization (Babjaková et al., 2014) – has become one of the basic conceptual documents for creating a digital platform to support renewable sources of energy.

The analytical basis for creating a digital platform was results of a research or renewable sources of energy in the Vysočina Region performed at College of Polytechnics Jihlava (Jiříček, 2013). Territorially, the RSE segments in the Vysočina Region will be divided by former districts of the Vysočina Region. From the perspective of individual RSE subject typology they will be divided in terms of the concept of the so called triple-helix model into: operators (producers) of renewable sources of energy, suppliers of products and services for the given segment, institutions and agencies of the public sector, and educational institutions interested in the segment development. From the perspective of classification of individual types of renewable sources, we use a classification using the EU methodology and Czech legislation into: sources using biomass energy (biogas stations, biomass boilers), sources using hydropower (small hydropower plants), sources using solar energy (solar thermal panels, photovoltaic panels), and sources using geothermal energy (heat pumps).

The software tools for the digital platform architecture will be the Mindmeister Internet online platform (team brainstorming method). The CAPSA online storage will be used to organize database subjects participating in the RSE segment development in the distinction among operators, suppliers, and support subjects. As the software tool for database creation in the digital platform system, the CMS Drupal system will be used for creating and administering websites. For *smart map* creation to map the subjects of the RSE segment in the Vysočina Region based on the so called triple-helix model, the maps.google.com and Google Earth Internet tools will be used.

Results

The architecture of the digital platform for renewable sources of energy support in the Vysočina Region reflects the so called mind map of the project that will serve the team members for creating the digital platform. The architecture is flexible and within team brainstorming it enables modifying its individual parts within the project implementation schedule.

The created mind map is based on the organized tree chart. Individual chart nodes represent various segments of the conceptual map of the project in the set of icons. They can be systemically divided into input and output elements. The four icons described below are the input system elements essential for digital platform creation.

The **Sources** icon includes source databases which are used to create the digital platform – these are the Albertina company database, which can be classified using the NACE classification and data can be specified for the examined Vysočina Region.

The **Goals** icon includes the list of numbered goals (tasks) from the beginning of the project.

The **Tools** icon shows software applications used in digital platform creation – MS Access, CMS Drupal, and the CAPSA data storage.

The **Legislation** icon contains basic national as well as EU documents relating to the topic of renewable sources of energy.

The output elements of the system should serve its users from among the operators of renewable energy production facilities, suppliers of products, devices and services for this segment, Regional Chamber of Economy, individual district chambers of economy in the region, institutions, agencies, and universities.

The **Smart Maps** icon enables defining interactive special identification of individual elements of the system of RSE subjects in the region in individual subsystems of classification: the relevant district of the region, the relevant type of renewable source of energy, and the relevant type of system participant.

The **Innovative database** icon is used to define the data evidence of individual elements of the system of RSE subjects in the region and it also contains a database of innovation programmes by funding providers (the EU, national sources, international sources outside the EU) and support databases, professionally oriented at the RSE segment.

The **Communication lines** icons is used to define the forms of communication of individual elements of the RSE subject system through general (Facebook), purpose-built (Web gate) or professional (LinkedIn) communication.

The **Statistics** icon is used to define the digital platform outcomes: data for economic research of regional universities, information for the needs of the Regional Chamber of Economy from the perspective of supporting the RSE segment entrepreneurs and the concept and strategies of public authorities in the area of regional development.

When working with Mindmeister that shows the architecture of the digital platform for RSE support we use a system of links for connection with the CAPSA Internet data storage for used sources and output documents. The icons are synchronized with the place of document storage in the CAPSA system and after clicking the appropriate icon with some of the source or output documents we are directed to the given document.

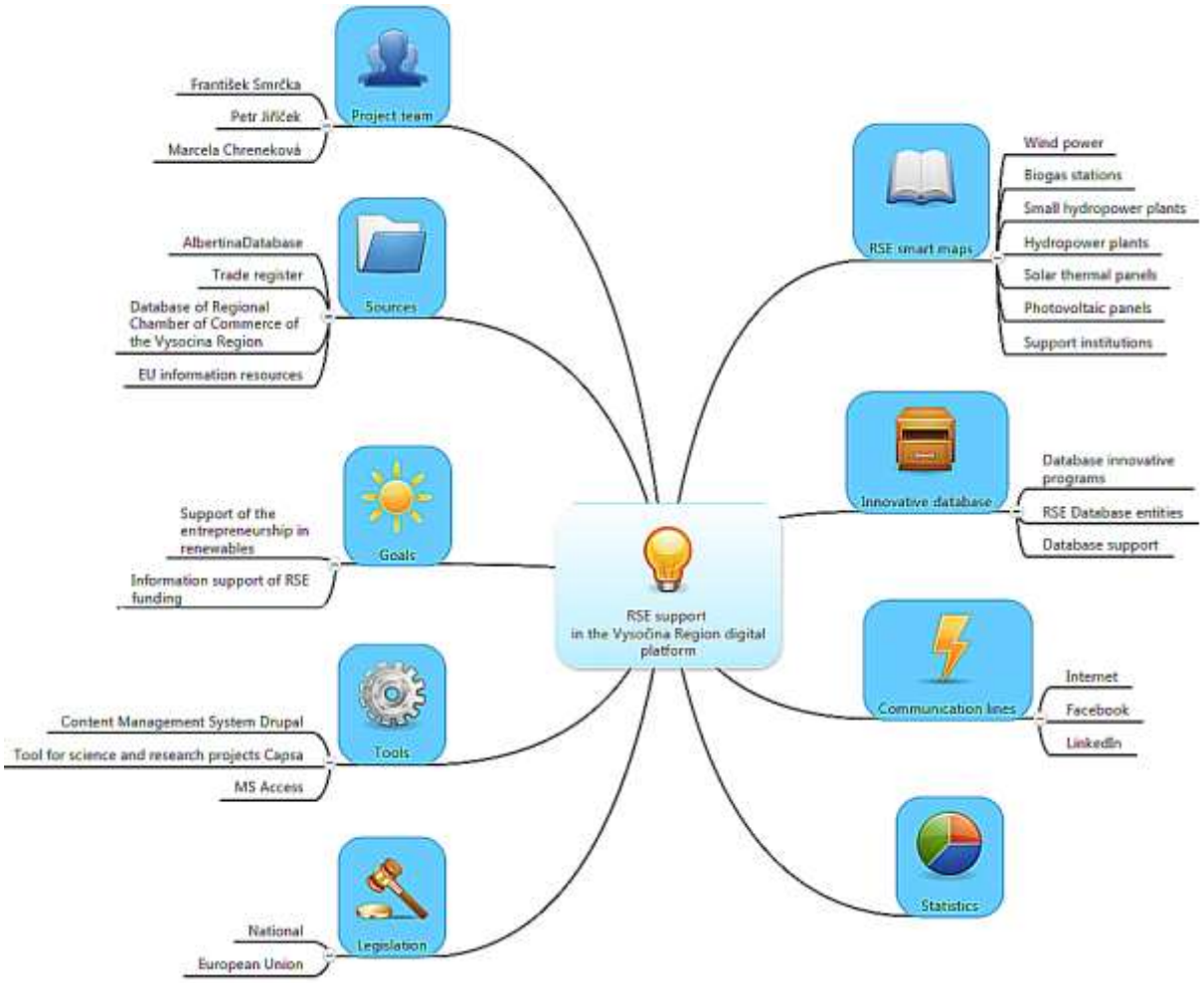

Figure 1. Architecture for the digital platform of renewable sources of energy support in the Vysočina Region
Source: own

Smart maps of the segment of renewable sources of energy in the Vysočina Region are shown in the division: the districts of Jihlava, Havlíčkův Brod, Žďár nad Sázavou, Třebíč and Pelhřimov; and in specification for individual RSE segment subjects: companies – RSE operators by individual types of energy production, companies – suppliers of products and services, and agencies and institutions of the public sector.

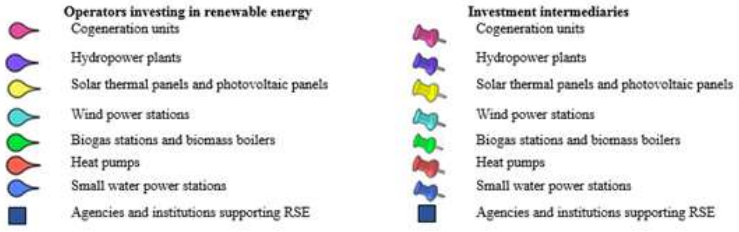

Figure 2. Key to the following maps

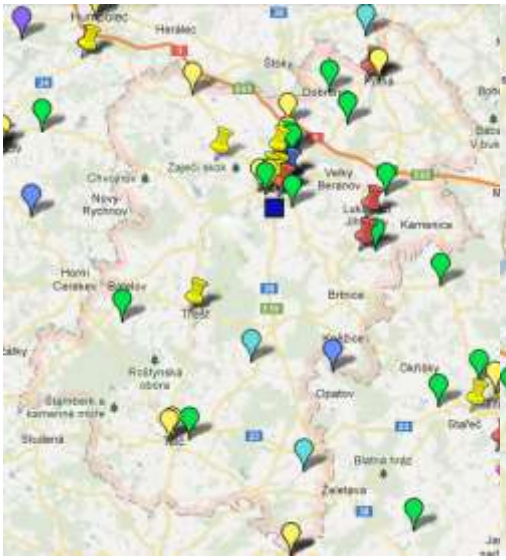

Figure 3. Map of RSE subjects – Jihlava district

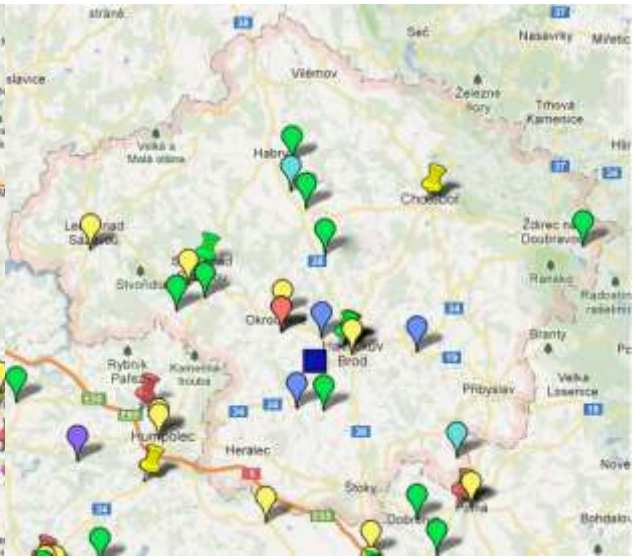

Figure 4. Map of RSE subjects – Havl. Brod district

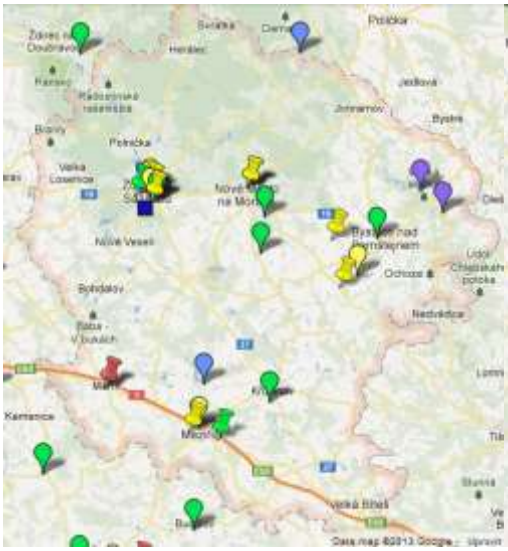

Figure 5. Map of RSE subjects – Žďár nad Sázavou district

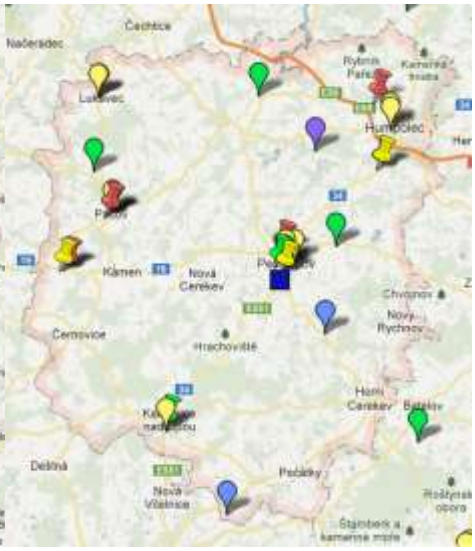

Figure 6. Map of RSE subjects – Pelhřimov district

Source: Own processing based on own data collection

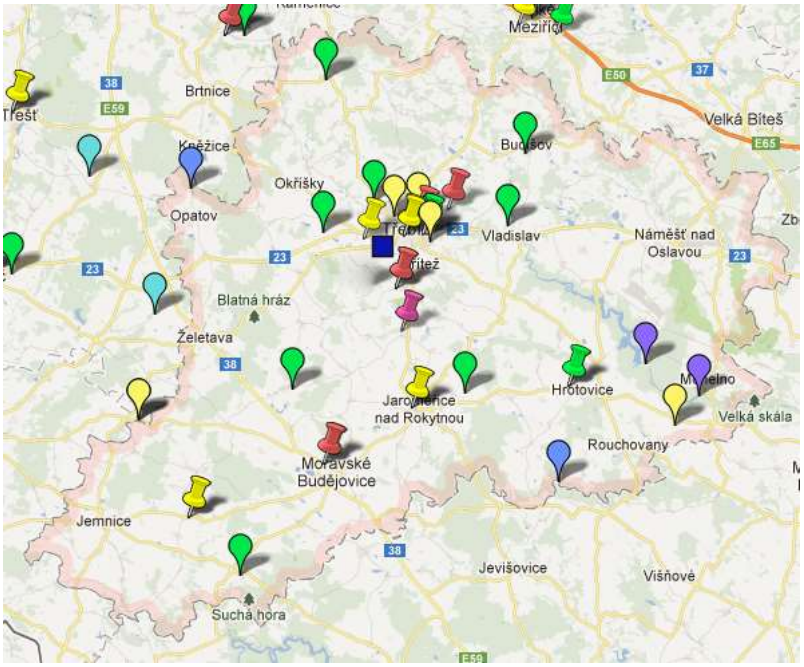

Figure 7. Map of RSE subjects – Třebíč district
Source: Own processing based on own data collection

The chart in figure 8 provides a view of the structure of companies in the region by operating individual renewable sources of energy. The largest share with 27% is created by companies that have heat pumps as their scope of business. The segment dominance can be explained by continuous effort of households and companies to get a better source of energy and the effort to decrease operating costs. The high evidence also testifies to the great competition in this field of modern technologies. A high share is also created by companies dealing with solar thermal systems (26% companies) and photovoltaic panels (23% companies).

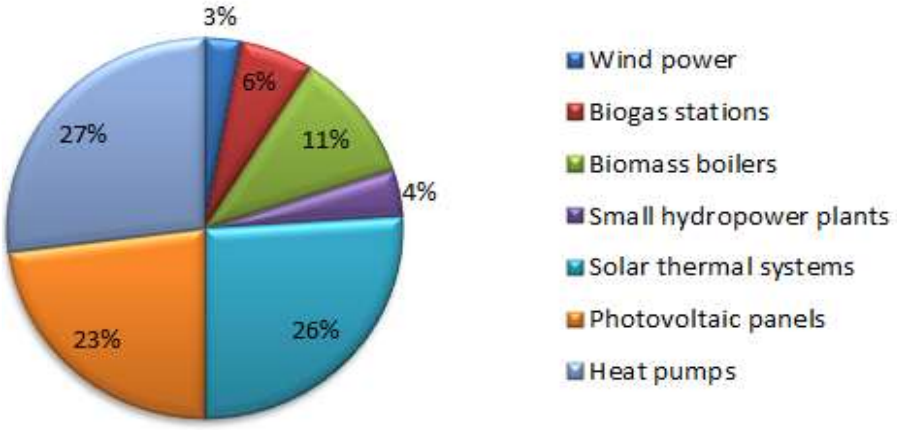

Figure 8. Structure of companies of the RSE segment in the Vysočina Region
Source: Jiříček, 2013

The database of the RSE segment was created in MS Access program. For the content, we used information especially from the Albertina national database of companies and subjects (Albertina, 2015). The database contains nearly 150 subjects, companies and institutions with the scope of business in RSE. Next it contains detailed information on operators who have invested into RSE.

Figure 9. Database of RSE subjects – sample record of a RSE subject
Source: own

The created database of financial programmes allows administering financial programmes for innovation support. The programmes are classified into categories and subcategories. The categories and subcategories will partly differ for every year and the database cannot be set to a fixed form. To enable a subject to find a suitable programme quickly, the database has a full text search by programme characteristics feature. The database has three user accesses. The Administrator maintains the whole application. They also add and administer other users. The "content administrator" user can create and process individual categories and subcategories and enter and correct new innovation programmes. The database contains regional, national, European and international financial programmes directed to the area of innovation in business and public sector including programmes aimed at the support of renewable sources of energy. The following information about the programmes will be registered: the name of the programme, the characteristics, gestor/EU, web/EU, gestor/CR, programme manager, and documents related to the programme. The database is created in the Drupal editor system. It meets the requirements for security, stability, speed, and sustainability.

Figure 10. Database of financial programmes supporting innovation in the RSE segment
Source: Smrčka and Jiříček, 2014

Conclusion

The designed digital platform is to help system support of entrepreneurial development in the area of renewable sources of energy in the Vysočina Region. The platform is created in close cooperation with Regional Chamber of Economy in Jihlava, which is the most important institution supporting the development of enterprise in the region. This cooperation built on the basis of the triple-helix model, aimed at intermediating environmentally oriented innovations for business and, if appropriate, consequently also for the public sector, should ensure sustainability of the whole system and its further development and create preconditions for creating a regional network. The project outcomes will serve not only as information support of enterprise and innovation in the area of renewable sources of energy in the Vysočina Region, but they should also provide sources of data for regionally oriented economic research in a given area for university field. The last but not least, a detailed mapping of the segment, which directly contributes to meeting the goals of climate and energy policy of the European Union and the State Energy Concept, should provide relevant and trustworthy statistical evidence for creating regional concepts and strategies created by public authorities of the Vysočina Region.

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CORPORATE SOCIAL RESPONSIBILITY OF THE TOURISM SERVICES SECTOR AS A FACTOR INFLUENCING SUSTAINABLE DEVELOPMENT OF THE NATURAL VALUABLE AREAS (EXAMPLE OF LUBLIN VOIVODESHIP – POLAND)

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Abstract
The aim of the study is to assess the potential of tourism service sector companies in the natural valuable areas of the Lublin Voivodeship in implementing the principles of sustainable development. The attitudes and activity of the enterprises of the sector were analyzed by adopting the concept of corporate social responsibility as a manifestation of the principles of sustainable development. The focus was on responsibility towards the environment. It has been shown that the activities exhibited by the entrepreneurs in the area of responsibility in relation to the environment create the potential for stimulating the processes of sustainable development of the natural valuable areas of the analyzed region. It is required, however, to strengthen the cooperation of local actors of the development processes focused on the development of sustainable tourism. The study was conducted on a group of enterprises from the tourism services sector from the 30 municipalities of the Lublin Voivodeship classified as the most ecologically valuable. The study used the method of diagnostic survey using a questionnaire interview.
This paper was prepared within the framework of the research project no.2011/01/D/HS4/03927 entitled "Environmental conditions and factors of economic functions development in valuable natural areas of the Lublin Voivodeship" funded by the National Science Centre.

Keywords: sustainable tourism, valuable natural areas

JEL Codes: Z13, Z30, Z32, D21

Introduction

Tourism sector just like other sectors of the economy need to pay attention to the environmental performance of the businesses involved. This is especially so in rural areas, where tourism is often seen as essential to their economies. In effect, this is to adopt an approach which reflects much greater awareness of the interconnectedness of the economic, physical and social dimensions of the environment rather than just the physical or natural, for example, pollution and damage (Leslie 2004).

As indicated in the literature, a positive aspect of tourism is that it is one of the most labor-intensive industries, so it has the potential to contribute towards job creation and economic development in rural areas, and indeed, is often seen as the linchpin in many rural development strategies (Mitchell and Hall 2004). Rural tourism can also act as a catalyst for a whole range of new entrepreneurial activities, created partnerships and networks (Oliver, Jenkins 2003).

Sustainable development has to ensure natural fundaments of human being's existence and has to implement economic, functional and esthetic order in the environment of human life. Rural tourism, based largely on attractive natural environment and landscape, can build on and preserve the agricultural, cultural and natural heritage of rural areas. It should be seen as a potential tool for conservation and sustainability rather than as an urbanizing and development tool (Polucha et al., 2009). In particular, potentially good strategy for connecting the business of tourism with goals for sustainable development and long term conservation are believed to be community-based ecotourism (Jamal, Stronza, citing: Chalal´an, 2009).

Translating the concept of sustainable development of the tourism sector gave rise to the dissemination of the concept of *sustainable tourism*. According to World Tourism Organization sustainable tourism can be defined as: "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities". Taking into account the three dimensions of sustainable development, sustainable tourism should: 1) make optimal use of environmental resources maintaining essential ecological processes and helping to conserve natural heritage and biodiversity; 2) respect the socio-cultural authenticity of host communities, conserve their cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance;

3) ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation (Making Tourism…, 2005).
Sustainable development implies responsible behavior both by tourists and by businesses involved in travel production and distribution. Thus responsible tourism and corporate social responsibility (CSR) can, as a consequence, play a significant role for the sustainable development of tourism (Manente et al., 2012).
CSR can be defined as "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and of their families as well as of the local community and society at large". It is an integral part of sustainable development (P. Watts, L. Holme, citing: WBCSD Stakeholder Dialogue on CSR, The Netherlands, Sept 6-8, 1998), as the axiomatic system of the concept of sustainable development is based on at least moderate anthropocentricism and the category of moral responsibility plays a prominent role. The main challenge of civilization economic entities is the need to integrate legal, economic, financial, social liabilities and the liability for the natural environment, stressing the expansion of the liability onto all groups of key stakeholders (Borys, Borys 2011).
The publication of the guidelines of ISO 26000 in 2010 provided comprehensive approach and dissemination of the standards of corporate social responsibility (Maas, Reniers, 2014). In accordance with the provisions of the standard, corporate social responsibility is the responsibility of organizations for the impact of their decisions and actions (products, services and processes) on societies and the environment provided through transparent and ethical behaviors. The area of social responsibility for the environment includes the following issues: 1) prevention of pollution – including air emissions, discharges into water, waste management, use and disposal of toxic and hazardous substances; 2) sustainable use of resources, including energy efficiency, water conservation, efficient use of materials, minimized product demand for resources; 3) mitigating and adapting to climate changes, 4) protection of the environment, biodiversity and restoration of natural habitats (Wytyczne..., 2012).
The aim of the study is to assess the potential of tourism service sector companies in the natural valuable areas of the Lublin Voivodeship in implementing the principles of sustainable development. The attitudes and activity of the enterprises of the sector were analyzed by adopting the concept of corporate social responsibility as a manifestation of the principles of sustainable development. The focus was on responsibility towards the environment.

Material and methods

The survey area consisted of 30 most environmentally precious municipalities in the Lublin Voivodeship, as designated by the index developed by D. Guzal-Dec [1] in the study of environmental preciousness of rural and urban-rural municipalities of the Lublin Voivodeship. In each of the municipalities, on the basis of the REGON register, 5 companies were selected to be studied. The selection of companies for research took into account the industry structure of business entities in the municipality and consisted of the designation of entities with the highest level of employment. In the group of 150 companies, 36 entities (representing 24% of the total) representing the sector of tourism services were selected, they were subjected to detailed analysis. The study used the diagnostic survey method using a questionnaire interview. Interviews with owners (or managers) of the enterprises were carried out in November-December 2013. The results of the study were presented in a descriptive and graphic form of tables. The statistical analysis used selected elements of descriptive statistics.

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[1] The procedure is described in detail in: D. Guzal-Dec, 2013. Operationalizing the pressure-state-response model in a study of the environmental preciousness of rural municipalities, as exemplified by the Lublin voivodeship, Annual Set of the Environment Protection, Vol 15, No. 3, 2925-2941.

Results and Discussion

The group of the 36 entities of the tourism services sector included companies offering accommodation (18 companies), carrying out activities related to culture, entertainment and recreation (13) and those providing service activities related to board (5). Most of the enterprises (58.3%) were established after 2004. Half of the entities were family businesses. Almost all of the entities (94.4%), in terms of their number of employees, meet the criterion of micro-enterprises, while 41.7% employ only one person.

In the case of the majority of the surveyed companies (58.3%), growth has been recorded over three years from the research and development plans were created for the next 3 years (83.3%). Less than half of the respondents (41.7%) assessed the economic and financial situation of the company to be good or very good. Socio-demographic characteristics of business owners were an important part of business potential. Owners, in most cases, legitimized a university degree and incomplete higher education (66.7%, and the others - secondary). Quite a large group were educated in natural sciences (13.9%). More than half (61.1%) of the owners were not older than 44.

It is characteristic that all of the entities operating in the area of their residence declared a very high and a high level of emotional attachment to the place of residence. It is very significant that, according to the research, the place attachment of tourism business owners has a significant positive effect on their support for the community, which in turn has a significant positive effect on enterprise performance (Hallaka et al., 2013).

Given the relationships between the natural environment and the organizations perceived by the owners, in general, it should be noted that entrepreneurs did not see the strong impact of economic activities on the natural environment of the given municipality, its resources and values. More than half (55.6%) declared no effect, 24.9% - small and inadequate effect. Such opinions could result from a small economic potential of the surveyed entities and specific industries belonging to the service sector determining a potentially lower interference with the natural environment.

The study of corporate social responsibility in relation to the natural environment included the following four areas: prevention of pollution, sustainable use of resources, mitigation and adaptation to climate change and protecting the environment, biodiversity and restoration of natural habitats. The study covered the declared scale of entrepreneurs' activity within the above level of responsibility.

It should be noted that entrepreneurs declared above-average activity in the area of pollution prevention and mitigation of climate change. From the point of view of the homo cooperativus ethos underlying the implementation of sustainable development, it is worth to note the significant commitment to working with local communities in the prevention of pollution declared by entrepreneurs and taking into account the impact on the municipality environment when taking business decisions. Entrepreneurs made efforts towards reducing pollution resulting from their economic activity, the use of undesirable and problematic substances. Poorer was their identification of the sources of pollution and waste associated with the company and they informed external stakeholders on the environmental impact of the activities (Table 1).

Table 1 Assessment* of the rating of the intensity of the activities undertaken in the field of pollution prevention and mitigation of climate change

Actions	$\overline{x}$	S
cooperating with local communities in relation to actual and potential polluting emissions and waste	4.33	0.57735
limiting the generation of pollutants in the provision of services	4.30	0.48305
eliminating the use of undesirable and problematic chemicals, for example, depleting the ozone layer	4.25	0.46291
taking important business decisions, we take into account their potential impact on the natural environment of the municipality	3.81	0.80096
identifying sources of pollution and waste associated with our company	3.67	0.88763
informing people and institutions from our region on the environmental impact of our business	3.40	1.34164

*Assessment on a scale of 1-5, where 1 is a definite lack of actions taken and 5 - definite taking actions

Source: own development on the basis of own research

Far greater than in the case of pollution prevention and climate change mitigation is the involvement of entrepreneurs in the field of sustainable use of resources, which is associated with cutting operating costs. Entrepreneurs declared significant commitment to the sustainable use of resources within the current functioning of enterprises. It was mainly manifested in the use of energy-saving bulbs, switching off appliances from the mains after use, using energy-efficient office equipment. In the case of activities that require greater involvement of entrepreneurs, including investments, the activity was lower. It involved the implementation of methods to improve the efficiency of resource use, energy-efficient space heating and replacing materials with those being more environmentally-friendly (Table 2).

Table 2 Assessment* of the level of intensity of the activities undertaken in the field of sustainable use of resources

Actions	$\overline{x}$	*S*
using energy-saving bulbs	4.64	0.84190
switching off equipment from the mains after use	4.54	0.87706
using energy-efficient office equipment	4.17	0.93744
implementing methods to improve the efficiency of resource use	4.00	0.70711
introducing energy-efficient space heating	3.82	0.98165
replacing more environmentally-friendly materials	3.82	0.60302

*Assessment on a scale of 1-5, where 1 is a definite lack of actions taken and 5 - definite taking actions
Source: own development on the basis of own research

Activities in the field of tourism and recreation conducted in environmentally valuable areas can have a direct impact on natural habitats and biodiversity. The respondents assessed that corporate activity has a rather positive effect on aesthetics. However, the activity they took up in terms of identifying the impact of companies on biodiversity and functions of natural ecosystems, endangered species or natural habitats and activities aimed at their protection were quite low (Table 3).

Table 3 Assessment* of the level of the intensity of measures taken for the protection of the environment, biodiversity and restoration of natural habitats

Actions	$\overline{x}$	*S*
having a positive impact on aesthetics	3.85	0.89872
identifying potential negative impact of business on biodiversity and the functions of natural ecosystems and taking actions to minimize it	3.39	1.04391
taking actions to protect endangered species or habitat that may be adversely affected by businesses	3.27	1.16292
avoiding methods and bases that threaten the survival or lead to the extinction of species or enable the spread of invasive species	3.25	0.96531

* Assessment on a scale of 1-5, where 1 is a definite lack of action taken and 5 – definite taking actions
Source: own development on the basis of own research

Given the complex impact of entrepreneurial the activities of the sector considered on the natural, social and economic spheres of local development, it should be noted that entrepreneurs perceived the greatest positive effect of the profile and scope of activities of the company in such areas as strengthening local cultural heritage, preventing or reducing pollution of air, land and water, protection of the local landscape and promoting local entrepreneurship (Table 4).

Table 4 Assessment * of the degree of the company's activities contribution to the improvement of the selected areas of local development

Dimension of development	$\overline{x}$	S
protecting and / or enhancing local cultural heritage	4.00	1.333333
preventing or reducing pollution of air, land and water	3.68	1.454977
protection and / or improvement of landscape quality	3.58	1.426565
promotion of local entrepreneurship	3.56	1.096638
increasing the availability and extent of the use of landscapes / architectural heritage	3.50	1.465285
activating local communities for social action	3.20	1.373213
improving the knowledge and skills of local people and / or visitors to the municipality	3.13	1.360147
improving conditions for biodiversity	2.89	1.450715

* assessment on the scale of 5-1, where 5 means that the factor decisively contributes, and 1 – it definitely does not contribute
Source: own development on the basis of own research

It should be noted that, in the group of the factors perceived as important in the development of the tourism sector, those associated with environmental standards and obtaining environmental certificates are not perceived as being particularly important. The most important include: market knowledge, knowledge about the industry or the implementation of effective marketing. The factors being the least important, as assessed by the respondents, included: operating within a group of companies with similar objectives to ensure co-operation and transfer of knowledge and institutions' support (Table 5).

Table 5 Assessment* of the importance of factors that determine success in the tourism services sector

Factors	$\overline{x}$	S
knowledge of the size and structure of demand and adapting the offer to the needs of buyers	4.39	0.777544
industry knowledge	4.38	0.619139
implementation of effective marketing	4.33	0.840168
personnel with appropriate business skills	3.75	0.856349
design and implementation of efficient supply chains	3.38	1.258306
compliance with recognized standards, verification and obtaining environmental certification	3.12	1.166316
functioning in a group of companies with similar objectives to ensure co-operation and transfer of knowledge	2.86	1.231456
institutional help	2.80	1.398411798

* assessment on the scale of 5-1, where 5 means that the factor decisively contributes, and 1 – it definitely does not contribute
Source: own development on the basis of own research

These observations are consistent with the observed tendency for businesses to develop with little or no meaningful strategy addressing the issue of sustainability, either from an environmental or marketing perspective. This has resulted in the emergence of rural tourism products that have not taken due consideration of environmental impact, demand conditions, competition, or supply side considerations (Mitchell and Hall 2004).

Conclusion

The surveyed companies were characterized by a low economic potential, however, most of them were characterized by a well-established economic situation and they showed development prospects. Their owners presented great attachment to the place of residence which, together with their socio-demographic characteristics, formed a significant basis for actions related to social responsibility. In this context, considerable attention is also paid to the declared commitment of entrepreneurs to collaboration with local communities in the prevention of pollution and their business decisions taking into account their impact on the municipality environment.

Assessing the activity of entrepreneurs according to the four dimensions of accountability in the area of environment points to an existing potential of the sector under consideration in the implementation of sustainable tourism. Entrepreneurs declared commitment in the area of pollution prevention and sustainable use of resources and in the case of activities that require greater entrepreneurial involvement, including investments; the activity of entrepreneurs was lower. This would indicate poor financial capabilities within activities on a larger scale in the field of environmental protection, taking into account the specificity of the group of companies under consideration.

It seems that green policies of tourism enterprises, basing on the appropriate use of local environmental resources and implemented on the basis of cooperation of local actors of development processes are factors that can play an important role in implementing the principles of social responsibility towards the natural environment in the studied areas of natural value and sustainable development. The responding entrepreneurs do not perceive the following factors as significant for the development of tourism: operation within a group of companies with similar objectives to ensure co-operation and transfer of knowledge or institutional support. It seems that the use of this potential depends on local activities inspired by local governments of the municipalities.

The strategy of cooperation for the development of tourism is justified especially in communes with a high potential of their environment, but with no developed brand and characterized by lower communication availability (Guzal-Dec 2014). Cooperation between stakeholders in tourism destinations is a prerequisite for sustainable tourism and its development. Many studies that investigate collaboration between actors and networks in tourism are applicable in the context of networking for sustainable tourism (Albrecht 2013). The theory and application of collaboration to tourism planning and protected areas management are evolving as new forms of collaboration arise to manage growing concerns over climate change, biodiversity loss, resource depletion and impacts of globalization on indigenous and local inhabitants (Jamal, Stronza 2009).

Sustainable tourism literature highlights the issues of engagement and collaboration between destination stakeholders, while government is widely acknowledged as a pivotal and influential stakeholder particularly the local government in a destination (Ruhanen 2013). Studies carried out in environmentally valuable areas of the Lublin Voivodeship indicate the need for mobilization of local authorities in the development of cooperation in local systems. The study results of local authorities from the area concerned[2] indicate that in the group of 30 communes around 75% of the representatives of local authorities declared their preference for tourism as the main direction of the development of the municipality, but only 50% of them actively support tourism of which approximately 30% have planned a support policy manifested in the comprehensive application of support instruments. In the studied group of local authorities, high activity within the intra-sector cooperation and LAG[3]-type partnerships was observed. The cluster-type of cooperation is a little more advanced form, not yet so popular (Guzal-Dec 2014).

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SESSION
AGRICULTURE, AGRICULTURAL LAND AND SPATIAL PLANNING

CONTRIBUTION TO THE ANALYSIS OF DAIRY CATTLE FARMING SYSTEMS IN THE CENTER AREA OF ALGERIA

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Abstract
The analysis of breeding dairy cattle systems was conducted on 16 farms in the center area of Algeria through a survey. Four groups of farms that differ in feeding strategies were identified. The first group contains four farms that promote the use of forages (61.8% of the total dry matter (DM) intake). The cost of production (≈ 0.34€/liter). The average annual productivity is about 4328.6 kg. Five farms of group 2 are characterized by milk yields below average (4146.5kg). The concentrates represent 39.3% of total DM intake. The cost of production (≈ 0.33€/liter). The third group contains 5 farms dominated by profitable farms (4833.4kg) and the lower cost of production (≈ 0.31€). High proportion of DM is provided by forages (53.6%). The fourth group consists of two farms whose main characteristic is the total absence of forage production with a significant contribution of concentrates (48.8% of total DM), the lowest milk yields (3561.2kg) and highest production costs (≈ 0.40€). So there are areas for improvement *via* restructuring land and the adoption of healthy feeding practices in order to ensure the profitability and sustainability of farms identified in this study.

Keywords: dairy cattle, food, milk yields, production costs

JEL Codes: Q10, Q11, Q12

Introduction

Milk is an important food in the Algerian consumer tradition. The problem of food insecurity and its negative effects on the national economy forced the state as early as 1990 to reflect on a series of upgrade policies of the local milk production in order to promote self- sufficiency (Belhadia et al., 2009). Today, with one million dairy cows, domestic increasing demand for milk is not yet satisfied. Our country imports milk powder to fill the gap, which costs approximately 800 million Dollars (M.A.D.R, 2013). Dairy farming remains a kind of speculation that is difficult to manage given the diversity of parameters that are linked to it. This study aims to describe dairy cattle farms in the mid-northern region of Algeria through: (i) the characterization of the producers involved in milk production, (ii) analysis of different practices and strategies in place to manage the units surveyed and finally, (iii) identification of constraints and potentialities of current systems.

Materials and methods

Data collection

The study was conducted by survey. Sixteen farms were selected to represent different conditions of milk production. The selection criteria are based on a minimum of 10 dairy cows per farm and the acceptability of the farmer to participate in this study.

Statistical procedure

A descriptive analysis was performed for the evaluation of averages, standard deviations, minimum and maximum of the various parameters chosen. A typology of farms was established through the use of multivariate statistical analyzes: principal component analysis (PCA) and a cluster analysis. Statistical analyzes of data were performed using the Statistica 8.0 software (2008).

Results and discussion

Through descriptive statistics performed on the data, it appears that 56% of farmers (*n*=9) were over 40 years of age. The parameters that characterize the surveyed barns are illustrated in Table 1.

The study included a total of 365 heads of dairy cows with an average of 22.8 cows per farm. Concentrates are distributed from 5.5 to 10kg per cow per day. These concentrates are 29 to 53% of total dry matter intake, with an average of 42.4% and between 0.34 and 0.56 Milk Forage Units (UFL) per kg of milk produced.

Table 1. Characteristics of farms surveyed (*n* =16)

Parameters	Minimum	Mean ± standard deviation	Maximum
Forage Land (ha)	0	8.6±8.1	27
Number of cows	10	22.8±19.2	78
Milk yield (Kg/cow/year)	3053.4	4333.5±961.3	6551.5
Energy from concentrates /kg of milk (UFL)	0.34	0.44 ±0.06	0.56
Share of concentrates in a total ration (% total dry matter intake)	29.2	42.4±5.9	53.25
Interval calving-calving (days)	407.2	452.1±31.7	505.7

Source: Own processing based on own data collection

According to the results obtained for the farmers in the north-center region of Algeria, the concentrates represent an average of 0.44 ± 0.06 UFL per kg of milk produced. In a previous study of Madani et al (2004) in semi-arid region of Algeria, similar intervals to ours were highlighted. The amount of concentrates represent between 42 and 53% of DM intake and between 0.32 and 0.53 UFL per kg of milk. The result was higher (73.1%) in intensive farms in Morocco (Srairi and Kessab, 1998). The annual milk yields per cow in these farms fluctuate between 3053.4 and 6551.5kg with an average of 4333.5kg. A higher average milk yield (4884kg) was found in the farms in the region of Médéa in Algeria (Kaouche et al, 2012). The results showed that nearly 70% of the cost of production of one liter of raw milk is allocated to food. Four groups of farms were identified from a principal component and the cluster analysis. The first typology group contains four farms with useful agricultural land completely used for forage crops (21ha). This means that this group of farmers promotes the exploitation of fodder compared to concentrate in the energy balance of the cows (an average of 61.8% of total dry matter). However, the economic burdens remain negative and higher than the overall averages (production cost=38.4 DA). This may be due to management difficulty of the important number of cows in this group (*n* = 47). The average annual productivity is high, on the order of 4328.6kg. This is a group of breeders that characterizes the beginning of specialization in the field of bovine milk production.

The five farms in group 2, are characterized by milk yields below average (4146.5kg). Concentrates represent 39.3% of DMI. Indeed, this group of breeders records low and below average rates production costs (37.1 DA/liter of milk) and minimum food expenses (65.2%). But, he holds an effective reduced cattle (12.6 heads) and low forage area (3.6ha).

The third group with 5 farms, dominated by profitable units with the highest average yield (4833.4kg) and the lowest cost of production (35.2 DA/liter). A relatively high proportion of dry matter intake is provided by concentrates used intensively (46.4%) but effectively valued. This means that a good feed management is practiced in these farms to cover the needs of the animals. This is the group of farms considered as leaders in milk production. The cost of food is fairly low compared to other groups and slightly below average (69.2%). In contrast, it was the 4th group containing 2 farms, whose main characteristics are the complete lack of forage production and a herd size of 10 cows on each farm. This is associated with significant concentrates contribution in the global energy balance (48.8% of DMI). These concentrates were poorly converted into milk as yields were recorded as the lowest (3561.2kg). This use of the massive purchase of food (forage and concentrates) has added to the costs of these operators, production cost of a

liter of milk highest (45.1 DA) and a very important food prices (79.3% of total). This category typically represents smallholder's dairy farms. The results of this study confirm the importance of the effect of diet on the diversity of farming systems in the study area. This is consistent with results of the literature (Srairi and Lyoubi, 2003; Millogo et al., 2008; Gabbi et al., 2013).

Conclusion

The analyses of all structural and techno-economic characteristics of surveyed farms shows that there is not in our sample an ideal type of farming that would bring together the contributions reasoned forage/concentrate in total DMI, so that the animals can reach their maximum production potential, an optimal amount of energy from concentrates annually, minimum cost of producing a liter of milk with the least food expenses. However, the constraints related to breeding are numerous and their exercise will require an arsenal of human and financial resources. These constraints include in the first place a food factor, which represents the major handicap of the entire dairy production industry. So there are areas for improvement *via* restructuring land and the adoption of healthy feeding practices in order to ensure the profitability and sustainability of farms identified in this study.

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DOMESTIC GARDENS OF THE CITY: PROBLEMS OF PERI-URBAN LAND USE IN SOPRON, HUNGARY

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Abstract
Gardens located in the periphery of cities can play a leading role in the future as a dominant form of urban agriculture. Urban gardens and agricultural lands have a growing importance concerning the food-offer to the growing urban population and the organization of a sustainable food supply as well as low pollution emissions. Similarly, green areas on the urban fringe are the puffer zones of urban sprawl. The increase of built-up areas often takes place spontaneously, for which the city administration cannot be prepared. Based on this, the examination of changes in the affected areas has to consider the aspects of urban management, sustainability, landscape protection and urban agriculture, in order to be able to plan and predict the spontaneous processes. In this study, we introduce the transformation of a traditional garden-area of Sopron using geospatial tools. The method used in the survey gives an illustration of the state of urban gardens, the usage of gardens and also of the functional change taking place in the gardens.

Keywords: Peri-urban areas, urban gardening, urbanization of agricultural land, land use mapping, Sopron

JEL Codes: R11, R14, R52

Introduction
Our study focuses on the urban fringe as well as the problems of urban gardens located in this area. By urban fringe we mean the areas situated at the border of the cities that form a transition between the built-up and vacant areas, or, to be more precise, typically between urban areas and the periphery; moreover, they are in direct contact with neighbouring settlements and the rural areas around the city. The rural-urban fringe as a dynamically transforming and developing type of urban area gives space to numerous social, economic, environmental and last, but not least political conflicts (Pócsi, 2009a). These areas are fairly heterogeneous and are characterised by rapidly changing land use. On the fringe of cities, a mixing of functions regularly takes place where mainly urban and agricultural land use are competing (Johnston et al., 2000). The rapid transformation of agriculturally used peri-urban areas into urban areas is a global tendency thanks to the significant growth of urban population and the urban sprawl resulting of it (Ives, Kendal, 2013; Pribadi, Pauleit 2015).
Usually, the transformation of peri-urban areas happens without a concept, and the city administration is unable to prepare for the spontaneous processes (Debolini et al. 2015). Therefore, these are conflict zones where the interests of property developers, real estate owners and the city administration as well as nature conservation and environmental protection are up against each other. One characteristic of the urbanisation of the fringe is the changes in real estate owners, the increase in the value of properties and the resulting property specialisation. At the same time with the hike of real estate prices – which can be attributed to the location of the property – and the appearance of new personae, dynamic transformation started. Multinational organisations, commercial centres, housing estates or even suburban building up significantly change land use, increase the traffic between the urban fringe and the city centre and require considerable infrastructural investments. This fast and irreversible transformation usually brings about the change in the urban landscape as well (Sági, 2013, Cros Kárpáti et al., 2004). The typical behaviour of real estate owners is to “wait and see” which often entails the discontinuation of agricultural activities and the fallowness of land.

Gardens as the elements of the urban fringe
In Hungarian cities, gardens are typically located in the urban fringe. During the socialist era, so-called “excluded gardens” that were established en masse appeared as a particular spatial planning legal category. From the 1980s onwards the role of enclosed gardens expanded; they became a significant element of economic production and those in favourably situated areas were also associated with the operation as a resort. They had a determinate role from a social perspective; they embodied a certain way

of life and lifestyle while they formed an independent morphological belt around the cities as a particular spatial element at the same time (Pócsi, 2009a).
Gardens went through a remarkable change following the change of the political system. This partly originated from the fact that the circumstances provided by the socialist system changed and the economic role of the gardens decreased (Ónodi, CrosKárpáti, 2002). Due to the changed consumer behaviour and the low wholesale prices gardening was more and more neglected. The lifestyle of people also changed, and today there is less time for gardening and backyard farming. Thanks to this, the function of gardens is shifting and gardens have gotten a recreational, relaxing role. This way, lawn and the adventitious thuja appeared dominantly in the former vegetable and fruit plots (Rosta, 2013).
This process foreshadows numerous problems: on the one hand, people give up gardening and break away from the old traditions inherited from the grandparents. Ancient knowledge gets lost and people forget that even a family with a small input of energy, on a relatively small area can grow chemical-free fruit and vegetable. Household and enclosed gardening therefore did not only have the advantage of providing a complementary income and growing for own consumption but it also gave an opportunity to transmit knowledge, which is barely mentioned nowadays. However, it also has to be mentioned that gardening as a physical activity holds numerous advantages: it means time spent on the fresh air that recharges, relaxes and calms people; it is exercise and a sense of achievement at the same time. The time spent together and the common activity helps build and strengthen community relationships in terms of neighbours as well as family. Due to the listed benefits, community, social and therapeutic gardens have become common in Western cities (Cameron et al., 2012; Rosta, 2013; Scheromm, 2015).
On the other hand, it is important to examine the roles of urban gardens in the catering of the urban population as well as the sustainability aspects (Kalmár, Farkas, 2013). Urban metabolism – as an economic-environmental approach prioritising the circular economy – examines material flow within the city. Following the route of food today we can see that urban residents consume food from countries far away, and thus there is barely chance for them to get hold of food grown in the city or in the immediate area of the settlement. From the aspect of sustainability, however, it is desirable for the food to travel the shortest route possible from the producer to the consumer; this is how supporting instruments encouraging short supply chains and direct sales came into view (Rothwell et al., 2015). Thanks to the spreading of conscious consumer behaviour this tendency seems to strengthen, which would be useful for both the local consumers, as well as, the regional producers.
In addition to the positive impact of gardens on well-being and physical health as well as their role in the production of local food, gardens cannot be disregarded from environmental, climate protection and nature conservation points of views either. Their existence contributes also to the preservation of biodiversity for example. Gardens form a considerable part of urban green spaces at the same time (Dewaelheyns et al., 2014; La Rosa et al., 2014). In numerous Western countries, cities provide residents with small gardens to rent because, inter alia, such maintenance of green spaces is more affordable than establishing public parks, and, if necessary, can be easily transformed into areas with other functions (Ónodi et al., 2002). From an urban planning point of view we can therefore clearly state that gardens are also strategically important land use units.

Aims

The aim of the paper is to examine, with the aid of the case study of Sopron, how the change of functions happens in gardens. Especially in the agglomeration areas it is a typical process that, with the spontaneous takeover of gardens, urban sprawl takes place without control or planning, usually with irreversible consequences. Gardens offer an attractive living environment for usually white-collar and prosperous families looking to escape the urban noise and overcrowding as well as for poor strata forced out of the urban real estate market.
However, we have to see that if the spontaneous and illegal population of a garden zones with no building or housing permits begins, demand for infrastructural developments will shortly be on the agenda in order to improve the sewage and the plumbing system as well as a dust-free road network. The developed infrastructure and an existing road network also shape the processes; tentacle-like building-up among the roads can be observed (Debolini et al., 2015). The chosen sample, area of Sopron is a good example, in whose case the proximity of the Vienna and the Győr highways is determinative.

The aim of the investigation is to present a new method that is able to forecast these processes and it could be important for urban planning. During our research we examined the functional metamorphosis of Virágvölgy (Flowervalley), a traditional garden of Sopron city. Sopron, thanks to its geographical location, has continuously been the target of internal migration in the past decade, and the freedom to work in Austria has only strengthened this tendency. The population growth of the city amplify the urban sprawl processes; the urban area of Sopron has grown nearly one and a half-fold since the change in the political system. The part of the Virágvölgy laying close to the city has been an urban area since 2001 (Urban Structural Plan). According to the urban planning documents, an influx of a considerable population, ca. 5000 people, can be expected on the long run (Sopron City of County Rights' Environmental Protection Programme 2010-2015. I. Status analysis). A significant share of the allotments is currently still a garden, viticulture is typical, but the construction of detached houses has started at a great speed and the sample area has begun its journey of becoming a suburb (Sági, 2013).
Via the examination of the *transformation of the land use of gardens*, we would like to paint a picture about the process; we investigate which allotments are already characterised by a *change of function* – that is, we wonder which factors play a role in the intensity of building up in these areas. We put emphasis on exploring whether the owners of the existing plots still do gardening or if ornamental gardens become established, giving a dominant role to the lawn and the thuja.
We would like to emphasise that gardens form a significant part of urban green areas and, taking international tendencies into account, we have to recognise that without the appropriate legal protection gardens can often become victims of urbanisation and urban sprawl. It is especially important to consider this in case gardens traditionally belong to the urban landscape, like Virágvölgy does in the city of Sopron.

Methods

The assessment of the gardens was carried out via remote sensing which is often used in similar research objectives (Debolini et al., 2015; Dewalheyns et al., 2014; La Rosa et al., 2014; Pribaldi, Pauleit, 2015). With the aid of aerial images at hand (from 1999, 2005 and 2014) we identified the land use that characterises different plots. During the assessment we checked the ambiguous areas. During this time we have taken photographs and also carried out a few interviews.
For the research we first performed the land use analysis of Virágvölgy using already existing core data (available to the Council as well as to the university). In order to examine the dynamics of changes we decided to use the oldest (from 1999) and most recent (from 2014) available data and to analyse the data source representing the "exodus" that started in the middle of the 2000s. The data of these three periods were given by the 1999, 2005 and 2014 orthophotos. The infra-coloured orthophoto from 1999 was taken in the summer period and its resolution is 0.65m.; the true-coloured orthophoto from 2005 was taken in the autumn period and its resolution is 0.15m; the true-coloured orthophoto from 2014 was taken in the summer period, its resolution is 0.20m.
We chose the application of visual interpretation for the preparation of mapping. Prior to the start of the analysis it was necessary to establish an appropriate category system. Primary information was given by the land use and the built environment; besides these we also recorded category that characterises other land use (e.g. industrial or commercial activity; quality of roads).
In regards to the functions of the allotments we fundamentally investigated whether they serve as a residential, recreational area or whether gardening and viticulture activities dominate. Based on the aerial photo we categorised whether the building seen on the picture is a real estate that serves as a residence or as a recreational facility or whether it is only a building related to gardening viticulture activities (e.g. wine cellar, tool shed, etc.).
We also examined how neat, groomed and cared for the allotments were. With the aid of the aerial images we identified the extent to which certain plots are used as vegetable or fruit gardens and to which the ornamental and recreational garden characteristics dominate. We held this categorisation interesting from the aspects of the metamorphosis of the traditional garden characteristics, the role of gardens in urban agriculture as well as the motivation of garden-owners. We assessed the garden-owners' opinion about the metamorphosis of gardens, the main deficiencies and their own attitude via the interviews we carried out during the field trips.

Virágvölgy – the study area

The location of Virágvölgy (Flowervalley) within Sopron favours the urbanisation processes because it is situated relatively close to the city centre as well as the main transportation route that bypasses the city on the north (Fig. 1). The M9 expressway is to be constructed in the next 5-10 years which concerns the northeast of the area.

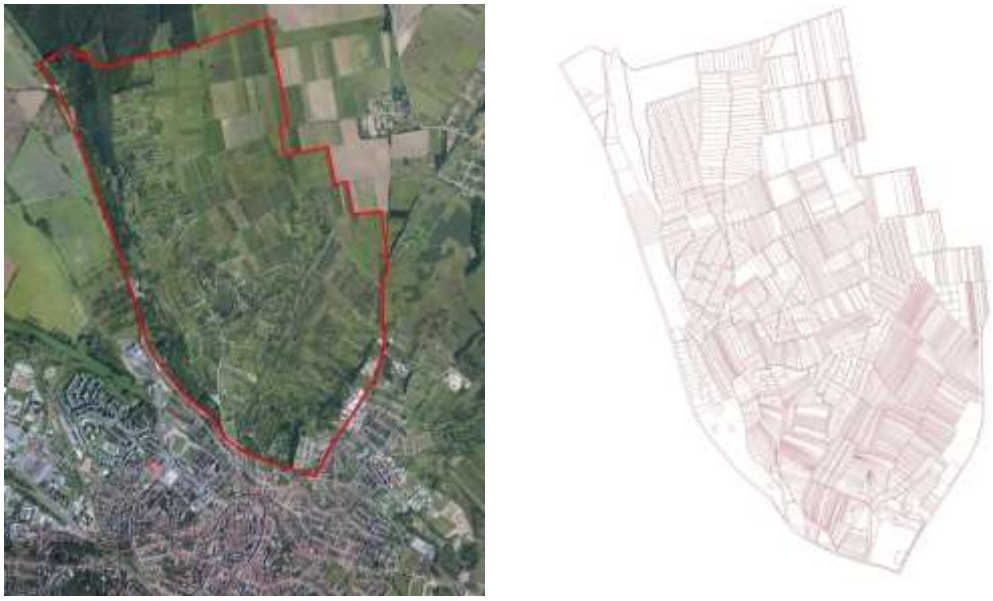

Figure 1 The location of Virágvölgy within the city and its allotment structure
Source: Orthophoto from 2014

On the hills between the Bécsi Hill and Lake Fertő, viticulture has been a tradition for centuries and since the devastation caused by phylloxera the expansion of fruit and vegetable gardens and recreational facilities has become typical beside viticulture. Considering its allotment structure and established architectural values the area deserves local protection. The area is featured by narrow, long plots that are adjusted to the landscape's endowments, often consisting of only a few rows of vines and following each other in an irregular, at times in curlicue, situated on slopes of different shapes and sizes. The formation of the so called "pig snout-allotments", as their old name stands, can probably be due to the fact that wine-growers often cultivated vines on several areas and defended themselves against hail and frost damage via small plots (Cros Kárpáti et al., 2004). From the 18th century onwards appeared, and by around the 1900s gardens could be found on the majority of the area with small thatched-roofed pavilions and farm buildings. Permits have to be obtained for the construction of pavilions, and, according to the laws at the time, the permitting of pavilions or houses with bedrooms and kitchen, open wooden porches and cellars was already typical in the 19th century (Cros Kárpáti et al., 2004). The owners of the pavilions with the wooden porches, however, were not wine-growers but prosperous people with civil jobs such as merchants, craftsmen, doctors, who typically spent the summer in the pavilion with their families (Varga, 1999; Cros Kárpáti et al., 2004).

At the beginning of the 20th century, the transformation of Virágvölgy into a recreational area and garden zone started at a bigger pace; vineyards and arable land started transforming into weekend gardens and more and more pavilions were built. The Association for City Beautification (Városszépítő Egyesület) founded the Virágvölgy Committee in 1911 whose aim was the development of the area; they encouraged the establishment of public utilities in the area through which they achieved results including the installation of street lighting (Sági, 2013). The need for the thorough settling of the matter of the area came up from the 1950s onwards due to the growing number of buildings. In the General Arrangement Plan (Általános Rendezési Terv) from 1982 Virágvölgy appears as a traditional garden area and partly a vineyard, a non-protected area holding natural values that provides active recreation. After the change of the political system the fast-paced appearance of buildings and detached houses that do not fit into the landscape started. As a result of this, the settlement structure plans from 2001 as well as the overlaying

urban planning regulation, meeting the demands of the owners, legalised the constructions, and allowed free-standing buildings with a low building-up ratio (10-20%) and low building heights while preserving the typical land division (Sági, 2013). However, in order to preserve natural values, a local advocacy area was assigned.

From a morphological point of view, the area can be divided into five units:

1. Area located closer to the bypass and major roads (Virágvölgyi Road, Csőszház Slope) which is characterised by more intensive building up; on these allotments, detached houses and recreational homes have been located for a while. On this part, infrastructure is also more developed (e.g. established pluming, electricity). Altogether, however, this is still a sparsely built-up space. This part of Virágvölgy is an urban area, a suburban residential area (Urban Structural Plan, 2010).
2. Bigger contiguous area in the northwest mainly used for viticulture. The area is characterised by the abandonment of viticulture but we can also find new plantings. This is the part of Virágvölgy that is located furthest from the city centre and the current main transport networks. Its metamorphosis could potentially take off after the construction of the M9 expressway whose track will affect this part of the area. In the long-term development documents, this track stands for the theoretical border of urban sprawl (Kuslits, 2010).
3. Long, narrow plots mainly used for viticulture in the northeast. This part shows the picture of a traditional vineyard the most.
4. St. Michael cemetery; this area is not among the examined ones.
5. More crowded commercial, hospitality and touristic areas by the Bécsi Road and Pozsonyi Road.

Results

During the assessment period we categorised about 2400 allotments using orthophotos from the three periods of time so we could present the dynamics of change as well.

After the political transition in 1990, the areas that have been made exempt from cultivation has grown by about 16% in Sopron in regards to the whole area of the city (Sopron City of County Rights' Environmental Protection Programme 2010-2015. I. Status analysis), which mostly happened at the expense of (fruit) gardens, arable land and vineyards. The ratio of the urban area grew by about one and a half-fold in this period of time. In the case of Virágvölgy we can say that about a quarter of its area is urban area which is situated in the place of former vineyards, recreational areas and gardens (Fig.2.).

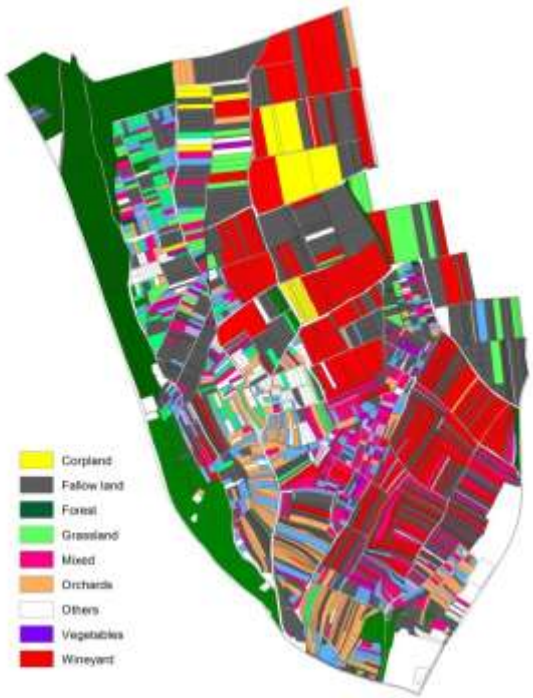

Figure 2 Typical land use in 2014 in Virágvölgy, Sopron
Source: own edition based on an orthophoto from 2014

It is a typical tendency in the change of land use that former vineyards are left fallow and wait for their fate neglected. It is common in urban areas for vacant allotments to be prepared for sale or for the building up grassed and with a neat land conversion (Fig.3.).

Figure 3 Vacant grassed allotment
Photo: Ákos Világos

The decline in and abandonment of traditional viticulture is another tendentious phenomenon in the sample area. A great share of overgrown fallow areas influence the landscape rather negatively (Fig.4).

Figure 4 Abandoned vineyard
Photo: Ákos Világos

The functional metamorphosis of allotments
During the examination of the functional metamorphosis of allotments we prioritised the assessment of the main functions of certain allotments. With this categorisation we tried to demonstrate the presence and the change of horticulture in the sample area.
In general, it can be stated that the residential function prevails in the urban areas. Roughly 100 new houses were built during the examination period, partly via the reconstruction and expansion of older buildings (Fig.5.). There has been a bigger allotment (even if this kind of building up is not typical for the time being) where 8 houses have been constructed; however, this draws the attention to the fact that the appearance of real estate investors can be expected in the area.

Figure 5 The location of detached houses and recreational homes
Source: own edition (the old houses can be already seen on the orthophoto from 1999, the newly built ones were constructed in the following period of time Red: New residential, built after 2000, Oragne: Residential before 2000; Dark Green: Weekend before 2000; Light Green: New weekend house built after 2000)

We performed the assessment of gardening primarily among those allotments without buildings. We organised the allotments based on the following categories: *"dominantly ornamental garden"*, *"dominantly vegetable garden"*, *"dominantly fruit garden"*, *"vineyard"* and *"mixed gardens"*. The allotments that were included in the *"mixed gardens"* category were the ones where, beside the grassed areas, vegetable gardens can be found in a corner or we can see fruit trees instead of (or besides) ornamental trees.

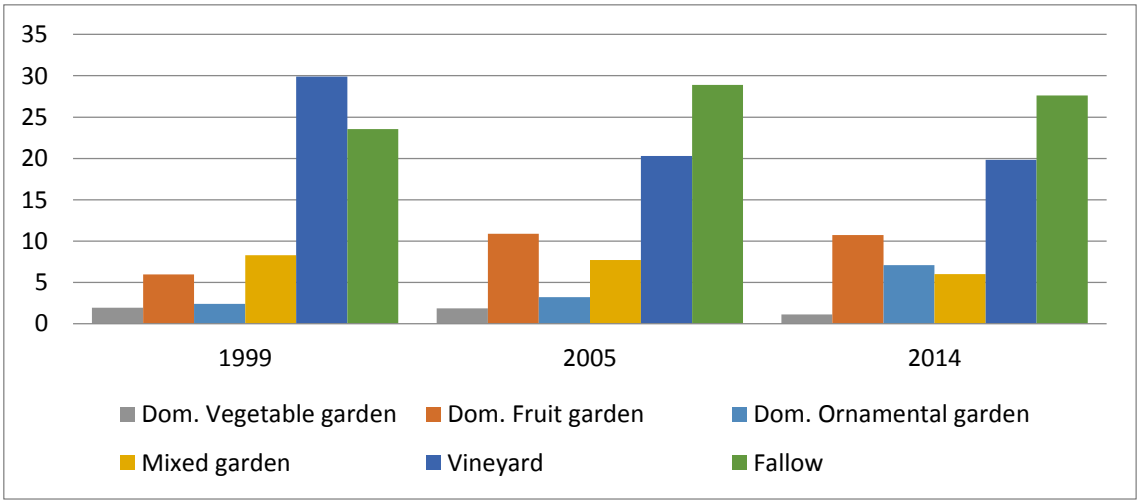

Figure 6 Changing of function of allotments (%)
Source: Own processing based on own data collection

The ratio of ornamental gardens has significantly grown by 2014; the number of allotments belonging to the *"dominantly ornamental garden"* category is manifold of that of 1999, while the number of Vineyards has decreased in 15 years (Fig. 7). The direction of changes shows a similar pattern for the allotments in the *"mixed gardens"* and the "*dominantly vegetable gardens*" category (Fig. 6).

Figure 7 Typical ornamental gardens
Photo: Ákos Világos

Based on the interviews we can draw the conclusion that gardeners and wine-growers enjoy cultivating their gardens and would like to take care of them in the long run. A typical motivation is providing healthy food for the family and obtaining complementary income; moreover, it has also appeared as a hobby and a recreational activity. It is true that a smaller fraction of those who had been interviewed owns a detached house in Virágvölgy, but most of them see the preservation of gardens as an important issue. They think it is important that youngsters also take over gardening. As problems, they mostly mentioned infrastructural underdevelopment, the lack of draining of precipitation as well as the destructive effect of the abandoned and fallow lands on the landscape. Besides these the interviews also shone light to the active neighbourly relations.

Conclusions

On the examined area, the change of land use happened mainly as a result of urban sprawl due to the compensation processes as well as the ownership property speculation that came about 1990, after the transition of the political system. The spontaneously started constructions often resulted in characterless detached houses that degrade the landscape and apply compromise solutions.

The Virágvölgy, Sopron's traditional garden and weekend zone, has started to transform into a suburban residential area. During our assessment we examined what kind of change of function is happening, which are the main horticultural characteristics and in what state the allotments are. The intensive pace of urban growth has a negative impact on the area as well as the formation of the landscape. The city consumes the well-located areas that are suitable for horticulture and viticulture. The establishment of infrastructure poses a great burden on the city council, drawing away development funds from the city centre that is inevitably neglected due to the peri-urban developments.

We think that it is important for cities to dedicate a greater significance to the gardens located on the periphery of the cities as economically, socially and environmentally determinative green areas, but these aspects never or hardly ever appear in the practice of Hungarian urban planning.

Acknowledgements

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DIGITAL DIY FOR SELF-SUSTAINABILITY OF RURAL AREAS

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Abstract
Digital Do-It-Yourself techniques, from 3D printing to micro-sensors, allow people to construct and reproduce complex objects, from drones to milking machines, with reduced costs and skills. Digital DIY can contribute to feasible, practical solutions for economic and social sustainability of rural areas. Digital DIY can help making agriculture and farming economically and environmentally sustainable, thanks to machinery and crop/livestock monitoring systems that greatly reduce both the costs of equipment, and the time and skills required to build and manage them. Digital DIY can also be applied to provide crucial services for rural areas, from Internet connectivity to telemedicine. At both levels, Digital DIY solutions can be reused, and completely adapted to the actual local needs of each community, at the smallest possible costs. In this paper we will first define Digital DIY, Open Source Hardware and their impacts and challenges in agriculture. Next, we will look into how Digital DIY enables people to build civic and social services bottom-up, also in rural areas. We argue that solutions based on Open Source Hardware and Digital DIY can and should be applied in rural areas, thus contributing to a sustainable society, from an environmental, social and economic point of view.

Keywords: agriculture, farming, resilience, Open Hardware, Digital DIY

JEL Codes: O31, O33, Q16

Definitions
Digital Do-It-Yourself is the socio-technological phenomenon, which stems from the convergence of physical ("atoms") and informational ("bits") components (ABC) and the growing accessibility of related knowledge and data. "Digital Do-It-Yourself" is abbreviated here as "DiDIY", which is also the name of the project (www.didiy.eu) in whose context this paper was written. A more complete definition is in the DiDIY papers “Knowledge Framework” and “Current DiDIY Support and awareness in Europe”, both available in the “Results” section of the project website. ***Fab Labs*** (fabrication laboratories) are small-scale workshops offering (personal) digital fabrication tools and services.

DiDIY and its applications in rural contexts
DiDIY is heavily based on Free/Open Source Software and Open Hardware, whose full description is outside the scope of this paper. Here, it's enough to say that they refer to software and hardware designs that, while **still** copyrighted, are legally usable without paying any fee, because they are released under licenses that explicitly allow, and encourage, their reuse, modification, and redistribution by anyone, under the same conditions (the "Free" in "Free Software" refers to the freedom to use and modify it in this way, regardless of whether and how much the developers are paid for each copy of their software) .
Free Sofware and Open Hardware are mostly developed by communities of both hobbyists and professionals that cooperate online. They are based on the freedom of all developers and end users to study, adapt, reuse and share all knowledge necessary to replicate the project. It is exactly because of this freedom that DiDIY is a very powerful tool and mindset, even in agriculture: *"if [a tool] does 80% of what you [need], you can search the Internet and find the stuff that does [the rest]"* (Garling 2013). Most Open Hardware projects relevant in rural contexts combine the Arduino microcontroller and the many sensors and other accessories already available for it in online marketplaces. Also relevant are 3D printing and DIY cutting and milling machines like Diylilcnc (Diylilcnc, 2011) or OpenBuilds (OpenBuilds, 2012) In practice, farmers and rural communities can benefit of DiDIY in (at least) four main areas:

- building and maintenance of farming machines and other tools, or of their **spare parts**
- (remote) automatic monitoring of land, livestock and equipment
- automation and remote control of several farming operations
- sharing of raw data and knowledge for better management of operation and decision-making, both

for single farmers and at community level.

The rest of this chapter briefly mentions some other applications of DiDIY in agriculture.

Environment monitoring

Besides water, many physical components of a (farming) ecosystem can be effectively monitored with DiDIY tools and techniques. Commercial sensors may be easy to use but often rather expensive and, more important, much less configurable than needed. Using, instead, the right combinations of Arduino, Arduino sensors and relatively simple software, every farmer may build at very low cost (tens of Euros) custom monitors of any combination of temperature, humidity, pressure, motion and other physical parameters. The practical applications, already used in the field and with open designs available online (see the "Online Resources" section) go from weather stations to real-time monitors of all sorts of "systems", from simple ones, like one field or barn, to relatively complex (micro) ecosystems like beehives or fish tanks. The Open Source Beehives project, for example (*Open Source Beehive*, 2013), tries to prevent bee population decline by "bringing [Open Source, DIY] sensor monitoring into beekeeping". DiDIY with Open Hardware is also already popular in Aquaponics systems, in which "water from fish ponds is automatically analysed and used to irrigate vegetables in exactly the right moments and amounts" (Garling 2013). The "Smart Aquaponics" project uses [Open Hardware] sensors to "autonomously mimic the earths water cycle and model nitrogen cycles, oxygen cycles etc. to grow healthy organic produce for feeding new and existing colonies" *(Smart Aquaponics,* 2014).

Farming automation

After monitoring come actions that keep, or bring to, a “system” in the desired state. Arduino and similar microcontrollers come with many accessories to *control* an environment, that is relays, actuators, motors and software. Practical applications already include:

13. distribution of configurable amounts of fodder and water to farm animals
14. automatic opening and closing of the doors of chicken coops
15. small, highly automatized greenhouses like Greenduino, Horto Domi or Hortduino (Hortduino, 2013)
16. Milking machines (Rich, 2013) (Rich, 2014)

Also, an automated CNC machine for precision agriculture called Farmbot (Farmbot, 2013) is being developed by an online community. Complete working versions are about to be offered through the kick-starter crowd funding platform as we write this article.

Machinery

The possibilities of DiDIY are not limited to "light" equipment like the one described in the previous section, or of their spare parts. Projects like the "Global Village Construction Set" (GVCS, 2007) are one of the first to develop open designs of tractors or harrows in a modular, DIY, low-cost, high-performance platform that allows for the easy fabrication of the 50 different Industrial Machines that it takes to build a small, sustainable civilization with modern comforts. The current prototypes are not as powerful, nor are they “smart”, that is equipped with sophisticated software, as the commercial, state-of-the-art products from companies like, e.g., John Deere. At the same time, DiDIY machines like those are adequate to the actual needs of small farmers and can be entirely built locally, at fraction of the costs. Above all, such machines can be fully customised, that is optimised for the actual needs and constraints (climate, nature of terrain, etc.) of **each** user, without “intellectual property” restrictions of any sort; and leave their owners full "Right to Repair", meaning that they can be entirely **serviced** by independent experts, without the costs and restrictions embedded in commercial products.

Energy production

While DiDIY can enable distributed design and manufacturing of tractors, it can't power them. At the same time, DiDIY solutions that let barns, greenhouses, irrigation systems and the like work off-the-grid are already available. When commercial power generators are not accessible, or do not match farmers needs, they may try (or co-develop) DiDIY solutions. Examples, at various stages of development, of what is possible in this area go from solar concentrators (Gosol, 2012) to wind turbines (SolarFlower, 2009), micro-hydropower plants (Global Anchor, 2013) and gasifier kits (Build-A-Gasifier, 2014).

Drones
Small drones for civilian purposes, and especially DIY, Open Hardware ones have become very popular in the last few years, to the point that several states have started regulating their use. Examples of very active projects and communities in this field are Dronecode (Dronecode, 2014) and, respectively, the DIY Drones (DIY Drones, 2008) forums. Drone potential in rural areas, however, is still largely untapped. DIY drones services that may already be used in every rural community include, but are not limited to:

- close, visual inspection of remote fences, orchards etc..
- tracking and rescue of cattle, if equipped with (DIY) radiocollars
- delivery of medicines and other small parcels to farmers in remote areas

Housing
DiDIY housing activities range from experiments with 3D printing of custom concrete walls or whole houses to "Earth Brick Presses" (CEB Press, 2012). More popular, and easier to use, is the WikiHouse (WikiHouse, 2011): an Open Source house construction set, of which everybody can download the design files, cut all parts with a CNC router and assemble them with very simple tools and procedures.

Furniture
For furniture various open projects exist, that enable you to make your own furniture. SketchChair (SketchChair, 2011) offers a software tool to sketch and virtually try the chairs you design before sending them to a CNC mill, and encourages sharing and customization of all designs among the users community. Furniture design studio AtFab (AtFab, 2013) offers their designs under free licenses to the OpenDesk (OpenDesk, 2014) community. Even these designs can be downloaded freely for CNC milling them yourself, or you can hire a specialist to make it for you. 3D Printed furniture is also possible, as shown by the Dutch Bits and Parts studio, who published a Puzzle Chair (Bits and Parts, 2014) under a CC Attribute NonCommercial NoDerivatives license. It takes some 30 hours printing the parts for this chair at an Ultimaker 3D printer. In Barcelona, the Leka restaurant has worked together with the nearby Fab Lab to remake the restaurant almost 100% by DiDIY activities (Leka, 1984). The furniture designs are published on their site under open licenses, as well as the personnel dresses they wear and some recipes.

Mapping
OpenStreetMap (OSM) is a digital map of the whole world, similar to Google Maps, but developed like Wikipedia: everybody can improve the map, create their own versions and legally reuse and redistribute them, even for commercial purposes. From a farming/rural community point of view, OSM is relevant because:

- it lets the member of each community map their own land, in their own language, as **they** want and need it, adding, naming and updating features at will
- the results are usable for anything from land monitoring to tourism and forestry
- even people **without** smartphones, computers or computer skills can add data to OSM

The latter activity is possible thanks to the Walking Papers services (Walking Papers, 2012) that let everybody print maps, draw on them and (have others) scan them back, so that somebody else can quickly add all the hand-drawn details into the digital version of OSM.

Connectivity
Internet connectivity, which in rural areas is still far from granted, is a necessary prerequisite to participate into DiDIY, or at least enjoy its results by downloading design files or instruction manuals. Luckily, when a whole community supports it, DiDIY can also solve this problem, by providing the tools to build community-owned and operated local access networs, even in rugged areas that would never be a priority for commercial access providers. In Europe we have several thriving communities that do just that. Guifi.net (guifi, 2008) is a community built telecommunications network which was born in Catalonia/Spain; it is open, free and neutral because is built through a peer-to-peer agreement where everyone can join the network by providing his connection, and therefore, extending the network and gaining connectivity to all. The radio link and Internet access points in the village of Verrua Savoia, in Northern Italy, were built by a local non-profit association also "with parts scavenged from computers" (Pianigiani, 2014). Still in Italy,

Ninux (Ninux, 2005) is a wireless network community with the goal to create and expand a free, open and experimental computer network. Freifunk (Freifunk, 2014), German for: "Free radio" is a non-commercial open Grassroots initiative to support free radio networks in the German region. Freifunk is part of the international movement for open wireless radio networks, whose aim is to build a network that is decentralized, owned by those who run it and to support local communication. Both Ninux and Freifunk are based on a Picopeering Agreement, in which participants agree upon a network that is free from discrimination, in the sense of net neutrality.

Data networks for the Internet of Things

For connecting remote sensors and actuators to the Internet a variety of radio technologies exist. However mobile and WiFi are not always adequate for their high energy consumption and thus short battery lifetime. Bluetooth maybe battery friendly but is – like WiFi – only applicable for short range applications. New radio technologies have emerged that combine low power with wide areas. One of the options is the Long Range Wide Area Network (LoRaWAN, 2015) that is the only radio technology of this kind that is developed by an open consortium of manufacturers, network operators and other interested parties. Its standards and protocols are published in a non-exclusive manner as an open standard. This technology allows you to set up your own network, where one antenna can reach to five or ten kilometres, especially in rural areas. A community called The Things Network (The Things Network, 2015) helps people to set up LoRa infrastructure and assures its access as free of charge. Given that up to 10.000 sensors can connect to one antenna at the same time, and the antennas now being so cheap as 200 euro, the abundance is so much that sharing the network as a commons is a very attractive proposition, and around the world many local Things Network communities are popping up (Tebbens 2015).

Traceability and quality control

Many rural areas produce unique varieties of high quality foods, beverages, textiles and other raw materials. The low volumes of these goods, however, mean that they may not afford same quality control procedures adopted in big companies. DiDIY and Internet cooperation, instead, may lower the costs and complexity of systems that certify origins, quality and supply chains of the same products. Two examples from Italy of such services are a 3D printer modified to 3D-print bar codes on hand-made pasta from organic wheat (seen by the author at Maker Faire Rome, 2015) and, even if it is not Open Source, the iOlive system (I-Olive, 2015). Its iPAD application allows its users to file digitally signed, non-editable quality reports of extra-virgin olive oil samples that they get with unique codes, but without knowing their producers. This gives, even to small farmers from many different areas, one common, low cost but highly reliable process to certify their oil and its distribution.

Online resources and communities

Many more working applications of DiDIY in agriculture and rural sustainability than those mentioned in this paper can be found in online portals and magazines like Instructables.com, Appropedia.org, Farmhack.org and modernfarmer.com. Farmhack.org is particularly relevant here, as it was specifically designed to "bring together farmers and engineers", because "as simple as Arduino can be, many farmers simply don't have the time to learn the techniques and would rather consult with a professional" (Garling 2015). It is also worth noting that the same portals provide very practical and cost-effective solutions **also** to many "low-tech" farming needs. Solutions, that is, in which the only "Digital DIY" component is the ability of the Internet to connect people with similar problems, and empower them to co-create and share solutions. In other words, DiDIY in agriculture can, and it already is taking, many forms that are useful even for farmers who may have no actual needs for microelectronics and other high-tech products.

DiDIY advantages

The examples in the previous chapter suggest that DiDIY-based equipment and procedures answer to the actual problems and needs of each single farmer, or rural community, better than many commercial products, or proprietary or centralised solutions that have been developed with public funding. Other advantages of DiDIY are described in the next paragraphs, but the main reasons are that DiDIY-based solutions:

- are easier to deploy, much more customisable and also more economically sustainable with bottom-up initiatives and programs

- empower the user, appropriating the technologies she needs;
- empowers the community, encouraging to share one's experience and solutions with others, thereby allowing all to stand on the shoulders of giants (of collective wisdom and shared knowledge);
- usually don't need special government permissions, nor corporate licenses or contracts;
- can create local service jobs, not exposed to delocalisation

Make farming more reliable, less stressful

A large scale adoption of DiDIY in farming may have an important *social* effect. If solutions like the ones mentioned in Chapter 3 became commonplace, they may contribute to make farming less physically demanding and less time consuming. Even better, they would make farming less stressful and risky, by reducing human error where feasible, and providing more data for better decisions. This is equivalent to say that DiDIY can make farming, and living in rural areas in general, more "bearable" than it has traditionally been. These benefits would apply both to native residents, and to people who may not otherwise leave the "comfort" of city life (including, in both cases, senior citizens). Appropriate DiDIY solutions hardly make their end users rich, but often leave them with more leisure time and spare money than they would have had without DiDIY. In the long/medium term, all this may make a meaningful impact, considering the aging and depopulation problems of many rural areas these days.

Real ownership of the most appropriate equipment

Proprietary state of the art farming machines are black boxes, whose maintenance and diagnostic tools also vary, in incompatible ways, from manufacturer to manufacturer. In the most extreme cases, even if a farmer managed to get the right software, without a factory password, that is without the permission of the manufacturer, no maintenance would be possible (Wiens 2015). By definition, such restrictions are not possible with Open Hardware. In general, DiDIY contributes to bring back real ownership of one's equipment, including the possibility to improve and repair it, in the activities, like rural agriculture, where it matters most.

Loss of isolation, without loss of identity

As we have mentioned in section 3.8, DiDIY empowers rural communities to design, deploy and operate their *own* local connectivity services, even at relatively high speeds. Of course, if real broadband connections with the rest of the Internet are unavailable, such networks will **not** give their owners the same access to digital services enjoyed in most urban areas. At first sight, this may make such projects look pointless, but there are at least two considerations that are worth doing. First of all, an high speed connection to the Internet is great, but is not a *mandatory* prerequisite for many non real-time but *essential* services, from email to e.g. downloading DiDIY files or manuals for later usage. In the second place, what is actually needed in many cases would only be high-speed connectivity *within the community itself.* Such connectivity could still support, for example, *local* telemedicine, video streaming of Community Councils or Uber-like sharing of transportation, tools and other resources. In other words, DiDIY networks like Freifunk may be enough to give a rural community all the digital, broadband-only services it needs *for itself.* This would improve (public) services and local quality of life, and lessen the isolation from the outside world, in ways that don't force rural communities to give up their identity and traditions, by using the same, one-size-fits-all services born and designed for very different cultural contexts.

Small communities, Big (community-owned!) Data and Commons

In traditional agriculture, many collective and individual decisions are based on combination of local tradition, personal experience and small amounts of **isolated** field data (that is: not collected and correlated in any systematic way). Soil nature and microclimate, however, can vary even inside the same field. Systematic collection and analyses of great amounts of data can increase the yield of fields, and reduce the risks of certain decisions. The availability of low cost, fully customizable DIY sensors and Free Software empowers even small farms and communities of farmers, to do just that, that is to *collectively* gather, share (even if only *among themselves*) and analyse agriculture-related data. In general, in addition to all its other possibilities, DiDIY (re)introduces in farming and rural communities levels and forms of cooperation and sharing that would not be possible otherwise. Services and organisations like OpenWeatherMap

(OpenWeatherMap, 2012) and HabitatMap (HabitatMap, 2006), that share meteorological or ecosystems data, are built just out of that concept (For more on these topics, in precision agriculture and other fields (NESTA 2015) (Biba 2014). This is equivalent to say that DiDIY is an enabler, and a supporter in the management, of both material Commons (fields, pastures, springs..) and immaterial ones, from the data about those resources to maps, local folklore and mutual support services. In this context, an interesting experiment to observe may be the "Rural Iperconnections" from Italy (Rural Iperconnections, 2015).

DiDIY for whole rural "systems"

If the goal is to make a rural community really resilient and self-sustainable, it is not enough to provide it with the technology and knowledge for more efficient farming. All its parts must contribute to that goal. One such component is housing: there are plenty of abandoned homes and buildings, in rural areas all over Europe, that may theoretically provide low cost social housing. Those homes and buildings, however, raise the following questions: could they all be enough comfortable, energy-efficient and safe by contemporary standards and expectations? Quite often, "remodeling" those buildings may make less sense than building *whole new houses and infrastructures from scratch, with state-of-the-art technology.* In both cases, however, the traditional, market-based answers may be expensive enough to leave no intermediate solution between abandonment and gentrification. When that happens, DiDIY styles alternatives like WikiHouse may offer valid alternatives.

Going further, we may say that in order to develop, or preserve, a whole rural area as a self-sustainable place in which it is worth living, that area needs solutions that are (Fioretti 2014):

- (self) organised and taking local history and unique characteristics into account
- designed with a *process* which is friendly to all the levels and sides of human life
- managed with cheap, not invasive actions that match real needs and features of each place

This is the standard approach of the International Society of Biourbanism (*ISB*, 2013), of which an example is Progetto Leo (*Progetto Leo*, 2014), by ISB, M. Fioretti and others; but all the approaches like that, that rebuild complete common spaces from the bottom, can benefit of DiDIY, in ways and areas that go beyond farming.

Obstacles and Risks

Education and Cultural Divides

In many cases, writing the software for an Arduino-based sensor system "only" involves a copy and paste job of someone else's work, after reading documentation that is only available in English. In order to merely *use* an Arduino-based system, one must "only" be able to use documentation and user interfaces in English, or ask the right questions in, often, English-only online forums. In practices, such activities are still beyond the skills of much of the general population, even in cities. This is the biggest obstacle to the widespread adoption of DiDIY, and in rural areas is a much bigger problem than elsewhere. In those contexts, even the design and service jobs created by DiDIY may only go to outsiders, or be used only as a way to acquire enough skills to *leave* the community as soon as possible. It is fair to assume that solutions like MOOCs (Massive Open Online Courses) and self-education can hardly play any meaningful role in rural communitiess. MOOCs, that is *common* programs for tens of thousands of learners, cannot fit the needs of many **small** communities, each with at least some unique needs. Besides, the people unable, so to speak, to teach themselves to learn online, that is the most likely to fail in MOOCs and self-education in general, are just those "from traditionally underprivileged backgrounds - poor and underdeveloped areas, as discussed in e.g (Konnikova 2014) and (Konnikova 2015).

Other risks

Some DiDIY-related risks have nothing specific to rural areas. On the ecological front, there is the risk that DiDIY activities - without proper education - may increase non-recyclable waste of microelectronic/plastic objects. Regulation-wise, existing product liability regulations are not adequate, in several cases, to deal with DiDIY products. As discussed at length in the preliminary DiDIY report on "Current DiDIY support and Awareness in Europe (DiDIY Project 2015), there are lots of legal challenges due to our current legal system being designed for a traditional world of mass production for consumption by the masses. Mass production may change into mass personalisation and production by the masses. The challenges include the way we as society deal with rights and responsibilities. For example product liability only applies when (finished) goods

are bought in the market. Digital DIY is typically outside of the market, which makes that often nobody can be held liable when products break and may cause injuries. Didiyers and prosumers should therefore be aware of the risks of dealing with certain materials. Legislation and insurance offerings should be adapted to these new realities. An issue more tied to rural communities is access to adequate financing. DiDIY needs much less money than highly automatized factory farms, high-tech tractors and similar products, but may require financing services (microcredit? Maybe) of a nature quite different from those available to most EU farmers these days. Good lessons on this side may come from Africa where "in countries like Kenya, less than 10% of farmers have access to formal credit, with women faring far worse than men. Better access to credit, especially for smallholder farmers, could bring about a revolution in African agriculture" (fin4ag, 2014).

Conclusions

Many of the digital technologies now fashionable in cities may bring even more benefits in rural areas. In the same areas, however, the current centralised, market-focused applications of those technologies may be much less feasible and sustainable than the DiDIY-based ones. We say “DiDIY-based” because the purpose of this paper is not to promote any *specific* product or technology, as much as the general approach, mindsets, knowledge bases and community structures that constitute the foundations of DiDIY. It is on those foundations that each rural community may build its **own** personalised solutions to solve its **own** actual problems, with the smallest possible effort and expenses. We suggest that DiDIY may play a role in *all* sorts of actions that are needed to make a rural community self-sustainable and resilient, even indirectly. Digital DIY with open technologies may not increase a community's GDP, but it can help it to become more resilient and connected with the outside world, but on its **own** terms, without losing its identity by assimilation or depopulation. In synthesis, DiDIY goes beyond the limits of free markets, without excluding them altogether; it brings in some benefits of globalisation, without some of its disadvantages; and favours “rural sustainability without the need for permission”. In a more transformational way we can see DiDIY as part of the bigger commons movement, where knowledge is shared globally and production takes place in a more locally oriented manufacturing processes (Commons Transition Wiki, 2015).

In order for this to happen, it is necessary to tackle the problems outlined in Chapter 5, especially the cultural ones. As far as documentation and user interface go, it only takes one translator, once, to make them available to all the speakers of some language. Free Software and Open Hardware mean that any Public Administration, NGO or University surely can, both technically and legally, translate those work (or pay professionals to do it), in any language or dialect, including ones that would never interest commercial suppliers. Besides, it is **not** necessary for every farmer to become a “didiy-er”, in order to personally benefit from DIDIY. As long, of course, as every single rural *community*, or network of such neighbouring communities, has enough skills and material resources to provide such services to their members. (e.g. local rural fablab, skilled *local residents* manning it etc). One way to favour such developments is to include, in the programs of Agriculture and Zootechnic schools and universities, specific education about DiDIY. Education, that is, that goes beyond mere technical training on Arduino or similar products, to present the *high level* advantages of DiDIY outlined here, and their best applications in the surrounding communities. Another action is to assist rural communities in developing their **own** versions of Fab Labs that offer “DiDIY services” to all their members.

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IMPORTANCE OF COSTS OF ENERGY ON AGRICULTURAL FARMS IN RELATION TO THEIR ECONOMIC SIZE

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Abstract
The first part of the work discusses the economic foundations of the increasing importance of costs and usage of energy carriers in agriculture. Using FADN (Farm Accountancy Data Network) data, the second part shows the importance of costs of energy for individual agricultural farms in relation to their economic size. The conclusion is that costs of energy rose considerably within the studied period, by 55% per farm on average. Increase of economic size is connected with increased energy inputs. The largest level of inputs in 2012 was noted on very large farms (PLN 1,187 per hectare on average), while very small farms came at the end of the list with PLN 501 per hectare. The costs of propellant materials have a decisive share in energy costs. However, with increased economic size their importance falls behind that of heating materials and electric energy. Increased economic size is conductive to increased energy and economic effectiveness of agricultural farms.

Keywords: farms, energy costs, FADN

JEL Codes: Q12, Q14, Q41

Introduction

The function of agriculture has been evolving for centuries. In recent times, agricultural policy is increasingly being dominated by issues related to ensuring a wide range of public goods, protection of the environment or ensuring suitable income for farmers. The basic objective of agriculture, however, remains unchanged – the supply of foodstuffs of suitable quality in suitable quantities. To achieve this objective, agricultural farms require a wide range of tools such as fertilizers, crop protection products, machinery, equipment and buildings. One should not, however, ignore the often disregarded means of production that are energy carriers. Modern agriculture cannot function without uninterrupted supply of electric energy and liquid fuels. These issues become ones of extreme importance when recent economic, political and climate events are considered.

The first notable issue is the theory of limited resources or growing costs of acquisition, the groundwork for which was laid already by classical economists (A. Smith, D. Ricardo, R. Malthus). The crowning achievement of this line of reasoning is the Oil Peak theory. The theory says that extraction of oil using conventional methods will peak shortly and can only decrease in subsequent years. In the United States, these forecasts have already come true (Bowden, 1985). The growing costs of acquisition theory have been expanded to form the EROI (Energy Return on Investment) concept with respect to energy resources (Murphy, Hall, 2010). EROI is the ratio between the amount of energy input and the resulting output of manufactured energy. The conclusions drawn from relevant studies are disquieting. There is considerable risk that, even when energy resources are physically available, their acquisition will not be worth the energy input (input will be greater than output). Moreover, similar reasoning applies to renewable energy sources, with EROI for ethanol from corn estimated from 1:0.8 to 1:1.6 and for biodiesel fuels only at 1:1.3 (Hall et al., 1986).

While depletion of natural resources is a future concern, situations in which energy issues are used to drive international politics are much more current. Considering the strategic importance of the agricultural and foodstuffs sector, it is critical to define what the impact that such problems can have on agriculture and agricultural farms as the first link in the food management chain is.

The research objective of the article is therefore to determine the amount of energy costs sustained by Polish individual agricultural farms, their share in general costs in relation to the economic size of the farm, and the economic and energy effectiveness of farms calculated as the ratio between the amount of production and the amount of expenditures for energy carriers.

Materials and Methods

The study uses individual agricultural farm data collected from 2007 to 2012 by the Institute of Agricultural and Food Economics – State Research Institute in the FADN system. The FADN field of observations consists of commodity farms. The minimum economic size for an agricultural farm to be included in the FADN field of observations is since the 2010 reporting year based on the analysis of sums of Basic Production (BP) data from the Central Statistical Office for each economic size category. In practice, the calculations involve adding the BP sums from each category, beginning with the largest, until about 90% of BP from the general population has been achieved. The lower boundary at which this occurs is the minimum economic size threshold. As a result, the boundary is different for each country, depending on its agrarian structure (FADN, 2013).

The study utilizes a grouping of agricultural farms by economic size, which is defined as the sum of Basic Production (BP) values of all agricultural activities taking place at the farm. The economic size of a farm is expressed using a BP value in EUR. Based on the economic size thus determined, an agricultural farm is assigned to the respective economic size category. The aggregation occurs according to guidelines specified in Regulation (EC) 1242/2008 of the Commission of 8 December 2008, as amended. The size categories have been shown in the following table.

Table 1 Ranges of economic size

1	Very small (2,000 <= EUR < 8,000)
2	Small (8,000 <= EUR < 25,000)
3	Small to medium (25,000 <= EUR < 50,000)
4	Medium to large (50,000 <= EUR < 100,000)
5	Large (100,000 <= EUR 500,000)
6	Very large (EUR >= 500,000)

The calculation was performed according to the profit and loss account in effect in the FADN The costs of energy included the following cost categories: heating fuels (coal, coal dust, briquette, wood, coke, heating gas, heating oil), propellants purchased for fuel tanks (gasoline, fuel oil, propellant gas, other propellants), propellants purchased for large tanks (gasoline, fuel oil, other propellants), heating wood, fees (electric energy, hot water, central heating). Calculation data are for the years 2007 to 2012. Economic data have been expressed in Polish zlotys.

Results and Discussion

The years 2007-2012 saw some very important changes of economic conditions in agriculture. In general, two periods may be distinguished. Until 2007, the prices of agricultural products (except for pork) were on the rise. In 2008-2009, the prices fell sharply and agriculture entered a downturn period. In subsequent years, however, the situation improved, but not to the extent of the peak in 2007 year. On the other hand, the global financial crisis translated directly to prices of energy carriers. The prices of carriers used on agricultural farms changed rapidly.

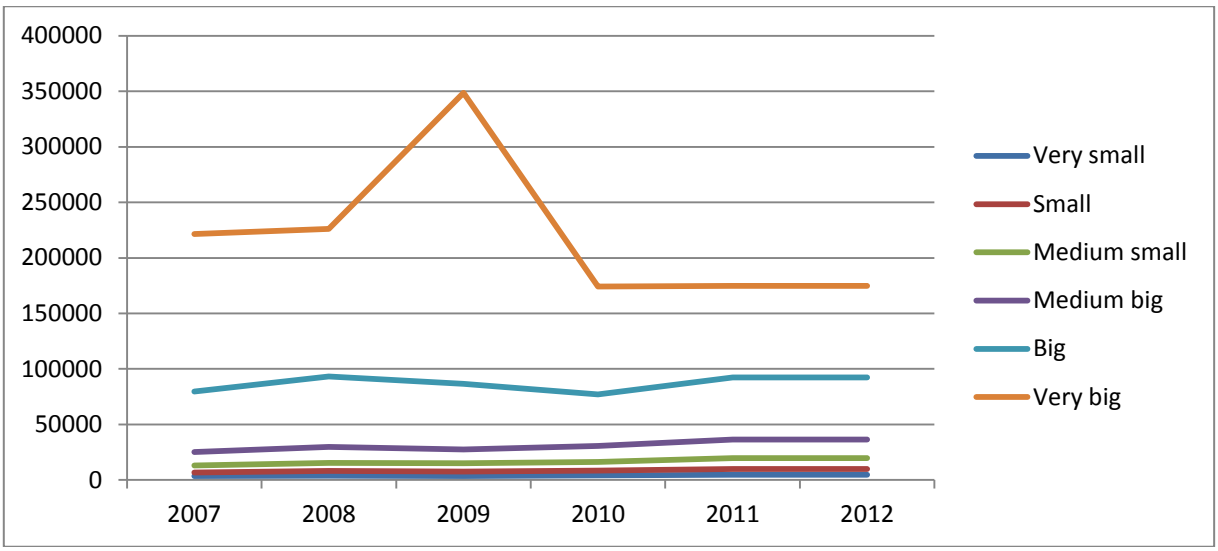

Figure 1 Cost of energy on farms in relation to economic size
Source: Own processing based on own data collection

The costs of energy on agricultural farms increases along with the economic size of farms. Among the largest farms, they were PLN 174,633 on average in 2012, while for the smallest farms the figure was only PLN 4,671. Certain changes that took place in the studied period need to be emphasized. The value of energy costs decreased only among the largest farms (by 9% in the studied period). For other groups, considerable increases were noted, in particular for small-to-medium farms where the figure rose by 68%. For small farms it was 49%, and for large ones 20%. In the studied period, total costs of energy carriers constituted 11-12% of all costs sustained by the studied groups of farms.
Since the economic size of a farm is closely related to its physical area, the relationship between increased costs of energy and farm size is quite obvious. Considering this, it is useful to examine costs of energy per hectare of agricultural land.

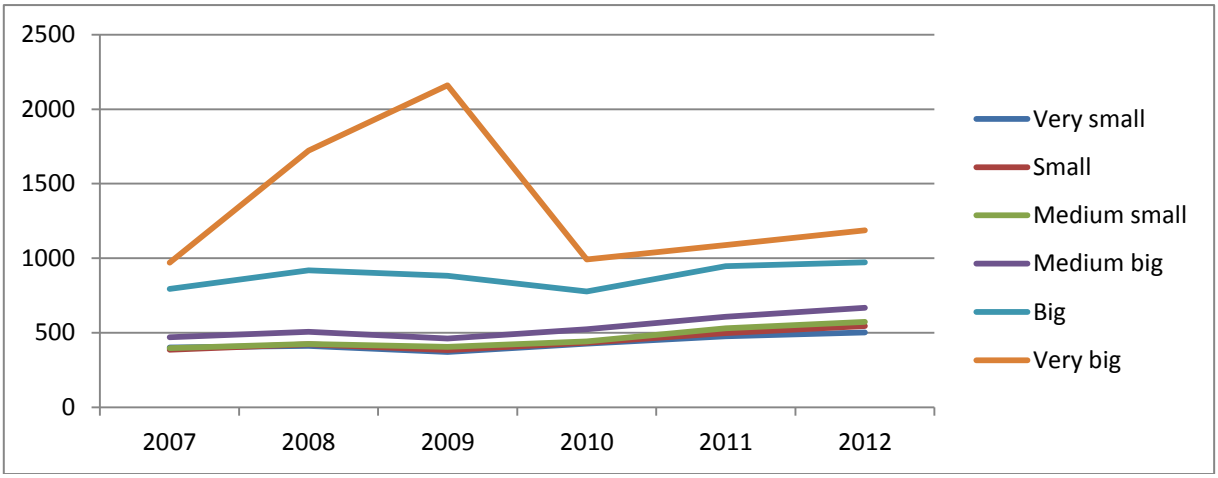

Figure 2 Cost of energy on farms in relation to economic size per 1 hectare of agricultural land
Source: Own processing based on own data collection

When recalculated to 1 hectare per agricultural land, farms with the largest economic size again came on top in energy costs. This is because of the type of activities they conduct. Large and very large farms deal mainly with animal production, where additional energy input is required to ensure, for example, appropriate conditions for the animals. Because of this, for these farms costs of energy per 1 hectare of agricultural land were almost twice as high as costs for small farms (PLN 1,187 vs. PLN 501 per hectare). However, an increase of costs of energy in the studied period was noted for all analysed farm groups, by 34% on average.

At a further stage of study, costs of energy were broken down according to the three kinds of energy carriers: propellant materials, heating materials and electric energy.

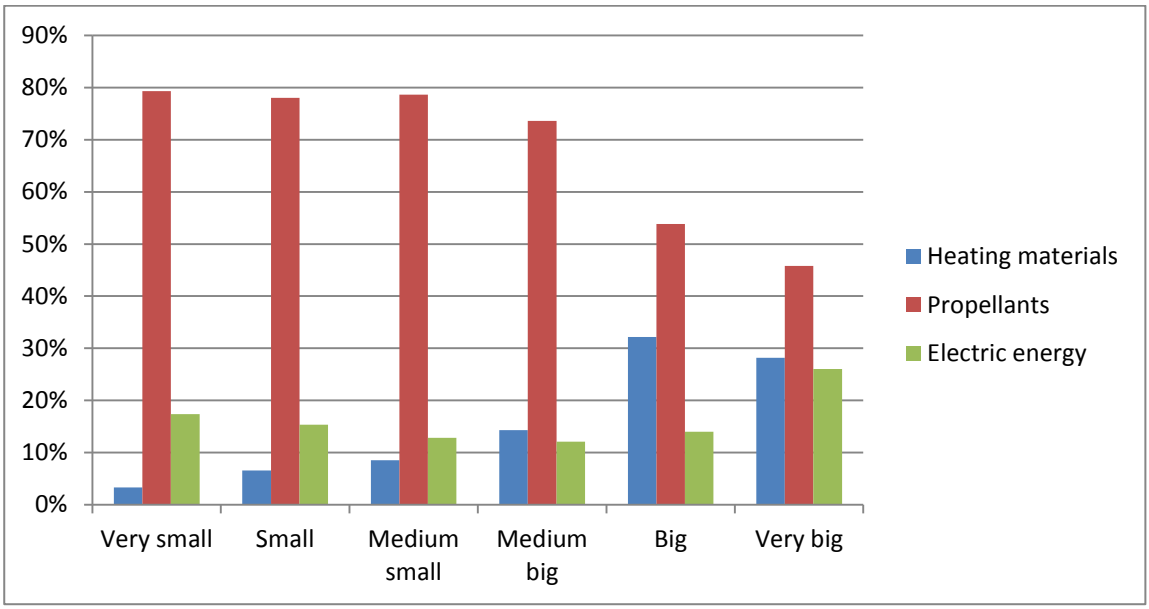

Figure 3 Structure of energy costs in 2012
Source: Own processing based on own data collection

Propellants dominated costs of energy carriers on farms in all size ranges. Propellants include primarily fuels, both purchased for tanks on farms and fed directly to fuel tanks in agricultural machinery used to perform all agricultural and technical activities on the farm (sowing, sprinkling, fertilizing, harvesting, etc.). Such costs are essential for the farm's operations, regardless of the type of production. However, as noted above, in case of larger farms the issue of animal production and the need to ensure appropriate animal care and automation of work is present. Likewise, it is in the group of large and very large farms that orchards and horticultural farms appear. In their case, the most important issue is the storage of harvested products, which requires extremely high expenditures for electric energy.
Another issue considered during the study is the effectiveness of energy expenditures sustained by the studied farms. The study focuses on the so-called economic and energy effectiveness. For the purposes of this article, such effectiveness is measured using the ratio between the value of agricultural production and the costs of energy sustained by farms covered by the study.

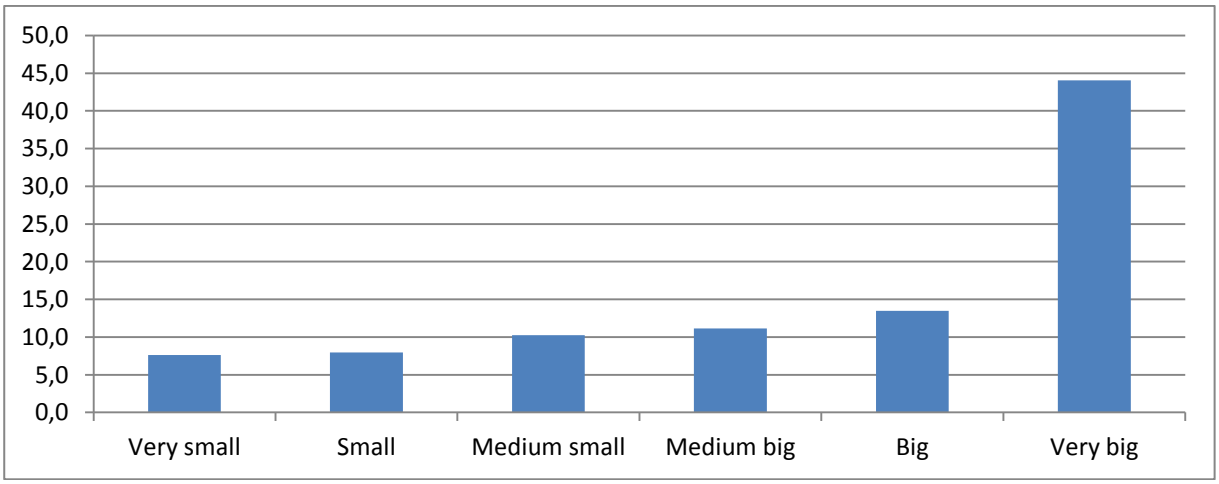

Figure 3 Economic and energy efficiency of farms in 2012 (value of production divided by costs of energy)
Source: Own processing based on own data collection

The above figure shows that increased economic size of an agricultural farm also causes an increase of its economic and energy efficiency. In very small farms, one zloty spent for energy generates only PLN 7.6 in terms of production value. The figure rises to PLN 13 for large and PLN 44 for very large farms. Multiple reasons may contribute to this state of affairs. First, large and very large farms are usually modernized and have invested in machinery stock. Second, more attention is paid to the costs they sustain and to optimization efforts. In very small farms these issues are usually relegated to the background.

Conclusion

The study results presented above lead to the following conclusions:

1. The costs of energy in the studied period have increased considerably, by 55% on average for the entire population. The increase, at 68%, was most pronounced among small-to-medium farms.
2. Increases in economic size led to increased expenditures for energy. The largest level of inputs in 2012 was noted on very large farms (PLN 1,187 per hectare on average), while very small farms came at the end of the list with PLN 501 per hectare.
3. Costs of propellant materials played a decisive role for energy costs. However, with increased economic size their importance falls behind that of heating materials and electric energy.
4. Increased economic size is conductive to increased energy and economic effectiveness of agricultural farms.

The issues of energy in agriculture have so far received a one-sided treatment. Agriculture was viewed merely as supplying materials to produce energy resources. On the other hand, given the theory of limited energy resources and the political issues surrounding their availability, the energy needs of agriculture and ideas for their effective utilization come to the fore. As is the case with the entire modern economy, the functioning of agriculture depends on access to energy carriers and rational energy use.

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IMPACTS OF EU ACCESSION ON THE V-4 STATES – BENEFITS AND CHALLENGES

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Abstract

A number of challenges are related to the agriculture and rural areas in last two decades of its development in the new European member states (NMS). Agriculture's transition process with its shocking therapy caused significant decline in the agricultural production and led to the significant decline in farm in farm employment. Plenty of rural people left the rural areas during the internal migration to the cities and later after the EU accession number of young people in external migration's waves found their job opportunities in the EU-15 states. Moreover transition process was followed by EU's accession processes which opened the common market and number of the new states was not prepared on the strong competition. Alongside of the above mentioned processes the serious challenges have been caused by the food volatile prices development, negative impact of the climate changes on the sector, followed by financial and economic global crises , with the Russian bans on the import of food products from EU states. In between the organizational structures of the farms, the organization of the food chain verticals and the technologies had been changed meaningfully. Another issue is the qualification and age of the farmers and farm's managers. Despite of this, rural regions are still important, both economically and demographically. Almost of the one quarter of NMS' population leaves in countryside. On the other side, rural regions across of European Union developed number of entrepreneurial activities. The aim of this paper is to provide comprehensive description of the recent trends and challenges related to the development of agricultural sector after the EU accession in the four states of Visegrad group with intention to highlight the benefits and weaknesses of this process Visegrad group (V-4), are composed from the following countries: Czech Republic, Hungary, Poland, Slovak Republic).

Keywords: agriculture, farm size, crop production, organic farming, farm employment, agricultural output.

JEL Codes: E24, Q18

Introduction

Broad changes are taking place in food and agricultural sector worldwide. In connection to the new EU countries the accession led to the number of changes with significant impact on performance and role of this sector. The global financial crisis and the accompanying slowdown of the economy reversed to the increased commodity prices which strongly impacted the food security and poverty of net food consumers. While the farmers could benefit from the higher commodity prices, at the same time, a reduction in real term wages, decreased employment which have negatively affected the income of households in the region and increased poverty.

Diversification of activities on the income generation activities in the market economy conditions is the key factor for the economic survival of farms. The important challenge is also to achieve balanced and sustainable growth of rural economies.

The countries of the European Union are highly diversified in terms of territory, population, society and economy, especially in term of their structure of agriculture. There is over 12 million of agricultural holdings across the EU-27 working on 178, 8 million hectares of land. The acreage size of holdings in the EU-27 was 14,4 hectares in 2010. There is a stark contrast in the structure across EU, on the one hand there is a large number 5,9 million (49 %) of very small farms (less than 2 hectares) in terms of size, on other hand, a small number (3 %) of very large farms (over 100 hectares) that use half (50 %) of the farmland in the EU-27. The objective of this paper is to deal with development of agricultural sector after the EU accession in four states of Visegrad group with intention to highlight the benefits and weaknesses of this process in the group as such, as well as in the individual states.

Literature review

In connection to the EU enlargement which meaningful stone mile-stone was achieved in 2004, Kiss (2011) wrote that accession has created an incentive to new member states 'agriculture but also had negative effects due to tough competition in the enlarged market. Möllers et al. (2011) analysed structural changes in new member states' agriculture and in rural livelihoods and drew several policy recommendations in light of initial experiences, especially considering the ongoing debate on the reform of the Common Agricultural Policy (CAP).

Besides the benefits, several difficulties of EU membership have emerged. First of all, the accession has made the NMS part of a large, rather competitive market, where they have limited potential to withhold competitive pressure. The concentrated and Europe-wide procurement systems of the major chains create high requirements for suppliers and impose strong price pressures as well. Farmers' adjustment to the enlarged integrated food markets is one of the most pressing demands of the post accession situation and requires public involvements (Csaki and Jambor, 2010).

The subsidy policy of competitors is also a source of concern. The traditionally high agricultural subsidies of the EU-15 have artificially increased the competitiveness of agri-food products imported by the NMS after accession, generating unequal competitive market positions in EU-27 markets (Ciaian et al., 2010). This argument is strengthened if account is taken of the small proportion of direct payments that have been received by the NMS immediately after accession.

The large number of subsistence and semi-subsistence farms is a special characteristic of the new member states, since these farms are fundamentally different from those which are called 'small farms' in the EU15 and they are hardly comparable to any segments of the EU15 farming sector and that they require special attention and policies (Möllers et al. 2011).

Methodology

The main aim of this paper is to provide comprehensive description of the recent trends and challenges related to the development of agricultural sector after the EU accession of four states of Visegrad group with intention to highlight the benefits and weaknesses of this processes and their implications for Visegrad group states - V-4, (Czech Republic, Hungary, Poland, Slovak Republic). The data was gathered and consequently processed from EUROSTAT, FAOSTAT databases, other data sources were taken from the World Development Indicators, as well as from published studies of the FAO, OECD, EU and previous authors' publications. The research was concentrated on the V-4 states with focus on major development trends including the most meaningful factors which have consequences on the recent status of agricultural development. The situation and position of V-4 states is compared with average results from the European Union and in the. The time horizon in majority of indicators include years 2003 up to 2010, 2011, resp. 2012.

The most significant results achieved in the agricultural development in the V-4 states after EU accession

Population and share of GDP in V-4 states

The countries of the European Union are highly diversified in terms of territory, population, society and economy, especially in terms of their structure in agriculture. In 2012, EU was inhabited by 500,355 thousand people/food consumers. The largest population of EU-27 is in Germany (80, 3 million people, France (63,5 million) and in Italy (59, 4 million), the countries with the smallest population are Malta (417,5 thousand), Luxemburg (524.8 thousands) and Cyprus (862,0 thousand). From V-4 states, the largest population has Poland (38,5 million), followed by Czech Republic (10.5 million) and Hungary (9,9 million), the smallest population is in Slovakia with 5,4 million people. In total, the population of V–4 states represents in EU – 27, 12.65 %, (figure 1). From this point of view, the negotiating power of the V–4 group is rather significant and can have impact on he discussed matters in frame of the CAP and related matters.

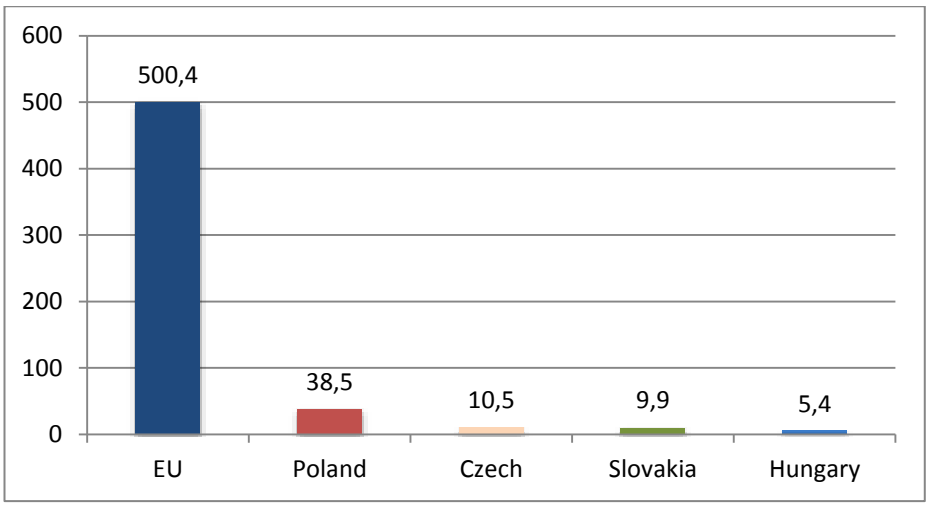

Figure 1 Average population in the V-4 (in millions), 2012
Source: own study based on Eurostat data

Gross domestic product (GDP) at market prices per EU inhabitant is on average 25,200 Euro. However, in V-4 states this indicator is significantly lower. The highest level is achieved by Czech Republic (14,6 million), followed by Slovakia (13,2 million), then by Poland (9,9 million Euro) and the lowest level of GDP per inhabitant was achieved in Hungary (9,8 million Euro) as indicated in figure 2.

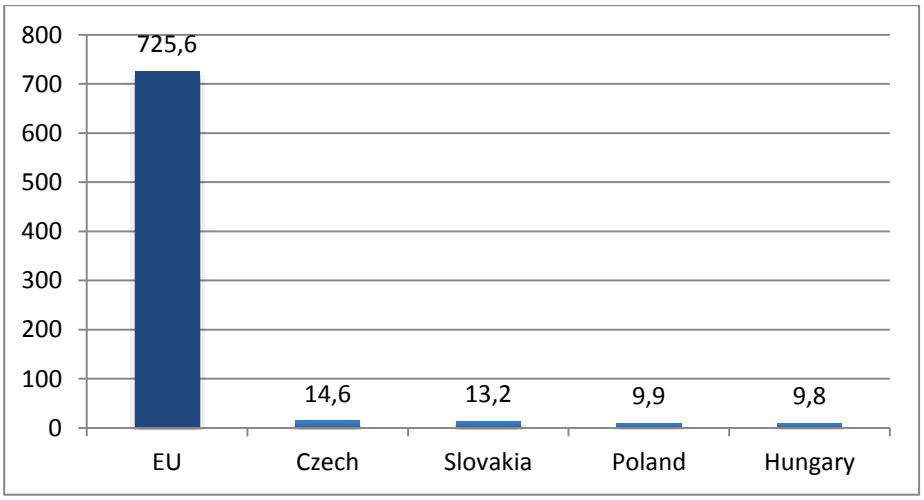

Figure 2 Gross domestic product at market prices in EURO (in thousand) per inhabitant in V4, 2012
Source: own study based on Eurostat data

Agricultural in GDP within the EU-27 represents 1,5 %, while in the V-4 states this indicator is higher. The highest one is in Slovakia with 3,9 % share, followed by Poland and Hungary with identical 3,5 %, and by the Czech Republic with 2,3 % share.

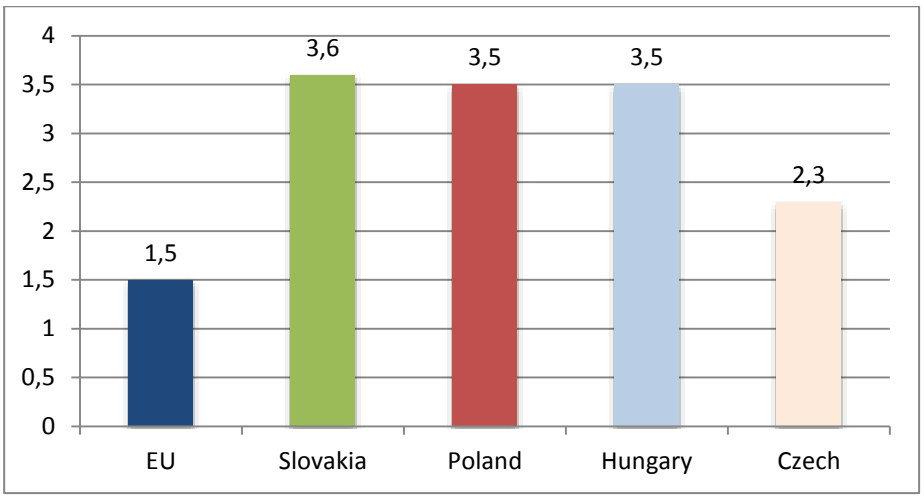

Figure 3 Agriculture in GDP in the V-4 countries (in %), 2010
Source: own study based on Eurostat data

The role of agriculture in a national economy is best characterised by the share of agriculture in GDP, which is shrinking all over the world. After EU accession, shares in all cases decreased, though largest falls can be seen in countries with originally high values. In 2010, the share of agriculture in GDP was below 4% in all countries analysed (the marginal difference among involved countries is 1, 30)

Table 1 Index of agricultural output in real terms in the NMS (2000=100)

Country	**2003**	**2006**	**2009**	**2011***
Czech Republic	83.58	87.18	90.97	94.21
Hungary	86.54	88.29	79.63	100.87
Poland	97.95	110.46	96.77	141.96
Slovakia	97.68	86.53	84.94	85.99
EU27	94.98	85.12	84.60	93.40

Source: Own composition based on Eurostat (2012)

The development of agricultural production is another key indicator of assessing the impact of accession. As Table 1 suggests, there are significant differences regarding the index of agricultural output in the V-4 states. It can be seen that Poland increased gross agricultural output about significant 41,96 %, Hungarian agricultural output was slightly increased about 0,87 %, Czech Republic noted 5,9 % decline and the most dramatic situation is in Slovak Republic in which within the years 2003 and 2011 agricultural real output dropped about 13.01 %.
Furthermore, country performances are based on different product structure (table 2). The share of processed raw materials in agri-food import is highest in Hungary (76 %), followed by Slovakia (75 %) and then by Czech Republic (74 %), Import of processed food was slightly increased in Poland (from 62 to 67 %). From table 2 we can read that the lowest share of imported raw products has Poland. From this point of view its performance is best one I frame of V-4 states.

Table 2 Share of raw materials and processed products in NMS agri-food trade (percentage)

Country	Raw materials in export				Processed products in import			
	2003	2006	2009	2011	2003	2006	2009	2011
Czech Republic	22	32	36	35	67	71	75	74
Hungary	33	34	38	35	72	73	75	76
Poland	28	24	25	20	62	66	68	67
Slovakia	26	32	36	35	75	73	77	75

Source: Own composition based on Eurostat (2012).

Utilized Agricultural Land and Farm's Outputs

Rural areas occupy 91 % of the EU areas, and they are inhabited by 56 % of population of EU – 27. In the EU-27 the utilized agricultural land is: 59,1 %. In the Czech Republic, the total utilized agricultural areas is slightly lower with 57,2 %, while the forest cover reaches 33,2 %. In Hungary the UAA is on the area significantly higher as the EU average represents - 66, 9 %, while the percentage of forests is rather low, only 18,2 %, (the lowest one from the all V-4 states). In Poland, the UAA land covers 62,9 %, the forest cover is 30, 1 %, while in the Slovak Republic is the UAA the smallest one with 48,3 %, while the forest cover is highest with 40,2 %. It is worth to mention that the Slovak Republic is in frame of EU-27 ranked as the sixth with regard of the forest concentration.

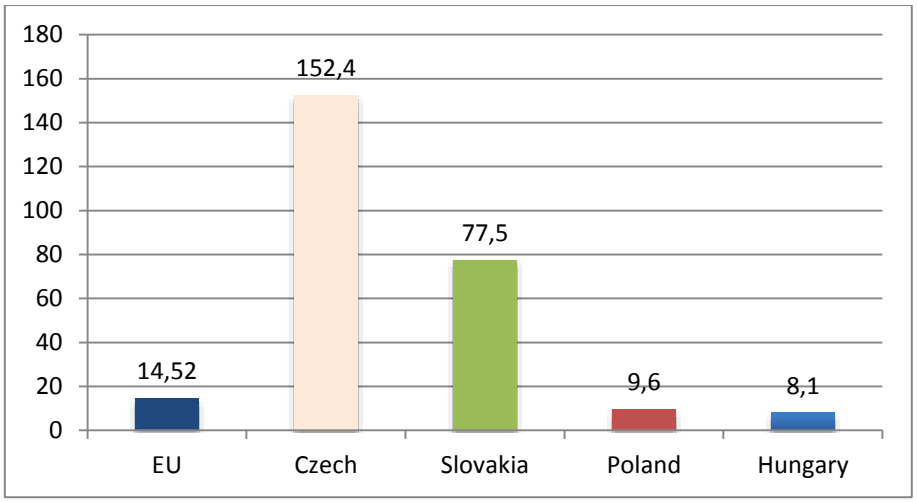

Figure 4 Average utilized agricultural area (UAA) per holding in the V-4 countries (ha), 2010
Source: own study based on Eurostat data

Analysis confirms that the not only EU-27 states are highly diversified, but even there are significant differences exist among V-4 states, despite of their geopolitical vicinity. The EU average of UAA represents 14,52 hectares, while the highest average is in the Czech Republic (152,4 hectares) and in Slovak Republic (77,5 hectares). In contrary, the rest two states from the V-4 group have very similar results. In Poland this indicator represents 9, 6 hectares, while in Hungary 8,1 hectare. These results also confirm that development of the agricultural sector underwent different processes during the transition period, and that former large agricultural commercial farms had been more fragmented in Poland and in Hungary, than in Czech Republic and Slovakia. However, it has to be emphasized that in Poland the status of small farmers was maintained during the whole socialistic period. So, from this point of view more radical changes with land fragmentation had been carried out in Hungary.

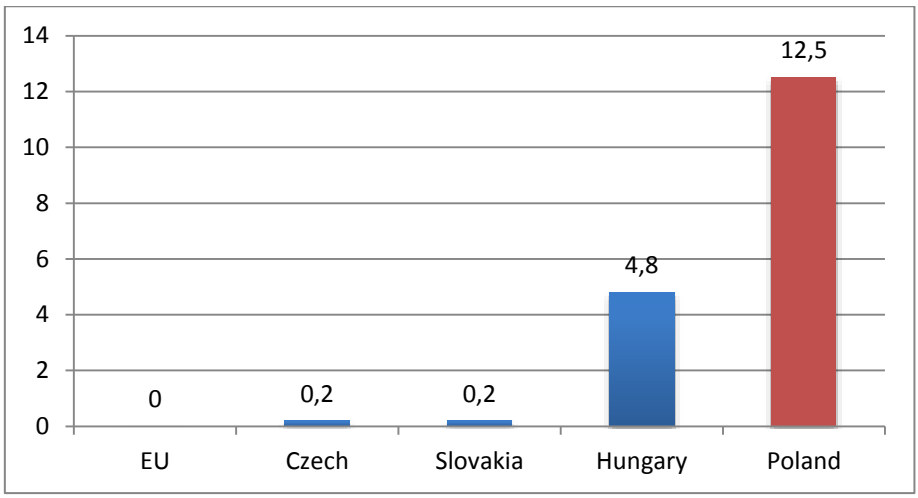

Figure 5 Number of agricultural holdings (in thousand) and % of share in the total number of holdings in the V-4, 2010
Source: own study based on Eurostat data

The following table witnesses that the fragmentation of agricultural production is more typical for Hungary and Poland. These two countries 'share on the number of the EU 's agricultural holdings represent 4,8 % in Hungary, respectively 12,5 % in Poland. The lowest share is noted in Slovak Republic and in Czech Republic with identical results 0,2 %. Despite the splitting up of these two states in 1993, their similarities in agriculture have been maintained.
This contrast is also reflected in the economic size of holdings. Out of the 12,0 million agricultural holdings in the EU–27 in 2010, 5, 1 million holdings (42,7 %) had a standard output less than 2000 Euro, ad was responsible for only 1, 4 % of total agricultural output. On the other hand, 5,3 % holdings that had a standard output in excess of 100,000 Euro accounted for over two thirds (68,6%) of overall agricultural economic output. It is worth to note, that agricultural holdings with standard output over 15, 000 Euro, which represent only 19, 1 % of the total number of holdings in EU provide 90, 5 % of total standard output. Over three quarters (76,4 %) of total standard output in EU–27 which was 8,060,359 million Euro, was created by farms in France – 16,6 %, Italy – 16,2 %, Germany – 13,6%, Spain – 11,2 % , UK – 6,4 % , Poland – 6,2 % and the Netherlands – 6,2 %.

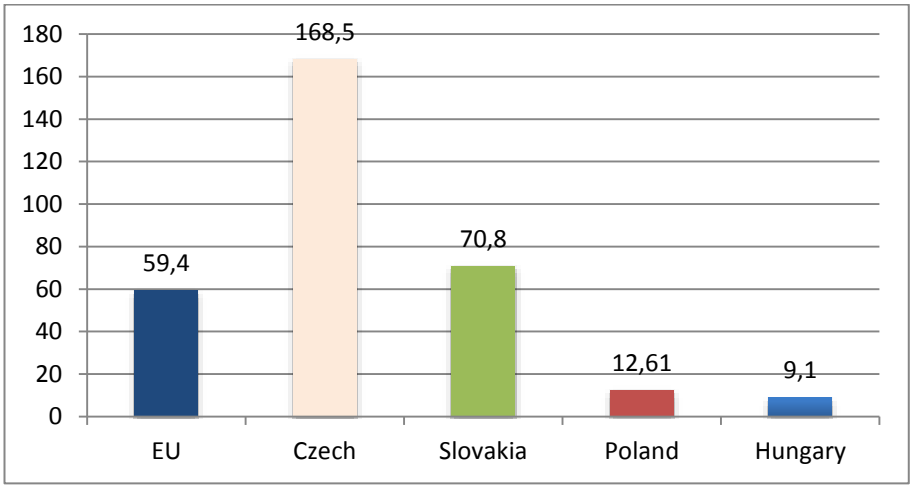

Figure 5 Standard output per 1 holding in thousand Euros in V-4, 2010
Source: own study based on Eurostat data

Table 3 Structure of agricultural holdings by size of the holding in the V-4, 2010

Country	Zero ha		< 2,0 ha		2,0 – 4,9 ha		5,0 – 19,9 ha		Over 20,0 ha		Total
	number	%	number	%	number	%	number	%	number	%	
EU V-4	258,410	2,2	5,637200	46,9	2 418,600	20,1	2 210,110	18,4	2 490,530	12,4	12,014
Czech Republic	290	1,3	1,980	8,7	1,260	5,5	8,130	35,6	11,210	49	22,860
Hungary	42,790	7,4	412,740	71,6	46,060	8,0	45,970	8,0	29,250	8,1	576,810
Poland	7,960	0,5	355,220	23,6	468,200	31,1	553,460	36,7	921,770	8,1	1 506,620
Slovakia	740	3,0	8,720	35,7	6,290	25,7	4,290	17,5	4,420	18,1	24,460

Source: own study based on Eurostat data

The average standard output per agricultural holding in EU–27 in 2010 was 24,464 Euro and it is extremely differ among member states. The highest level was achieved in Netherlands (26,753 Euro, or in Denmark (200,716 Euro). Interesting results are achieved when we compare standard output per one holding in V–4 states. This indicator in Czech Republic reached 168,5 thousands Euro and in Slovakia 70,8 thousand Euro). Both these data are significantly higher in comparison with the EU–27 average, as well as comparing them with results achieved in Poland and in Hungary. It is obvious, that the standard output per one holding will be lower in the rest two states due to the farms' size. In Poland, this indicator represents - 12,61 thousand Euro and in Hungary - 9,1 thousands Euro. While comparing these two data sets, it is obvious that Polish agriculture is better performing as Hungarian, at least in relation to the standard output.
EU farmers can get direct payments under CAP with a yearly budget of around 40 billion Euros. Direct payments ensure a safety net for farmers in the form of a basic income support, separated from production, stabilizing their income stemming from sales on the markets, which are subject to volatility. Direct payment also contributes, in combination with cross compliance, to providing basic public goods delivered through sustainable farming. The number of agricultural holdings in EU which received direct payment in 2009 was 8,060,359 (67,4% of the total number), and the value of paid subsidies was 56,420 million Euro, (7, 2 thousand Euro per farm). Direct subsidies are used to the greatest extent by: France (10,9 million Euro, 19,4% of overall subsidies of EU per farm, 22,7 thousand Euro per farm), Germany (7,5 million Euro, 13,3 %, 20,1 thousand Euro per farm), Spain (7,4 million Euro, 13,2% per farm) Italy (5,8 million Euro, 10,4%, 4,5 thousand Euro per farm, UK (3,6 million Euro, 6.4 %, 11,4 thousand Euro per farm) and Poland (3,0 million Euro, 5,3 %, 2,1 thousand per farm. Rural development policy is a highly flexible policy which uses a range of tools to offer targeted solutions to the very diverse challenges faced by the EU's rural areas. This essential characteristic is reflected in various aspects of its management and structure.

Crop and Livestock Production, Volatile Prices and Integrated Crop Nutrition
Main crops cultivated in the V-4 states
The position of the crop producers from V–4 states is strong or stronger in the following crops: *Cereals*-Poland, (26,7 million tons); *Sugar beet*-Poland, (10,3 million tons); *Rape*-Poland (1,8 million tons) and Czech Republic, (1,0 million tons). *Sunflower*–Hungary, (1,4 million tons);*wheat*–Poland, (9,3 million tons);*barley*–Poland, (3,3 million tons); *grain maize*–Hungary (8,1 million tons); *ray and maslin*-Poland,–(2,9 million tons); *rice*–Hungary, (0,009 million tons); *Carrots*–Poland, (0,8 million tons); *onions*–Poland, (0,6 **million** tons); *cabbage* – Poland, (1,2 million tons); *apples*–Poland, (2,5 million tons); The country with the biggest cultivation of vineyard is Hungary which has in total–74 thousands hectares. From the all 27 EU–member States only in 15 states is registered vineyard area.

Livestock Units and Production
The total livestock production in EU–27 was 133, 9 millions of LSU in 2010. About one half (47%) of which was cattle, a little over one quarter (27 %) was pigs, 15% was poultry and 7 % was sheep. Just over half (51, 1 %) of the EU livestock herd was located in four following member states: France, Germany, Spain and United Kingdom. There is also quite large number of livestock in Poland–7,7 %.
In Hungary the number of livestock is only–1, 9 %, in Czech Republic only 1, 3% and the lowest share is in Slovakia–0, 5%.

Volatile Prices and Increasing Incomes
EU accession had also a significant impact on agricultural prices and incomes. Agricultural raw material prices have shown a remarkable increase for a few years, usually demonstrated by changes in wheat producer prices. Wheat producer prices in the V-4 states have followed EU respective average prices to a great extent and by 2008, they increased by roughly 2.5 times compared to 2000. According to general price trends, the initial decline was followed by another price hike in 2011 in world agricultural product markets (FAO, 2011).
Similarly to wheat producer prices, those of fresh cow milk have also shown a significant increase during the past few years. However, due to Russian buns against of the milk product import the milk prices are significantly declining from the mid of 2014. We have to take into consideration that the largest price adjustment occurred where pre-accession producer prices were lower. Increasing producer prices have also resulted in an increase of producer incomes after accession in the V-4 states. Real farm income per annual

work unit (AWU) has grown in each and every country in the region from 2003 to 2011, though to a different extent.
Price adjustment was larger in countries with lower pre-accession levels, despite that in the V-4 states the prices were almost identical. However, there has been a significant increase of farming incomes in the NMS, mainly due to agricultural subsidies, while initial differences have remained among countries.

Integrated Crop Nutrition and Protection
The estimated consumption of manufactured fertilizers in the EU–27 was on average 81, 7 kg of nutrients (nitrogen, phosphorus, and potassium together) per hectare of utilized agricultural area, in 2010. The Benelux countries reported the highest level (173, 9 kg per hectare) of nutrient consumption from manufactured fertilizers. The highest nutrient consumption from V-4 states is in Poland with 114,00 kg, followed by Czech Republic, 90 kg, then by Hungary - 72 kg per hectare) and ending by Slovakia with 68 kg manufactured fertilizers per hectare.
The yields of agricultural and horticultural production crops can be severely reduced as a result of infestation by pest and diseases. In order to protect crops before and after harvest, plant protection products are used. The available statistical data imply that plant pesticides consumption is very divers, from very high in Italy (6, 62 kg per hectare and the Netherlands (4, 97 kg. In Slovakia this indicator reached only 0, 75 kg.

Status of NH3 emissions in V-4 states
Among various activities in the area of agriculture and environment, the need for air protection in the agricultural utilized area, is an equally important task, ensuring cleanliness of water resources located there. An air pollutant, which is produced in substantial quantities in the course of the broadly understood agricultural production, in particular animal production, is ammonia NH3 a gaseous, inorganic nitrogen compound. Emission of this compound causes particular environmental disturbances. Agricultural activities in EU 27 resulted into emission of 3, 4 million tons of ammonia in 2010. This represented a decline of almost 30 % when compared with the level emitted in 1990.

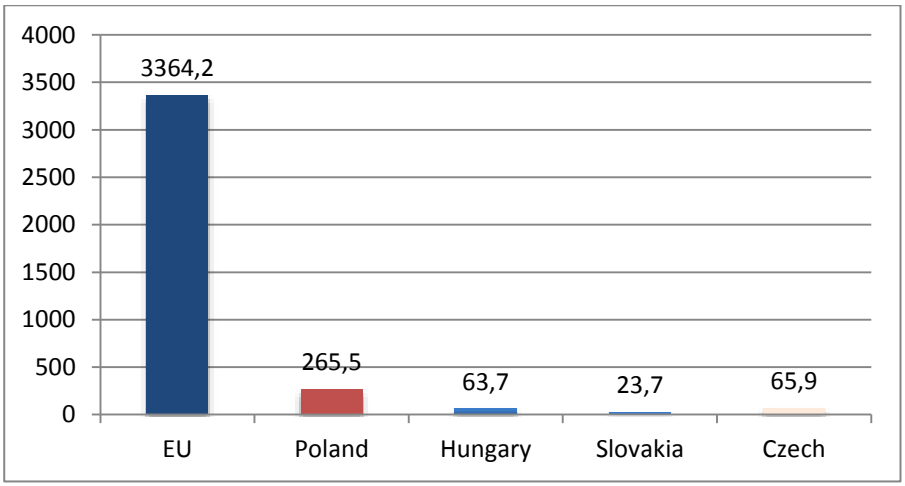

Figure 7 NH3 emissions from agriculture (in thousand tons) and % structure in EU V-4 countries, 2010
Source: own study based on Eurostat data

Nevertheless, agriculture was still responsible for the vast majority (93, 3 %) of total emissions in the EU. France accounted for 18, 7 % of ammonia, Germany 15, 2 % and Italy for 10, %. In frame of V-4 states the highest level of ammonia was in Poland with 7, 9 %, followed by Czech Republic with 2 %, then Hungary with 1, 9 % and the lowest level of ammonia emissions from agriculture is in Slovakia - 0, 7 %.

Farm Employment and Farm's Managers

Farming is predominantly a family activity in EU–27; over three quarters (77, 3 %) of the labor input in agriculture came from the owner or member of his/her family in 2010. In Poland, Ireland, and Malta family labor accounted for over 90 % of the volume of work carried out in agriculture. By contrast, there was small percentage of countries for which non-family labour accounted for a majority of labour force (Czech Republic–74, 6 %, Slovak Republic–68, 4 %, France–45, 1 %.

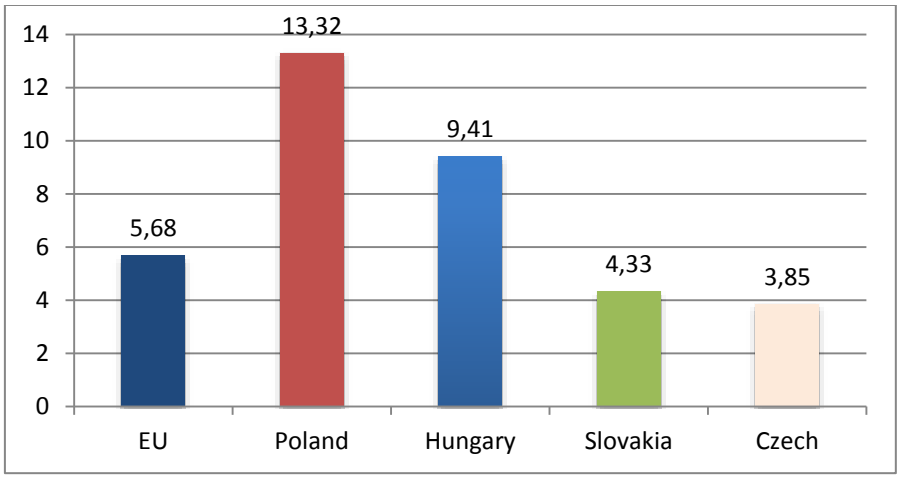

Figure 8 Agricultural employment in AWU/100 ha of utilized agricultural area (UAA), 2010
Source: own study based on Eurostat data

Farms in V–4 are managed by managers who are relatively older. On average, as much as 53,1 % managers in EU-27, are people above 55 years age (23, 5 %) from 55 to 64 years and 29,6 %, 65 years and over). There is a relatively significant difference in the age structure of managers among different V -4 states. The most beneficial age structure of farm mangers was observed in Poland-40,2 % managers in age less than 44 years and in Czech Republic. 32,4 % of farm managers are younger than 44 years. Both in Hungary 21,6 % and in Slovakia (21,6 %), the results are identical, but the situation is annoying especially in these states when we take into consideration the age beyond 55 years. In Hungary even 57 % of farmers are achieving the age which is higher as 55 and in Slovakia this indicator achieves 51 % of farm managers beyond of 55 years of age. The Czech Republic achieved in this result 40,8 % and in Poland this indicator is the most favorable with 27 %.

Table 4 Percentage of farms' managers in different age by countries of the V-4, 2010

Country	Less than 35 years (%)	From 35 to 44 years (%)	From 45 to 54 years (%)	From 55to 64 years (%)	64 years or over (%)
Czech Republic	11,7	20,7	26,9	28,0	12,8
Hungary	7,1	14,6	21,2	27,9	13,6
Poland	14,7	34,5	32,3	20,1	8,4
Slovakia	7,1	14,9	27,0	28,3	22,7

Source: own study based on Eurostat data

Organic Farming in V-4 states

One of the innovative agricultural production systems is organic farming that eliminates the use of synthetically produced fertilizers, pesticides, growth regulators and livestock feed additives. To maintain soil productivity and fertility and to control needs and pests, organic farming relies primarily on crop rotations, crop residues, animal manure, legumes or other green manures and biological pests control. Implementation of organic agriculture is important to meet diverse market needs.

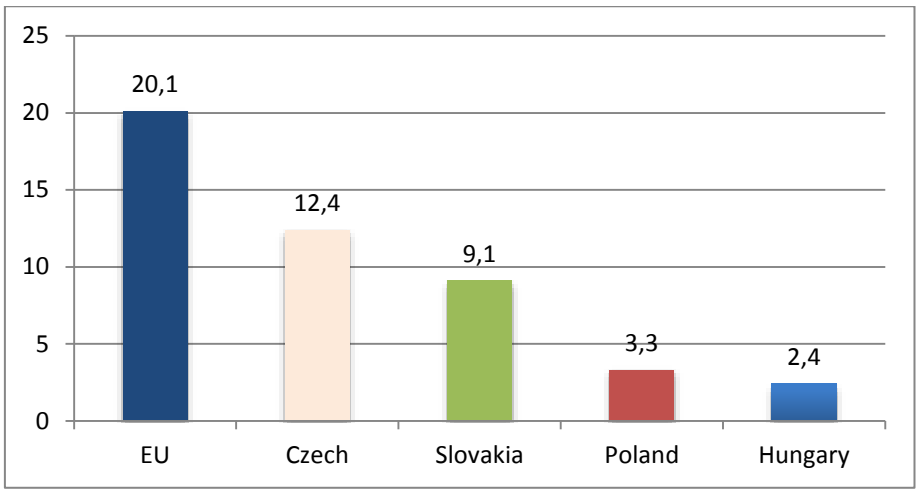

Figure 9 Share of total organic crop area out of total utilized agricultural area (in %) in V-4 countries, 2010
Source: own study based on Eurostat data

The number of organic producers was 227, 641 (1, 9 % of total number of agricultural holdings) in EU-27 in 2010 and the organic area used by them was 9,179,900 hectares (5, 2 % of total UAA). The biggest number of organic holdings were in Italy (41,807), Spain (27,877), Austria (22,132), Germany (21,942), Greece (21,161), France (20, 645) and Poland (20,578).
The biggest crop area under organic farming is in Spain–1,615,047 ha and Italy–1,113, 742 ha. Areas with 500 thousand hectares and over organic crop area were also recorded in Germany, France, United Kingdom, and Austria and in Poland.
Taking into account the share of total organic crop are out of the total utilized agricultural area in particular Member State of EU, we could identify the following countries, that have implemented a system of organic farming to the greatest extent: Austria (19 %), Sweden (14,3 %), Estonia (12,8 %), Czech Republic (12,4%), Latvia (9,2 %), and Slovakia (9,1%) (Figure 9).

Conclusions
The review of developments in the agricultural sector of the V-4 has led to a number of conclusions. First of all, EU accession has had a significant impact on V-4 states agricultural performance. The role of agriculture has further decreased in the national economies, agricultural output has somewhat changed. However, the EU enlargement has in general view the positive impact on agricultural and rural development, first of all farm income and profit's point of views. Furthermore, the enlarged EU market, containing around half a billion people, offers great opportunities for agricultural products from V-4 states. There has been a significant increase of farming incomes in the V-4, mainly due to agricultural subsidies, while initial differences have remained among countries.
The development in some states was not uniformed due to the pre-accession and post-accession policies, as well as activities and the diverse starting positions of agricultural sectors. It was confirmed that the consolidated larger holdings and agricultural enterprises have certain advantages, while the small holdings are facing some challenges. However, in the V-4 state was also confirmed that they are posing with low potential for competition with more experienced partners from EU-15 states in the arena of the open market. This result is in line with research made by Csaki, Jambor, (2010) and Kiss, (2011).
The EU accession has scaled-up the investment inputs into the agrarian sector. The cultivation programmes in crop production are more simplified with regard of the number of cultivated crops and with use of more environmentally friendly technologies. In the strong competition environment the negative impact was noted in animal production, where the production of meat had significantly declined (pork, beef, and poultry). The decline was about of one third.
In general, the EU's accession led to the number of benefits, but also caused many difficulties. The V-4 countries during the last decade became even more diverse, with regard of the farm size, outputs, share of the exported processed food products, education and age structure of the labour forces in general and farm managers. There are also differences in the approaches to the integrated crop production, organic

farming and to structure of the livestock and crop production. Each country did some progress, but there are also noted weaknesses. The dual approach to the support of farmers from EU-15 and EU-12, resp.V-4, led to the gaps which have significant non desirable impacts on agricultural sector. On the whole, it can be concluded that more targeted and locally adjusted agricultural policy programmes are needed in the very near future in order to restart the role of the agri-food sector as the supplier of the high quality and safe foodstuff for citizens.

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IDENTIFICATION OF LANDSLIDE SENSITIVE AREAS FOR PLANNING DOCUMENTS

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Abstract
The landslide risk mapping procedure using GIS technology was developed in the co-operation of scientists at the Institute of Geonics, Czech Academy of Sciences, Ostrava and Technical University of Ostrava, Czech Republic. The procedure is based on the application of standard data available in the public databases in a raster form, the vector form of data is accessible for the disaster management staff only. The risk assessment respects relevant territory features, as slope, aspect, geology, soil humidity, drainage network, land use, registered landslides. All the features were assessed using 0-3 mark scale. The summarization of individual feature assessment provides the final level of the landslide risk in the area. The final resolution of mapping outputs is decimetres. The risky areas were highlighted in the 100 m wide buffer zones along the built objects and technical infrastructure. The resolution of the landslide risk map allows its usage in the master plans. The reliability of the mapping procedure and the risk map ware verified on example of the extreme rainfall in the area tested as example.

Keywords: landslide, risk assessment, GIS, territorial planning

JEL Codes: Q51, Q57, Q58

Introduction

Natural disasters (disasters) cover the wide range of extreme natural processes - natural hazards (threats) - that are localized in time and space and affect human society, where cause the loss of human lives, material damage, disable technical infrastructure in the landscape. Among the natural hazards are also geological and geomorphological hazards (Mazur, Ivanov, 2004), also referred to as geological hazards (e.g. Smith, 2002), which include landslides. It should be noted that the term geohazard is being implemented at present that encompasses natural disasters that are associated with the processes taking place in the rock environment of the Earth. Landslides are also reported within these geohazards.

While the Czech Republic is known of cases of damage to property caused by landslides, human casualties are fairly sporadic. But reports about the number of victims caused by rapid landslides come the world (Tůma, 2000). Mountain and highland residents, settlements and their visitors are particularly at the risk, when considerable elevation difference along a path between an outbreak of mass movement and endangered sites make hundreds of meters or more. Due to the nature of the territory of the Czech Republic, where an important role of the relief diversity with a significant presence slopes is played, the dynamic processes operating on the slopes with intensive land forming effect are significant. These processes work depending on the individual parts of the slope, the nature of the climate and terrain developmental stage. In the geomorphology, the slope processes are distinguished by genetically active medium, which can be a mass movement factor (e.g. gravitational, fluvial, cryogenic slope processes, slope processes associated with the effects of ground waters, biological slope processes (see Demek, 1987). Land sliding (Nemčok, 1982) is a relatively rapid short sliding movement of the rock mass slope along one or more sliding surfaces. The final form of movement is a landslide. Land sliding is therefore a slope process, one of gravitational motions.

Landslides are one of the main processes that degrade the landscape. Potential (susceptibility) for the formation of landslides depends primarily (Micu, et al., 2010) on the geological structure of the landscape in a given space, the nature of rocks, terrain morphometry, land use changes and current land use. But also soil hydrological groups and river network have to be taken into account. The potential is then activated by spring rain falling on a snow cover or summer intensive rainfall, or the earthquake. Shallow to deep landslides can be generally activated by accumulated rainfall in the range of 30 mm/24 hours, or above 50 mm/48 hours, or above 100 mm/72 hours (depending on the experience from the Romanian Carpathians - Micu, et al., 2010). In the recent period a number of scenarios for predicting the occurrence of landslides

have been developed (see Chung, Fabri, 1999 Zezere, et al., 2004). The most of them are based on the relationships between existing landslides and factors of their acceleration. Experimental probabilistic equations will include the following variables: aspect, slope, land use, geological structure and character of the soil. The experience from the Romanian Carpathian Foothills (molasse in the Carpathian Bend) shows that most landslides (usually shallow) are located on the slopes with the inclination of 5-15° (55%) and 15-30° (36.2%) and equably on sunny and shady slopes (Balteanu, Micu, 2009). The Czech Geological Survey has developed the evaluation methodology of the area land sliding susceptibility (Kycl, et al., 2008 – "The GIS analysis of the susceptibility of slopes to the mass movements"). The resulting map of the territory then represents the slope susceptibility to land sliding, rather than displaying the overall threat to this natural phenomenon, since it ignores the land slide trigger, a causal rainfall, earthquake or human interventions leading to mass mobilization on a slope.

Natural disasters have a different impact on the developing or on developed countries. In the latter ones, it is usually incomparably easier due to their financial and technological advancement, to response to the problem and to carry out subsequent rehabilitation of the territory. A number less wealthy countries often depend on sustainable forms of tourism, which usually have a major impact and impact on the development of local communities. The presence of extreme natural phenomena directly threatens these communities, because of their income, quality of life and social development are directly proportional to the development of tourism. Therefore, if the effect of climatic and other changes occurs (e.g. the impact of climate change on nature near tourism in Nepal) (Nyaupane, Chhetri, 2009), in practice, as the first drops significantly the standard of living of these communities. That is why it is necessary to include natural hazards into the consideration during the planning stage of the future development of the territory, whether as part of disaster management or sectoral measures, for example in tourism (Becken, Hughey, 2013).

Strategic and development plans have undoubtedly to take into account the safety of the population, territory, or objects. These considerations have to be appropriately reflected in the planning documents. All of these documents can also beyond the scope of existing information on the potential risks gain more added value, both of the available documents on risk areas and the emergency plans of enterprises and institutions. The territorial risk assessment in terms of slope mass movements should be part of the planning documents.

Data sources and their application for the purposes of land slide risk assessment

Data available from various sources in the Czech Republic allows realize on sufficient level the territorial risk assessment in terms of land sliding and identification of sites that deserve the utmost attention to the disaster staff in the event of a threat (Table. 1).

Table 1 List of input data necessary to assess the current land slide risk

Ord. No.	Area of knowledge	Geo-data title	Administrator
1	administrative division	CSU_US_obce	ČSÚ
2	geomorphology	Digital elevation model of the 4th generation	ČÚZaK
3	geology	Geological map of CR 50	ČGS
4	geology	List of slope instabilities	ČGS
5	soil science	Permanently and seasonally waterlogged soil	VÚMOP
6	land use	ZABAGED – forest, meadow, buildings, infrastructure	ČÚZK
7	hydrometeorology	Weather radar data	ČHMÚ
8	hydrometeorology	Area saturation index	ČHMÚ

Source: Own processing based on own data collection

The procedure of the area evaluation in terms of land sliding risk can be divided into a sequence of steps

Step 1: Territory risk assessment with respect to geological conditions – the overall area risk level according to the presence of major geological units
The evaluation is based on data from the Basic geological map of the Czech Republic of the scale of 1:50 000. The content of geological maps must be first assigned to the purpose (and reclassified in GIS) in terms of the susceptibility of various rock to the slope movement. The rock risk assessment from the perspective of land slide is a matter of expert assessment (Tab. 2).

Table 2 Risk classification of rocks in terms of susceptibility to land sliding

rock type	risk class
rocks little prone to land sliding	1
rocks moderately susceptible to land sliding	2
rocks very susceptible to land sliding	3

Step 2: Delimitation and evaluation slopes with risky inclination in GIS
The DEM of the 4th generation is used to derive the relief characteristics affecting the character, development and course slope processes. The basic local terrain characteristic is the slope. It is reasonable to assume that the higher slope inclination gives the more labile position of the masses of rocks on the slope. We must however take into account the fact that the slopes of the higher inclination are covered with permanent crops, mainly forests, which serve for some time and to some extent as a stabilizing factor to shallow layers of material. The area waterlogging after antecedent heavy precipitation activates first the slopes of the higher inclination where are existing of weakened material coherence layers. Extremely inclined slopes allow the accelerated rainwater runoff without a strong saturation in rocks. Rather, they are subject to rock falls in the case of bedrock outcrops. Slopes with extreme inclinations (over 45°) do not occur in the area of interest. The classification of slopes is presented in Table 3.

Table 3 Classification of slopes in terms of susceptibility to land sliding

slope	risk class
0 – 7°	0
7 – 15°	1
15 – 25°	2
above 25°	3

Step 3: Identification of slope aspects and their evaluation in terms of susceptibility to land slides
In the Czech Republic, the slope aspect shows its impact vicariously through the moisture management. The slopes of northern exposures generally receive more precipitation at the reduced evaporation. This potentially increases their susceptibility to land sliding. The southern slopes drying up earlier and in this respect they are potentially more stable. The applied assessment is demonstrated in Table 4.

Table 4 Classification exposure slopes in terms of susceptibility to slumping

aspect	risk class
plain (0-3°)	0
S	1
SE	1
SW	1
E	2
W	2
NE	3
N	3
NW	3

Step 4: Determining the presence of registered landslides and their classification into three risk categories according to the listed characteristics
The landslides registered in the database of the Czech Geological Survey (the "Register of slope instabilities") are conducted in three categories: stabilized, temporarily stabilized and active. In terms of activation in the presence of causal rainfall, respectively of a trigger of another origin, these landslides are assessed in three levels of risk (Tab. 5). Their presence in the area can potentially increase the risk of the land sliding process. But new landslides may occur in favourable conditions and there is no need to be limited in assessing risk areas in terms of land sliding only on known recorded landslides.

Table 5 Classification of registered land slides in terms of susceptibility to land sliding

type of landslide	risk class
none	0
stabilized	1
temporarily stabilized	2
active	3

Step 5: Risk classification of soil conditions in terms of susceptibility to land sliding
The soil map derivatives dealing with soil humidity conditions are important for the land sliding risk assessment as increased soil moisture, either continuous or periodical, reduces not only the soil consistency, but also the soil parent material. The degree of risk is based on the occurrence of soil units with seasonal or permanent moisture saturation (tab. 6).

Table 6 Classification of soils with different humidity regime in terms of susceptibility to land sliding

soil water saturation	risk class
other	1
periodical	2
continuous	3

Step 6: Territory land slide risk assessment with respect to land use
Permanent cultures have some stabilizing effect on the rock mass on a slope, regardless of the amount of failed rainfall. If there is a tectonic fault close the surface allowing infiltration of rainwater to the shear or weakened area, the stabilizing effect of the root systems may be applied only superficially, respectively into the subsurface depth massively reached by roots. Yet, some permanent cultures, especially forest can be attributed to a stabilizing effect against land sliding. Forest areas as a key mass movement retarding factor are represented in the ZABAGED database as a layer of "forest" and "scrub vegetation with trees." Other forms of land use are also favourable of land slides on different levels. The risk degree of areas is determined conventionally by stabilizing role of vegetation (Tab. 7).

Table 7 Classification of land use in terms of susceptibility to land sliding

land use	risk class
forest	1
scrub	2
pasture/meadow	2
bare soil/built-up area	3

Step 7: Territory land slide risk assessment with respect to distance from watercourses
Water objects pose a risk to the stability of the slope mainly because they represent a source of water that can get by wicking into the material on the slope and thus reduce its internal stability. Traditionally, the risk zones) are calculated with widths of 25 m, 50 m and 100 m on both side of streams, respectively of other water bodies in the Czech Republic (by Czech Geological Survey (Tab. 8).

Table 8 Classification of area with a different distance from the water body in terms of susceptibility to land sliding

distance from streams and water objects (m)	risk class
>100	0
50 - 100	1
25 - 50	2
0 - 25	3

Step 8: Summarisation of partial risks values

The summarisation of detected partial land slide risk values computed for individual localities raster network is a simple and easy to understand process, without the need to weight the importance of individual factors. This method is more sensitive to the number of partial assessments, since the absence of one of the sub-evaluation leads to the change of the resulting sum because it assumes the same importance (weight) of all relevant factors. The final land slide risk map demonstrates 3 categories of the area susceptibility land sliding (the overall classification distinguishes 3 risk classes). The highest risk level is relevant for the future territorial planning (Fig. 1).

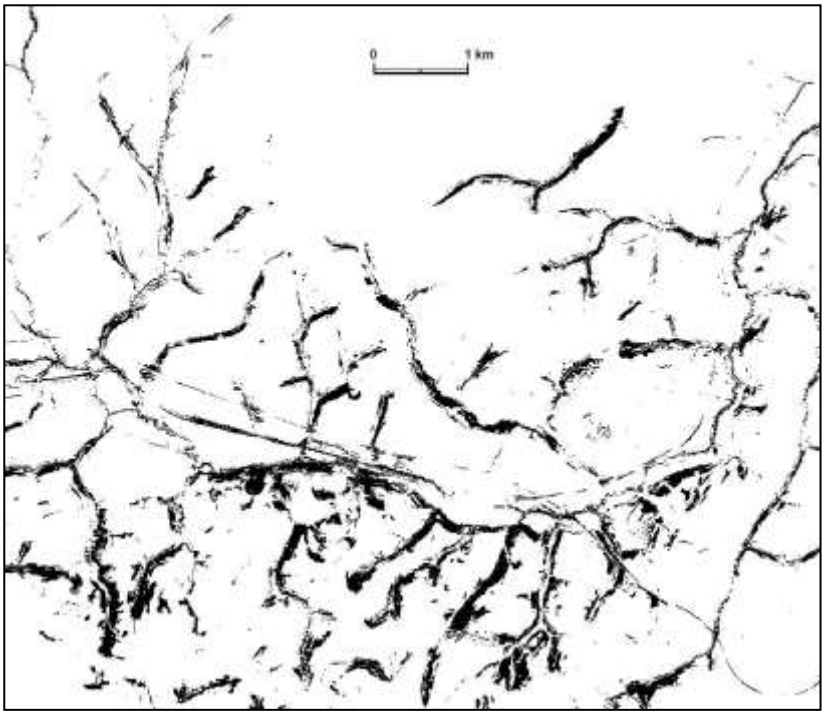

Figure 1 Example of land slide risk assessment using GIS. Presentation of the highest risk level areas. Luha River catchment, Oder River tributary, NE Czech Republic

The evaluation results show that if registered landslides are taken into account the final evaluation of the monitored area considerably more homogenous. However, not always are sites with the presence of all land slide types located in the territory of the increased land slide risk. Many of them, especially stabilized and "dormant" land slides, are found in the environment without any signs of the increased land slide risk. Our verification of the accuracy of the highest-risk area identification was held in connection with the last enormous rainfall period in June 2009. All of land slides, occurred shortly after that time of torrential rainfall, originated in the areas designated to be the riskiest. Altogether it happened in forest, respectively in scrub-covered areas with trees suggesting a weak stabilizing role of permanent woody vegetation.

Reflection of the land slide risk areas in spatial planning needs

Risk locations in the neighbourhood of settlements and technical infrastructure are critical for their functioning. From a practical point of view, it is not possible to monitor all the risky areas in the administrative area if the causal conditions (or other trigger) occurred. Conversely, the attention must focus on areas where is a threat to lives and property. Therefore it is an area in the built-up and technical infrastructure zone, represented e.g. by the road, rail and electricity networks. Any disruption of their functionality may acquire a wide range of consequences, including fatal ones.

It is possible to identify reliably the elements of technical infrastructure networks in the ZABAGED geodatabase. Similarly, it is also possible to identify different types of built-up areas. A strip with the width of 100 m on the side of the objects can be considered as a protective zone around such objects. The technical standards define exactly the extent if the safety zones around various types of technical infrastructure, but these measures mainly relate to possible human interference in their existence. In terms of the land slide threat it is useful to sount with a safety zone (buffer) with a width of 100 m. Such width of the buffer zone probably will not be enough to protect the infrastructure element in the dissected areas with the high relief energy. However in any case, the deployment of the monitoring in this zone can detect a real risk (Fig. 2)

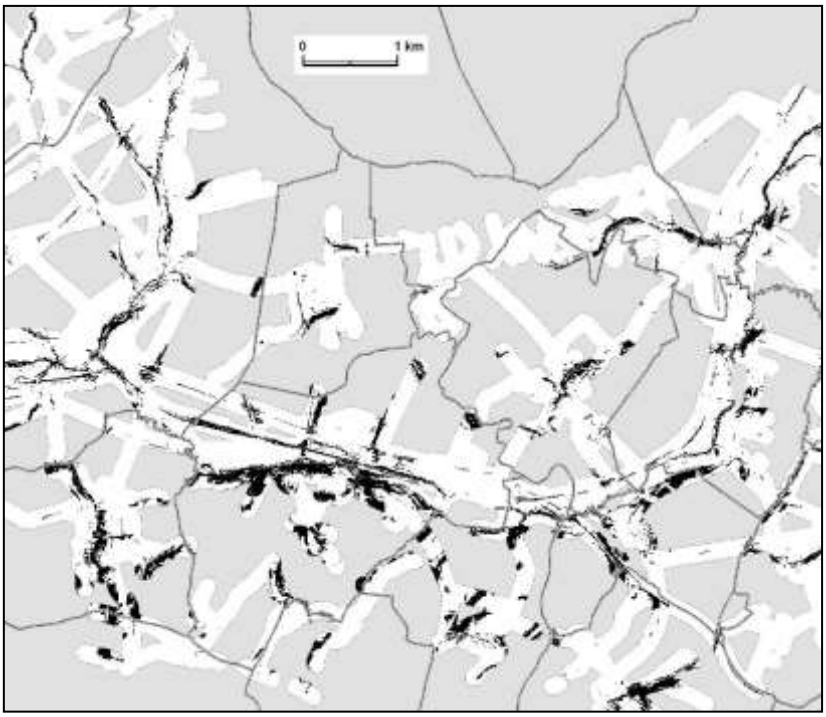

Figure 2 Territorial distribution of areas with the highest land slide risk within 100 m wide buffer zones along built-up areas and technical infrastructure Luha River catchment, Oder River tributary, NE Czech Republic

A combined display of the most dangerous areas along with the localities of registered landslides and fundamental topographic elements of the area of interests can provide a key overview about the territorial relationships between the risks, residential structure, terrain and technical infrastructure. Such study output display will help the local administration to decide on the targeting of monitoring in case of need and at the same time on the need for incorporation of risk sites into the planning documents (Fig. 3).

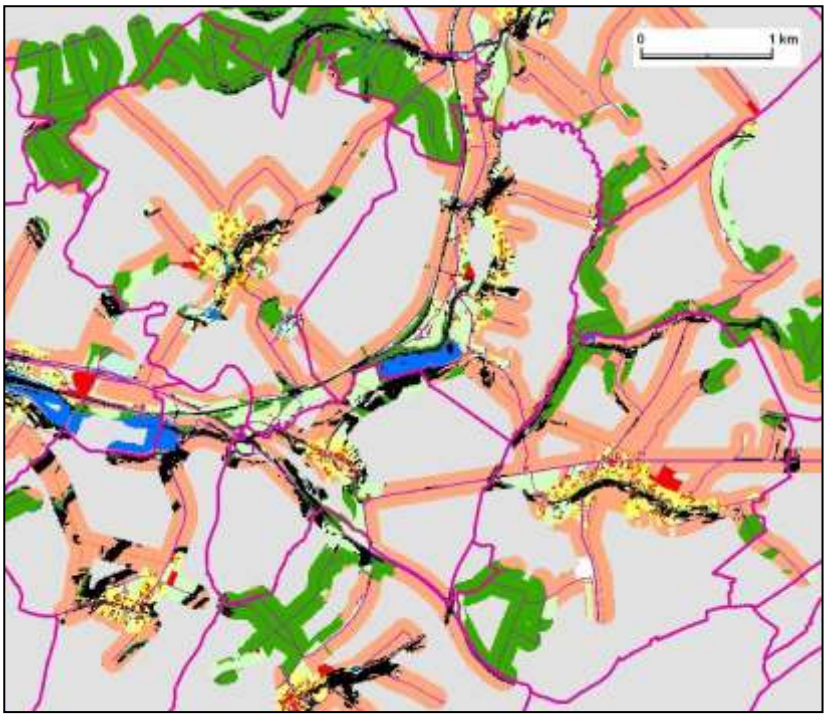

Figure 3 Presentation of areas with the highest land slide risk level (in black) in safety zones over present land use (in other colours) within cadastral borders (in purple). The data resolution allows compile the planning documentation in the scales from 1:10 000 to 1:5000

The application of knowledge on land slide risk areas lies in the fact that the future construction projects have to avoid such sites and the infrastructure will be guided to minimize eventual damaging caused by land slides.

Conclusion

However the natural risk assessment is becoming part of the planning documentation, the attention is preferentially paid to sites threatened by floods. The risk of landslides stands out of the spotlight. The procedure demonstrated above is feasible because of its simplicity (with the assistance of a regional expert in geology) at any location. The local community is able to order a similar type of the assessment on a commercial basis. Insurance companies and the state government have certain options also available to order and publish expert assessments for areas threatened by landslides as they have done for flood risk areas. Such material would certainly be welcomed by the general public.

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THE AGRICULTURAL LAND IN TERMS OF CURRENT ACCOUNTING AND TAX LEGISLATION OF THE SLOVAK REPUBLIC

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Abstract
For farmers and agricultural enterprises the agricultural land including labour and entrepreneurship are considered as basic economic resources. The landlords of agricultural land, respectively the land users, consider the land as goods convertible for financial sources. The objective of the article is to present the agricultural land as an economic category based on the current accounting and tax perspective. Pursuant to the Slovak accounting and tax legislation and IFRS the agricultural land is generally treated as a non-depreciable tangible asset, recorded at acquisition costs. The article presents the relation between the agricultural land area and the amount of land tax in the selected sample of companies of agricultural primary production in the Slovak Republic within the period from 2010 to 2014. Based on the an**alyses** the slow decrease in the area of the agricultural land has been reported in the selected commercial companies and agricultural cooperatives in the observed period. The growing trend of land tax per 1 hectare of agricultural land in both legal forms of companies is considerable**.**

Keywords: agricultural land, asset, acquisition costs, land tax

JEL Codes: R52, H29, O52

Introduction

The United Nations Organization has declared the year 2015 as the international year of land. The land is usually a limited resource; therefore the soil protection is inevitable.
The Slovak Republic (hereinafter "the Slovak Republic" or "SR") declares that the land of the Slovak Republic is the mutual wealth of all state citizens and the heritage of future generations. The land is a natural source in comparison with water (Sobocká, 2015). It is and it will stay the base of environmental, ecological and social potential of the Slovak Republic and therefore it must be carefully treated and protected from harm and unjustified reduction of its area and content.
The agricultural land represents the basic economic resource in the agricultural sector and by it is treated between three basic producing factors of market economy. Its characteristics are that is not reproducing, not transferable and its total extend is determined by area, which can be integrated into the agricultural production (Bielik and Turčeková, 2013).
The majority of our territory is covered by the agricultural land and forest. The emphasis is set on the agricultural land of small farms but as well as large agricultural companies and its crucial task is to determinate the health rural economy and the creation of rural country (Králiková, et al., 2013).
Land and resource policy is the key to future economic and social development. Land tenure plays also a vital role in achieving sustainable rural development (Schwarcz et al., 2013).
Land is a part of property, plant and equipment presenting the essential part of assets in each accounting entity. The decisions on fixed assets acquisition and on acquisition of financial resources needed for land acquisition belong to the strategic management decisions because they significantly influence the future development and the effectiveness of activities in a particular subject. Land is determined for longer usage than one year and therefore it can be the resource of economic benefits for several years in a particular accounting entity (the increase in cash). The main task of this asset is to secure, support and extend the existing business activities (Baštincová, 2009).
By the entrance of the SR to the EU the land has become the basic tool for the acquisition of subsidies from the Common Agricultural Politics. Direct payments are acquired by the subject, who farms regardless the land ownership (Serenčéš et al., 2014). In the year 2012, 23 years after the change of social conditions, the crucial part of agricultural land is still farmed by subjects with large area of farmed land.

Local taxes, which can be levied by a municipality, include property tax (land tax, building tax, apartment tax and tax on non-residential premises within apartment buildings). Local taxes have facultative character as they become mandatory after their introductions in the generally binding regulation of a municipality (Bojňanský et. al., 2013). Municipalities are entitled to decide which types of local taxes will be levied in their territories.

Material and Methods

The objective of the paper is to present the agricultural land as the most important economic category in terms of the current accounting and tax perspective.

In particular, the paper presents a theoretical view on the accounting and tax consideration of the agricultural land. Therefore, the selected provisions of the Act no. 431/2002 Coll. on Accounting as amended (hereinafter referred as "Act on Accounting") and related accounting regulations are to be taken into consideration. The provisions of the Slovak accounting laws on land are compared with the provisions of the International Financial Reporting Standards (hereinafter referred as "IFRS/IAS"). Further, the agricultural land is to be taken into account according to the Act no. 582/2004 Coll. on local taxes and fees for municipal waste and small construction wastes as amended (hereinafter referred as "Act on local taxes"). The land tax is to be "treated as the source of income of the municipalities. Further, the land tax is considered from the Slovak Income Tax perspective, i.e. the Act no. 595/2003 Coll. on Income Tax as amended (hereinafter referred as "Income Tax Act") is also taken into account.

Subsequently the article deals with the development of selected factors, namely the area of agricultural land and the amount of land tax in the selected sample of companies of agricultural primary production in the SR which consists of 546 commercial companies ("CC") and 432 agricultural cooperatives ("C") in the observed years from 2010 till 2014. Data resource is presented by the Information Letters of the Ministry of Agriculture and Rural Development in the SR. The statistical data related to the agricultural land of the Slovak Republic are to be included.

Selected description characteristics are calculated for before mentioned analysed factors – point and interval estimate of mean, standard error of mean estimate and standard deviation, which is a measure of dispersion. Point estimate is realized by a unique value and interval estimate by figure interval covering the value of factor with certain reliability. Point and interval mean estimate (95% reliability interval) of selected factors in individual groups is calculated in accordance with the combination of levels – company and year.

The most common from averages is the arithmetical average $\bar{x}$, which is calculated from found values x_1, x_2 ... x_n, as follows:

$$\bar{x} = \frac{x_1 + x_2 + ... + x_n}{n} = \frac{\sum_{i=1}^{n} x_i}{n} \quad (1)$$

The most significant rate from the variability characteristics is a variance s^2:

$$s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n} = \frac{\sum_{i=1}^{n} x_i^2 - \bar{x} \sum_{i=1}^{n} x_i}{n} = x^2 - \bar{x}^2 \quad (2)$$

The variability of the statistical character in the original units of measurement is often described by means of positively taken square root of the variance, called standard (SD) deviation s:

$$s = \sqrt{s^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n}} \quad (3)$$

Standard error of the estimate sample mean $s(\bar{x})$ is calculated at an unknown standard deviation of basic sample σ and a sample range n:

$$s(\bar{x}) = \frac{s}{\sqrt{n-1}} \quad (4)$$

The acquired results of description characteristics are visualized in the paper.

Selected results of the analyses are compared with the trend of the agricultural land area in the world and in the SR. In this respect, the statistical data related to the agricultural land of the SR are to be included.

Furthermore standard methods of scientific work as selection, analysis, comparison, synthesis and deduction are used in this paper. It should be noted that selected provisions mentioned in the article have taken into consideration as at 30 November 2015.

Results and discussion

Pursuant to the accounting legislation in the Slovak Republic the land, i.e. agricultural land, is treated as the non-depreciated property, plant and equipment regardless the acquisition costs.

An accounting entity records the fixed assets if an accounting entity has ownership rights or administration rights in case of state, municipal, or higher territorial unit assets, as well as in case an accounting entity does not have ownership rights or administration rights to assets if assets are acquired by an agreement in which the ownership right or administration right is transferred by approval of entry into the land register, and used by an accounting entity before ownership or administration transfer, (the Measure of the Ministry of Finance of the SR no. 23054/2002-92 stipulating the details of accounting procedures and framework chart of accounts for entrepreneurs keeping double entry accounting as amended, hereinafter referred as "Accounting procedures").

Land is reported in non-current tangible assets or non-current financial assets. In case of non-current financial assets, the land is presented by the land acquired for the purpose of long-term deposit of free cash, (Accounting procedures).

Land is initially measured as at the date of accounting transaction. Depending on the manner of acquisition the land shall be measured at acquisition costs or in several specific cases at fair value. Acquisition costs are costs for which the land has been acquired and costs related to its acquisition. Fair value means a market value, a valuation by qualified estimate or by expert opinion in case a market value is not at disposal or does not provide the correct fair value, (the Act on Accounting). Land is reported in the balance sheet accounts of financial statements.

As regards the historical relations of accounting and tax regulations which are significantly projecting in the area of property, plant and equipment, the issue is solved from the accounting point of view and at the same time from the tax point of view. Except for the Slovak legal arrangements the arrangement set in IFRS/IAS is taken into account (Baštincová, 2009).

Pursuant to IAS 16 (Property, Plant and Equipment) land becomes a separate class of property, plant and equipment. The land has an unlimited useful life and therefore is not depreciated. Further, according to IAS 16 property, plant and equipment are tangible assets that (i) are held for use in the production or supply of goods or services, for rental to others, or for administrative purpose; and (ii) are expected to be used during more than one period.

In accordance with IAS 16 the land can be reported in acquisition costs. Acquisition costs are costs for which the land has been acquired and costs related to its acquisition, the same statement set in the Slovak accounting standards as well as in the International Financial Reporting Standards.

The Income Tax Act is characterized by close links to accounting standards in the valuation of assets (Baštincová, 2009). Pursuant to the Income Tax Act the property, plant and equipment is treated as fixed asset while the land is according to the accounting legislation as fixed asset not depreciated. In terms of above mentioned, the land shall be excluded from depreciation for tax purposes and is reported at acquisition costs.

In accordance with the Act no. 220/2004 Coll. on the protection and use of agricultural and the amendment of the Act no. 245/2003 Coll. on integrated prevention and control of environment pollution and the amendments of other acts (hereinafter "Protection Act") the agricultural land is understood as the productively potential soil registered in the land register as arable land, hop-gardens, vineyards, orchards, gardens and perennial crops.

For registration purposes in the land register the particular types of land are divided as follows: (i) arable land, (ii) hop-gardens, (iii) vineyards, (iv) gardens, (v) orchards, (vi) perennial crops, (vii) forest land, (viii) water areas, (ix) built-up areas and courtyards, (x) other areas. The Act on local taxes follows the division of land and inter alia it defines the calculation of land tax and contains provisions, which relate to the administration of land tax.

In accordance with the above mentioned legal norms the subject of tax is the land in the following classification: (i) arable land, hop-gardens, vineyards, orchards and perennial crops, (ii) gardens, (iii) built-up

area and courtyard, other places, (iv) forest land, where are the economic forests and ponds with fish farming and other economic used water areas and (v) construction land.
In general, the taxpayer of land tax is the landowner or the administrator of land in a state ownership, the administrator of land in a municipality ownership or the administrator of land in a higher territorial unit ownership registered in the land register. It means that taxpayers are except for legal persons – entrepreneurs who own the land respectively the agricultural land.
The tax base of arable land is the land value without crops determined by the multiplication of land area in m^2 and the land value per $1m^2$ stipulated in the appendix No. 1 of the Act on local taxes. The value of arable land and perennial crops is divided in accordance with the cadastral territory. In case of Nitra region the value of arable land is in the amount EUR 0,6798 and the value of perennial crops in the amount of EUR 0,1301.
The annual land tax rate is 0,25%. The annual land tax rate might be increased or decreased by the tax administrator by means of generally binding regulations for a particular tax period.
Subsequently the land tax is calculated by multiplying the tax base and the annual land tax rate.
Land tax administrator is the municipality in which the land is situated. It means that the land tax is the income of municipality budget. Therefore, the amount of land tax is significant from the regional and rural development point of views.
Pursuant to the Income Tax Act the local taxes, which are paid in accordance with the Act on local taxes become taxable expenses, i.e. expenses, which have been incurred by the taxpayer in order to generate, assure, and maintain income. It means that the land tax is treated as tax deductible expense for the taxpayers. In connection with above mentioned, the development of average agricultural land (AL) area is assessed in the selected sample of companies of agricultural primary production in the SR (Fig. 1), which achieved a slightly decreasing trend in the observed period of year from 2010 to 2014, while agricultural cooperatives (C) in comparison with commercial companies (CC) are characterized by a higher average area of agricultural land and they report a predominance over the average of such assets in commercial companies.

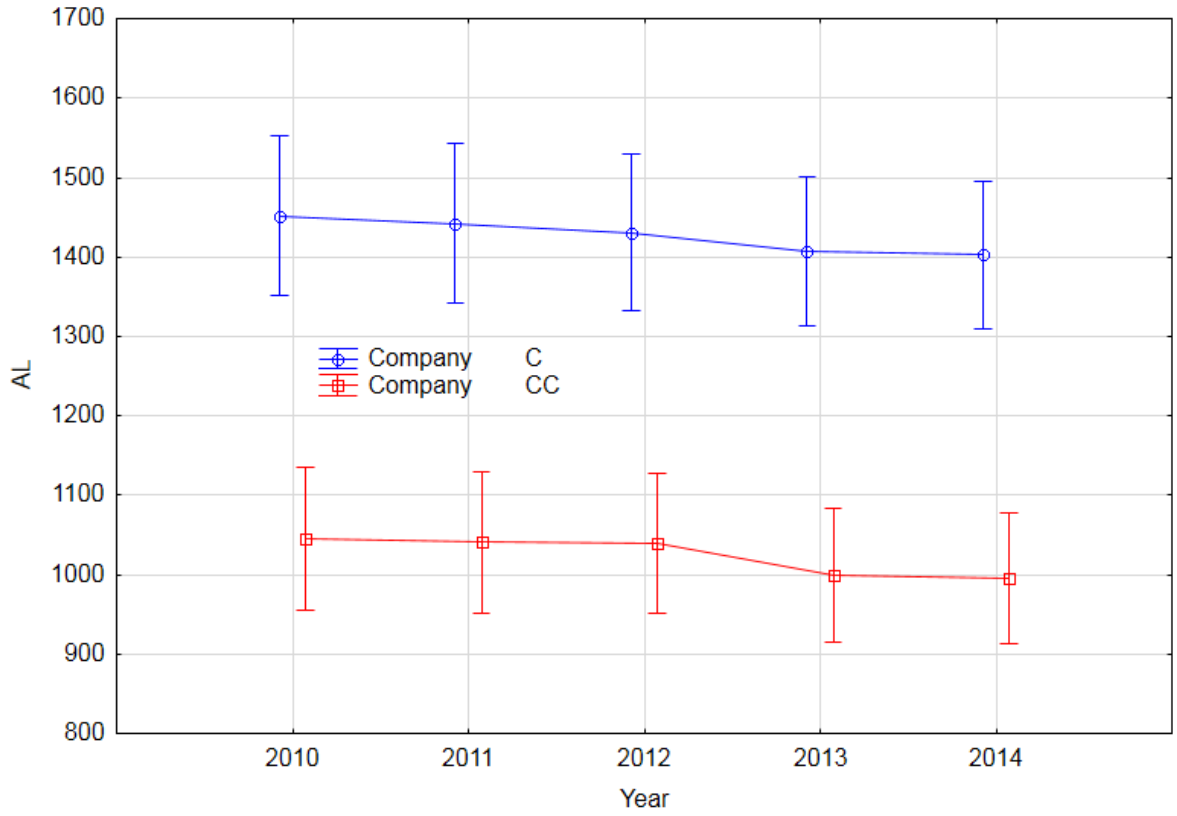

Figure 1 Average and reliability interval for the area of agricultural land in the years 2010-2014
Source: own processing based on the data presented in the Information letters of the Ministry of Agriculture and Rural Development of the Slovak republic

The more significant decrease in the area of agricultural land was determined in both legal forms in the year 2013. In the year 2014 the area of agricultural land in cooperatives was in the interval amount of EUR 1 310,136 - 1 495,193 hectare with 95% reliability. Commercial companies reported lower area of agricultural land in the interval amount of EUR 911,581 - 1 078,866 hectare in the year 2014. Analysis was conducted in the sample of agricultural companies including commercial companies and cooperatives due to the fact that from the legal entities farming the land, cooperatives and commercial companies are dominant (Adamišin and Kotulič, 2010).

It can be stated that the above mentioned corresponds to the total trend of decrease in the area of used agricultural land in the Slovak Republic as well as in the world. The area of used agricultural land presented 1 921 157 hectares in the year 2014 and decreased by 7 351 hectares (0,38%). All types of land participated in the total decrease in the area of used land. Arable land decrease by 0,2% (2 911 hectares), home gardens by 0,1% and the area of permanent grassland by 0,6%. The area of perennial crops decreased the most significantly (8,1%) (Report on agriculture and food sector in the Slovak Republic 2015).

According to data from the Faostat the area of agricultural land in the world presents 4,9 billion of hectares, i.e. 37,8% from the total land in the world (13,0 billion of hectares). The area of agricultural land in the world slightly decreased in further years. The ratio of arable land in the agricultural land, i.e. the level of arable land currently amounts to 28,4%. The highest area of agricultural land is in China, the USA, Australia, Brazil and in Russia where is the highest area of arable land. The highest ratio of arable land in agricultural land is in the South Africa (79,1%), India (60,5%), China (55,7%), Argentine (53,9%), Australia (53,3%) and Mexico (53,1%). In the European Union it is 44,3%, (Report on agriculture and food sector in the Slovak Republic 2014).

The development of agricultural land is characterized by more rapid decrease of its area in the developing countries with a higher intensity of agricultural production, and increase in the developing countries with the prevailing extensity of agricultural production, (Report on agriculture and food sector in the Slovak Republic 2014).

Table 1 Land area in the SR in hectares

Indicator/year	2013	2014	Index 2014/2013
Used agricultural land	1 928 508	1 921 157	99,62
including: arable land	1 362 002	1 359 091	99,79
perennial crops1)	20 463	18 807	91,91
home gardens	32 339	32 318	99,93
permanent grassland	513 704	510 801	99,43

Source: Statistical office of the SR, NPPC – VÚEPP (Research Institute of Agricultural and Food Economics)
Note: 1) vineyards, vineyard areas in reclamation, orchards, hop-gardens, other perennial crops

In the observed years from 2010 to 2014 the average value of land tax calculated per hectare of agricultural land increased in both legal forms of companies (LT in EUR per hectare AL), while the development of this factor (Fig. 2) is connected with the reported area of agricultural land in companies.

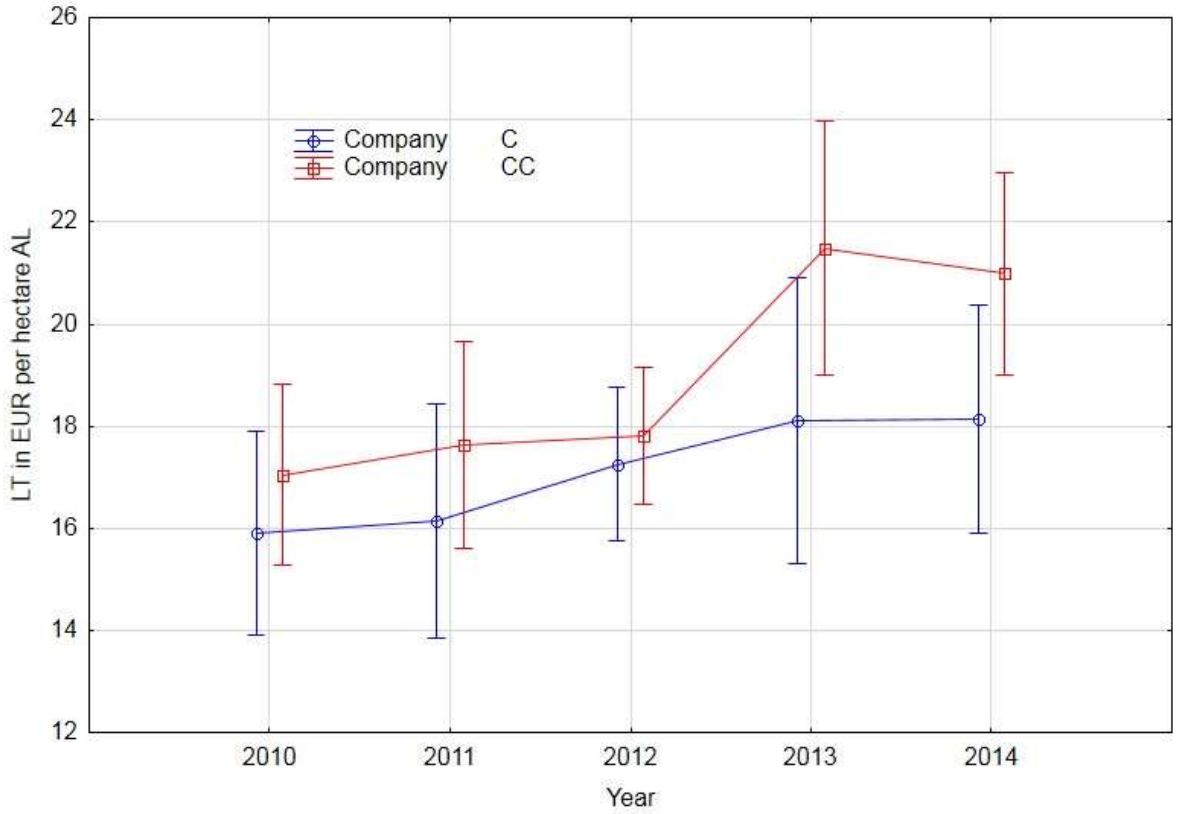

Figure 2 Average and reliability interval for the land tax in the years 2010-2014
Source: own processing based on the data presented in the Information letters of the Ministry of Agriculture and Rural Development of the Slovak Republic

The year 2013 is characterized with more significant increase in the amount of land tax in both legal forms of companies while in this year the highest average value of land tax is in commercial companies in the amount of EUR 21,48355 and in the amount of EUR 18,11311 in cooperatives. In the year 2014 the amount of land tax calculated per hectare of agricultural land in cooperatives was in the interval amount of EUR 16,89731 - 19,38943 with 95% of reliability and in commercial companies in the interval amount of EUR 18,52389 - 23,45497 and for both legal forms totally in the interval amount of EUR 18,24941 - 21,21514.

Conclusion

The land presents the crucial natural source and at the same time economic and eco-social potential of the Slovak Republic. Its multifunctional and multisector importance presents the need of indispensable interest of all in the sufficient area and the adequate quality of our soils.

In the legal arrangements of the Slovak Republic the determination of this issue prefers accounting and tax legislation. It can be stated that both areas are closely related. Pursuant to accounting and tax legislation of the Slovak Republic the agricultural land is considered as assets excluded from depreciation. Taxpayers of land tax are cooperatives and commercial companies who are, in general, owners of agricultural land. Land tax dominates in direct tax burden of companies of agricultural primary production in the Slovak Republic while its value depends on the area of agricultural land as well as the valid tax rate. This tax is the crucial income in the budget of a municipality who act as the administrator of land tax.

The area of agricultural land is the essential factor used for comparing of results in companies of agricultural primary production where the values of indicators are generally calculated per hectare of agricultural land. The calculation of selected descriptive characteristics and 95% reliability intervals for the area of agricultural land and the amount of land tax were used in order to present the results. The development of before mentioned factors was assessed in accordance with the legal forms of companies, separately for cooperatives and commercial companies, as well as for the observed years from 2010 to 2014. Cooperatives have a higher ratio in the agricultural land in comparison with commercial companies. In the observed period of years from 2010 to 2014 the area of agricultural land slightly decreased in the

selected sample of companies of agricultural primary production in the Slovak Republic in both types of legal persons. At the same time, the amount of land tax calculated per one hectare of agricultural land in the assessed group of agricultural companies increased during the observed years.

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POLITICAL BACKGROUND FOR MULTIFUNCTIONAL DEVELOPMENT OF RURAL AREAS IN TERMS OF EURASIAN INTEGRATION

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Abstract
Rural development promotes the improvement of the economic situation and living conditions of farmers and rural residents as well as the growth and quality of the goods, which are provided by the rural areas to the whole society. This paper defines the concept of "multifunctional development" as the one that refers primarily to sustainable development of rural areas in terms of Eurasian integration. The peculiarity of interstate regional integration in relation to the agricultural sector is that it causes a distinct production and trade of industry specialization in order to achieve this due to the competitive advantages of each state as integration in the domestic market and the integration of formation in general on the foreign market. Regional integration in the agro-food sector is a positive development, since it provides the weakening of the natural monopolies, an increase in the productive capacity of the integrating states reducing costs by introducing new technologies and, as a consequence, the increase in competitiveness of integrated education. In addition, thanks to the emergence of integrated agro-food groups it has increased the standards of living in rural areas, and improved the social infrastructure at the expense of employment and income.

Keywords: rural areas, multifunctional development, competitiveness, Eurasian integration

JEL Codes: Q17, Q18, R11

Introduction

Greater stability of the economy in rural areas is reached when the development is mixed, even in cases where there is a cost-effective dominant industry. This is due to a decrease in the risk of monospecialisation of rural areas, the involvement of underused potentials of rural areas.
Besides multi-functional rural development it contributes to the creation of attractive new jobs in the social sphere, construction, industry, tourism, forestry and water management (unrelated diversification) as well as new sectors of agriculture (related diversification). Thus it is necessary to distinguish the relatively stable development of rural areas based on a single prosperous industry and a more stable, long-term and integrated development of rural areas based on the involvement of all the potentials of multifunctional rural economy that is less dependent on market fluctuations and the exhaustion of resources.
The diversification of agricultural production is an important tool for improving the stability and versatility of the rural economy. Related diversification of agriculture is carried out by expanding activities within the industry (expansion of specialization, the range of agricultural production). It is often used for the employment of the rural population with an intensive release of manpower development in the main industry. An important direction of the development of the agrarian sector is to increase its diversification and innovation including the integration of large and small enterprises in solving the multifaceted problems facing the industry: the provision of food, raw materials, employment, and care for the rural landscape.

Research aim

The aim of this paper is to identify the key issues of multifunctional development of rural areas in terms of Eurasian integration.

Methods

The research was conducted according to the set of research methods - economic-statistical, monographic, abstract logic, calculation and constructive, comparative economic analysis, expertise and economic forecasting.

Results and discussions

Rural development as part of the development strategy of the EAEU

Nowadays there is a growing dynamics of changes in the world economy. Successive processes of creation of the Customs Union, the Common Economic Space, and now the Eurasian Economic Union are major geopolitical developments in the post-Soviet space in the XXI century. The formation of the EAEU is unprecedented in terms of scope and project tasks. As it is known, on 29 May, 2014 in Astana the leaders of Belarus, Kazakhstan and the Russian Federation signed an agreement on the formation of the Eurasian Economic Union, which came into force from the 1st of January, 2015. The EAEU was created to enhance the competitiveness of the national economies of States Parties individually forming integration as a whole. The economic potential created by the integration of the formation of the EAEU is attractive for other states. So, from the 2 January, 2015 the Republic of Armenia became a full member and, on 1 May, 2015 the Republic of Kyrgyzstan joined the EAEU. In order to ensure the development of agriculture and rural areas for the benefit of the population of each Member State and the Union as a whole, as well as economic integration within the Union to pursue they agreed (coordinated) on the Agricultural Policy. The Creation of the Eurasian Economic Union will contribute to the development of agricultural production of the member countries. The most important section of the Treaty establishing the EAEU is an agricultural policy. Currently, the interaction of the EAEU in the field of agricultural production is regulated by the Agreement on common rules for state support of agriculture of 9 December, 2010. This Agreement is made in order to limit the application of measures of state support for agriculture, distorting effects on trade between the Parties that are very significant concerns, but narrow the field of agriculture policy.

For the formation and implementation of the agreed (coordinated) agro-industrial policy of the Member States, the following documents were issued by the EAEU:

1. The Concept of the Agreed (Coordinated) Agricultural Policy of the Member States of the Customs Union and Single Economic Space (Decision of the Supreme Eurasian Economic Council at the highest level of Heads of State on 29 May, 2013 №35);
2. Action Plan to implement the Concept of the Agreed (Coordinated) Agricultural Policy of the Member States of the Customs Union and Single Economic Space (Decision of the Supreme Eurasian Economic Council at the level of Heads of Government on 21 November, 2014 №94);
3. Draft Agreement on the policy of livestock that are bred by the member states of the Customs Union and the Single Economic Space;
4. Draft Agreement on the treatment of seeds of agricultural plants;
5. The list of performance indicators of the development of agro-industrial complex - members of the Eurasian Economic Union (Decision of the Council of the Eurasian Economic Commission on 4 February, 2015 №2);
6. The list of promising research and development activities in the field of agro-industrial complex of states - members of the Eurasian Economic Union up to 2020 (Recommendation of the Board of Eurasian Economic Commission on 8 July, 2015 №14);
7. The Project of Methodology Forecasting performance indicators of development of agriculture - members of the Eurasian Economic Union.

These documents describe the possible mechanisms for ensuring food security in the regional and inter-state aspect. They have been designed with the main trends of formation and functioning of the global food market that does not contradict to the international obligations of States. One of the main strategic directions of agrarian policy of the EAEU in the present conditions, along with the technical and technological modernization of the industry, is to improve the profitability of agricultural producers, the rural social development, the greening of agricultural production and the rural development should ensure food sovereignty and collective import.

It is obvious that the current state of the agrarian sector of the founders of the EAEU - Belarus, Kazakhstan, the Russian Federation - and problematic issues of the mechanisms of their interactions with the planned deepening of the process of regional economic integration require new approaches to determine the direction of economic integration in the agricultural sector and the effective ways of the joint contribution of the EAEU in food sovereignty and collective economic union. Eurasian economic integration process in the agricultural sector has less to do with the search for new ways of interaction and mutual adaptation of agro-industrial complexes of post-Soviet states, as the restoration of lost economic integration ties. The reintegration character of the union of the post-Soviet states is a particular feature and hallmark currently

taking place in the process of regional economic integration. It should be noted that the market for agricultural products, raw materials and food was one of the first three common markets where integration began in the construction of economic relations in the agricultural sector in the framework of the Commonwealth of Independent States. Another important feature of the process of Eurasian integration is its open nature and prospects of cooperation based on free trade relations and mutually beneficial cooperation. It is not less important than the creation of a financial stabilization fund of the EAEU. At the present stage the founding EAEU should keep its main goal - to ensure profitability and alignment of national agricultural producers. This could be one of the measures to increase the attractiveness of the EAEU, especially in terms of enlarging the Union by taking Armenia and Kyrgyzstan. Also, the creation of an insurance fund of the founders of the EAEU is important in case of occurrence of emergency situations in the agricultural sector and to ensure sustainable development in general. With a view to further development of the agrarian market of the founders of the EAEU it should also be considered to establish a joint industry or product associations and unions involved in the production, process and trade of agricultural products (Hett F., Szkola S., 2015).

In addition, it is advisable to set up the agricultural investment and consulting center EAEU in which the Russian, Kazakh and Belarusian experts could jointly select projects and search of investors, as well as monitor the implementation of already existing investments projects in the founding EAEU. It is evident that institutional change of this format should be implemented in phases, with the development of integration and formation of the common agrarian market of the founders of the EAEU.

Increasing the productivity of rural areas

The current Russian State Program for agriculture development and regulation of the markets for agricultural products, raw materials and food for the period of 2013-2020 has been developed for the integrated development of all sectors and sub-sectors, as well as spheres of activity of Agro-industrial complex. Instead of the five areas, supported by the previous State Program for agriculture development and regulation of the markets for agricultural products, raw materials and food for the period of 2008-2012, it includes 6 sub-programs: two federal ones and 55 major events, providing a set of interrelated measures. For the development of domestic agriculture in the 8-year period Program of 2020 plans to invest 1525 billion rubles, or 190.7 billion rubles per year were ratified, while in 2012 in the Program for 5 years a budget of 551 billion rubles was planned, or an average of 110.3 billion rubles per year, that is, annual funding provided for the national currency will be increased by 73% (Khristenko V., 2015).

Agricultural policy in the field of agriculture in Belarus is based on a system of centralized state planning. Ministry of Agriculture and Food of the Republic of Belarus is the central authority for the implementation of agrarian policies and food security of the country. The main provisions and priorities of Agrarian Policy of the Republic of Belarus that have been identified consistently received a five-year state program for the period of 2001-2005, and for the period of 2005-2010. These programs were aimed at restoring the agricultural sector in Belarus after the negative consequences of liberal reforms of the first half of the 90s of the twentieth century which led to a sharp decline in agricultural production and the destabilization of economic activity in rural areas. Currently there is "The state program for sustainable rural development for the period of 2011-2015". During the ten years preceding the implementation of the two state programs there have been positive trends in the development of agriculture in Belarus. It has been prepared a stable framework for the further development of rural areas by strengthening the revived agricultural economy. Belarus is currently focused on increasing the volume of exports of agricultural products, raw materials and food, and the diversification of its structure in carrying-on of the importers in the range of goods supplied. The tasks are set in the State program of 2015, detailed in the 19 sectoral programs, each of which defined its specific target participants, funding sources, as well as key activities aimed at achieving the set goals. The complex program covers all areas of agriculture, from seed production to the production of milk, pork, beef and poultry meat / eggs and production to refining and selling them to the customers on domestic or foreign markets.

Public funding programs in the field of agriculture and rural areas are carried out in two directions:

- One of the funds is given to all agricultural enterprises to centrally and on equal terms, for example, to subsidize interest rates on loans or part of the acquired mineral fertilizers.
- Another part of the funds is available for enterprises involved in specific targeted government programs, such as the Program for the construction and modernization of grain drying systems, the

Program for developing breeding and seed production, the program for purebred breeding in livestock, the Program for the Development of potato, vegetable and fruit growing.

The formation of an agrarian policy of Kazakhstan is a part of the national strategic planning. Comprehensive national policy document is the president's "Strategy 2050", which was adopted in December, 2012. For each decade, strategic plans were developed to find their concretization in the successive five-year and five-year development programs as well as sectoral programs. At present, agriculture has a Program for the development of agriculture in the Republic of Kazakhstan for the period of 2013-2020 "Agribusiness 2020", which was approved in February, 2013. The Agribusiness-2020 Program aims at the development of four dimensions: financial recovery, increase of affordability of products, work and services for the agro-industrial sector entities, development of the state system of agricultural producers support, improvement of efficiency of the state management system of the agro-industrial complex. Financial recovery will be conducted through restructuring, refinancing, financing of credits and projects as well as financing of agricultural manufacturers having debts. Thereby the government can ease debt and avoid bankruptcy of agricultural manufacturers. The "Agribusiness 2020" was formulated as the sole purpose of agricultural policy - to create conditions for improving the competitiveness of agribusiness. The new program continues the orientation of the policies adopted since the early 2000s to stimulate the growth of agricultural production in the framework of a strategy to diversify the national economy. It also focuses on supporting domestic producers to increase competition in terms of integration into international trade (Nazarbayev N.A., 2012).

Belarus has set a low rate of single tax for agricultural producers - 1%. The object of taxation is to recognize the activities related to agricultural production. In order to stimulate entrepreneurship and create favorable conditions for investments of small enterprises (private farms) on 7 May, 2012 the President adopted the Decree number 6, which enables commercial organizations and individual entrepreneurs with location (residence) in the medium and small city settlements, rural areas for 7 years to work with no income tax and other taxes and fees (taxes), except for VAT.

Kazakhstan has a special tax regime for agricultural enterprises and farms. Agricultural enterprises receive 70% discount on the 6 key taxes on businesses, including:

- Land tax (or fee for the land to tenants of land)
- Property tax,
- Unified social tax,
- Value Added Tax (VAT)
- Income tax,
- The tax on vehicles.

For farmers, these six taxes are replaced by a single land tax, which is set as a percentage of the cadastral value of land owned and / or used (Hett F., Szkola S., 2015).

In addition to the special tax regime in Kazakhstan for the peasant or farm operating mode, exempted from all taxes, they replaced them with a single land tax based on the calculation of the area of land multiplied by the estimated cost. Tax rates on the regime do not exceed 0.5%. A similar tax treatment is available in Russia (the so-called simplified taxation system). It enables organizations not to pay three kinds of taxes: income tax, property tax and VAT (for individual entrepreneurs instead of income tax the tax on personal income is applied). The tax rate in this mode does not exceed 15%, depending on the subject of taxation (gross margin - 6%, net revenues - 15%).

The Treaty on Accession of Armenia to the Eurasian Economic Union entered into force on 2 January, 2015. Armenia became the fourth full member of the Eurasian Economic Union along with Belarus, Kazakhstan and Russia. The Republic assumed the corresponding obligations, while obtaining access to the common market of the Union which is made of more than 182,1 million citizens. By joining the Eurasian Economic Union, the state was involved in a full-scale implementation of the Eurasian project aimed, on the one hand, at the formation of the “four freedoms”: movement of goods, services, capital and labor, and on the other hand, at the creation of one of the major economic centers of the emerging polycentric world architecture. Among the expected effects on the economy of Armenia there is an increase in sales due to the removal of barriers and minimized administrative costs, an increased labor mobility and entry to the

common labor market, improved sustainability of economic development by reducing the effect of the economic isolation, developing infrastructural projects, participation in shaping global economic agenda through the mechanisms of the Eurasian Economic Union (Mukhamediyev B., Khitakhunov A., 2015).
On 12 August, 2015, the Treaty on the Accession of the Kyrgyz Republic to the Eurasian Economic Union Treaty came into force. Kyrgyzstan became a full-fledged member of the Union along with Armenia, Belarus, Kazakhstan and Russia. The accession of Kyrgyzstan to the EAEU was preceded by major joint efforts to ensure integration and convergence. "Road maps" on the accession of Kyrgyzstan to the Eurasian integration project were implemented in 2014; they contributed to economic adaptation of the country to the legislation and practices of the EAEU. The accession to the EAEU opens new opportunities for Kyrgyzstan. The barriers of the free movements of goods, services, capital and workforce are now removed. New investment opportunities and prospects are opening for the implementation of major infrastructure projects, primarily in the energy, transportation and agriculture industry. The citizens of Kyrgyzstan now gain the right to be employed in any state of the Union on the same conditions as the citizens of the state of employment. The accession of Kyrgyzstan to the EAEU gives a new impetus to develop the potential of the association. The Union consolidates its position in the global economic architecture. The membership of the Kyrgyz Republic in the Eurasian economic union certainly has been successful in promoting agricultural production in the countries of the EAEU, especially in the Republic of Kazakhstan and the Russian Federation.

Integrating sustainability as a cornerstone of rural development
EAEU contributes to the creation of joint ventures, jobs, higher incomes and agricultural development. Prospects for rural areas are largely dependent on the formation of agricultural policies based on multi-functional and balanced rural development. Creation of the appropriate activation of preconditions of entrepreneurship in rural areas will provide an opportunity to diversify the activities of individual farms including in the sphere of tourism services. Similarly, to the manufacturing sector of the economy, agriculture is also able to meet the specific nutritional needs of private farming. Being the main link with rural employment, it does not lose its multifunctional nature, but contains more versatile contents. Modern multifunctionality acquires a hierarchical, multi-faceted character, which equally concerns farms, agricultural producers, agro-industrial complex, as well as a local and regional governance and remains an important element of the local (regional) economy of the community. Modern development of rural areas faces many challenges, both external and internal, which are important not only for farmers and agricultural producers, but also for the consumers and taxpayers. These challenges led to the reconsideration of goals of agricultural policy, the forms of its development and implementation. The evolution of the common agricultural policy of EAEC shows a removal from the typical agro-industrial policy aimed at a multi-functional development policy in villages. It is an essential element and sustainable development of agriculture and other sectors of the agro-industrial economy, social development and the preservation of the environment, historical and cultural heritage are being carried out. The Policy for Rural Development under the Eurasian integration has theoretical and methodological bases, it has passed a certain period of development and formation. The content of these categories is necessary for the improvement of conditions for working and living, for supporting of local entrepreneurship and for the development of new non-agricultural functions of territories including the provision of travel services. The concept of multi-functional development of rural areas and the non-production functions of agriculture requires a search for methods to assess these features, pricing, and to find the appropriate ways to motivate farmers for their contribution to the formation and preservation of the natural and cultural environment, rural landscapes, traditions demonstrating the openness and hospitality of the people living in rural areas. Modern agriculture should be integrated in a balanced and sustainable development of rural territories (Khristenko V., 2015).
It allows searching for more productive jobs that provide farmers to improve their living conditions, to use the benefits of civilization at the same level as urban residents. Rural development is a complex process and its evaluation and identification requires the use of many criteria. Integration processes of these areas are in harmony with elements such as production development (creation of new jobs and an increase in the real incomes of the population), the preservation and protection of the environment, improvement of rural living conditions and enriching the cultural heritage.

Scientists are well aware of that for the sustainable development of agribusiness special attention should be paid to the overcoming of social crisis of the village and the integrated socio-economic development of rural areas. At the same time the two sets of problems must be separated: the first one– the acceleration of solving urgent social problems of the agricultural sector; the second one - the formation of industrial and social sphere of rural areas by a model of mixed-use development. However, it can be argued that the traditional village has always been multi-functional, only in a slightly different meaning than it is today. The long-standing multi-functionality was the fact that agricultural production people produced a significant portion of the instruments of labor (economic tools, clothing, construction materials, etc.) they themselves provide most of the resources they need for consumption as well as industrial and domestic services. Such versatility is primarily centered on the agricultural enterprise and goes out from the character of the peasant economy. Traditional peasants were forced to be multifunctional because of the circumstances. The modern multi-functional development is to introduce new features in the rural areas that are not related to agriculture. The main purpose of multi-functional development of rural areas is a constant improvement of living conditions, the work and rest of the peasant families of non-agricultural services (rural and ecological tourism). The driving power of such development may be upgrading or building a new social economic infrastructure in rural areas, which will promote the development of non-agricultural activities and expanding the employment of local people at the same time.

Recommendations for the way forward

Positive trends in agricultural production have not been able to solve the problems of socio-economic development of rural areas. Agricultural products and their processing did not create needs of the population for high-quality food. Social services of the villages are still in the doldrums. The most acute problems are the lack of economic interest to live and work in rural areas, the motivation to work, unemployment, labor migration, poverty and the destruction of social infrastructure. Practice has showed that the multi-functional development of rural areas in developed countries was the result of the efforts of many institutions, especially if the process affected underdeveloped regions with a high level of unemployment, poor infrastructure and problems of depopulation. The creation of new jobs, new sources of rural income, development entrepreneurship, that is, the economic activation of rural areas, have been specialized by the government agencies with the support of the budget financing and also public institutions as well as private organizations that cooperate with local administrations expressing their proposals.

The multifunctional character of rural areas is a concept of forming a strategy of rural development, in particular the support of non-agricultural activities of its inhabitants. First of all, the basis of multi-functional development is the local entrepreneurship, which is directed to various forms of raising capital: on the one hand, the expansion of agricultural activities and the development of new agricultural products or other areas of production, and on the other hand the establishment of businesses, which are not related to agricultural sector of the local economy. Entrepreneurship in the agricultural sector is characterized by the development of the production of basic agricultural products, non-traditional (alternative) crop production, its processing, and production services to agriculture. The non-agricultural area includes the development of public services, trade, industrial production, local raw materials as well as a socio-cultural service and tourism infrastructure. Consequently, the multi-functional development results in the differentiation of the rural economy, skillful implementation in the rural area functions more for the non-agricultural purposes. Development of small and medium-sized production and its modernization, especially harvesting nature, handicrafts, tourism services, infrastructure, etc. in rural areas will contribute to the professional activation of the population that will eventually move away from agricultural production. Such processes will speed up structural changes in rural areas thereby affecting the raising of the agrarian sector to a higher and better level of farming.

The creation of new jobs in rural areas is the main condition for increasing the social and the productive capacity of the country. The problems of the village and agriculture should be considered comprehensively as there are dependencies between the modernization of agriculture and the multifunctional development of rural areas. To create opportunities and working conditions for those who wish to abandon agricultural purposes but intend to reside permanently in the village, it is necessary to examine separately the national strategies and the decision of such tasks should be allocated budgetary funds. There are many reasons that farmers are forced to be engaged not only in rural economy, but also in other economic activities on a

smaller scale. However, the most important reason seems to derive from the market principles of competition: the owners of farms are becoming less and from the other enterprises of various organizational and legal forms of management every year provide themselves with the income taken from agricultural activities. Dynamics of reduction of agricultural producers in general and for legal forms shows search for a way out crisis trends in agriculture by means of reorganization by consolidation and enlargement of the production. The attention has been drawn to the fact that income from private farming directly depends on many factors - both social (the size of the family , the presence of the farm-bodied members, social condition, the degree of manifestation of economic activity); and economical (line of business, size of land, livestock performance, availability the farm's own equipment and necessary means of production, the feasibility for realization of residues generated by the production, the placement of the economy and etc.); and organizational - the union of cooperatives. All of these factors may contribute to further and supplier services or, on the contrary, cause additional costs of farming.

The concentration of jobs in urban agriculture has contributed to the development of pendulum migration. In the cities there comes a housing crisis, unnecessarily increasing the costs of construction of new infrastructure, advancing preconditions of environmental degradation. In turn, in rural areas, from which a considerable labor force has been attracted for the city works developed depopulation processes. Implementation of the concept of multifunctional development of rural areas, processes of diversification in agriculture, non-agricultural development features of rural areas should be the subject to governmental structures and the answer to the difficulties of the village. The key problem of many villages is to ensure employment for the unemployed, especially women and the youth. Tasks of local government and central government bodies are to create favorable conditions for the development of different forms of small and medium-sized businesses (Khristenko V., 2015).

Local development is realized through a variety of business activities. The industrial and economic situation in most rural areas is not easy. On the one hand, there is a lack of financial resources that would ensure a fast and stable development, and on the second hand- in the villages the necessary infrastructure it is missing or does not function that would attract external investors, as well as highly qualified specialists. In rural areas and in smaller regional cities there are major economic entities, the small farms, which, thanks to their flexibility will play a dominant role in the local economy.

Rural areas are in different conditions on the possibilities conducting in the territories of non-agricultural activities. Local authorities and local communities in the future expect outside help not realizing how much they depend on themselves. Skillful use of the potential locations, outdoor advertising area, attraction of families and other investors, the entrance to the market niches usually is not a simple task, but it is not impossible with respect to implementation. Therefore, the efficiency of business activities in rural terrain depends on several factors, such as organizational, economic, financial, social, psychological and demographic characters. Construction of regional policy at the level of the small and medium business remains challenging amid a general crisis situation in agriculture that is a braking factor for the strengthening of the social function entrepreneurship and rural development. The problems of rural areas and the enhancing of entrepreneurship in rural areas are relevant, and their solution is possible if macroeconomic conditions are stabilized; economic development is balanced; the economic growth in agriculture is ensured; there is the expansion of non-agricultural employment in rural areas; the achievement in rural areas is close to urban society in terms of income and social benefits; the improved access of hosting entities that carry out business activities in rural areas to the markets of the material - technical, credit, information and other resources; the formation of rural public institutions society, protecting economic and social interests of different rural population; the realization of programs for improving the environmental situation in rural areas.

Development of small businesses in rural areas must take priority. There is a regional policy of the state. According to it the development of rural entrepreneurship will come when the village and the surrounding area will retain its identity as a place of residence and work; economic development will be built on internal potential of rural areas; it will approve of a strategy for the phased development and will ensure long-term work on the intensification of the terrain; it will persist existing production and business sites and it will create new ones; it will form consultative structures for entrepreneurs and for their employees; it will increase spending on researches in the development of business in rural areas; economic policy of government will reveal insight values into the development of rural economy and it will stop investing exclusively into cities; it will come to revitalization of local and regional consciousness of economic

patriotism, which should concern more than the identification of the entrepreneur and the local community with a place of residence; education will be actively involved in the process laying the foundations of entrepreneurship among rural youth and women.

Conclusion

To sum up, in general it should be noted that regional economic integration in the agricultural sphere helps to eliminate unnecessary barriers to mutual trade and other areas of economic and trade cooperation between states, technical and technological modernization of agriculture, improving the profitability of agricultural producers and ensure collective food sovereignty. In the agricultural sector of the Eurasian Economic Union, the trend is the predominance of the growth of bilateral trade in agricultural products, raw materials and food over foreign trade.

The process of the multifunctional development of rural areas should be considered in many aspects of which agriculture is the main, but not the only one. In the process of stabilizing of the situation in the agriculture sectors of the commodity rank the nature will be relatively reduced in the interests of the processing industries and services. Structural problem transformation of the village should be taken into account by the activation of business activities, including foreign ones. Based on demand, the availability of local resources and their status, their availability and communication must be formed, which is based on the versatility and balance. This represents new challenges for farmers, local authorities, non-governmental organizations, employees, education and sciences for activating local entrepreneurship.

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FINANCIAL SUPPORT SYSTEM OF AGRICULTURE IN SLOVAKIA AND RUSSIA

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Abstract
Agriculture as an economic sector has long been supported by different sources- public or private entities. Financial support system is in the EU regulated by the Common agricultural policy but beside of this regulation could have each EU member state additional financial support system. Russia tries to support agriculture in different levels, national and local. The aim of the paper is to identify the financial support systems of agriculture in Slovakia as a member state of the EU and Russia and to compare both financial systems based on the common features. Financial support system will be examine since 2004 to the present. The paper provides information about agrarian legislation in the EU and Slovakia and in Russia, included the definitions of the agrarian land and its specifics in both countries. The paper was proceed by the method of an analysis, deduction, synthesis, comparison and scientific abstraction. Results of the paper examines the complex financial support in both counties and it could contribute in the longer perspective to the optimization of the financial support of agriculture the agrarian legislation in order to increase the productivity and profitability of using the agrarian land and make it more competitive in the European Union's market.

Keywords: agriculture, financial support, legal regulation, Russia, Slovakia

JEL Codes: Q18, Q14, Q10

Introduction

Agricultural land is a key element of the environment and is natural source of natural heritage of each country (Geodesy, Cartography and Cadastre Authority of the SR, 2015). FAO and OECD commonly define agricultural land as a land devoted to agriculture; it means the collection of:

- arable land (aka cropland): here redefined to refer to land producing crops requiring annual replanting or fallow land or pasture used for such crops within any five-year period;
- permanent cropland: land producing crops which do not require annual replanting;
- permanent pastures: natural or artificial grasslands and scrublands able to be used for grazing livestock.

In accordance with the Article 4 Regulation (EU) No 1307/2013 of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009, agricultural area means any area taken up by:

- arable land- means land cultivated for crop production or areas available for crop production but lying fallow, including areas set aside;
- permanent grassland and permanent pasture - means land used to grow grasses or other herbaceous forage naturally (self- seeded) or through cultivation (sown) and that has not been included in the crop rotation of the holding for five years or more;
- permanent crops- means non-rotational crops other than permanent grassland and permanent pasture that occupy the land for five years or more and yield repeated harvests, including nurseries and short rotation coppice.

Aim and Methods

The aim of the paper is to identify the financial support systems of agriculture in Slovakia as a member state of the EU and Russia and to compare both financial systems based on the common features. Financial support system will be examine since 2004 to the present. The paper provides information about agrarian legislation in the EU and Slovakia and in Russia, included the definitions of the agrarian land and its specifics

in both countries. The paper was proceed by the method of an analysis, deduction, synthesis, comparison and scientific abstraction.

Results

Slovak republic includes to the definition of agricultural land wider typology of agricultural lands. In accordance with the Section 2 Point (b) of the Act No. 220/2004 Coll., on the conservation and use of agricultural land and amending the Act No. 245/2003 Coll. on integrated pollution prevention and control and amending certain acts as amended, agricultural land stands for a production potential land, which is registered as arable land, hop gardens, vineyards, orchards, gardens and permanent grassland in the Cadastre. In this regard decisive for determining the type of agricultural land is the land registry reference. The concrete specification of the types of agricultural lands are designed by decree of Ministry of agriculture and rural development of the SR.

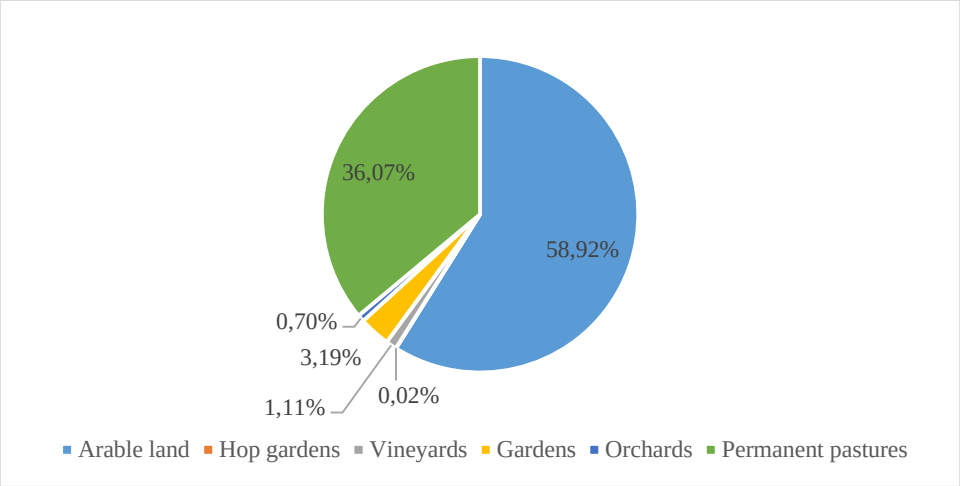


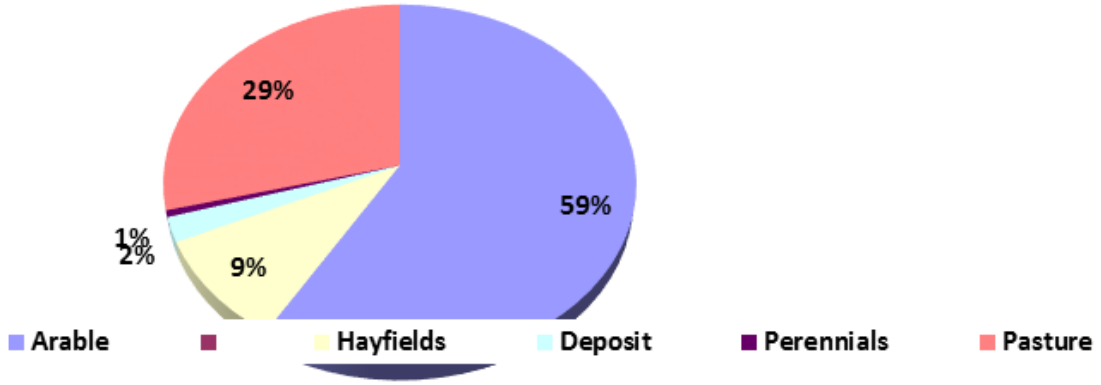
Figure 1 Agricultural land types in Slovakia on 1.1.2014
Source: Geodesy, Cartography and Cadastre Authority of the SR (2015), Own processing

In Slovakia, agricultural land represents 2,405,971 ha (49.01%) of the total amount of land in Slovakia (Geodesy, Cartography and Cadastre Authority of the Slovak Republic, 2014). The figure 1 leads us to a conclusion that the protection of the quality of agricultural land has its meaning, since only 1,412,228 ha (58.92%) from the total agricultural land can be used as an arable land, the rest of the agricultural land is represented by permanent grassland 864,681 ha (36.07%), a smaller amount of the land includes gardens 76,362 ha (3.19%), vineyards 26,513 ha (1.11%), orchards 16,744 ha (0.7%) and the smallest part is represented by the hop gardens 512 (0.02%) of the total agricultural land area. In general, however, it can be stated that the agricultural and arable lands area decreases in favour of forest, non-agricultural and non-forest lands.

Statistically, in Slovakia corresponds 0,45 ha of agricultural land/per capita and 0,27 ha of arable land/per capita (National Agriculture and Food Centre, Soil Science and Conservation Research Institute, 2016). Between the years 2000-2014 agricultural area decreased by 1.8% (-43,626 ha), while this decreasing trend has been going on since 1990. The largest percentage drop since 1990, recorded a hop and 74.4%, orchards 16, 5%, and 15.6% vineyards. In the period 2000 to 2014 there was a decrease in the area of all types of agricultural land, which is environmentally negative phenomenon (Ministry of Environment of the SR, 2015).

In accordance with Article 3 of the Land Code of the Russian Federation agricultural lands are lands which are located outside the boundaries of the village and which are provided for the needs of agriculture, and intended for that purpose (in the version the Federal Law of 22.07.2008 No. 141-FZ). As a part of agricultural land are allocated farmlands, lands occupied by the internal roads, communications, forest plantations intended to provide protection from the adverse effects of land, also water bodies, and

buildings, used for production, storage and primary processing of agricultural products (in the version of the Federal law of 03.06.2006 No. 73-FZ, the Federal Law of 04.12.2006 No. 201-FZ, the Federal Law of 23.06.2014 No. 171-FZ, the Federal Law of 21.07.2014 No. 234-FZ).



Graph 2 Agricultural land types in the Russian Federation on 1.1.2014
Source: Report on condition and use of agricultural lands prepared by the Ministry of Agriculture in 2015

According to the state statistical reporting, the land fund of the Russian Federation as on January 1, 2013 is amounted to 1,709,820,000 ha. Actually the greatest parts of the land fund of the country are forest lands that are 1,121,641,000 ha (65.6% of all land) and agricultural land – 386,419,000 ha (22.6%). The figure 2 shows us that 115,100,000 ha (58,7%) from the total agricultural land can be used as an arable land, the rest of the agricultural land is represented by pasture 56,833,000 ha (28,9%), hayfields 18,656,000 ha (9,51%), also by perennials 1,167,000 ha (2,23%), and the smallest part is represented by deposit 4,372,000 ha (0,6%) of the total agricultural land area.
In Russia corresponds 4,08 ha of agricultural land/per capita and 1,32 ha of arable land/per capita (State National Report, 2015). Generally in Russian Federation there is an annual reduction in the area of agricultural land, since 2009 a decrease of this indicator was 16.2 million ha. Basically the reduction in the area of agricultural land occurred due to the inclusion of lands of the Russian Federation (mainly non-agricultural land) to the Land Redistribution Fund, and in connection with the liquidation of agricultural organizations, the voluntary and involuntary rejection of the land, as well as because of the lands transfer to the other categories for the construction of gas pipelines and other linear objects, expanding the reserve.

It should also be noted that as on January 1, for the period 2009-2015 in the dynamics of changes in the area of agricultural land as a part of agricultural land there are only minor fluctuations due primarily to the fact that part of the land is transferred from the various categories to the agricultural land. This can be explained by the optimization of the agrarian legislation of the Russian Federation, and also with the fact that Russian government supports farmers to increase the productivity of their activities.

Financial support to agriculture in Slovakia
The agriculture is considered as a key sector of the national economy. Even the GDP of the agriculture is in the low level (Figure 4), the productive and non-productive functions of the agriculture are irreplaceable.

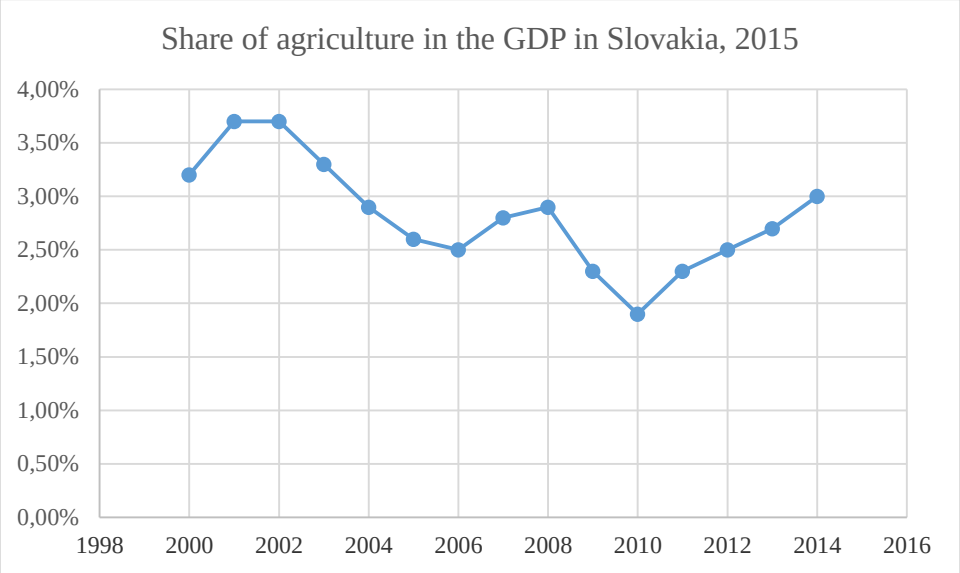


Figure 3 Share of agriculture in the GDP in Slovakia, 2015
Source: Enviroportal.sk, 2015, Own proceeding

Share of agriculture in GDP in the Slovakia from 2000 until 2014 recorded a fluctuating trend, in the mid-term review it was recorded a broadly downward trend. From 2010 here has been an increase in the share of agriculture in GDP in the Slovakia (Ministry of Environment of the SR, 2015).
Agriculture is entrepreneurship and in the case the entrepreneur need to act individually and his/her own sources. But because the agriculture meet also non-productive functions, the agriculture has a special position in the national economy with the special emphasis on the sustainable development. Financial support to agriculture is in two levels:

- European union level- regulated by the European legislation of the Common agricultural policy and EU environmental policy; it is binding and directly effective in all EU member states;
- National level- each state could regulate financial or other non-financial tools to support and stimulate agriculture in respect to its own needs to ensure sustainability of agriculture and natural heritage of the state;
- Regional/Municipal level – each region and/or municipality could decide to support and stimulate agriculture based on their regional and/or local cultural and natural heritage.

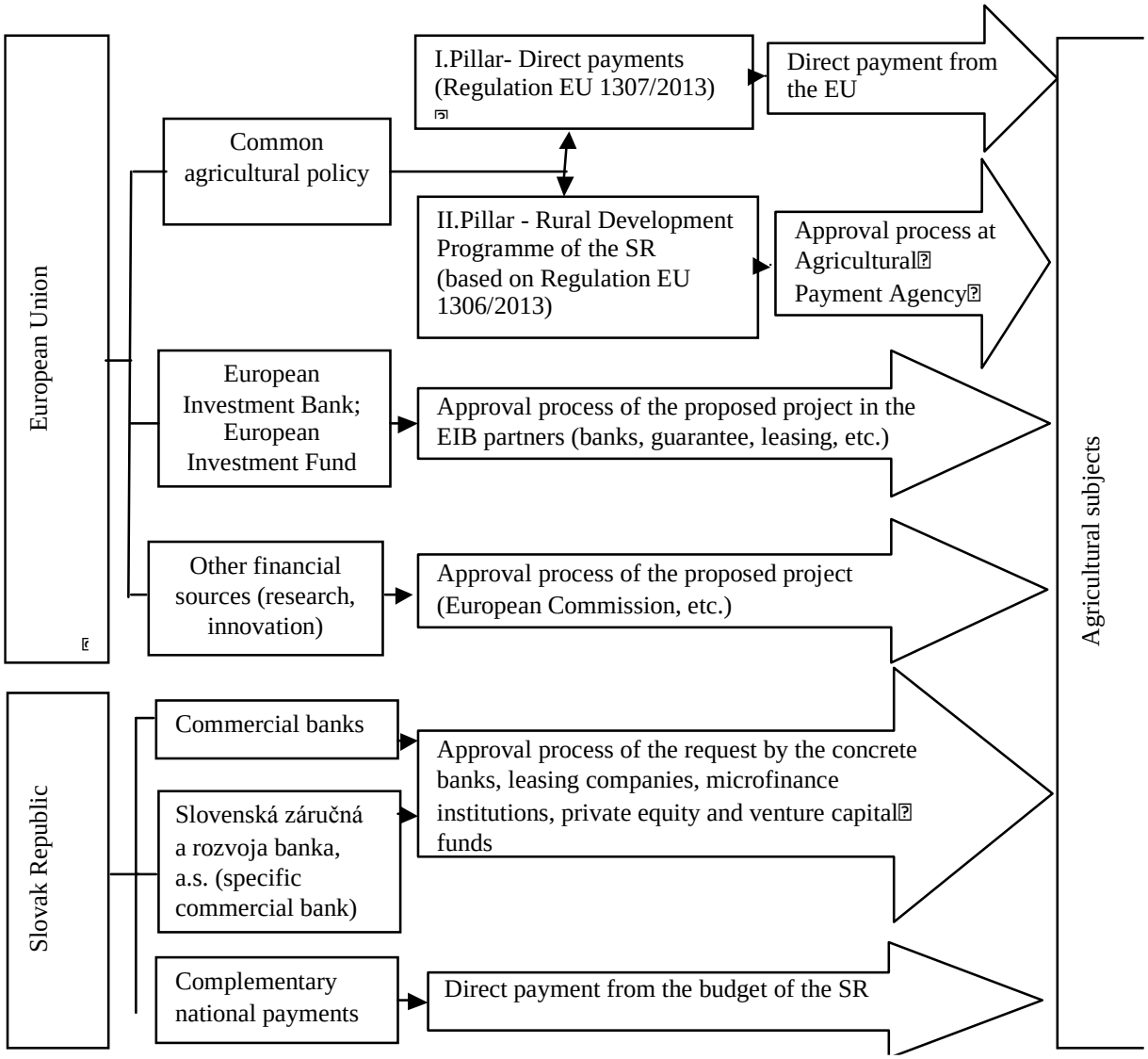


Figure 4 Financial instruments implemented in the SR
Source, Own Proceeding, 2015

Since 2004 when the SR entrance to the European Union, Slovak agricultural subjects are eligible to receive financial support from the EU.

Financial instruments implemented in the SR- European Union

I. Pillar of the Common agricultural policy regulated by the Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No. 73/2009. Although EU regulation is directly binding in all of EU member states, the Slovak Republic adopted a number of generally binding legal regulations that booth's specify parts of EU regulations that are binding for Slovakia and also define the elements of direct payments, where EU regulation provided an option to member state. The financing of direct payments is regulated by Regulation (EU) No 1306/2013 of the European Parliament and of the Council of 17 December 2013 on the financing, management and monitoring of the common agricultural policy and repealing Council Regulations (EEC) No 352/78, (EC) No 165/94, (EC) No 2799/98, (EC) No 814/2000, (EC) No 1290/2005 and (EC) No 485/2008. Article 3 of the Regulation introduces for the programming period 2014-2020 funds which ensure the fulfilment of the Common agricultural policy goals:

1. The European Agricultural Guidance and Guarantee Fund;

2. The European Agricultural Fund for Rural Development.
Both funds are part of the general budget of the European Union (Palšová – Schwarcz, 2015)

For the programming period 2014-2020 Slovak Republic provides the following types of direct payments from the European Agricultural Guarantee Fund:

- Single Area Payment;
- Payment for agricultural practices beneficial for the climate and the environment;
- Payment for young farmers;
- Payment for the cultivation of sugar beet;
- Payment for the cultivation of hops;
- Payment for the cultivation of selected species of fruits with high labor input;
- Payment for the cultivation of selected species of fruits with very high labor input;
- Payment for the cultivation of selected species of vegetables with high labor input;
- Payment for the cultivation of selected species of vegetables with very high labor input;
- Payment for the cultivation of tomatoes;
- Payment for breeding of ewes, ewe lambs and goats;
- Payment on fattening of selected categories of cattle;
- Payment on cows bred in the system of market milk production.

II. Pillar of the Common agricultural policy is regulated by the Regulation No 1305/2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 that arose based on the Partnership agreement 2014-2020 (Partnership agreement on the use of European structural funds and investment in years 2014-2020). The regulation is in the SR implemented by the Rural Development Programme 2014-2020.

For the programming period 2014-2020 Slovak Republic provides the following types of support from the European Agricultural Fund for Rural Development:

- Measure 1 Knowledge transfer and information actions
- Measure 2 Advisory service
- Measure 4 Investments in physical assets
- Measure 5 Restoring agricultural production potential
- Measure 6 Support for young farmers, small farms and business
- Measure 7 Basic services and village renewal in rural areas
- Measure 8 Investments in forest area development and improvement of the viability of forests
- Measure 10 Agri-environmental- climate action (non-project measure)
- Measure 11 Organic farming (non-project measure)
- Measure 12 Payments related to NATURA 2000 (non-project measure)
- Measure 13 Payments to areas facing natural or other restrictions
- Measure 14 Animal welfare (non-project measure)
- Measure 15 Forest-environmental and climate services and forest conservation
- Measure 16 Cooperation
- Measure 19 LEADER
- Measure 20 Technical assistance

European investment bank (EIB) is the EU's bank and the largest multilateral borrower and lender by volume providing finance and expertise for sound and sustainable investment projects which contribute to furthering EU policy objectives. Based on the classification Small and medium-sized enterprises (SMEs) defined in the EU recommendation 2003/361, majority of Slovak farmers are consider as a small and medium enterprises. The EIB provides support to SMEs and Mid-Caps through “Intermediated loans”, whereby the EIB makes loans to local banks and other intermediaries which subsequently on-lend to the final beneficiaries. Promoters are requested to apply directly to one of the intermediary banks and financing institutions, which operate on a national, regional or local level

(http://europa.eu/youreurope/business/funding-grants/access-to-finance/search/en/financial-intermediaries?shs_term_node_tid_depth=1599&combine=&field_amount_of_finance_range_value_i18n=All). Within this context, it is up to the partner bank that examines the application and bears the credit risk, to decide whether or not to finance the project. Requirements for application may vary according to the respective intermediary, and the EIB does not take part in this process.

The European Investment Fund (EIF) designs financial products addressed to its partners (banks, guarantee, leasing and microfinance institutions, private equity and venture capital funds, among others), acting as local financial intermediaries, which in turn provide equity capital, loans and micro-loans to SMEs.

Based on the survey of all financial subjects which provide loans and financial support from EIB and EIF it could be stated that these subjects provide almost the same conditions for applicants for common commercial products. Some of the email addresses are not existing and some institutions didn't know about products from EIB and EIF.

Financial instruments implemented in the SR- Slovak Republic

Financial support for farmers is in the SR limited. There exist commercial loans for all subjects, if there are some products that connected to the agriculture, the difference in the conditions are that the applicant need to be a farmer; other conditions are the same for other commercial loans. Green Report (2015) notes that total loans in agriculture in 2014 increased by 12 %. The prevailing part of the structure of total loans was represented by short-term loans with the highest share of 50.3 % and with maturity period up to one year. In terms of volume, short-term loans were decisive especially from the viewpoint of the financing of the operation of agricultural holdings and problem-free guarantees realised through the EU support - EU direct payments. The importance of short-term loans was decisive for farmers particularly during the bridging period from the time they received support from the Agricultural Payment Agency. Mid-term loans from one to five years represented the lowest share in the structure of the loans (19.3 %). Long-term loans with maturity period of more than 5 years recorded the biggest year-on-year change. These loans increased by as much as 31.5 %, which can be attributed to investments in tangible assets.

In addition, as in the previous years, some commercial banks offered to enterprises a flexi-loan, the so-called investment loan to purchase agricultural land with a lien to the land purchased or other land in continuous parcels or other form of guarantee. At present, agricultural land is a very little used security as to the granting of loans because of its fragmentation and ownership rights that have not been settled yet. Despite this fact, there was increase in the loans for the purchase of agricultural land in 2014. The average amount of the loan for the purchase of land exceeded € 300 thousand. A "My Land" loan product for farmers was important as well, within which loans to buy 9,959 hectare of agricultural land were granted.

Specific payments from the state budget connected with the transitional national payments, as follows:

- The complementary national area payments;
- The complementary national payment for hops;
- The complementary national payment for livestock units.

Financial support to agriculture in Russia

The agriculture is considered as one of the most important part of the Russian economy. Agriculture value added (% of GDP) in Russia was measured at 4.2 in 2014, according to the World Bank. Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production (Figure 5).

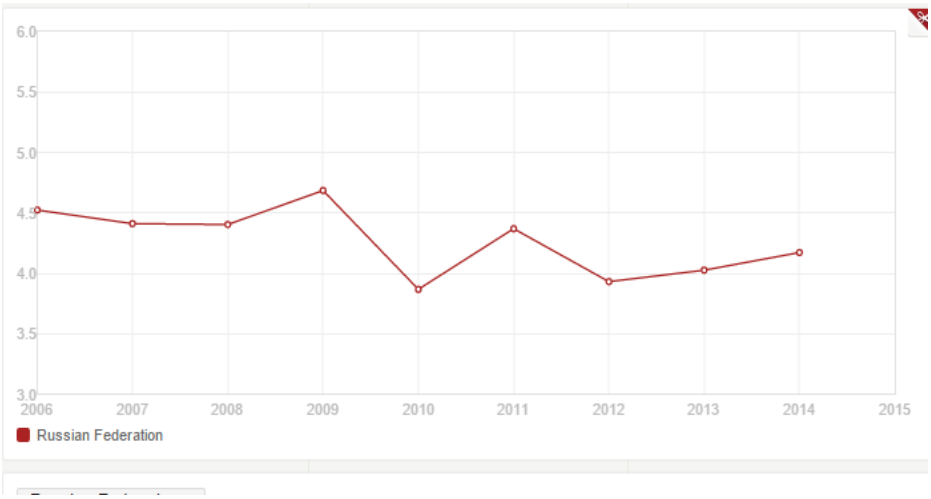


Figure 5 Share of agriculture in the GDP in Russia, 2014
Source: http://data.worldbank.org/, 2015

Nowadays Russian government works hard to provide better terms and conditions to the farmers to assure that they will continue their activity and to support them in the domestic and international markets. In Russia, the agricultural sector has long been given insufficient attention. Only since 2013, the government has decided to provide more support to this sector, seeking to increase agricultural production.

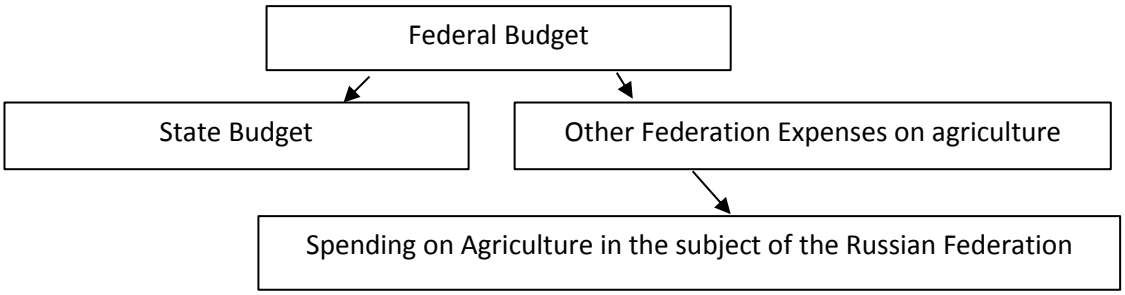


Figure 6 The general scheme of the cash support from budget to agriculture
Source: Federal and regional budget support for agriculture in Russia: Problems evaluation and control (Schagaida, 2013)

In order to solve the current problems, the government adopted several decisions to stimulate the revival of this segment of the industry. The Russian government is also developing a program of support for agriculture, including activities in the field of agricultural production and the payment of subsidies to agricultural producers, as well as the development of agriculture within the framework of the State program of agricultural development and regulation of agricultural products, raw materials and food.
The new program should provide support for domestic farmers. Concessional loans to agriculture is one of the most effective tools for the implementation of these programs.
Actually all banks provide loans to agricultural people and farmers, as well as individual entrepreneurs and other small and medium-sized enterprises, which meet the following requirements:

- They are economic entities of agro-industrial complex;
- Farmers have been operating for at least three months;
- Farmers have the developed business plan, which indicates the effectiveness of the project.

Banks also lend to startups in the country. Farmers who are working less than three months, but have an experience in private subsidiary farming, can count on a loan.
It should be mentioned that only some banks are engaged in concessional lending, such as "Rosselhosbank" which is the biggest specialized bank in agricultural sphere; "Agroros" which provides loans on the security

of agricultural land on concessional terms; other bank is "Sberbank" which provides loans on security of next harvest and the purposes of this loans are purchasing of equipment, seeds, fertilizers or conducting seasonal work. "Binbank" has a special program for concessional lending to farmers; and also "AK Bars Bank" provides loans for different agricultural purposes for a term of 5 years.
The list of credit products that are available to farmers is quite extensive. They can get a loan for the purchase of machinery or equipment under the pledge of property to be acquired. In addition with such loans farmers can purchase young farm animals (on the security of purchased animals), as well as plots of land from the agricultural land (on the security of land).
Such lending is considered as target loan, and is made to purchase the necessary equipment, vehicles, feed, fertilizer, seedlings, farm animals and others.
To the farmers who have just started their business, banks are willing to provide more loyal conditions - investment loans granted for long periods.
There are four types of concessional loans for agriculture:

- Against security of immovable property;
- On the development of private subsidiary farming;
- Under the lands of agricultural designation;
- The crop secures the loan.

To gain access to concessional lending, the borrower must have the status of small or medium-sized businesses. It is necessary that the first installment would be of 20% of the loan amount (sometimes it takes 10%, but not less).
The companies involved in agriculture or consumer cooperative can claim for this type of loan. Approval of the loan is possible for firms with a staff of at least five qualified staff and administration.
The owner of the private subsidiary farming can also count on a soft loan. However, in such cases, the repayment period is not large (up to 2 years).
The size of the loan to farmers depends on their income (usually up to 300 000 Rub). Often there is the practice of paying the loan amount in installments depending on seasonal work.
A pledge from a private person may be a movable and immovable property. In the role of the guarantor (if necessary) may be a person or legal entity.

Conclusions

Agricultural land is natural heritage that need to be protect based on the principle of sustainability. Based on the comparison in Slovakia and Russia we could conclude that Russia has more available agricultural land (including arable land) even the GDP in agriculture is comparable in both countries. To compare financial support system for farmers we can notice differences- farmers in Slovakia rely more on the financial mechanism of the EU and the loans are used in particular during the bridging period from the time they received support from the Agricultural Payment Agency. Other loan are in the level of consumer loans and this not meet requirements of the farmers. Moreover agricultural land is a very little used security as to the granting of loans because of its fragmentation and ownership rights. In comparison in Russia is a variety of credit products available for farmers. These take into account the specificities of agribusiness.

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AGRICULTURAL KNOWLEDGE AND INNOVATION SYSTEMS DESIGN: THE CASE OF GREECE

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Abstract
This analysis is based on the concept of Agricultural Knowledge and Innovation Systems (AKIS). The actors involved in rural development issues constitute individual entities exchanging information and knowledge. Thereby, innovation is generated. Therefore, innovation is perceived as an output of social and politico-administrative processes rather as outcome of research conducted at scientific institutions. In the case of Greece the actors interacting in the context of AKIS were detected and their (formal and informal) structures were depicted using Quantitative Network Analysis techniques. The primary data was collected using standardized questionnaire. Barriers and communication channels were explored; relations between rural practice and scientific research were also analyzed. A deeper understanding of the rural knowledge flow and innovation system was depicted, with regard to the institutional, administrative and socio-economic environment in the national framework as well as in the context of the EU.

Keywords: EU agricultural policy design, agricultural knowledge and innovation systems (AKIS), rural development policy (RDP), Quantitative Network Analysis (QNA), politico-administrative actors

JEL Codes: O31, Q16, Q18

Introduction

Innovation has become a key objective, which runs horizontally all European policies. In contemporary economies, the ability of the enterprises and institutions to innovate is considered as a precondition for economic recovery. Besides, since the 1990s, innovation was an objective not only of national policies but also of EU regional policy, which was implemented in rural areas through the LEADER Initiative. Apart from the implementation of European and national policies, a new, “bottom-up” approach to the development process has been adopted. In this context, innovation is created through the interaction of the actors involved in the process of production and distribution of products and services (EU SCAR, 2012). The Agricultural Knowledge and Innovation Systems (AKIS) approach provides an effective framework that can describe the dissemination of knowledge and innovation, and their study can contribute to the sustainable agricultural development within the members of the EU.

Contemporary agricultural market is characterized by the globalization of consumption but not of production. The fluctuations in the markets, the growing demand for food, the adoption of sustainable methods of production and the care for the environment and natural resources have led to major changes in production, trade flows and consumption patterns of agricultural products (Hall et al, 2006). In many countries, knowledge dissemination systems in agricultural issues have changed in view of these challenges and of local specificities. The private sector is involved more and more actively in the dissemination of knowledge, changing the structures and increasing the number of actors, yet encounters difficulties in communication. The adoption of new governance structures is considered crucial to support and aid the flow of knowledge between research bodies, the dissemination of knowledge and rural practice. This object has been the research field for European programs such as Insight, SOLINSA, EU-AgriMapping and RUDI. This proposal aims to act further and deepen the results already worked out programs.

The concept of Agricultural Knowledge and Innovation Systems (AKIS) is an evolution of the older concept of Agricultural Knowledge Systems (AKS). The AKS was the result of an interventionist agricultural policy that started in the 1960s and aimed to transfer knowledge to farmers (such as handling tractors, machinery, etc.) to accelerate rural development. Its implementation took place by a central body, the Ministry of Agriculture. In recent years, as particular emphasis is given to the concept of innovation in all sectors of the economy, in the acronym of the AKS was added an "I" which refers to innovation (EU SCAR, 2012).

The evolution of the concept of AKS to that of AKIS is due to a number of factors such as the liberalization of key factors that affect rural development, the adoption of a multilateral aspect of rural development (environment, quality of life, employment, externalities, etc.), the replacement of the linear innovation model from a participatory, network approach and the growing disconnection between the knowledge acquired by the farmers, the research systems and the advisory services (EU SCAR, 2012).

The formal definition of an AKIS is "a set of agricultural organizations and/or persons, and the links and interactions between them, engaged in the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge and information, with the purpose of working synergistically to support decision making, problem solving and innovation in agriculture" (Röling and Engel, 1991). An orderly AKIS, should be able to propose and develop practical ideas to encourage the birth of innovation, knowledge transfer and information exchange. A modern innovation policy should take account of the real framework where innovation is taking place, which includes all the actors created in the agri-food chain (EU SCAR, 2012).

The concept of AKIS is based on the "Innovation Systems" approach (EU SCAR, 2013). In this context, the various actors form individual subsystems that interact with each other. Innovation is born through the flow of information among these systems. Therefore, it is perceived more as a social phenomenon resulting from the interaction of various actors than as the result of research in scientific centers (Assefa et al., 2009). In all countries, the traditional image of AKIS comprises of organizations involved in education, research and advisory services with ultimate purpose the increase of agricultural productivity (Proost et al., 2008). The main subsystems and actors of the AKIS as categorized in the IN-SIGHT project are the following:

- Government decision-making system

Local and regional administrations/ governments can provide legal consultancy or participate in the financing of innovative business projects. Usually they do not support the initial stages of a project while the regulations and restrictions imposed at local and national level might either encourage or hinder the implementation of innovations (Dockes et al., 2008).

- Information and knowledge actors

This system consists of research institutions, advisory services, farmer schools and farmers' associations. The structure, organization and the form of governance (public or private) differs from country to country depending on the degree of decentralization. For example, for the provision of services to farmers are encountered several models, such as privatized systems where the management of AKIS is dominated by private companies, co-management between farmer organizations and the state, semi-state management (collaboration of government experts with individuals), state management through regional organizations or individual innovation nucleuses (Dockes et al., 2011).

In general, government systems face problems such as under-qualified staff, overlapping of responsibilities between stakeholders, inefficient management and lack of incentives. On the other hand, private companies are less attractive for small units because of the economic cost of their services. Furthermore, in terms of incentives, private operators are interested in maximizing their customer profit ignoring the externalities. As regards the impact of academic research in AKIS, it does not always correspond to the real needs of the society. This is due to the incentives governing researchers who most often seek for scientific publications. As a result, the produced knowledge does not meet the needs of the various actors of AKIS (Dockes et al., 2011).

NGOs are an element of growing influence on the AKIS. They are engaged in different issues such as environment, hunting, food, consumer and social issues. They can provide direct advice to farmers and provide ideas and incentives for innovation or they can support changes in legislation, develop new forms of financing even hinder the implementation of programs (Proost et al., 2008).

- Socio-economic actors

Farmers themselves, individually or collectively can implement innovative ideas in the production and sale of products. However, experience has shown that access to the services of AKIS is not equal for all farmers. Those who mainly benefit are men, professionals, highly skilled with conventional production methods. Generally, smaller farmers engaged in extensive cultivation forms face difficulties in accessing government programs since most of these programs concern intensive methods and large cultivations. Besides, their access to private companies is limited due to the financial cost they entail. Entrepreneurs and SME in rural areas, agro-tourism, exploitation of natural resources, food processing and social services do not appear to have direct connection with AKIS (Proost et al., 2008).

Suppliers of technical inputs (fertilizers, equipment, etc.) have become a very important link in the chain of AKIS as they provide advice to their customers. Their role is particularly important in the field of processing of agricultural products, animal production and in countries where advisory services to farmers are inefficient (Proost et al., 2008).
Cooperatives and producer associations can effectively participate in the dissemination of knowledge and innovation since they provide agricultural inputs and the necessary technical advice (Proost et al., 2008). The media, magazines which refer to the farmers and the internet can significantly affect the eating habits of consumers by informing them about the quality of foods, new foods and alternative networks to acquire them. Moreover, they can assist in the dissemination of knowledge in the rural community (Dockes et al., 2011). Finally, the special role that banks and financial advisors play in rural innovation should be mentioned (EU SCAR, 2012).

- End users

End users are consumers, either individuals or businesses (e.g. restaurants, supermarkets). In recent years their contribution to the process of innovation has been widely recognized especially with regard to green technology and sustainable lifestyle issues (Proost et al., 2008). Finally, as observed in the last decade, in the meso-level, communities, cities and regions appear as important actors of the system by adopting alternative food networks (Watts et al., 2005).
Under this scope, according to Koutsouris (2014), the Greek AKIS is highly fragmented and is characterized by low effectiveness. As concerns the educational/ research field, in Greece, the education of the farmers takes place in universities and Technological Educational Institutes. Seminars and training programmes are held by OGEEKA (Organisation of Agricultural Vocational Education, Training and Employment) and PASEGES (Pan-Hellenic Confederation of Unions of Agricultural Co-operatives) that focuses mainly in technical issues, ELGO DIMITRA (ex National Agricultural Research Foundation - NAGREF) and some private and public training institutions. Regarding the research outcomes, the main actors are universities and the NAGREF. In general, research in Greece is rather limited due to the lack of resources and unlike other countries the private sector is not engaged in research (Koutsouris, 2014).
In the past, the provision of advisory services to farmers was responsibility of public services of the Ministry of Agriculture. Today, the lack of rural development policy, the changes in the priorities brought by the country's accession to the EU (then EEC), the administrative upheavals and the economic crisis have changed the role of the state. At national level, PASEGES and local offices of Rural Development provide advisory services. In the former prefectual level, the body that offers advisory services to the farmers are the Development Companies. Generally, the services offered by the public sector are inadequate. Thus, in order to obtain information about new technologies and practices, farmers consult private companies and input suppliers who provide training and advice about their equipment. It should be noted that multinational companies transfer knowledge and technology either through their salesmen at stores and agriculturist or through open workshops for agriculturists. However, in this way, the access of all farmers in consulting services is not ensured (Koutsouris, 2014).
Due to the substantial absence of public sector as regards advisory services, private companies are the main actors in this field. The fact is that they deal much more with farmers who are interested to join European programs than with those that need advice on issues of rural management. Generally, farmers ask for advice on crop production (plant protection, processing, marketing and subsidies) and machines, bookkeeping, animal production issues (breeds, processing, marketing) and cross-compliance. Young farmers (including women) seek advice on all the above issues and furthermore for rural development. The provision of advisory services is achieved mainly through personal contacts with the farmers and in a lesser extent through seminars/ workshops/ meetings and the mass media. The cost for obtaining such advice from private companies can be subsided by public funding (Koutsouris, 2014).

Aim and methods

Objectives

The main objective of the proposal is to understand the way that the AKIS support and encourage the implementation of innovative actions in the agricultural sector within the Greek reality, as well as to explore alternative ways that the flow of knowledge between research and farming practice (and vice versa) can take place, in order to make it more effective.
To fulfill the main objective it is necessary to achieve the following secondary objectives:

1. The development of a methodology and an analytical framework that describes the AKIS and the stakeholders involved, as well as the analysis of the flow of knowledge among them.
2. The registration of the existing AKIS and the actors involved.
3. The description and analysis of formal and informal interactions (i.e. the flow of knowledge) among farmers, research bodies and the actors involved in the dissemination of knowledge.
4. The description and analysis of farmers' access to extension services and to the results of research projects. Furthermore, the identification of difficulties of the farmers as regards their access to advice services.
5. To find ways of strengthening the flow of knowledge and coordination between research, dissemination of knowledge and practice. In particular, major issues comprise:
    (i) the supply of incentives for research in order to correspond to real rural needs,
    (ii) the utilization of flows between consulting actors and research institutions,
    (iii) the implementation of innovative practices and techniques.
6. The dissemination of results.

The methodology of the research

The approach that was used in order to describe the actors and their interactions was that of the AKIS. Moreover, AKIS was used as a tool for policy proposals. Within the context of this proposal, the AKIS include:

- all rural actors, organizations and networks which are included in the processes of knowledge creation, as well as their connections and interactions.
- the formal links between public and private actors and the informal knowledge networks among all the actors, including the farmers.
- non-traditional actors-processes such as the Global Framework for Good Agricultural Practices.
- barriers and opportunities in the flow of knowledge, such as access to it, incentives, cultural beliefs, trust, etc. These facts are crucial because, in order to support the creation and effective flow knowledge and innovation, it is essential to create an appropriate environment.

The other methodological tool that was used is the Quantitative Network Analysis. This analysis is based on the theory of social policy networks (Büskens, 1999, Brandes et al., 2001, Knoke and Kuklinski, 1982, Marsh and Rhodes, 1992). A network is defined as a system of interactions and relationships between actors (organizations, interest groups, investors, etc.). These interactions take place at different levels: trust or mistrust, institutional pressure - the extent to which each member of the network is identified with the organization or the group to which it belongs, incentives (monetary or other), information flow and communication, characteristics and perceptions.

According to the quantitative network analysis, the characteristics of an actor, the position, the role and the behavior are not innate or hereditary, but formed by the interaction with other players within a network. The actor may exhibit different behaviors, attitudes, image and status/ position of power or authority (or potential impact pressure), depending on the environment of the network. Rametsteiner and Weiss (2006) argue that each system is a set that works due to the interaction of its members.

Using the AKIS as the framework of analysis and the implementation of Quantitative Network Analysis, it is possible to reach conclusions as regards:

- An inventory of all the actors in the system of research – knowledge dissemination - farmers.
- The description of formal and informal relationships and interactions.
- Finding the barriers and limitations of communication within the AKIS.
- The exploration how to link agricultural practice and scientific research.

In this research project, the actors of the Greek AKIS were grouped in three categories based on the classification of the IN-SIGHT project, as discussed in the introduction:

1) The Public Decision-Making System, which includes services of central government and regional organizations. Questionnaires were sent in public services of the (former) prefectural level in the Region of Central Macedonia, in public services of regional level as well as the Genaral Directories of the (former) Ministry of Rural Development and Food.

2) Information and Knowledge System, which includes research institutes, universities, advisory service providers to rural entrepreneurs (private or public), agricultural associations, agricultural schools, NGOs. The sample includes Universities and Technological Educational Institutes of the country, lyciums (secondary education) with a field of agronomy, OPEKEPE (Greek Payment Authority of Common Agricultural Policy) centers, OGEEKA (Organisation of Agricultural Vocational Education, Training and Employment), ELGO Dimitra (ex National Agricultural Research Foundation) and private consulting services.
3) Socio-economic system, including rural entrepreneurs and SMEs, suppliers of technical inputs, cooperatives - producers' associations, processing and sale companies, media and banks - financial advisors.

It should be noted that the fourth category in the IN-SIGHT project are the end users (consumers). However, in the context of this research, this group was not examined.

Sample analysis

The whole sample includes 117 valid questionnaires that have been gathered after sending 824 e-mails (special questionnaire was built using GoogleForms platform) mainly in the region of Central Macedonia. 50 were gathered from the prefecture of Thessaloniki, 20 from the prefecture of Imathia, 15 from Chalkidiki and the remaining 22 from 15 other prefectures. The public decision-making system includes 18 questionnaires (15%) answered from public services. The information and knowledge system, as regards the private sector, includes six questionnaires (5%) by private advisors / consultants / contractors and 16 (14%) as regards the public sector (Universities and Technological Educational Institutes). This category also includes three questionnaires from organizations in the wider public sector. Finally, the socio-economic system is dominated by rural entrepreneurs (farmers, breeders and others) with 37 responses (32%), 17 (15%) questionnaires come from employers of private enterprises, and six from cooperative representatives (5%).

From the total respondents, 72% consider rural activities as their primary occupation (48 replies), while 57% stated that they have some income (main or additional) from rural activities. The majority of respondents who have income from agricultural activities worked in agriculture (60%), and 21% in livestock. Regarding the overall demographics of the sample, 77% are men (90 responses) with an average age of 44 years. 37% have completed only secondary education. As regards the rest, who are university graduates, 14% holds a graduate degree and 16% a PhD degree. 21% does not speak any foreign language, 59% of one and 16% two. The average amount of income is estimated at €14.893 and a positive correlation with the level of education was observed.

In the group of rural entrepreneurs, the majority has completed only the secondary education (70%). 41% does not speak any foreign language, while 51% speaks one. They are classified in low-income classes since 24% has personal income between €5.001-10.000 and 32% €15.001-20.000. The average age is 45 years and that of professional experience is 21.

Results

The questionnaire comprises of eight sections and the data were analyzed using the spearman coefficient of correlation. The first section of the questionnaire aims to explore the ways that the sample uses in order to update their knowledge about rural issues. The results reveal that half of the sample has attended a conference /exhibition / seminar at least once during the last three years. The groups that had the lower attendance rates were the rural entrepreneurs and the public servants. Furthermore, most in these categories stated that they had not traveled by airplane during the last three years. In contrast, within the other categories the use of airplane was more frequent and they had higher rates of participation in conferences/exhibitions/seminars during the last three years. All categories of respondents stated that they use the internet very often.

The second section of the questionnaire investigates the way that innovation is perceived. The respondents state that the most interesting innovations are a new method/ technique (26%), a new product (16%) and a new way of working/ organization/ function (15%). The rural entrepreneurs also point out the use of a new machine (14%). The sample was also asked for their attitude towards an innovation in terms of problems and costs that it may entail. The majority viewed an innovation that could create minor problems to the

respondents themselves positively. But if it entailed monetary cost without benefit to the respondents, the majority answered that they would be cautious towards it, especially if they had low income or if they belonged to the group of rural entrepreneurs.

In the third section, the sample was asked for the incentives they considered more appealing in order to implement an investment in four fields: (a) a new method or means of cultivation/ breeding (e.g. new machine, new pesticides, new feed, new way of toiletries, etc.), (b) a new variety of species that are already nurtured/ nourished by the farmer, (c) cultivation or breeding of a completely new plant or animal species and (d) the implementation of an investment in the sector of agro-tourism. The different incentives included: (a) subsidy from public resources or participation in the cost of the investment, (b) the existence of free monitoring and assistance from agronomists/ vets/ scholars, (c) simplicity of the investment and (d) whether the investment has already been applied by others. In all types of investments, the most frequent answer (incentive) was the existence of free monitoring and assistance from agronomists/ vets/ scholars by 34-36%. Second was the subsidy from public resources or participation in the cost of the investment (29-34%), third the simplicity of the investment (22%) and lastly the already applied investment has others (10%).
In the same section, the sample was asked what they would consider as positive features of an innovative procedure/ legislation as regards rural development. The first was the possibility to fulfill quickly a case (32%), the second to have clear criteria and predictable effects from the beginning (30%), third, the possibility to be completed without the mediation of an advisor (27%) and finally the possibility that gives to the applicant to repeat the request (11%).

In the forth section, the respondents were asked whether they believe that they need constant training as regard their professional issues. The majority (83%) answered “yes”. Public servants tended to answer “no” in contrast to the employees of the private sector who tended to answer “yes”. The fields where the respondents would prefer to be trained are: law issues/ institutional framework (15%), funding programs (15%), marketing (10%), tax issues (9%), management (9%), new fertilizers chemicals and their proper use (8%), cultivation practices (8%). Compared to the other groups, rural entrepreneurs considered very important information considering new fertilizers and chemicals and their proper use.

In the fifth section of the questionnaire, the respondents were asked for issues regarding the research that is made from the universities, the technological educational institutions and other research centers. In the first question, they were asked about which they believe to be the possible sources that researchers use, in order to set research questions. The most frequent answers were farmers (27%), literature and internet (23%), private advisors (21%), private companies (15%), public services (7%), mass media and internet (5%). The respondents that have not completed higher education seemed to consider farmers as sources of knowledge and information, while those who have completed higher education the literature.
The second question of this section considered the incentives of the researchers. The answers that were given are: the production of knowledge that is not connected to the needs of the farmers (27%), getting funds for research (27%), correspondence to the real needs of the farmers (23%), professional advancement (21%). Those of the questioned who had completed highest educational tended to answer that funding is the main incentive, whereas the less educated considered the response to the real problems/needs. The group of professors/ researchers tended to choose as incentive their professional advancement.
Finally, the respondents were asked whether research is close to the real needs of the society or not. Half of them answered “rather yes” and 37% “rather no”. Those who have completed only secondary education believe that scientific research is close to the real needs of society in a higher proportion than those who have a degree of highest education.

The sixth section of the questionnaire was addressed only to those who had income from rural activities. It was answered from 67 respondents (57%), 48 of whom consider rural activities as their main profession. In the first question, farmers were asked for their own sources of information as regards professional issues. Most farmers get information mainly from other farmers (29%), especially if they are quite experienced or if they have relatively low levels of education or income. Secondly, they prefer more to address to

cooperatives (19%) and private consultants (15%) than public services (12%), whereas universities and technological educational institutions are their last choice (9%).
The second question of this section concerned the means of information that rural professionals choose. They choose internet by 47%, local publications (20%), newspapers (14%), scientific journals (8%) and television (8%).
The third question refers to the obstacles of gathering information from public services. The most frequent is the long distance from the public services (21%), the reluctance of public servants to answer the phone calls (18%) and the ignorance of the public servants to answer (18%). Only a small percentage of respondents (15%) stated that they never address to public services and 23% stated that they do not face any obstacles.
In the last question of this section, the sample was asked for their willingness to attend groups with other farmers (without external coordinators) in order to discuss their problems. This is an innovation that has successfully taken place in the Netherlands. Most of the questioned answered that they would be willing to engage in self-organized groups (70%). Only 12% replied that they would not attend such groups whereas 9% would prefer external coordination.

The seventh section of the questionnaire covered the network analysis. The sample was asked for the contacts they had with other actors of the AKIS during the last five years. The possible answers were: (a) I did not have any contacts, (b) I received useful information on administrative-legislative issues, (c) I received useful information on financial issues, (d) I received useful information on technical issues, (e) I did not receive any useful information and I wasted my time, (f) I tried to get information but I did not achieve it. From these data can be drawn conclusions concerning the interaction among the actors of the AKIS as well as the quality of the information they have exchanged.
Firstly, the data were analyzed using Spearman's coefficient of correlation. Rural entrepreneurs state that they did not have any contact with professionals in the field of education/ research nor with public servants or private companies. Actors in the field of education/ research appear to have contacts only with other actors in the same field. Public servants appear to be isolated from the other groups. Employees of the private sector seem to be the only group that has interactions with other groups. Therefore, it could be claimed that it consists the main means of the flow of knowledge within the AKIS.
Secondly, the data were used in quantitative network analysis. As regards administrative/ legislative information, farmers' associations and the directory of agriculture are the best "postmen" (traffickers) of the administrative information. Thus, farmers appear to have an active role in the AKIS. However, those who posse the most important information are the directory of agriculture and the private sector (supply companies).
As regards the financial information, the most important "postman" (trafficker) is the private advisor. However, he does not decide which kind of information is important to know. This is done by farmers' associations (experience) and fish farmers (innovative entrepreneurs).
The most neglected actors appear to be directories of the central state, agritouristic entrepreneurs and woodcutters. Highest intitutions appear to have a middle level of ignorance. These conclusions underline the role thoso who are practically engaged to agriculture.
The most important postmen of technical information are farmers and universities. Therefore, it seems to be a close connection of universities with the real needs in agriculture. As regards to who defines what information it is important o know, too many actors are involved (farmers, universities, technological educational institutions, farmers' associations, private advisors, supply companies, etc., even woodcutters).
The actors that provide useless information are the administration of central Macedonia and the farmers. The first because it is a rather ignored actor and the latter because had a very active role in previous networks and they became target of criticism

Conclusions
Only half of the sample answered that they had attended a conference /exhibition/ seminar during the last three years. The rates of the rural entrepreneurs are low, a fact that means that they do not update their knowledge participating in such actions.
As interesting innovation is considered a new method/ technique, a new product and a new way of working/ organization/ function while the rural entrepreneurs also point out a new machine. The most

important incentive to carry out an investment is considered the existence of free monitoring and assistance from agronomists/ vets/ scholars and secondly the existence of a subsidy or the public participation in the cost of the investment. The most positive characteristics of an innovative process/ legislation relating to rural development are considered the quick handling of a case.

The majority of respondents (employees in private companies much more than public servants) stated that they would prefer having continuous training to professional issues in (a) law issues / institutional framework, (b) funding programs and (c) marketing of agricultural products and (d) new fertilizers and chemicals and their proper use (for rural entrepreneurs).

Farmers get information mainly from other farmers. Secondly, they prefer cooperatives and private consultants than public services. Universities and technological educational institutions comprise their last choice. Therefore, the flow of knowledge and information takes place mainly among farmers and less among farmers and employees of private companies or public services. As source of information, most preferred the internet and secondly local publications and newspapers. Farmers face several obstacles of gathering information from public services. Since only 23% stated that they faced no obstacles, we can conclude that communication of farmers to the public sector is rather problematic, hindering the flow of knowledge between the two systems.

Network analysis using Spearman's coefficient of correlation revealed that the flow of knowledge takes place made rather "horizontally" within either the rural entrepreneurs or the research system. The contacts between the two groups them are rather limited. The group of actors that appears to have more contacts with other groups is that of employees of private companies.

The quantitative network analysis revealed the active role of farmers in the flow of technical and administrative knowledge, even though it is characterized as worthless. The private sector dominates as regards financial information and the state services appear to be rather neglected actors of the Greek AKIS. These results form a picture of a rather fragmented AKIS where private sector and individual farmers constitute the main actors of the flow of knowledge without a substantial participation of the state.

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AGROTOURISM AS A FORM OF BALANCED AND MULTIFUNCTIONAL DEVELOPMENT OF HIGH NATURE VALUE FARMLAND AREAS IN THE LUBELSKIE VOIVODSHIP

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Abstract
Agribusiness is one of the areas of an activity undertaken by rural households, which are seeking additional income sources. This form of providing tourism-related services gains importance in the context of multifunctional and balanced development of rural areas. Due to their specificity and characteristic environmental benefits, areas of natural value constitute a territorially important sector of providing rural tourism services.
The main aim of the following article is to determine the factors that contribute to undertaking an agricultural activity in the context of balanced and multifunctional development.
The research paper was written on the basis of data analysis of 39 rural households rendering agricultural services and located in areas of high nature value in the Lubelskie Voivodship. The article has been based on the data obtained in the research study number 2011/ 01/ D/ HS4/ 03927 entitled "Ecological determinants and factors contributing to the development of agricultural functions in the areas of natural value in the Lubelskie Voivodship" financed from the resources of National Science Centre.

Keywords: rural households, agro-tourism, multifunctional and balanced development, high nature value areas

JEL Codes: L83, R58, Q56, O52

Introduction

The notion of natural value areas has been conceptualised in a variety of ways. According to one of the definitions indicated by L. Ryszkowski, the aforementioned areas are "the territory inhabited by an organism, species or a group of organisms or even a malnourished creature, whole habitat, ecosystem as well as landscape, selected on the basis of their rarity, typicality, usefulness, symbolicity, aesthetic value, etc." (Ryszkowski, 1984). The concepts of high nature value areas and conservation areas are not identical since despite their considerable environmental and ecological quality, the aforementioned areas are not always protected (as defined by law). Taking into account the subject of analysis that the following research paper touches upon, which is agro-tourism activity, it must be said that the essence of high nature value areas is well expressed by the definition suggested by M. Dobrzańska. The definition specifies nature value areas as those areas whose biological diversity consists or may consist (should correct directions and methods be chosen) a dominant, essential factor of agricultural activity, or it restricts to a substantial degree the forms of management that go against the fundamental purpose which high nature value areas exist for, namely maintaining the biological diversity" (Dobrzańska, 2007).
Biological diversity and environmental values may constitute a crucial factor activating farmers to undertake agribusiness. Implementing non-agricultural forms of activity is a substantial element of multifunctional development of rural areas. This activity is said to provide opportunities for households to gain profits as well as to create new workplaces in rural areas, which is consistent with the definition of versality presented by M. Kłodziński. He views multifunctional development as a concept of economic activation of rural areas and agriculture, which is supposed to stimulate the growth in rural household income and from rural communities emigration. The role of multifunctional development is not only to promote the non-agricultural activity but also to promulgate remittance services, services for rural communities particularly in the range of environment and landscape protection (Kłodziński, 2008). Agricultural activity in high nature value areas fits in perfectly with this concept.
The program of multifunctional development is in a way complementary to the conception of balanced development, it being constantly the subject of discussion and analysis (Gudowski, 2009). Balanced rural development should perhaps be carried out through the intensification of versality, which in turn should

support respecting the norms of balanced development in particular spheres of socio-agricultural activity of the rural population (Koreleski, 1998).
As part of searching for additional income sources of income, the area of activity undertaken by rural households is agro-tourism. Its fundamental domain is organising tourists' stay on a farm with the use of the potential of agricultural holding, environmental and cultural values as well as regional and rural infrastructure (Balińska and Sikorska-Wolak, 2001). Agro-tourism is a part of rural tourism whose main service proposal focuses on the farmhouse bed and breakfast accommodation with an option to purchase farm goods. Agro-tourism comprises a mutual relationship between a tourist, nature and a household owner living in accordance with nature (Sikora and Wartecka-Ważyńska, 2013). It is a form of activity that enables the concept of multifunctional and balanced development with the usage of environmental values of high nature value areas to be implemented.

Aims and methods

The research comprising the subject of analysis in the following article was conducted in November – December 2013 in 40 rural and rural-urban municipalities in the Lubelskie Voivodship. The selection of municipalities for the purpose of the following research study was made with the use of ecological value analysis conducted on the basis of the indicator developed by D.Guzal-Dec as part of studying ecological value of rural and rural-urban municipalities in the Lubelskie Voivodship (Guzal-Dec, 2013). Due to the ecological value analysis, 30 municipalities with an increased ecological value and 10 comparative municipalities were selected. The main research tool used for examining agro-tourism households was a questionnaire. The research study was conducted in 50 households, 78% of which comprised the increased ecological value municipalities. The analysis was carried out using SPSS packet whilst the study results were presented by means of the tables and charts.
The article was written on the basis of the data from the research project number 2011/ 01/ D/ HS4/ 03927 entitled "Ecological determinants and factors contributing to the development of agricultural functions in the areas of natural value in the Lubelskie Voivodship" financed from the resources of National Science Centre.

Results

Aiming for the characterisation of agro-tourism households, two areas of activity should be taken into consideration: agricultural production and service activity. The tested households dealt mainly with plant production. An average area of rural households in nature value municipalities was 12.36ha (standard deviation 18.11), whereas in comparative municipalities – 8.27ha (standard deviation 6.29). The potential in the range of providing agro-tourism services has been proved by the number of accommodation places offered by households.

Table 1 The characterisation of agro-tourism households given an average number of accommodation places and rooms.

Number of accommodation places:	**Households in**			
	High nature value municipalities		**Comparative municipalities**	
	Average	**Standard deviation**	**Average**	**Standard deviation**
at the landlord's	9.17	5.26	9.11	3.65
in a separate residential building	16.10	15.85	15.75	8.09
The number of host rooms:				
at the landlord's	3.75	1.96	3.30	1.49
with private facilities	2.44	1.61	1.80	1.31
in a separate residential building	3.68	4.94	7.25	3.20
with private facilities	3.35	5.27	7.25	3.20

Source: Own study based on extensive research.

An average number of accommodation places at the landlord's house as well as in a separate residential building in the areas of both high nature value and comparative municipalities was approximately the same (Table 1). The obtained result relating to the number of accommodation places at the landlord's house in municipalities with higher environmental attractiveness was 9.17 (standard deviation 5.26), it being 9.11 (standard deviation 3.65) at comparative municipality lessors'. More prominent differences can be seen in the case of the number of rooms in separate residential buildings. A higher result – 7.25 (standard deviation 3.20)- was obtained as regards comparative municipality households.
Creating a household providing agro-tourism services means preparing an additional service offer. Their range ought to be varied and related to: food, accommodation as well as different forms of qualified tourism or equipment rent (Durydivka, 2012). Careful analysis of researched households' offer leads to the conclusion that this offer has been created according to their rules.

Table 2 Attractions/ services offered by agro-tourism households from high nature value and comparative municipalities (provided in %).

Specification	**Households from**	
	High nature value municipalities	**High nature value municipalities**
fire, barbecue	89.5	72.7
kitchen for tourists' use	86.8	90.9
playground for children	69.4	36.4
full board	56.8	54.5
fishing	50.0	18.2
tent area, campsite	48.4	9.1
open-air events	40.5	27.3
(e.g. volleyball) court	33.3	9.1
guide services	32.4	9.1
chaise, sled	32.4	27.3
fish pond	30.6	18.2
organizing kayaking trips	24.3	18.2
horse riding	21.6	9.1
work/ help on the farm	20.0	27.3
organising a conference	13.5	9.1
local apprenticeship option	8.3	9.1
sauna	5.4	0.0
sporting equipment rental		
a bicycle	63.9	27.3
a kayak	14.3	9.1
ski	5.7	0.0

Source: Own study based on extensive research.

Those in charge of households in high nature value municipalities indicated most frequently the following elements offered by a household: campfire spot or barbecue (89.5%), kitchen available for tourists' use (86.5%), playground for children (69.4%), as well as full board (56.8%). As regards households in comparative municipalities, the obtained numbers were mostly lower. It has to be emphasised that the elements indicated in the offer proposed by a small group of agro-tourism households were the attractions connected with additional investments made for their implementation (e.g. horse riding, sauna).
Another issue related to creating a household offer, and consequently its comparative advantage in the market is using extra payment for providing additional services. It is worth indicating that some of the household managers declared to surcharge for using a campfire spot (6.9% of households in high nature value municipalities, 28.6% in comparative municipalities), or even a playground (4.5% of households in high nature value municipalities).

Contemporary agricultural versality, as pointed out by J. Wilkin, is directed at "the outside of the household and serves to satisfy many social needs: environmental, cultural, economic and social" (Wilkin, 2010). Relating to three dimension functions of a household in the context of the development of versality, agro-tourism households fit in perfectly with the dimension of mobilising and forming rural areas. It is done, among other things, through implementing a new non-agricultural activity into the household, as well as obtaining profits outside the household (Adamowicz, 2005).
As indicated by the research conducted in agricultural holdings, which provide agro-tourism services, the factor to have sublimely influenced the decision to start this kind of business was an opportunity to make extra money. The respondents evaluated 16 factors on a scale from 1 to 5, with 1 meaning "little impact" and 5 "enormous impact" on the final decision.

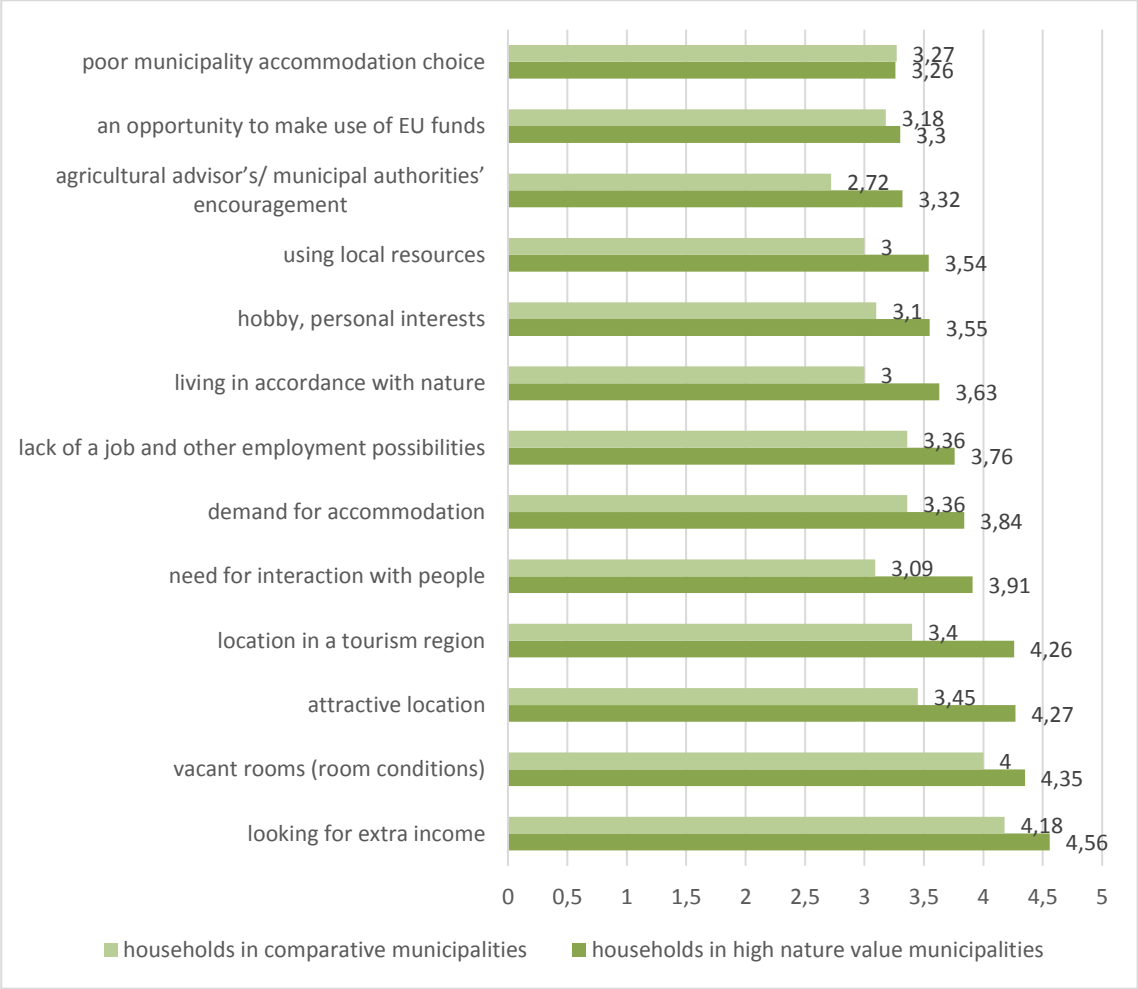

Figure 1 Average assessment of the influence that particular factors have on the decision to start agribusiness.
Source: Own study based on extensive research.

An average result obtained with reference to an opportunity of gaining extra income for household budget support was 4.56 for the households in high nature value municipalities, with standard deviation 0.83. The number was lower in the case of agro-tourism households in comparative municipalities – 4.18 (standard deviation 1.25). Similar results were obtained by R.Marks-Bielska and K.Babuchowska in the research study conducted in 2010 in a group of 51 owners of agro-tourism households in the Warmian-Masurian Voivodship. Over 50% of respondents decided that the main reason for providing agro-tourism services was an opportunity to obtain extra income (Marks-Bielska and Babuchowska, 2013). This factor proves to exert most considerable influence on the decisions in this respect. It is equally important to utilise household resources such as vacant rooms or empty uninhabited buildings. Average assessment of this factor amounted to 4.35 as regards the owners of households in high nature value municipalities (standard

deviation 0.78) and 4.00 in the case of comparative municipality managers (standard deviation 0.63). Attractive territorial location of the farm as well as the whole municipality in tourism region was evaluated slightly lower in comparison to the other factors (Figure 1).
The specificity of providing agro-tourism services is associated with organising tourists' stays on a farm, using its potential and environmental-cultural values as well as regional and rural infrastructure (Balińska and Sikorska-Wolak, 2001). Research respondents were supposed to asses the following factors.

Table 3 Factors determining the area attractiveness in the opinion of agro-tourism household managers (provided in %)

Specification	Overall	Households in	
		high nature value municipalities	comparative municipalities
landscape values	98.0	100.0	90.9
forest proximity	97.9	100.0	90.0
peace and quiet	95.7	97.2	90.9
good transport	91.3	97.2	70.0
a variety of tourist routes in the area	79.2	86.8	50.0
interesting folklore and traditions	75.0	75.7	72.7
access to baths, ponds and pools	60.9	69.4	30.0
a number of sights, antique buildings and museums in the area	58.3	62.2	45.5
access to lakes and rivers for swimming or sailing	54.3	66.7	10.0
access to winter attractions (ski lifts, running tracks)	39.1	50.0	0.0
frequent festivals and concerts in the area	34.8	41.7	10.0

Source: Own study based on extensive research.

According to the respondents, the attractiveness of the area is considerably influenced by landscape values (98%). These values have a significant impact on tourists' choice of the type of leisure. Another factor claimed to influence the attractiveness of the area is forest proximity linked to environmental and landscape values. This vital factor was indicated by all household owners in high nature value municipalities (Table 3). In the respondents' opinion, tourist routes or folklore and tradition were equally important elements to increase the tourism attractiveness of the neighbouring area.

Conclusion

Agricultural activity is a form of providing services for a large group of recipients. Due to being based on the cooperation with an agricultural holding, they are specific services. Agro-tourism is a form of activity combining all the important characteristic features of the concept of balanced and multifunctional development. It enables using environmental values of rural areas with a beneficial effect on socio-economic aspects characterising rural population. It also creates possibilities of activating household members and increases the household income.
Questionnaires carried out in the group of agro-tourism households lead to the conclusion that it is the financial aspect that most considerably influences the frequency of undertaking this form of activity. Agro-tourism activity helps to obtain extra income for the household. An average percentage share of tourism income in a household income was 21.73%) considering the households in high nature value municipalities and 6.4% as regards those in comparative municipalities. The obtained results indicate that agro-tourism activity is a crucial source of household's income.
The decision to start this form of activity was influenced not only by economic factors but also the possibility to utilise local resources and environmental values. In respondents' view, they are an important element contributing to the attractiveness of the areas.

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INNOVATIVE EXTENSION SYSTEMS IN AGRICULTURE AND RURAL AREAS

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Agricultural extension and advisory services have required importance as a consequence of increased attention for food production and related innovation processes in rural areas. In Europe, the recent agricultural policy (CAP) strategy aims at a “green growth” that is based on a “viable food production”, a “sustainable management of natural resources” and a “balanced territorial development”. In this context, it is widely assumed that farmers, especially small-scale farmers, need to have access to a broad range of information and knowledge sources. Supporting farmers in accessing this knowledge has typically been a function of public advisory services. The decrease in budget expenses on public advisory services and low effectiveness of advisory work have caused processes started in 1987 of commercialization and privatization of public organizations which result in pluralistic advisory systems in most countries of the world.

The key question of the paper is how to create more innovative extension systems. Based on research results conducted in 27 EU countries in the framework of FP7 PRO AKIS in the years 2012-2015 using semi-structured questionnaires, interviews, earlier own research and literature review, the author pointed out four major functions of an innovative, market-driven advisory system in helping small-scale farmers increase their farm income.

Regardless of the adopted structural-organizational and financial solutions, the system of agricultural extension in particular country should have the following characteristics:

- capacity to satisfy needs of extension services recipients and participants of the extension system, which requires: strict linkages between extension and science, giving as a result: qualitatively better advice, better examination of research and extension needs, better technological solutions and more efficient management of holdings taking account of the market needs, support for professional training of producers and rural inhabitants, reaching fast sources of information about research findings, a possibility to use advice of high class specialists, including employees of scientific-research institutes and universities of agriculture;
- social identification of needs and issuing opinions on the performed extension tasks, which will improve efficiency of funds allocated for extension and popularization activities.

He concluded that public extension, which is needed, should give higher priority to process innovation and focus attention on natural resource management practices. To make institutional changes, public extension and advisory services must become more decentralized, farmer-led and market driven and also financially sustainable.

Keywords: agricultural extension, advisory services, small-scale farmers, restructuring of extension systems

JEL Codes: Q16, R10

LAND CONSOLIDATIONS IN THE CZECH REPUBLIC – EFFICIENCY AND ECOLOGICAL ASPECTS OF IMPLEMENTED MEASURES

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Land consolidations are an important instrument for implementation of erosion control and water management measures. They have poly-functional character and contribute to increase of ecological stability and aesthetic of agricultural landscape. Although the land consolidation process does not advance requisitely, it brings unquestionably positive results. Land consolidations are finished at 13 % cadasters in the Czech Republic and the process is running at 7 % cadasters. Twenty five model cadasters with at least one implemented erosion control or water management measure have been chosen with aim to evaluate efficiency of measures and their influence on landscape characteristics and functions. They are spread all over the Czech Republic and they represent its various natural and anthropic conditions. Results of the evaluation confirmed that efficiency of implemented measures is good in sphere of erosion and flood control and also their influence on ecological stability, landscape patency and aesthetic is positive.

Keywords: land consolidation, common facility, erosion and flood control, efficiency, landscape functions

JEL Codes: R52, Q57, O52

LAND CONSOLIDATION IN THE CZECH REPUBLIC BY THE VIEW OF RURAL INHABITANTS

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Land consolidation in the Czech Republic is one of important instruments of rural development. Its application consists of the organization of individual plots to ensure their accessibility, interlining or allocation and balancing the borders with the aim of rational territorial management. In these sense, property rights are settled. At the same time, environmental conditions, soil protection, water management and ecological stability of landscape (in particular flood and erosion control measures or systems of ecological stability of landscape) are realized through the land consolidation process. The aim of the study was to evaluate the perception of importance of land consolidation by different rural stakeholders (municipalities, agricultural organizations, farmers) in areas were the land consolidation was, is in progress and under preparation. Questionnaire was directed mainly on following issues: understanding the aim and course of the land consolidation process, land consolidation pros and cons, general meaning about land consolidation process. Evaluation of the questionnaire shows (among others), that about a half of respondents believe that the measurements brought rather benefits whereas 41% of respondents highlight rather problems. The negative side of the land consolidation measurements are seen mostly in the time delays and demanding administration; in the case of enterprises also in complications with farming on land.

Keywords: land consolidation, perception, quantitative research, common facilities

JEL Codes: R52, O52

ANALYSIS OF URBAN AGRICULTURE FOR LAND USE PLANNING IN ALMADA, PORTUGAL

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The purpose of this study is to create a methodology for identifying and quantifiably measuring agricultural land use within a set urban boundary. Further qualitative information is gained through onsite stakeholder interviews, providing insight on the incentives for agricultural land use and land use change in the area. The resulting data from this study has the potential to be used in conjunction with other available data (i.e. demographic data and zoning maps) in order to make land use change predictions and zoning decisions among other uses. The case study performed in Almada, Portugal expresses results which show the value of municipal zoning and agricultural land preservation in the area and furthermore reveals a conflict between land ownership and land use.

Keywords: urban agriculture, land use change, satellite imagery, qualitative research, mapping, GIS, Lisbon, Portugal, landscape planning

JEL Codes: O13, R14, O52

CONCLUSIONS AND POLICY RECOMMENDATIONS

CONCLUSIONS AND POLICY RECOMMENDATIONS

The main objective of the SURAP international conference was to present and discuss new approaches to development of rural areas. Following areas of scientific interest were included:

1. New approaches to revitalization of rural economy and rural communities: increasing incomes of rural population, creating jobs in rural areas, diversification of rural economy, diversification of agricultural activities, rural tourism, use of local resources, social aspects of rural community development.
2. New environmental approaches in management of rural landscape: green growth, biodiversity, soil and water issues, development and support of environmental services.
3. Agriculture, agricultural land and spatial planning: possession of agricultural land, protection of agricultural land.

Total number of participants was 131, of which 11 key speakers (one of them from OECD), 6 special guests and 2 members of CRP programme. Together 11 key papers, 39 papers and 22 posters were presented.

Key speakers from University of Wageningen and Instituut voor Agrarisch Recht, Wageningen (Netherland); Countryside and community research institute, Gloucestershire, University of Leeds and Manchester Metropolitan University (United Kingdom); University of life sciences, Prague (Czech Republic); Canadian Forest Service and University of Guelph, Ontario (Canada); Cornell University (USA); OECD (France); and Pisa University (Italy) presented their papers.

The other participants came from following countries: Algeria, Austria, Belgium, Czech Republic, Estonia, Greece, Hungary, Italy, Poland, Romania, Slovak Republic, Slovenia, Sweden and Ukraine. As special guests, Head of Representation of the European Commission in Slovakia, state secretaries of Ministry of Transport, Construction and Regional Development and Ministry of Agriculture and Rural Development of the Slovak Republic and Head of the Department of strategic activities of the Nitra self-governing region were present. From Slovak University of Agriculture as a hosting institution, 35 members of three faculties took part in the conference. Majority of the total number of participants were academic and research staff. From public administration 6 members were present. Civil society was represented by 2 participants.

Apart this conference proceeding, special issue of journal European Countryside (number 2 of the 8 volume) with selected papers (Järv H., Kliimask J., Ward R., Sepp K./ Lipińska I./ Krajčírová R., Ferenczi Vaňová A., Munk M./ Chalupová M., Prokop M. Rojík S./ Jarábková J., Majstríková Ľ., Kozolka T./ Chreneková M., Melichová K., Marišová E., Moroz S./ Bohátová Z., Schwarcz P., Schwarczová L., Bandlerová A., TÍčik V./ Bumbalová M., Takáč I., Tvrdoňová J., Valach M./ Dwyer J./ Brown David L., Schucksmith M.) was published. It can be found on: http://www.degruyter.com/view/j/euco.2016.8.issue-2/issuefiles/euco.2016.8.issue-2.xml.

The conference was organized in cooperation with the regional authorities, Slovak Ministry of Agriculture and Rural Development, Ministry of Transport, Construction and Regional Development, Government Office, representation of the European Commission in the Slovak Republic. The representatives of these authorities attended conference plenary and parallel sessions and participated in formulation of conference conclusions.

As a conclusion, new challenges for policymakers and institutions (legislative support for rural development; policies at local, regional, national and international levels, their impact and financial security; competencies, position and influence of institutions; efficiency of institutional protection; legislative instruments of rural development support; and new challenges and legislation barriers for rural development) were formulated, having in mind agriculture and the other types of economic activities.

Major highlights from the presentations

- In some countries, deep regional disparities still persist – both in rural-urban context and between specific higher territorial units.
- At the national level, diversification of activities in agriculture is on the rise, however, at the regional level, in some regions specialization, mainly on crop production, is still underway with serious implication for sustainability of rural areas.
- There are missing components of regional agriculture and food value chains, leading to low regional employment multiplier.
- In lagging underdeveloped regions, dominant sectors are uncompetitive.
- There are many cases of overestimation of potential of tourism in the context of development of rural areas, there is a need to address the fact that tourism is both supply and demand driven industry, which heavily affects the potential of tourism as a development driver in specific regions.
- Innovation activity in rural areas is underestimated – innovations are generated in rural areas as well, they are, however, specific in that they usually solve specific problems and are implemented immediately with low emphasis on patenting, which excludes them from official statistics.
- Ecosystem services derived from soils are as essential as water for human existence.
- Landscape composition – perennial or annual typologies – can be strategic to meet societal objectives like water quality and biodiversity.

Major outcomes and conclusions in terms of policy relevance

Conclusions with policy relevance were also discussed:

- Support of real innovation for sustainability of rural areas (build for long-term, and not just support conventional change);
- Support of activities in rural regions without copying the mechanisms of support in urban setting, and without "copy-pasting" best practices identified in other countries; special measures taking into account specific conditions of innovation process in rural areas are needed;
- More even risk-sharing in governance - offer certainty, aid, delivery (long-term staff, personal contact, transparent processes and decisions);
- Avoid audit-led policy design (bureaucratic, inflexible, inefficient);
- More emphasis on involvement of all local stakeholder in local development planning and implementing process – including the attitudes of inhabitants and their vision, ensure peer evaluation and reach the disengaged;
- Stress connecting people and communities – extend networks; sponsor events; advice; opportunities for businesses / communities to travel, reflect, exchange ideas;
- Consider first funding learning, and then funding project applications;
- Professionalise the funding service – consider early, how to use funds in complementary and integrated ways;
- Support to an agro-ecological turn (which means stimulation for on-cooperative and small farm processing, improve and strengthen greening components of the Common Agricultural Policy), agricultural policy reform need to shift to green growth and other public goods and away from commodity production;
- Regulation can differentiate landscape goals based on geographies, both cultural and ecological.
- To intervene to use rainwater as a basis for resilience in the face of climate change – more sustainable agricultural production;
- To strengthen education about fundamentals of green growth through all levels of education so that Green Growth provides new paradigm for research and innovation: R for D rather than R&D;
- To integrate food and water policy into the same political spheres;
- Policy needs to be carefully crafted because while it can be highly specific to meet environmental goals and address cultural objectives it has to survive court challenges;

- Public policy should shift to create conditions for effective implementation of landscape diversity and perennial cover and away from counter-productive annual crop supports.

Emerging issues for rural research were formulated as: determinants and consequences of changing nature of rural – urban interdependence, vulnerability of rural people and communities, interdependence of nature and rural society, changing nature of migration and displacement occurring in rural places. To contribute ameliorating these challenges of the 21st century, rural studies must work across boundaries between academic disciplines, universities and society, research, teaching and engagement and between nations.

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