

the community to it. Local government decisions on directions of change are independent but usually take place with the use of expert knowledge. In the model alliances, local governments cooperate with NGOs (i.e. "modern" - deeply involved in the development of communes), basing on the expert and managerial knowledge. The bottom-up model is based on the cooperation of local government using the ideas growing out of local knowledge, thus, it plays a major role. The integrated model is characterized by the participation of various groups making up the community and cooperating with it (local government, NGOs, local people) in decision-making regarding the future direction of the commune and the integration of all types of knowledge.

A number of conditions were assumed for a relatively unambiguous assignment when attempting to identify the models of sustainable development present in the surveyed communes of the Lublin voivodeship. The agency model assumes that local power is the main subject of the creation of a local development strategy – socialization of the strategy development process can take place after its publication. Decisiveness of local authorities will strengthen their overrepresentation (larger than 1/3 share) in the structures of the Councils of LAGs. The development of competence in implementing the environmental and development policy enables the organization of work of councillors, as reflected in the creation of problem groups - standing committees for the Municipal Council on environmental / economic issues / development of the selected function.

Institutional civic community creates the conditions for the model of alliances. Participation of NGOs in the development of the development strategy is recommended in this model. The "modern" NGOs (taking up comprehensive pro-development activities for the local community as opposed to the "traditional" NGOs in rural areas, such as: voluntary fire brigades, rural housewives' meetings - operating in selected areas of development). In this model, municipal governments should create the conditions for a debate with NGOs and cooperate in the field of ecology with ecological organizations.

Informal civic community creates the conditions for the bottom-up model. In the bottom-up model commune inhabitants should be co-authors of the commune's development strategy, the structure of LAG councils should exist with apparent dominance of the social sector. It is advisable for the government to work with residents in the field of ecology.

Ideal civic community creates ideal conditions for the integrated model. In this model, the authors of the commune's development strategy should be all of the representatives of the local community and external experts. The structure of LAG councils should represent an equivalent participation of sectors in deciding on the development of communes. It is a long-standing experience in cross-sectoral cooperation of local governments (including outside of LGDs) and constant cooperation with such research centres as business clusters. There should be conditions created to debate with NGOs, representing LAG councils in a number of issues. In order to increase the own potential of knowledge, local governments should properly organize the work of the Municipal Councils (creating permanent committees on environmental

/ economic development / selected function / direction of development). In the implementation of environmental actions, municipal governments should work both with the locals and ecological organizations, so that the cumulative effect of the knowledge of the local community took place.

Table 2

Scheme of sustainable model types determination in the communes located in environmentally valuable areas

model type classification criteria	agency	alliances	bottom-up	integrated
Share of residents in the creation of development strategies	-	-	+	+
Participation of local authorities in creating development strategies	+	+	+	+
Participation of external experts in the creation of a development strategy	+/-	+/-	-/+	+
Participation of NGOs in the creation of a development strategy	-	+	-	+
The occurrence of the standing committees of the Municipal Council for environmental / economic selected development function	+	-/+	+/-	+
LAG council structure	50% self-government participation allowed	Participation of "modern" NGOs	Social sector domination	Sector balance
Participation of NGOs in the structures of LAG council	-	-	-	+
Creating conditions for a debate with NGOs	-	+	-	+
Cooperation in the field of ecology with ecological organizations	-	+	-	+
Cooperation in the field of ecology with residents	-	-	-/+	+
Continuous co-operation of local government / community with academic institutions e.g. within a cluster	+/-	+/-	-/+	-/+
Experience in cross-sectoral cooperation outside the LGD	-	-	-	-/+

Source: author's construction based on the research; Explanation of the typology criteria requirements to be met: (+) necessary (+/-) desired, but not necessary (- / +) unnecessary but advisable (-) unnecessary

Most difficulties in describing the models found in the surveyed communes have been connected with the differentiation between the agency and the bottom-up models. Therefore, the following distinguishing criteria have been adopted for the models:

- LGD council structure (with the bottom-up model, the dominance of the social sector, and with the agency model, 50% of the public sector);
- cooperation of residents in environmental efforts (advised in the bottom-up model);
- participation of the residents in the creation of a development strategy (in the bottom-up model contribution of the residents in the development of the document is necessary).

The bottom-up model was the one most widespread within the surveyed communes - a total of 16 indications and in the case of the agency model - a total of 13 indications. A model of alliances has been identified in the case of one commune. In the case of 10 communes, the model implemented has evolved into the integrated model, of which in six that was the bottom-up model towards an integrated one, in three towards the agency model and in one, it was the model of alliances towards the integrated one).

If at least 6 out of the 11 criteria for the identification of the integrated model type were met, it was considered that the present model tended to evolve towards an integrated model. None of the surveyed communes showed participation of NGOs in the creation of the development strategy of the commune, or cooperation with ecological organizations in the field of ecology. Occasionally, cooperation was taken up in clusters, and conditions were created for a debate with NGOs. In the surveyed rural communes an integrated model of sustainable development has not been fully developed, which demonstrates the essence of dim awareness of sustainable management of commune society¹. It must therefore be emphasized that the implementation of the concept of sustainable development of environmentally valuable communes in the environmental dimension requires changing attitudes towards environmental problems of local governments to support the creation of an integrated sustainable development.

Preference for the bottom-up and agency models demonstrates that local government authorities insufficiently platform the development of synergies of different types of social knowledge. Development barrier is the low level of social capital - as indicated by the popularity of the agency model, which is characterized by minimal civic community. The universality of the bottom-up model translates into great opportunities to use local knowledge, but without linking it to the global - expert - knowledge.

The model of the integrated sustainable development and environmental competitiveness of the surveyed communes

In search of the determinants of the success of the communes in achieving competitive advantages in the environmental area, it is important to show the relationship between the level of environmental competitiveness and the model of sustainable development implemented by the communes. Due to the difficulty of measuring environmental competitiveness (operationalization of the concept and availability of data) the measurement accounts for the narrow concept of environmental competitiveness understood as the ability to attract tourists. The level of the environmental competitiveness measured using the ability to attract tourists (the adopted measure - the number using the accommodation as of 31 December 2013) proved to be statistically determined by the model of sustainable development implemented by local governments.

¹ Similarly, paper on the CORASON project, based on rural communes in Lodzkie and Malopolskie voivodeships, also did not reveal the emergence of an integrated model, cf. M. Klekotko 2008.

The level of environmental competitiveness vs. the type of the implemented sustainable development model

Competitiveness level model type	below the arithmetic mean	above the arithmetic mean
aimed at integrating (integrated)	16.67%	83.33%
Other	91.67%	8.33%

Source: author's calculations based on the research

Communes characterized by above-average levels of environmental competitiveness have often implemented models aimed at integrating (Pearson Chi-Square test is 15.09, $df = 1$, at the significance level of $p = 0.0001$). The results obtained allow for the acceptance of the hypothesis set up in the paper, as the governments' efforts to implement an integrated model of sustainable development are characterized by a higher level of environmental competitiveness.

Conclusions, proposals, recommendations

1. An integrated model of sustainable development should be considered optimal in the creating of development of communes located in environmentally valuable areas.
2. It has been shown that local efforts to implement an integrated model of sustainable development are characterized by a higher level of environmental competitiveness.
3. The implementation of this model finds such difficulties as shortage of social capital, which is evident in the preference for the agency model applicable to the low level of social activity.
4. The implementation of the integrated model of sustainable development also requires changes in attitudes and openness of local authorities to widely implemented inter-sectoral cooperation strategies.
5. The surveyed local governments have taken action to create an integrated model, for example, widespread participation in LAGs, the first experience in cross-sectoral cooperation outside LAGs, e.g. in clusters, thus, the execution of the model in at its early stages.
6. Further involvement of local communities in the current financial perspective within the framework of LEADER is advised in order to strengthen local social capital, along with taking up cooperation with LAGs from other regions in the country and abroad for the transfer of positive role models and good practices.
7. Activation of municipal institutions of culture and education in the implementation of projects that integrate social knowledge (local and expert) is aimed at strengthening social capital.
8. Application of specific solutions for enhanced social capital in the surveyed communes requires deeper research in order to identify the problems of development in the various communes.

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SOCIAL INNOVATION AND ITS TYPES IN RURAL AREAS

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Abstract. The growth of modern economic systems has generated more numerous, complex and urgent social challenges. The aim of study is to clarify the term (definition) and meaning of social innovations and to determine the types of social innovations in the rural areas. The results of study show that the definition of social innovation is still vague. Despite the social innovation being defined and interpreted differently, it provides the social benefits for both local community and/or society in general. When accepting broader description of social innovation, it was concluded that social innovation is not the same as social entrepreneurship. Nowadays, social innovations, particularly in the rural areas, focus on successful solution of different social, economic, political and environmental issues. The social benefits, for instance, reduce the threat of climate change (e.g. reducing greenhouse gas emissions); maintain the biodiversity, ecosystems and landscapes; offer fresh and healthy local food etc., can be provided by the social innovations based on the agricultural production and other rural activities. The following social innovations (but not all) are or will be suitable for Latvia: sustainable or environment friendly agricultural production; local food systems; social or care farming; social services; renewables (e.g. bioenergy); ecosystem services (int. al. tourism) and recreation services; cooperation; local action groups and financial services.

Key words: social innovation, rural area, development.

JEL code: A130; O130.

Introduction

The growth of modern economic systems has generated more numerous, complex and urgent social challenges. Moreover, there is a growing consensus that the disconnection between economic growth and social welfare is increasing (Harayama, Nitta, 2011).

Therefore, interest in social innovation is growing due to societies facing extraordinary numerous, complex, and urgent social challenges: energy efficiency and security, food security, increasing inequality, rising poverty rates, unstable economies, extended unemployment, delocalisation, climate change, environmental degradation and a raft of other,

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mainly global, issues (Harrisson et al., 2009; Hewit, 2008; Caulier-Grice et al., 2012). The importance of social innovation for successfully addressing the social, economic, political and environmental challenges of the 21st century has been recognized on a global scale (Howaldt et al., 2014).

It is acknowledged on the European Union (EU) level (The Social Innovation..., 2010; European Commission, 2013) that social innovations are critical or essential in addressing the following challenges: economic growth - restarting economic growth and ensuring long-term sustainability and competitiveness for the future; fighting unemployment – especially youth unemployment and generational worklessness; climate change.

It is widely accepted (Bertolini et al., 2008) that there is backwardness of well-being of the inhabitants of rural areas or territories. For instance, Copus and de Lima (2014) recognize that the risk of poverty and social exclusion was higher in Central and Eastern Europe; *inter alia* Latvia, particularly in rural areas.

Taking into account the above mentioned considerations, the aim of the study was stated - to clarify the term (definition) and meaning of social innovations and to determine the types of social innovations in the rural areas. The tasks of study are: to clarify the definition, meaning and concept of social innovation; to find and propose social innovations, which are or will be suitable in Latvian rural areas.

Materials and methods. The principal materials used for the studies are as follows: different sources of literature, e.g. scholars' articles, research papers and the reports of institutions. The suitable qualitative research methods have been used: monographic; analysis and synthesis; grouping, logical and abstractive constructional etc.

Due to limited space, only the most important results of research have been outlined in the paper.

Research results and discussion

Definition and nature of social innovation

There are numerous definitions of social innovation found in literature that have been used in a number of ways. Some of the earliest references to social innovation, dating back to the 1960s, use the term to refer to experimental research within the social sciences and humanities (Caulier-Grice et al., 2012). Moreover, the social innovation is a complex and multidimensional concept that is used to indicate the social mechanisms, social objectives and/or societal scope of innovation (Bock, 2012). Many scholars pointed out that the definition of social innovation was still vague (e.g. Butkeviciene, 2009; Harrisson et al., 2009; Westley, Antadze, 2009; OECD, 2010; The Social Innovation ..., 2010; Caulier-Grice et al., 2012; The Young Foundation, 2012; Howaldt et al., 2014) and confusion exists with regard to the understanding of it. Besides, it is proved that social entrepreneur, social entrepreneurship and social enterprise do not have the same meaning (Westley, Antadze, 2009; The Social

Innovation..., 2010; Noya, 2011; Groot, Dankbaar 2014), for example, in the United States as in Europe (OECD, 2010), and this difference also complicates situation.

Murray et al. (2010:3) defined the social innovation as "...new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. ...they are innovations that are both good for society and enhance society's capacity to act. The interest is in innovations that are social both in their ends and in their means." To this definition Caulier-Grice et al. (2012:18) added that social innovations " lead to new or improved capabilities and relationships and better use of assets and resources" but Phills et al. (2008) pointed out that social innovations were created, adopted, and diffused in the context of a particular period in history. Phills et al. (2008:39) propose own definition of social innovations "...novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals." Phills et al. (2008:39) insert the social change within the meaning of social innovation, to redefine social innovation as "a novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals."

The social innovation happens in all sectors, public, non-profit and private; and between the three sectors (Phills et al., 2008; Harayama, Nitta, 2011). Caulier-Grice et al. (2012:29) add informal sector, which is described as "...activity undertaken by individuals, families and communities that is not captured by the private, public and non-profit sectors." Caulier-Grice et al. (2012:18) suggest the following five elements should be used to define the activity or practices as a socially innovative: novelty; from ideas to implementation; meets a social need; effectiveness; and enhances society's capacity to act, which along with the descriptions are outlined in Table 1.

Table 1

Core elements of social innovation

Core elements	Description
Novelty	Social innovations are new to the field, sector, region, market or user, or to be applied in a new way.
From ideas to implementation	There is a distinction between invention (developing ideas) and innovation (implementing and applying ideas).
Meets a social need	Social innovations are explicitly designed to meet a recognised social need.
Effectiveness	Social innovations are more effective than existing solutions – create a measurable improvement in terms of outcomes.
Enhance society's capacity to act	Empowers beneficiaries by creating new roles and relationships, developing assets and capabilities and/or better use of assets and resources.

Source: *Caulier-Grice et al., 2012*

Scholars (Westley, Antadze, 2009; The Social Innovation..., 2010; Noya, 2011) argue that terms "social innovation", "social enterprise," and "social entrepreneurship" are overlapping but distinct. Moreover, the terms "social enterprise," "social entrepreneurship," and "social finance" are often used interchangeably with "social innovation" (Westley, Antadze, 2009). Table 2 shows the links and differences of social innovation and social entrepreneurship.

Table 2

Links between social innovation and social entrepreneurship

Social innovations	Social entrepreneurship
New solutions to social challenges	New responses to social challenges.
Improvement of individual and collective well being and quality of life	Explicit pursuit of positive externalities.
Conceptual, process or product change, organisational change and changes in financing, and new relationships with stakeholders and territories	New forms of internal and external governance.
Changes in financing	Mixed financing (public, private, monetary and not monetary).
Changes in relationships with territories	Strong links with territories.

Source: *Noya, 2011*

Groot and Dankbaar (2014:24) go even further and indicate that 'social' should not be used as an adjective to entrepreneurship, which suggests that some entrepreneurs are social and others are not. 'Social' is as a dimension of the results of entrepreneurial action. Entrepreneurship can have social results, intended (by what are often called social entrepreneurs) but also unintended (when a business idea leads to social change) or maybe partially-intended; moreover, new ideas, new products, or new services, may turn out to be social innovations regardless of any social impact intended by the inventor (Groot, Dankbaar

2014:24). Groot and Dankbaar (2014) explain very clearly that it would be easier to define, separate and compare the social impact of enterprises than to aspire with rigorous criteria separate 'social' enterprises from so called 'regular' or 'normal' enterprises. Moreover, the 'normal' entrepreneurs should be encouraged to think about possibilities to engage in social innovation instead of thinking that social innovation is something for government, foundations, charity, or non-profit organization (Groot, Dankbaar, 2014).

Groot and Dankbaar (2014) consider that social innovation occur in different sectors, in which they may arise from actions and activities done by different actors (e.g. public authorities and officials as well as from private initiatives, both profit and non-profit); and social innovation does not require social entrepreneurship.

Meanwhile, Caulier-Grice et al. (2012) state that the term social innovation has been used to describe also social entrepreneurship. This statement is opposite to viewpoint of other forenamed and cited scholars. Hubert (2012) pointed out that in the BEPA report three complementary approaches to social innovation were distinguished:

- 1) *social*: the grassroots social innovations responding to pressing social demands which are not addressed by the market and are directed towards vulnerable groups in society;
- 2) *societal*: the broader level which addresses societal challenges, where the boundaries between social and economic are blurred; and they are directed towards society as a whole;
- 3) *systemic*: the systemic type which relates to fundamental changes in attitudes and values, strategies and policies, organisational structures and processes, delivery systems and services.

There are three major challenges with a global scope, which require action at the EU level (Hubert, 2012):

- 1) a green challenge: the need to change current ways in which essential natural resources are used;
- 2) an inclusive challenge: the need to anticipate and adapt to societal changes, including political, cultural, demographic and economic transformations in order for the EU to develop into a knowledge society;
- 3) a smart challenge: the need for more effective and transparent governance in the EU and the world with the creation of accountable forms of governance able to anticipate and adapt to the future; and in such a way to respond to common challenges.

Social innovations can mobilize collective activities and leverage institutional resources into society-wide incentives (social services, social economy, model of governance, inter alia, regional, social movements, and diversity policies); thereto, the relationship between state institutions and social innovation is complex and may complete both tensions as well as opportunities (Moulaert et al., 2013). Besides, the social innovations highlight new cross-sector relationships (Bjork, Olsson, 2013).

The social economy is the source of social innovation and while it already plays the key role in developing new models and services to meet social needs, it could play an even greater role (Murray et al., 2010). The social economy is a hybrid and it cuts across the four sub-economies: the market, the state, the grant economy, and the household (Moulaert et al., 2013). The distinction between social and economic innovation is impractical and restrictive, because there are many cases of social innovations which are also economic innovations, for example, the fair trade and micro-finance movements (Caulier-Grice et al., 2012). Social innovations can include new types of production and new markets for social or environmental goods; moreover, it can include employment, consumption or participation; and ownership and production, for example co-operatives (Caulier-Grice et al., 2012). Butkeviciene (2009), studying Lithuanian situation, regards that the main actor in social innovation development is community; and the idea and successful implementation of social innovation highly depend on the characteristics of the community itself.

Types of social innovation in rural areas

The Ministry of Agriculture of Latvia¹ emphasizes the viability of long-term agricultural production and the future-oriented management of natural resources; in addition, the Ministry stresses that the Latvia's EU presidency will continue promoting the sustainable, innovative and environmentally-friendly development of agricultural, food and fishery sectors.

Evaluating the possibilities of the social innovation in rural areas, author agrees to this view and consider that the meaning of social innovation is broader than simply satisfying social needs but includes numerous challenges (e.g. energy efficiency and security, food security, increasing inequality, rising poverty rates, unstable economies, long term unemployment, delocalisation, climate change, environmental degradation etc.); and can address to achieve the benefits for society as a whole.

Butkeviciene (2009), analysing social innovations in rural Lithuania, lists them: ecological farming, formation of local action groups, and electronic social innovations. Moreover, the social innovation is often appointed as an essential part of agricultural and rural innovation (Bock, 2012), which are characterised by co-production of economic and social values or benefits.

Analysing experience of other countries, one can notice differences in selection the types of supporting social innovations. In this context, Moulaert (2013) stressed that social innovations could differ, considering regional and local specifics. For example, Northern Ireland Building Change Trust (2013) emphasises the following themes or sectors as the key opportunities and challenges associated with developing social innovation: health and social care; access to rural services; culture and the arts; and food/food production.

¹ <https://www.theparliamentmagazine.eu/articles/feature/latvia-focus-long-term-agricultural-production>

Taking into account the benefits not only for the local community but for society as a whole, author proposes pursuing types of social innovations, which already are developed, are currently in the developing stage or could be developed in rural areas.

Sustainable agricultural production

Sustainable or environment friendly agriculture is the production of food, fibre, or other plant or animal products using farming techniques that protect the environment, public health, human communities, and animal welfare. Scholars (Phills et al., 2008; Power, 2010) consider that sustainable agricultural techniques can provide the social and environmental benefits. For instance, environmental friendly and organic farming is recognised as social innovation, which provides ecological (biodiversity; ecosystems, landscapes, carbon storage and climate regulation etc.), recreational (*int. al.* tourism) and cultural output (Phills et al., 2008; Bergman et al., 2010; Power, 2010).

Local food systems

Local food systems or chains not only provide locally produced fresh food but also strengthen social cohesion and community development, particularly in disadvantaged rural regions, where low farm incomes and narrowly-based economies can lead to out-migration, which further threaten agriculture and social cohesion (Karner, 2010; Melece, 2014).

Local food systems deliver the following social benefits: social co-operation, local economic development, and close geographical and social relations between producers and consumers, thereby providing universal social benefits – welfare of a society - in economic, social and environmental terms, which satisfy society, not only locally but in general (Karner, 2010; Bareja-Wawryszuk, Golebiewski, 2014; Melece, 2014).

Social or care farming

The care farming (also called as social farming, green care farming, farming for health) can be defined as the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity; and provide various other services, for example, educational, rehabilitation and etc. (Sempik et al., 2010; Di Iacovo et al., 2014; Elsey et al., 2014). In addition, the care farming or care farm has the following different interpretations: social farm, rehabilitation farm, residential farm, educational farm, community farm, therapeutic farm etc. (Elsey et al., 2014). Di Iacovo et al. (2014) pointed out that the social farming was a traditional as well as an innovative activity for farmers.

Social services

Social services are a range of public services provided by governmental or private organizations, for example, education, health care, job training, and nursing services for children, older people and disable persons; as well as to help former prisoners and people with addictions. These public services may provide not only above mentioned social farming but also entrepreneurs and other different institutions (e.g. public, non-governmental and community owned).

Renewables (e.g. bioenergy)

It is recognized that pollution-reducing innovations, *inter alia* green house gases reducing emissions, are the social innovations (Bergman et al., 2010), and scientists (Knickel et al., 2009; Levidow, 2011) include the development of renewables, including bioenergy, in it.

Ecosystem and recreation services

Considering the fact that agroecosystems are essential sources for provisioning services (Power, 2010), EU Rural Development Programme offers, under agri-environmental measures and measures promoting environmentally sustainable farming practices, different options for addressing environmental concerns to rural development stakeholders, through actions that include, *inter alia*: enhancing biodiversity by conserving species-rich ecosystems, *inter alia* reserving or maintaining grassland and extensive farming (e.g. organic); improving water management; contributing to capture and storage carbon; reducing emissions; as well as preserving cultural heritage and landscapes (Peters, 2009; Maes et al., 2013).

Moreover, Maes et al., (2013) stressed that the cultural ecosystem services or recreation services were one of the non-material benefits for society. Ecosystem services are connected not only with recreation services but also with rural or countryside tourism.

Cooperation

The social impact or benefits of the cooperation and various cooperatives, which act in rural areas, are identified by scholars (e.g. Thomas et al., 2011; Lafleur, Merrien, 2012; Anderson et al., 2014). Besides, it is noted that the cooperatives may multiply local expertise and create social capital within a community (Nembhard, 2014).

Local action groups

One way to operate the initiatives of local community in rural areas are local action groups, made up from public and private partners from the particular territory, and may include representatives from different socio-economic sectors and act under the LEADER¹ approach. They receive financial assistance to implement local development strategies, by awarding grants to local projects.

Financial services

Taking into account that the rural areas are still lacking access to financial resources and services, credit unions and micro-finances² or micro-credits are the options in this sector. Despite the rural microcredit funding having been established in Latvia (Kruzmetra et al., 2012), nevertheless, the further development of financial services, in particular credit unions, are necessary. As evident from the above description of various types of social innovations in the rural areas, it should be noted that the majority are related to the so-called green

¹ Derives from the French words "*Liaison Entre Actions de Développement de l'Économie Rurale*" which means, 'Links between the rural economy and development actions'. An EU wide initiative that give local people a real opportunity to get involved and have their say in the delivery of a local development strategy.

² Micro-finance is a source of financial services for entrepreneurs and small businesses lacking access to banking and related services.

economy and partially could be described as a green innovations. UNEP (2011:16) provides the definition of green economy as "...low-carbon, resource efficient and socially inclusive". Furthermore, it can characterise as "...improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2011:16).

Conclusions, proposals, recommendations

Many scholars have pointed out that the definition of social innovation is still vague. Despite the fact that there is lack of common and clear definition, social innovation is complex and multidimensional concept; and is a much broader term than social entrepreneurship or enterprise.

The social innovation is defined and interpreted differently. Some scientists perceive the social innovation only in its narrowest scope, linking it solely with the social services and the social entrepreneurship. Another view expressed by the scientists in recent publications highlights a broader description or meaning of the social innovation. They emphasize that the social innovations are innovations which provide the social benefits or beneficial outcomes for both the local community and/or the society in general.

Besides, the social economy is the source of social innovation. Hubert (2012) suggests three major challenges with a global scope, which require action at the EU level: 1) a green challenge; 2) an inclusive challenge; 3) a smart challenge - the need for more effective and transparent governance.

Nowadays, social innovations, particularly in the rural areas, focus on successful solution of different social, economic, political and environmental issues. The social benefits for example, reduce the threat of climate change (e.g. reduction of greenhouse gas emissions); maintain the biodiversity, ecosystems (e.g. agroecosystems; forest ecosystems) and landscapes; offer fresh and healthy local food etc., can be provided by the social innovations based on the agricultural production and other rural activities.

After studying literature on social innovations of rural and agricultural origin, author describes and propose following, but not all, social innovations, which are or will be suitable for Latvia: sustainable or environment friendly agricultural production; local food systems; social or care farming; social services; renewables (e.g. bioenergy); ecosystem services (int. al. tourism) and recreation services; cooperation; local action groups and financial services.

The majority of abovementioned rural social innovations are related to the so-called green economy and could be named as partially green innovations.

The necessity of further studies arises from various types of rural, including agricultural, innovations which could require detailed studies for each of the types of innovation.

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RURAL AND URBAN MUNICIPALITIES IN THE REGIONS OF LATVIA – DEVELOPMENT TENDENCIES AND CHALLENGES

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Abstract. The aim of the research was to evaluate the 48 indicators in urban and rural municipalities in the regions of Latvia in order to identify the factors for differentiated development of municipalities as well as their socio-economic clusters. One may conclude that there are differences among values of indicators in urban and rural municipalities. Factor analysis results showed that the most important factors for diverse municipality development are - *Residents' income, Employment, Land resources and Provision of basic functions*. As a result of cluster analysis, several municipality groups were identified, which have similar socio-economic processes. Positive socio-economic processes have been recognized in 58 municipalities, for example, larger population, higher income level or positive age structure comparing with other municipalities. Negative socio-economic processes have been observed in 52 municipalities, the main problems being as follows – clear depopulation and aging, small number of employed and low salary, small land area per farm and low intensity of agricultural activity.

Key words: rural, urban municipalities, sustainable development, regional development

JEL code: R00

Introduction

The development of municipalities may be characterised by various indicators. An analysis enables to evaluate development tendencies and to model future development. The evaluation is essential to perform sustainable development planning process in all levels – local, regional and national (Rondinelli, Ruddle, 1978; Shucksmith, Cameron, Merridew, Pichler, 2009). The indicators' evaluation can be used as a tool to assess the efficiency of regional policy implementation or as argument to introduce the new regional or spatial development measures in order to promote sustainable and balanced development. Balanced and sustainable spatial development has been a topical issue in the EU since the 1980s with the aim to reduce differences between the EU regions, and rural and urban areas (Wegner, 2008).

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This goal has been included in the European Spatial Development Perspective (1999), the Territorial Agenda (2007), the European Community Strategic Guidelines on Cohesion (2006) and other documents. Necessity of sustainable regional and local development has been updated also in Latvia – both the Sustainable Development Strategy of Latvia until 2030 (2010) and the National Development Plan of Latvia for 2014 – 2020 (2012) as well as the Regional Policy Framework for 2013 – 2019 (2013).

Taking into considerations territorial cohesion as one of sustainable development dimensions, many scientists stated questions – did the city impact on its administrative area could be described as significant (Meijers, Waterhout, Zonneveld, 2007) and were there statically significant differences between rural and urban areas in terms of socio-economical indicators (Tacoli, 1998; Zonneveld, Stead, 2007; Szajnowska-Wysocka, 2009).

Specific research tasks: (1) to evaluate the indicators in Latvia's urban and rural municipalities for a three year period; (2) to perform a factor analysis to identify the indicator groups that differ between urban and rural municipalities; (3) to perform a cluster analysis to identify the municipalities with positive or negative development tendencies. The research methods employed: monographic, analysis and synthesis, induction and deduction, statistical analysis methods, factor analysis, cluster analysis and Mann-Whitney U test. The secondary data collected by the Central Statistical bureau was used. The municipality is considered as urban if one or more towns/cities are located in its territory. If there are no towns in the territory of municipality – it is considered as rural municipality. The republic cities are excluded of the research. The research was elaborated in the period from 2010 to 2013, the calculations made were performed in the national currency (LVL), and the results can be converted into euro currency according to the exchange rate: EUR 1 = LVL 0.702804.

Research results and discussion

Analysis of the administrative territories of Latvia was carried out in several stages. The *first* stage reveals indicators for rural and urban municipalities in the period 2009 – 2011 (due to data availability, agricultural description was analysed only for 2010). Indicators were analysed in groups of municipalities of the statistical regions of Latvia. To determine differences in indicators correctly, *Mann-Whitney U test* was performed and *p-value* was obtained – if its value is less than 0.05, it shows statistically significant differences in values of indicators in urban and rural municipalities (The theory behind..., n.d). In the *second* stage factor analysis was performed to analyse and study in detail the main structural differences in the groups of municipalities, as large group of common indicators was used to describe situation in the territories. To justify results of factor analysis, objective probative indicators were calculated (*Anti-Fig.* correlation matrix, Bartlett test and Kaiser-Meyer-Olkin test) that prove the statistical significance of the performed analysis. In the *third* stage of data analysis cluster analysis was performed on the basis of complex factors, revealing differences among the municipalities, obtained as a result of factor analysis. As a result different groups of

municipalities was identified, characterising the positive and negative tendencies of their development.

Analysis of demographic indicators

To determine the demographic differences in rural and urban municipalities in Latvia, several indicators were analysed – number of residents and its changes, demographic burden, density in a three-year period. Factor analysis includes one more indicator (Personal income tax (PIT)). Three factors were identified, explaining 88.37% of differences in municipalities (Table 1). The most important factor is *Residents' income*. Six indicators differ statistically in rural and urban municipalities suggesting heterogeneous situation in Latvian municipalities.

Table 1

Results of analysis of indicators characterizing the demographic situation

Indicators	Mann-Whitney U test*	Factors (explained dispersion)
PIT in the municipality budget, LVL per 1 inhabitant	0.34	Residents' income (48.09%)
Residents in the pre-employment age, %	0.41	
Density of population, resid./km ²	0.00	
Residents after the working age, %	0.21	
Demographical load per 1000 residents in the working age	0.00	Residents' structure (24.33%)
Residents in the working age, %	0.00	
Residents after the working age, %	0.00	
Number of residents	0.00	Number of residents (15.95%)
Changes in number of residents (compared to the prev.year)	0.00	

* *p*-value

Source: author's calculations

Fifty-one percent of population lived in nine cities (in 2011), majority of them in the capital city Riga, showing an explicitly monocentric spatial structure. Number of residents has decreased by 4% since 2009 – in urban municipalities the decrease was caused by residents' migration to other territories, in rural municipalities – due to the decrease of natural reproduction. Proportion of number of urban and rural municipalities, however, has not changed (70% and 30%) proving that residents are leaving urban and rural areas. In Pieriga region the numerical dispersion between municipalities in terms of number of inhabitants is - 15.8 times, but the largest difference is in Latgale region (23.9 times) showing an explicit heterogeneity in terms of the number of residents in municipality.

Pieriga region is the most densely populated area (104 resid./km²), Vidzeme region, which is of large space and small number of residents, in terms of density of population is the last one compared to the other statistical regions of Latvia. Ageing structure of residents in urban and rural municipalities is similar – differences in each ageing group are less than 1%, in the

regional aspect it is homogeneous as well. Significant differences is observed in rural municipalities of Pieriga region where proportion of residents in the pre-employment age and residents after the working age ranges within 10% each, proportion of residents in the working age, however, ranges only within 4%.

The average level of demographic load in 2011 in Latvian municipalities was 522 persons; moreover, dispersion was larger in rural municipalities than in urban municipalities. The largest average demographic load was observed in rural municipalities in Kurzeme region, the smallest – in rural municipalities in Pieriga region, showing that the territory is attractive to residents in the working age that can be explained by the wide variety of work opportunities in Riga.

Analysis of indicators describing economic activity

In the cities are located 53% of all economically active statistical units of Latvia, in urban municipalities – 32%, in rural municipalities – 15%, demonstrating concentration of economic activity in the cities. In order to characterise economic activity in rural and urban municipalities, analysis of 12 indicators was made – only three of them (gross salary in public and private sector and number of self-employed) are not statistically different in groups of municipalities. Factor analysis resulted in three factors – factor *Employment* explains 44.78% of disparities in municipalities.

Table 2

Results of analysis of economic activity indicators

Indicator	Mann-Whitney U test	Factors (explained dispersion)
Number of employed, thou.	0.00	Employment (44.78%)
Number of employed in public sector, thou.	0.00	
Number of employed in private sector, thou.	0.00	
Gross salary (companies employing >=50 employees)	0.79	
Number of individual merchants per 1000 residents	0.00	
Gross salary (companies employing <50 employees)	0.79	Salary (19.08%)
Gross salary at public sector	0.79	
Number of companies per 1000 residents	0.00	
Unemployment level, %	0.00	
Number of economically active market sector statistical units of per 1000 residents	0.04	Basic forms of economic activity (13.73%)
Number of self-employed per 1000 residents	0.95	
Number of peasant and fishermen farms per 1000 residents	0.00	

Source: author's calculations

In the cities the most often form of commercial activity is a commercial company (69%), in municipalities - self-employed persons (44% in urban municipalities and 42% in rural municipalities in 2011). Farming and fishing enterprises are mainly located in municipalities - 64% in urban municipalities and 35% in rural municipalities. In Latvia 95% of economically

active statistical units in rural municipalities and 94% of economically active statistical units in urban municipalities are classified as micro by the economic size, 4% and 5%, respectively, fall into the group of small economically active units showing a fragmented economic activity, low competitiveness and limited development opportunities.

According to NACE, the largest number of companies in Latvia is registered in the following lines of business: agriculture, forestry and fishery (52% of the group of rural and 40% of the group of urban municipalities), retail sales and wholesale, repair of vehicles and motorcycles.

In 2011 in Latvian municipalities 228.7 thousand residents were working, 67% of those were employed at companies operating in urban municipalities and 33% - at companies operating in rural municipalities. Proportion of the number of employed complies with the general trends of residents' placement in the groups of municipalities and shows that in urban municipalities there is a larger number of available work places, concentration of economic activity, state and municipality institutions are located there. Private sector employs 57% of the employed; the proportion is equal in both rural and urban municipalities.

When evaluating economic activity indicators one can conclude that there are significant differences in the groups of urban municipalities and rural municipalities – urban municipalities have higher indicators of economic activity in terms of number of employed, number of economically active statistical units as well as in terms of gross salary.

Analysis of agricultural activities

The largest number of registered economically active statistic units is observed in agriculture, forestry and fishery, thus, the main indicators of agricultural activity were assessed in detail using data of agricultural census in 2010.

Seven agriculture indicators were reduced in three factors (Table 4), explaining 91.84% of differences; factor with the greatest impact is *Land resources* as the basis of agricultural activities. Utilised agricultural area (UAA) per farm depends on both location of municipality and municipality overall area. Mann-Whiney test results showed that indicators of agricultural activities did not statistically differ in rural and urban municipalities as agricultural production depended on available resources and land quality.

Table 3

Results of analysis of agricultural activity indicators

Indicator	Mann-Whitney U test	Factors (explained dispersion)
Agricultural area, on average per farm, ha	0.59	Land resources (42.71%)
UAA, on average per farm, ha	0.58	
Total land area, on average per farm, ha	0.67	
Number of persons employed in agriculture	0.72	General description of agriculture (28.39%)
Number of farms	0.09	
Average economic size of farms, thou. EUR	0.95	Agricultural intensity (20.74%)
Average number of persons employed at farm	0.06	

Source: author's calculations

According to the farms surveyed during the agricultural census, the total agricultural area occupy 67% of total municipality area, forests occupy 25%. In urban municipalities on average 97% of total agricultural area are utilised, in rural municipalities the result is 96%. There are 83 364 farms registered in Latvia that are managing 1 796.3 thou. ha. The main specialization of farms is agriculture (43%), dairy farming (21%) and mixed farming (13%). In Latgale region the largest number (35%) of farms is registered. Analysing the obtained data, it can be concluded that agricultural activity in Latvia is concentrated in certain areas and municipalities also have differentiation in economic activities – there are municipalities with very intense agricultural activities, especially in Zemgale region. Various economic size of farms is another significant issue for policy developers – in order to increase development diversified policy instruments for the small and large farms are necessary.

The most significant share of persons employed in agriculture is in Latgale region (35%). In Zemgale region the number of employed in rural municipalities is higher (53%) than in urban municipalities demonstrating the explicit specialization of farms in Zemgale region in agriculture.

The total standard output of farms in 2010 was EUR 777.2 million. In Zemgale region the farms are more active and economically more efficient that is proved by the share of number of farms and total standard output. In Latgale region the number of rural farms and UAA is larger, however, the total standard output in this region is 18% of total Standard output in Latvia showing an ineffective use of resources. The economical size of Latvian rural farms is EUR 11.7 thou. On average, in rural municipalities – EUR 13.2 thou., in urban municipalities farms – EUR 10.5 thou. showing that farms in rural municipalities are economically more active and the value of produced goods is higher. Assessing the agricultural sphere in the context of the EU, it can be concluded that farms in Latvia are with low competitiveness, comparing with other EU member states. To promote development, merging of farms should be stimulated or operations should be oriented to niche products.

Analysis of financial indicators of municipalities

Analysis of income in municipalities shows the most significant income sources of residents and its size as well as relations to other municipalities, for example, receiving resources from the municipal balancing fund, resources from other municipalities for services provided by education institutions and other income sources. The municipality budget factor analysis identified two factors (Table 5), whereas the Mann-Whitney test showed two indicators which did not statistically differ in rural and urban municipalities (environment protection and health expenses).

Table 4

Results of factor analysis of municipal financial indicators

Indicators	Mann-Whitney U test	Factors (explained dispersion)
Total income of general budget	0.00	Provision of basic (primary) functions (62.19%)
Education expenses	0.00	
Leisure, religion, culture expenses	0.00	
Total expenses of general budget	0.00	
Expenses for general government services	0.00	
Social protection expenses	0.00	
Economic activity expenses	0.00	
Environment protection expenses	0.29	Provision of secondary functions (11.18%)
Municipality territory and housing management expenses	0.00	
Health expenses	0.11	
Public order and security expenses	0.00	

Source: author's calculations

Income of general budget for the majority of municipalities (32%) amounts to LVL 3–5 million, for the fifth part of municipalities – LVL 5–7 million. Personal Income Tax (PIT) contributed to the municipal budget 39% on average (total tax income 46%). In urban municipalities incomes amounted to LVL 7.45 million on average in 2011, in rural municipalities – LVL only 4.60 million, showing that rural municipalities have less opportunities to ensure good life conditions to residents and support economic activities thereby creating an attractive business environment. Income of urban municipalities is 13 times higher on average, allowing affect the development of territory positively and promote the use of potential more than in rural and urban municipalities.

In 2011, PIT payment per one resident in Latvia amounted to LVL 225 on average, in Pieriga region PIT payment was higher by 17%. The lowest amount was in Latgale region, demonstrating differences of income and economic situation among inhabitants that complies with salary trends. In urban municipalities, PIT payment was higher by 12% than in rural municipalities. Municipalities in Pieriga region should be emphasized because the PIT payment per one resident is the highest in Latvia both in urban municipalities (LVL 277 on average) and

in rural municipalities (LVL 248 on average). These differences between both groups of municipalities are comparatively small – 10%. It proves that income of residents of municipalities located near Riga are higher and not dependent upon place of residence, as majority of working places are located in Riga, the declared places of residence are in suburban municipalities.

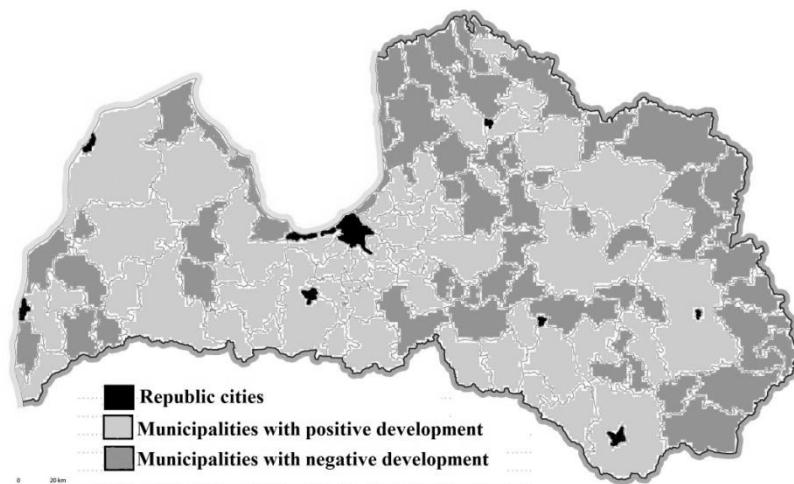
The largest part of expenses of the general budget are expenses for education (40% on average), territory and housing management expenses (18%) and expenses for general governmental services (12%). Expense structure in regions is comparatively homogeneous. There are significant differences in municipalities as regards expenses for environment protection and health - as a result of various reforms, in several municipalities there are no medical institutions and municipalities have not incurred any expenses in this category. Expenses for environment protection are not the priority and have not been included in expense structure.

Assessment of development in municipalities applying cluster analysis

As a result of cluster analysis, clusters of municipalities bearing different social-economic situation is obtained; the analysis is based on previously obtained factors. Municipalities located close to republic cities are more attractive – the number of residents is higher as well as residents' income level. The essential issue for future development is creation and maintenance of infrastructure – both road network and its quality which ensures everyday commuting, and public service availability to improve the quality of life. The second group is municipalities with intense agricultural production – a larger number of farms, higher economic size, more inhabitants are employed in agriculture. A key issue of development in these municipalities is sales markets for agricultural production and creation of demand-supply chains. Cities and towns are major market for agricultural products and partnership establishment between municipalities is an essential factor to ensure development and growth. Municipalities with particular decrease of population and unfavourable aging structure, partnership and cooperation should focus on more attractive living condition creation by ensuring access to public services.

Applying the cluster analysis it is possible to group all Latvian municipalities in clusters with a positive situation or negative situation. For example, Adazi municipality in Pieriga region has especially high residents' income level and values of other indicators are medium. Thus, one can conclude that this particular municipality may be characterised as high-income municipality among other municipalities in Latvia. In order to ensure future development in municipalities it is essential to identify those areas where certain measures should be implemented to improve negative tendencies. In those municipalities, which are characterised positively, local government main task is to ensure the continuation of growth and stabilisation of positive development. Positive development tendencies (for example, high residents' income, high number of employed persons, high economic activity, high agricultural intensity)

are identified in 28 rural and 30 urban municipalities. Negative socio-economic processes (an explicit decrease of number of residents, clear ageing of residents, low number of employed persons, low agricultural intensity) are identified in 22 rural and 30 urban municipalities.



Source: author's construction

Fig. 1. Latvian municipalities with positive and negative socio-economic situation

Results of cluster analysis show that in Latvia there are several groups of municipalities with different socio-economic situation – the regional and spatial planning instruments should be diversified in order to ensure growth and development. Development planning may be carried out in two forms - strengthening and developing the strong points of municipalities (for example, in municipalities with high number of farms and high number of persons employed in agriculture, highlight agriculture as a priority sphere) or focusing on reducing the impact of the weak points of municipalities (for example, in municipalities with the highest decrease of number of residents, focus on matters to maintain the number of residents).

Conclusions, proposals, recommendations

1. When analyzing demographic, economic, agricultural production and municipality financial indicators in municipalities, it can be concluded that there are differences among values of indicators in urban and rural municipalities which can lead to unbalanced development in future.
2. Analysis of demographic indicators revealed by the first three groups of factors, highlight Pierīga region as the most favourable - residents' income and number of residents is higher and demographic load is lower. Situation in urban municipalities in Latvia is more favourable in terms of resources - higher number of residents promote development of municipalities, increase municipal budget and general attractiveness of the territory. In rural municipalities, especially those located close to the cities, there is a more positive demographic load - proportion of children and youth until the age of 15 is larger than in other municipalities proving that families with children choose to live not in urban but in municipalities close to cities.

3. The average values of factors *Employment* and *Basic forms of economic activity* in regions show comparatively homogeneous situation, values of factor *Salary* in regions differ. Economic activity is higher in Pierīga region with a high number of registered companies, in Latgale region, however, there is an opposite situation - level of employment is low and number of commercial companies is small. In rural municipalities residents establish their own companies as the number of offered working places is limited - number of economically active statistical units per 1000 residents is higher than in urban municipalities.
4. Analysing agricultural operations, municipalities in Latgale region have a higher number of persons employed in agriculture and higher number of farms, those are, however, smaller in size and production intensity. In Zemgale region the situation is quite the opposite - farms are bigger in terms of land for agricultural use and size of area of land for agricultural use per one farm. Description of agricultural activity does not significantly differ among urban and rural municipalities.
5. Certain municipality groups with similar socio-economic tendencies can be identified by using 11 factors. Socio-economic processes, which can be evaluated positively, have been recognized in 58 municipalities, for example, larger population, higher income level or more positive age structure as in other municipalities. Negative development tendencies have been observed in 52 municipalities, the main problems being as follows - clear depopulation and aging, small number of employed and low salary, small land area per farm and low intensity of agricultural activity.

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A REVIEW OF MUNICIPAL ENVIRONMENTAL COMMUNICATION RESEARCH: STAKEHOLDERS, INSTRUMENTS AND EVALUATION (2009-2014)

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Abstract. This review article identifies the main elements of successful municipal environmental communication practices presented in research papers that have been published from 2009 to 2014. Various aspects of municipal environmental governance and communication, including planning, methods, stakeholder engagement and evaluation indicators, are examined. The article provides an overview on current state of research on this issue and suggests directions for future studies.

Key words: municipal communication, environmental communication, sustainable development planning, environmental management, citizen involvement, literature review

JEL code: Q

Introduction

Over the past decades, research on environmental protection in various management levels has become increasingly important due to increased attention on global warming, increasing pollution and other environmental issues. Scholars have explored the ways in which human behaviour affects environment and developed instruments that can be used to change it through different levels governance. Environmental communication on local level, including environmental communication activities practiced by local municipalities, also has an important role in bridging the local community and environment. Yet up until now researchers have often neglected the importance of environmental communication as a vital part of municipal environmental governance in itself (Calder & Beckie, 2011; Grodzinska-Jurczak & Cent, 2011).

By exploring the ongoing scholarly work on environmental communication on municipal level, the authors aim to gather information on how various communication-related tools and processes are employed to achieve the relevant goals. By doing this, the authors provide an overview of the current developmental status of this topic and identify directions for further studies. Since a number of studies from Latvian researchers were examined, too, the article

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also demonstrates how approaches to environmental communication popular in Latvia correspond with those chosen by researchers from other countries.

This paper specifically inspects studies on governance and environmental communication that deal with environmental communication as a tool for sustainable development in municipalities. In this review, an emphasis was put on the municipal environmental instruments that can be used to include primary stakeholders in all stages of the development of environmental policies. The paper also summarizes methodological choices of researchers and their main observations regarding the stakeholder involvement, instruments that are used by municipalities to engage with those groups and recommendations for best practices.

The paper is structured as follows. First, the authors explain the procedures they used to search for and select research articles that were included in this study. Then they proceed to analyze methodology of these papers, including methods and research objects, and summarize environmental communication practices in municipalities. Finally, the authors draw conclusions, which also illustrate potential directions for further research.

Research results and discussion

The sample consists of 12 research papers published between 2009 and 2014 that could be found in databases available to us, including Academic Search Complete in EBSCO, Sage Journals and Taylor & Francis Online. Additionally, the authors searched online repositories in which works by Latvian researchers have been included and also consulted Google Scholar search results. Only articles that could be found by using keywords "municipal" (or "governmental," or "governance"), "environmental communication" and "sustainable development" were considered for the inclusion in the sample. The authors were especially interested in applied research articles that describe actual communication tools and practices employed by municipalities and evaluate the effectiveness of these activities. Thus, the sample included only papers that concern municipal environmental communication in context of sustainable development, including those that deal with specific issues, for example, the use of particular communication instruments or specific (e. g. archaeological) environmental protection methods and issues.

Since the aim of this report is to provide an overview on the central ideas and approaches employed by other researchers, this account is constructed based on the principles of grounded theory (Glaser & Strauss, 1967/2006), a methodology that builds a theory or framework based on the analysis of data, rather than applies an existing theory to gather and interpret data from the beginning. In this way, we looked for common patterns, recurrent ideas in the included articles, which were then outlined in the subsequent description.

1. Methodological patterns

Among the reviewed research papers, most are case studies, in which specific practices of environmental communication have been studied or tested. Researchers from Latvia mostly

have researched the coastal regions of the country, with a focus on coastal environmental pollution issues (e. g. Antons, Ernsteins, Sulga, Kursinska, Fridmanis, Lice, Zilniece, 2013). Researchers from other countries, on the contrary, have directed their attention to more diverse territories and have examined various issues, including the status of environmental policies and sustainable development strategies and the readiness for the implementation and evaluation of these strategies (Grodzinska-Jurczak & Cent, 2011, Calder & Beckie, 2011). One of the most commonly used criteria for the selection of territories to be included in research is population differences in these territories.

Researchers have used a variety of research methods, such as focus-group discussions and interviews, to gather opinions from experts or stakeholders regarding the current and desirable practices. Similar methods have been used to assess the expectations that various stakeholders have regarding the municipal environmental communication activities (e. g. Antons, Ernsteins, Sulga, Kursinska, Fridmanis, Lice, Zilniece, 2013; Grodzinska-Jurczak & Cent, 2011; Buil, Roger-Loppacher & Marimon, 2014). In addition, researchers also have analyzed policy plans and other official documents with an aim to identify legal and strategic practices within municipalities (e. g. Calder & Beckie, 2011; Lagzdina, Ernsteins, 2009).

2. Identified existing and desirable practices

It is a common understanding that a planned environmental protection policy is needed on a local level. However, most of the studies reviewed in this article do not discuss environmental governance and environmental communication in municipalities as standalone phenomena. Instead, they are integrated in various other practices and policy plans. Thus, environmental communication has been analyzed in the context of sustainable development planning (e. g. Skoglund, Svensson, 2010), environmental protection (e. g. Grodzinska-Jurczak & Cent, 2011), reduction of environmental pollution (e. g. Kalnina, Zilniece, Ernsteins, 2013), change of citizen behavior (e. g. Buil, Roger-Loppachier, Marimon, 2014), local-patriotism (e. g. Skoglund, Svensson, 2010), spatial planning (e. g. Ernsteins, Lontone, Kaulins, Zvirbule, 2013) and the management of administrative resources (e. g. Pasquini, Shearing, 2014).

Research on municipal environmental communication shows that it consistently takes up only a small part in a long list of environmental protection instruments that municipalities use — along with legal and political, economical and financial, administrative and institutional planning and infrastructure instruments (Ernsteins, Lontone, Kaulins & Zvirbule, 2013). This happens despite the fact that environmental communication serves as the bridge between the people and environment, thus creating a common understanding of environmental issues and the need for sustainable development in a particular territory (Ernsteins, 2000, cited in Ernsteins, Kaulins & Zilniece, 2013:21). Environmental communication has often lacked attention as an important group of governmental instruments per se in a municipality (Calder & Beckie, 2011; Grodzinska-Jurczak & Cent, 2011).

A well-developed communication practice is crucial to putting sustainable development plans into action. It requires stakeholder involvement in all stages of policy development, including problem identification, policy planning, policy implementation and evaluation of the outcomes. Even though researchers and communication practitioners seem to agree on this, only few studies have attempted to find ways on how to improve environmental communication practices in municipalities (Calder & Beckie, 2011; Grodzinska-Jurczak & Cent, 2011) by treating them as a standalone management tool.

There are, however, a number of elements that are common in the reviewed research articles and characterize a good environmental communication practice. These elements are: (1) involvement of the relevant stakeholders in the planning and implementation stages; (2) using appropriate communication instruments and (3) making it a long-term practice, thus allowing it to be integrated in other planning and development practices. The following subsections present these elements in more detail.

2.1. Stakeholders in municipal environmental communication

Even though in practice municipal environmental communication often is limited to dissemination of specific information to denizens, research shows that in order to ensure the best possible practice, it should encompass interests and perspectives of various stakeholders more thoroughly. This, however, puts a pressure on planners to find a compromise between the interests of the various stakeholders, which often have conflicting views (Corburn, 2003).

The key players are citizens, whose behaviour municipalities aim to change through communication activities. A number of the reviewed research articles conclude that the success of environmental management practice in municipalities depends on citizen perspectives and their environmental awareness (e. g. Kalnina, Zilniece, Ernsteins, 2013; Calder & Beckie, 2011). Citizens not only can express their opinions on existing or proposed practices, but also are able to provide suggestions on how their ideas should be implemented. For example, citizens can voice their opinions regarding which sites or artefacts in the municipality should receive some sort of protection or on which places the spatial development should focus in a particular territory (King, Lepofsky, Pokotylo, 2011).

Even though the previous research puts an emphasis on citizen engagement in public deliberation by using questionnaires, discussions and other methods, it should not be neglected that there are many other stakeholders that also have an important role in the environmental communication processes in municipalities. For example, a research project carried out in Poland on how the local public accepts the idea of environmental protection in their surroundings showed that if the communication activities do not reach all of the primary stakeholders it can lead to a fiasco of the whole environmental policy (Grodzinska-Jurczak & Cent, 2011). Conflicting ideas and non-involvement of primary stakeholders can make it impossible to achieve the desired behaviour of the public, and, accordingly, fail to gain the intended benefit for the local environment.

In the discussions during all stages of the policy development — problem identification, planning, implementation and evaluation — the local business community should also be involved. Local businesses usually have interests in the development issues because these can affect business operations. However, their perspectives do not always correspond with the interests of the environmental protection (King, Lepofsky & Pokotylo, 2011). There are other groups that also should participate in all stages of the policy development. These include municipal officials and city councils, who are responsible for the management of environmental communication in the municipality; environmental NGOs, which usually lend support to the environmental issues, the media, consultants, researchers and educational institutions, including libraries, schools, universities and museums. (Calder & Beckie, 2011; Ernsteins, Kaulins, Zilniece, 2013:23).

These stakeholders differ in their power to affect the environmental policy, their interests in it and willingness to accept the proposed ideas. Therefore, all stakeholder groups, regardless of whether they support or oppose these ideas, are ignorant to them, interested in them or already practicing and supporting the proposed action (Bocur, Petra, 2011), should be engaged by using proper communication instruments to achieve the best possible results.

2.2. Instruments for municipal environmental communication

Previous studies suggest that the existing environmental management instruments in municipalities are sufficient to change people's behaviour in a direction that would be beneficial to the environment (Ernsteins, Lontone, Kaulins & Zvirbule, 2013:12; Bocur & Petra, 2011). At the same time, the results of the reviewed studies show that these instruments in municipal communication practice usually are not used in the most effective way. An understanding exists among researchers that environmental communication in municipalities until now has mostly been limited to a mere exchange of information, rather than cooperation between the key stakeholders in environmental management (Kalnina, Zilniece & Ernsteins, 2013:45).

One of the ways the communication instruments can be classified is related to the involvement of stakeholders in the issue. For example, a study that took place in Canada and was aimed to examine communication processes in various stages of sustainable development planning describes an idea of stakeholder involvement levels that differentiate municipality's duties regarding communication with the stakeholders. These levels are: informing, consulting, involvement, cooperation and support (Calder & Beckie, 2011). According to this framework, all stakeholders should be engaged in all those stages consecutively. Similar ideas of dividing the communication processes into levels can be found in other reports, too (Ernsteins, 2008:160, cited in Ernsteins, Lontone, Kaulins & Zvirbule, 2013:16; Bocur & Petra, 2011). However, other authors consider such a division only as a desirable practice rather than an existing one or even something that can realistically be implemented, because the involvement of the relevant stakeholders is difficult and not all municipalities are able to handle it.

The first level of stakeholder involvement — “informing” — refers to those instruments that are used for information purposes only and provide stakeholders with advice about the issue. Examples for these instruments include press releases or other information on environment-friendly behaviour or environment-related events disseminated through media, e-mails, municipality’s website or other channels. In a research article on reactions of youth to an environmental social marketing campaign the issue of choosing the most effective communication channels to reach and inform the targeted stakeholder groups was highlighted (Buil, Roger-Loppacher & Marimon, 2014). When trying to reach youth, one should consider transmitting the message through social media, such as Twitter or Facebook. Buil, Roger-Loppacher and Marimon (2014) stress the importance of using the appropriate instruments and channels to transmit the information during the campaign.

The second level — “consulting” — covers the educational role that informs about and explains the significance and regulations of environmental issues. These activities could be carried out through seminars, discussions, workshops and similar deliberations.

The third level — “involvement” — until now has been considered as one of the biggest challenges for municipal planners, because it represents the need for the motivation among citizens and other stakeholders in order to participate in the municipal environmental policy processes — from the defining of a problem to the evaluation of a policy (Calder & Beckie, 2011). Stakeholders may be engaged through seminars, workshops, and public discussions during which they can express their views and interests (Barge, 2006, cited in Calder & Beckie, 2011). However, this can only be achieved through a clear understanding that the expected results are of benefit to the stakeholders’ interests. Strong motivation is hard to achieve when, as the previous research demonstrate, even the task of informing the stakeholders is often not being implemented adequately (Antons, Ernsteins, Sulga, Kursinska, Fridmanis, Lice & Zilniece, 2013; Grodzinska-Jurczak & Cent, 2011). Information on environment and environmental protection (or global warming, for that matter) circulated in the public sphere is often contradictory and insufficient, and it may lead to erosion of stakeholders’ trust in the interpretations of such issues (Buil, Roger-Loppacher & Marimon, 2014). If these basic requirements are not fulfilled, it is hard to exercise the next steps in a proper manner.

The fourth level of the stakeholder involvement is “cooperation.” It helps mobilizing the public to act in a desirable way and includes planning of common activities like projects, waste collection campaigns in municipalities and the like. Finally, the fifth — “support” — level refers to the requirement for municipalities to provide opportunities for stakeholders in environmental policy to act in a desirable manner by providing opportunities, such as encouragement to take part in the Earth Hour or setting up a platform for discussions between stakeholder groups (Bocur, Petra, 2011:49-51) and the like. In some articles (Antons, Ernsteins, Sulga, Kursinska, Fridmanis, Lice & Zilniece, 2013; Grodzinska-Jurczak & Cent, 2011) the fourth and fifth levels are combined together.

To conclude, municipalities have a wide range of communication instruments at their disposal, but the use of those instruments in practice requires a considerable level of sophistication. In order to carry out these activities according to guidelines described in the reviewed articles, the communication practice has to be planned.

2.3. Municipal environmental communication planning

Even though specific activities might be completed on an individual level or even executed spontaneously (Bocur & Petra, 2011:51), yet one of the main preconditions for successful environmental communication practice mentioned in reviewed studies is that it has to be planned and implemented over a long-term period and integrated in other municipal planning activities — sustainable development plan, spatial plan and others (King, Lepofsky & Pokotylo, 2011). However, drafting a strategic and analysis-based plan of activities is not an easy task, and in many cases municipalities lack incentives to do so. Sustainable and integrated planning of development is not always required by the legislation, as it has been demonstrated in the case of Latvia (Ernsteins, Kaulins, Zilniece, 2013:24; Lagzdina & Ernsteins, 2009:136-138). Since the environmental issues are not necessarily among the priorities of local governments (Lagzdina & Ernsteins, 2009), the environmental management activities often are not carried out on the strategic level. When they are, implementation differs massively.

Research shows that good municipal environmental communication planning practice should include a long-term plan that provides a clear vision and a list of priorities, directions and tactics of what has to be completed (Bocur & Petra, 2011). All these elements must be compatible with other municipal planning documents and the interests of stakeholders, including public, also have to be taken into account. This can only be done through appropriate means of communication and by providing sufficient information to the parties involved (Antons, Ernsteins, Sulga, Kursinska, Fridmanis, Lice & Zilniece, 2013:6).

Researchers have suggested various approaches on how to create a good environmental communication plan in a municipality. One of the examples is the eight-step model for integrated municipal development planning that includes (1) audit of the sector; (2) formulation of the vision, problem, and priorities; (3) integrated audit of the relevant issues; (4) development of spatial development guidelines and (5) directions of action; (6) drawing up action and investment proposals; (7) establishment of control system for planning documents and (8) defining long-term development indicators (Ernsteins, Kaulins, Zilniece, 2013:24). Another model proposes that at first the municipality should develop a structured planning process; then a proper communication process should be used to create a common understanding of expected results, so that the plan coincides with stakeholders' interests; then a common understanding of issues should be developed, followed by an action plan for previously identified targets. Final steps are implementation, control and reports to the stakeholders (Calder & Beckie, 2011).

The planning process has to inhere an activity cycle that allows returning periodically to previous stages and improve them. However, to do that, the evaluation process of the practice should have clear aims and timetables (Lagzdina & Ernsteins, 2009) — without these the evaluation process most likely will be hard.

Conclusions

This review of selected research articles allows drawing a number of conclusions, proposals, and recommendations.

1. The methods and content of the environmental communication discussed in the reviewed articles are in line with other activities in which municipalities can engage to advance their policies. At the same time, environmental communication is special in that it puts a particular emphasis on distinct groups of stakeholders — including environmental NGOs, educational institutions that have environment-related programs, and the like.
2. Obviously, the number of articles reviewed does not represent all the research that has been done on this subject. The sample used by the authors was limited to research papers we were able to locate in databases available to us. However, this review still provides an insight into the issue and identifies the main challenges in municipal environmental communication practice. It highlights shortages in both practice and research, which should be addressed in the future.
3. The small number of research articles and reports the authors were able to include in the study also indicates that the role of communication in these issues has often been underrated. While it has long been acknowledged that human behaviour impact the environment, not that many scholars have analyzed the instruments that can be used to change it. The instruments available to municipalities include planning, overseeing and legal actions. Communication instruments also can directly influence stakeholders in the environment policy and make them change their attitudes and behaviours that in turn could reduce the negative impact on environment caused by human activities.
4. Having communication instruments at officials' disposal is not enough. Municipalities should find the right way to use them. The lack of national or regional regulations regarding policies of environmental management and their aims does not add to officers or any stakeholders' motivation to engage in environmental management activities.
5. Taking into account the emerging technologies and changing ways in which communication between various groups in a society works, the future research should investigate municipal communication instruments in more detail with an emphasis on how to encourage the relevant stakeholder groups to engage in local environment management. More research is also needed on the examination of the differences between stakeholders' involvement stages and local environment management processes. Differences between

those fields of activity and possible communication results should be explored. Moreover, specific standard models for municipal environmental communication planning need to be developed; these models should be compatible with the varied environmental management policies, sustainable development policies and other municipal plans and policies.

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LOCAL PLANS IN THE MANAGEMENT OF ROAD INVESTMENT PROJECTS

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Abstract. The aim of this article is to define the role of local development and spatial plans in road management procedure. The article analysed the area covering the national road section S7 including Krakow - Moczydło. The section is being built in the municipalities of Ksiaz, Miechow, Iwanowice, Michalowice and Krakow. It contained four variants of the location of the road (W1, W1A, W2 and W3). Records of local development plans and documents relating to the implementation of the road investment have been verified as part of the research. Verified which of these areas is covered by local plans and what purpose. Those was the basis for a broader analysis of the role that the local plan and other planning instruments play in the road projects.

Key words: local plans, regional development, road investments.

JEL code: R11

Introduction

Various factors affect the development of real estate, including agricultural real estate. These factors include, among others, spatial conditions as well as conditions related to the execution of specific investment projects. Local spatial development plans should be pointed out in this context, these are key instruments of spatial management. The aim of this article is to analyse the impact of adopted local plans on the process related to the management of road investment projects. In this work statistic materials included in reports prepared by the General Directorate for National Roads and Motorways (GDDKiA) and some municipalities were used as a source of data. Analyses contain case studies of specific activities conducted by representatives of GDDKiA and their results, especially significance and influence of local plans on road investments projects as well as on local development.

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Research results and discussion

1. Local plan as an instrument of spatial management

The local spatial development plan is not substantially an obligatory document. It is the communal authorities which decide to a large extent whether and to what extent the plans will be valid within the commune. However, the plan, as opposed to a study, is an act of local law and the provisions planned in it are thus valid. At this point it is worth pointing out the fact that the rights and obligations resulting from the content of the plan are specific. First of all, they will be taken into account when the area covered by the plan is supposed to be developed in a certain manner. In this situation, the content of the plan's provisions decides whether it is possible to issue a building permit for specific investment projects. The lack of approval for a specific intended use of the investment project in the plan will result in the inability to issue a building permit and, as a consequence, the abandonment of the investment project. However, the local plan substantially does not affect an area which is already developed. The act on spatial planning and development does not contain decisions authorizing bodies to bring about the actual condition that is inconsistent with the legal status to compliance with the content of the plan. Interference in this respect may be performed on the basis of specific regulations, e.g. the building law or the water law. The local plan, thus, plays a specific but key role in the context of the future development of an area.

The provisions contained in the plan have an unquestionable impact on the plan's role. P. Kwasniak classified them as:

- provisions of a directional type, determining the directions for development describing the structure (including the development) of a specific area as well as indicating favourable and unfavourable factors affecting the achievement of expected changes (the concept of spatial development of a specific commune or area is included here);
- provisions of a location type, including specific projects (with a diverse degree of detail);
- provisions of a linear type, separating areas of various intended use;
- provisions of a procedural type, determining the mode of conduct related to the formation and execution of the local plan (Kwasniak P., 2008).

The publication edited by R. Cymerman indicates the following functions of the local plan:

- the protective-control function, namely, the identification of the framework and requirements for conducting activities resulting in spatial development (consists, among others, in preventing conflicts);
- the information function - providing information to local administration authorities in order to conduct an effective offer and promotional policy in the commune;
- the coordination function, executed by indicating mutual spatial and material relations between entities participating in the planning process;
- the inspirational function - extracting unique spatial qualities (Cymerman R., 2011).

Of course, the main premise should be the fact that the local plan shapes the space according to sustainable development and spatial order. Thanks to all the functions listed above, spatial shaping may be deemed fully effective with the use of this instrument.

According to Article 15 of the Act on Spatial Planning and Development, the local plans include mainly:

- the intended use of the land;
- lines marking the boundaries of areas of various intended use;
- the principles for the protection and shaping of spatial order;
- the principles of environmental protection;
- the requirements resulting from the needs to shape public space;
- the parameters and indicators for shaping the development;
- the principles for the modernization and building of communication systems as well as technical infrastructure.

The list presented above results in the fact that local spatial development plans may shape the space to a great extent, affecting the forms and manner of its development. They are a very important and necessary instrument for the management of regional and local development (Mickiewicz P., Nowak M., 2013). It is the local plans which very often determine the success and effectiveness of a specific project, planned by both private as well as public investors.

The obligation to provide cash benefits is an important financial consequence of adopting the local plan. When the value of land covered by the plan increases because the plan becomes effective, the owner of the land selling this land within five years from the plan's becoming effective is obliged to pay a zoning fee amounting up to 30% of the real estate's value growth (the specific rate is determined by the commune council). On the contrary, when the value of land decreases because the plan becomes effective, the owner of the land may file a claim for compensation towards the commune regarding the return of the amount related to the change in the land's value. If using the real estate in the previous manner or consistent with the intended use has become impossible or significantly limited because the plan was adopted or changed, the owner or the perpetual user of the real estate may request

- compensation for the actual damage sustained or
- acquiring the real estate or its part.

When the owner or the perpetual user did not exercise this right and the value of the real estate was reduced, when he sells the real estate within five years from the date when the plan becomes effective, the owner or the perpetual user may request compensation from the commune equal to the reduced value of the real estate.

This type of compensation is one of the more vital elements discouraging local governments in communes from using local plans. Other factors may include:

- relatively large costs related to the preparation of the plan's draft;
- the lack of the possibility to quickly change the plan (Nowak M., Mickiewicz P., 2012).

The latter factor may be assessed in various manners. On the one hand, it really leaves no ground to manoeuvre for the communes in some situations but on the other hand it should be emphasized that changes in spatial planning must not be of an accidental and ad hoc nature. However, the literature indicates a thesis with which one should completely agree that the entire area of the country is insufficiently covered by local spatial development plans (Mickiewicz P., Nowak M., 2013a). High investment pressure resulting from the launch of means from the European funds does not improve this situation. In connection with the above, it may be justified to consider whether local plans - at least to a certain extent - should become obligatory for the communes (Sleszyński P., Solon J., 2010). Of course, such modification of the legal system would have to entail other consequences in the form of changing the modification mode of the local plans. The spatial development plan for the voivodship is a separate instrument of spatial management but it is not so important from the point of view of the effects. However, this is a programme document rather than an act of local law.

The conditions related to the preparation of road investment projects (public roads) are defined by the Act dated April 10, 2003 on specific principles for the preparation and execution of investment projects regarding public roads. Pursuant to its provisions, there is a separate mode related to the execution of investment projects, independent of the planning conditions. First of all, it is based on the permit to execute a road investment project issued by the voivode regarding national and voivodship roads, and by the starost regarding roads in powiats and communes. This specific decision contains comprehensive different settlements which are contained in separate decisions in the regular mode. The permit may thus contain elements usually expressed in the local plan, decisions on development conditions, decisions approving the division of real estate, decisions on expropriation or building permits.

In the context of relations between road investment projects and spatial planning, Article 11i of the Act seems to be crucial. Pursuant to this article, regulations on spatial planning and development do not apply in cases regarding the permit to execute a road investment project. The Voivodship Administrative Court in Poznan indicated that when an investor determines a specific procedure and intends to execute the investment project according to the regulations of the special road act, the regulations of the Act on spatial planning and development do not apply at all. The following options are then available: using the special road act or the local plan and location decisions.

There is a field for discussion which tools of spatial management can be recognized as the most efficient. In the authors opinion it depends on the context and perspective of the problem. At this stage of the analysis it must be assumed that despite the regulations of the special road act, the very important tasks should follow local spatial and development plans. They are provided as basic tools for space management. It can be only verified by research how these assumptions work in practice.

The National Road Construction Programme for the years 2011-2015

The National Road Construction Programme for the years 2011-2015 is a medium-term programme document in the sector of the national road infrastructure. This document determines the investment objectives as well as priorities, indicates the level and sources of necessary funding as well as the list of tasks related to road investment projects which need to be executed. The programme takes into account:

- the current level of the state's financial capacity;
- the progress of the preparatory process in investment projects;
- the result of the acceleration of road investment projects from the years 2008-2010.

The programme's content refers to the material scope which was specified in the National Road Construction Programme for the years 2008-2012 demonstrating the effects of its execution after almost 3 years. The total limit related to the programme's execution is PLN 82.8 billion. This amount includes expenses for the execution of tasks related to investment projects regarding national roads, sustained from the National Road Fund and counted from the beginning of 2010.



Source: National Road Construction Program for the years 2011-2015 Appendix to the resolution of the Council of Ministers No 10/2011 dated January 25, 2011

Map 1. Layout of express roads along with layout of motorways in Poland according to the Regulation of the Council of Ministers dated May 15, 2004 on the network of motorways and express roads

2. General Directorate for National Roads and Motorways as the largest road investor in Poland

The General Directorate for National Roads and Motorways is the largest road investor in Poland as well as the central government administration authority responsible for the construction and management of the network of national roads and motorways. The General Directorate for National Roads and Motorways (GDDKiA) is the administrator of more than 20,000 km of roads, including approx. 1,553 km of motorways and approx. 1,472 km of express roads and the largest investor building roads in Poland. According to the state as at December 2014, works on the construction of new roads were underway, including 1,308 km of motorways, express roads and bypasses. According to the new National Road Construction Programme (PBDK) for the years 2015-2023, 2,227 km of new national roads are planned for

construction, including 1,946 km of motorways, express roads and bypasses with the parameters of express roads.

The efficiency of GDDKiA's activities depends to a large extent on other institutions at the central level, namely:

- the Ministry of Infrastructure;
- the Ministry of Environment;
- the Ministry of Finance;
- the General Directorate for Environmental Protection.

GDDKiA's investment projects apply, above all, to national roads understood as one of the categories of public roads. The group of national roads includes, in particular:

- express roads;
- international roads;
- access roads to commonly available border crossing points;
- alternative roads to toll motorways;
- roads constituting bypass routes for large municipal agglomerations;
- roads of defensive importance.

The General Directorate for National Roads and Motorways undertakes investment activities towards national roads, and is responsible, in particular, for obtaining necessary administrative permits (building permits, decisions on environmental conditions, decisions on land development conditions) as well as for acting as the investor in specific construction processes. GDDKiA's actions in this respect have a very strong impact on regional development. Taking into account the above, the General Directorate for National Roads and Motorways is divided into branches dealing with particular tasks at the level of each voivodship.

GDDKiA's tasks as the administrator of national roads, in particular, include:

- serving as an investor;
- maintaining road surfaces;
- coordinating works on the road strip;
- executing intervention, maintenance and protective works;
- counteracting the destruction of roads by users.

There is no doubt that these tasks involve the obligation to care for the condition of roads as well as - in the case of observing related problems - conducting relevant construction works. GDDKiA thus conducts relevant actions in the sphere of construction investment projects and not only affects regional development but also performs its statutory obligations. GDDKiA has also influence on spatial planning. This affection was unexpected by the legislature on the occasion of the creation of space management system. However, this is the actual impact, sanctioned by special road act but that is not in the basic principles reflected in spatial management system. This opens up the question of the effectiveness of management in terms

of space to reconcile the basic instruments of the need to implement the tasks which are important from the point of view of implementation plans of road projects.

3. Process of preparing a road investment project

From the organizational point of view, the process of preparing a road investment project of national importance and higher (express road and motorway) executed by the General Directorate for National Roads and Motorways may be divided into 3 stages: the corridor study stage, the environmental decision stage and the building permit stage. The last stage (exceeding the preparation stage) is the construction stage.

According to procedures functioning at the GDDKiA, the following should be performed at the stage of obtaining the decision on environmental conditions (DSU):

- the corridor study along with a multi-criteria analysis (SK);
- the technical, economic and environmental study (STES).

In order to obtain the permit to execute a road investment project (ZRID), the following should be performed:

- the programme concept (KP);
- the building design (PB).

The purpose of the corridor study is to:

- determine field corridors for the route's options;
- initially analyze corridors in conjunction with the network of public roads, with particular focus on spatial relations with areas of various spatial functions as well as the emphasis on solutions contained in local law as well as studies of land use conditions and directions in communes;
- select options least colliding with local conditions, including with areas and facilities, covered by protection. Options selected at this stage are subject to a further study in subsequent phases of preparing the documentation.

Unfeasible and irrational solutions in technical, economic, environmental and social terms are ruled out at the stage of the corridor study. General data about the area in which the corridor is to be located along with the inventory-taking of previous planning-design works regarding the road network is used when preparing the study. This is the first (initial) document in the management of planning the development of the road network.

The purpose of the technical, economic and environmental study is to specify the routes of particular options and to finally determine the types as well as basic technical parameters of building facilities. This stage is used to provide initial details of the project's material and financial scope as well as to determine its economic efficiency. A report on the investment project's environmental impact is drawn up as part of STES and the planned investment project's impact on the environment is assessed as a result of which the decision on environmental conditions is obtained. This stage is the longest phase in the management process of preparing the investment project.

The programme's concept is prepared after obtaining the decision on environmental conditions for the selected option of the road's route. The main objective of this stage is to specify the project's material and financial scope, consisting in determining specific geometric solutions for road elements, the structure of road and engineering facilities, field boundaries of the investment project as well as the bill of quantities and the cost estimate of works. The building design is a detailed design documentation of drawn up for the selected option of the road route (in the decision on environmental conditions) and the selected type of the structure of building facilities. The Investment Preparation Department as well as the Environmental Department supervise the execution of the corridor study. The worst options are rejected. After receiving the documentation, at the request of the GDDKiA branch, a meeting of the Team for Assessing Investment Projects (ZOPI) at the Head of the Branch is summoned. The supervision over the execution of the technical, economic and environmental study is performed in a similar manner. After issuing the recommendation for options subject to further assessment, the study referred to above is prepared which is then assessed by the Team for Assessing Investment Projects at the Head of the GDDKiA branch.

The investor is not obliged to inform the society about the preparations for the project, about the initial analysis of particular road options, nor about collecting data to maintain or omit further analyses of particular road options in the project.

4. Local plans in the management of road investment projects - a case study

The analysis covered the section of national road S7 Krakow - Moczydło. This section is built in the following communes: Ksiaz, Miechow, Iwanowice, Michałowice and Krakow. Four options for the location of the road were planned (W1, W1a, W2 and W3). Some areas intended for the road are covered by local plans.

Table 1

Scope of planned road investment project covered by local plans

Option	Length of section (in km)	Length of sections covered by local plans
W1	45	30
W1a	42	17
W2	40	21
C3	41	22

Source: Own work

The last part within the plan Krakow - Dolina Dłubni was not included in the calculations. The analyzed area has four valid local plans, including two adopted by the city of Krakow. In general, it should be indicated that each option for the location of the road involves a large

part of areas covered by local spatial development plans. From such perspective, Option 1 for the road S7 is covered by local plans - depending on the location - at the level of 40-66%. Option 2 - 52%, and option 3 - more than 53%. The local plans include an intended use for roads, and it may be assumed that this instrument is used to a significant (but still incomplete) extent.

Table 2

Intended use of land of the executed investment project covered by local plans

Option	Prevailing intended use
W1	Residential buildings, farm buildings, green areas, residential-service buildings
W1a	Residential buildings, farm buildings, green areas, residential-service buildings
W2	Residential buildings, residential-service buildings, green areas
C3	Residential buildings, farm buildings, green areas, residential-service buildings
Common part for all options	Production buildings, forests, service areas, sports and tourism

Source: Own work

It should be verified in the local plans, but also in the overall concept related to the construction of roads, what is the intended use of the land in areas surrounding the roads. Table 2 demonstrates the fact that residential buildings and service buildings dominate in the analyzed cases. Green areas and agricultural areas may be observed. In general, local plans determine an intended use other than roads for the land which is intended for the road investment project. The Road S7 is included in the spatial development plan for the Malopolskie voivodship (in the part "Directions", p. 70). It is defined there in very general terms, several sections are indicated (e.g. section Krakow-Myslenice, section Radzikowskiego-Modlnica). However, as it was already indicated above, taking into account even the general guidelines referred to above does not generate any legal consequences related to the reservation of land for the investment project and the possibility to commence the investment project.

It can be assumed that the basic system associated with the management of the space and the most important tool - local plans - is detached from the needs and realities of road investments management. It also confirms the assumptions made in the theoretical part of the paper. The current system of spatial management is fragmented and internally inconsistent.

Conclusions

The conducted research implies that planning instruments in the analyzed areas do not bring about any assumed effects: local plans do not take into account complete road investment projects, and plans for the voivodship are drawn up at a very high level of generality (in addition, they are not binding). It may be assumed that the assumptions related to spatial management in the present formula - regarding road investment projects - are not effective. Therefore, instruments contained in the special road act apply - at least when it comes to national roads. The possibility to execute investment projects in isolation from the planning order in the commune is provided by the permit for the execution of a road investment project.

This actual and legal condition raises numerous doubts. It seems that basic planning instruments should be used to a greater extent. Currently, there may be too many contradictions, especially when it comes to attempts to maintain spatial consistency and order.

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QUALITIES AND INDICATORS FOR SOCIAL CAPITAL ASSESSMENT

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Abstract. Social capital as a research subject has been topical for several decades, especially in the field of social and economic sciences, and recently also in relation to development planning. In literary sources and territorial development planning practice, an ever greater attention is devoted to the significance of social capital in the context of territorial development and possibilities for its assessment. Social capital is usually understood as mutual connections among individuals or groups in society, however, different opinions still exist. There are also different approaches to the measurement and assessment of social capital, usually manifested as development of various quantitative and qualitative indicators.

Where social capital is regarded as a resource for territorial development, it is important to define suitable indicators. The purpose of this study is to define indicators for the assessment of social capital on the basis of information freely available in the databases of various agencies which store statistics in Latvia. Five local municipalities in three regions of Latvia have been chosen as research territories where consultations were undertaken and situation was explored to define social capital indicators and identify possibilities for its assessment.

The outcomes of research demonstrate that, when carrying out an assessment of social capital, it is equally important to include information on population as creators of social capital, and on civic participation in social processes as well as social interaction and networks, which is the component of social capital least easily assessed and requiring a quality-based approach.

Key words: social capital, territorial development, assessment.

JEL code: Z130

Introduction

This article explores various understandings of the concept of social capital and regards social capital as a resource for territorial development. The study has examined options of the measurement and assessment of social capital by applying a complex approach, or two sets of indicators: quantitative and qualitative – the latter also defined as qualities.

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For assessment of social capital it is important to define suitable indicators, at the same time statistical information used in formation of indicators should be available to all local municipalities

that would be main users of it. Therefore the aim of this study is to define indicators (based on freely available information) for the assessment of social capital in Latvia. In order to reach it, several tasks have been set: 1) to develop suitable approach for social capital measurement in Latvia; 2) to analyse information freely available in the databases of various agencies which store statistics in Latvia; 3) to probe into five local municipalities as case studies in order to define quantitative and qualitative indicators for the assessment of social capital in Latvia. Research methods include analysis of statistical information, interviews and consultations with local authorities, representatives of local NGOs and observations of research areas.

Five territories of local municipalities in the planning regions of Riga, Vidzeme and Latgale have been chosen for research purposes, on the grounds of their scale and location: Jaunpils - a small rural municipality, Kandava - a municipality with a small town as the centre, Gulbene - a municipality with a town as the centre, Rezekne - a municipality with a city as the centre and Rezekne city. The territories have been analysed in the context of statistical data available in Latvia, applying quantitative indicators which characterise population and people's engagement in societal processes. It is more difficult with identification and analysis of social interaction and public participation - it is not enough to apply quantitative indicators, and more often than not, the necessary information is not available.

For the most part, the study builds on information obtained in consultations in the above listed municipalities, and on freely accessible data; the majority of it was obtained through the application of the Regional Development Indicator Model (RDIM, 2014), which integrates information provided by various data maintainers at the national, regional and local level.

The section of conclusions and recommendations contains the main findings on the possibilities for measuring the social capital and a prospective course of further research that should most probably target the issues of qualitative assessment.

Understanding of social capital

Although the term "social capital" was coined as early as at the end of the 19th century, it is only since the 1980s that social capital and its significance is being addressed alongside other forms of capital. The ideas concerning social capital are of particular significance in the areas of sociological and economic sciences, while also being actively applied in other realms, for instance, environmental sciences, medicine, psychology and others. This means that the concept is holistic, making it possible within its framework to analyse and explain issues connected with the structure of society, engagement, health, and others. This article focuses on the importance of social capital in the context of territorial development and possibilities for its assessment.

Most often, social capital is understood as connections keeping society together and related, for the most part, to the value of mutual relations the formation thereof as a resource for social conduct. Social capital is accumulated through building social relations between people, groups, communities and institutions. Social capital is often regarded as the aspect that shapes the context of human capital.

Human capital concerns the existing abilities of individuals, while social capital is about possibilities (Burt, 1997). Like other forms of capital, social capital makes it possible to achieve results that were not possible to achieve in the absence of that capital (Coleman, 1990). In Latvia, in the "Human Development Report", social capital has been defined as the most significant advantages offered to an individual, a family or a group by better contacts (Simane, 2003; Zobena, 2007).

American sociologist James S. Coleman distinguishes among three forms of social capital – social norms, information channels, and collective obligations and expectations that function in social networks. Individuals involved in certain relationship structures are able to achieve goals which they would be unable to achieve otherwise (Coleman, 1988).

Politologist Robert Putnam focuses on trust, norms and networks, emphasising the prominent role of the involvement of the general public in various civic society organisations which can stimulate collective action (Putnam, 1993). A number of researchers have studied differences between social capital, which featuring internal, exclusive relations (bonding capital) and social capital possessing external, inclusive relations (bridging capital). Bonding capital promotes solidarity and cooperation within a community or group, whilst bridging capital ensures access to resources and information outside a group (Putnam, 2000; Saegert et al., 2001).

Rasma Pipike explains this with an example and points out that on the one hand, a helping hand lent by a neighbour can be regarded as an element reinforcing social capital but on the other hand, that social capital is a set of existing or potential resources which are formed by various institutions interacting over a longer period of time (Pipike, 2003) and, thus, presents a resource beyond the boundaries of a group or community. Accordingly, social capital is related to the ability of individuals to form connections among the members of their group/community and "bridges" with other groups. Likewise, in this study, social capital is treated in terms of both its manifestations – individual connections and relations within a group, and links between groups/inter-institutional relations.

Social capital as a resource for territorial development

James Coleman began using the concept of in a broader sense in the 1990s and connected it to the development issues. He admitted, that the role of social capital in territorial development is not unequivocal. In certain cases, information and trust based on personal contacts or networks can facilitate economic cooperation, whilst in other cases, networks can also function as an instrument restricting competitions, thereby reducing efficiency (Trigilia,

2001). The role of social capital in local economic development depends on whether bonding capital or bridging capital dominates in the specific territory, and on the mutual relations and the strength of linkages between those two aspects (Kaminska, 2000). Besides, an American sociologist Mark Granovetter has argued that the impact of social capital on local economic development cannot be clearly foreseeable. Therefore, in order to understand the impact of social, political and economic indicators on the formation of social capital in a certain territory and, consequently, its significance in development processes, he calls for an in-depth analysis of those indicators (Granovetter, 1985).

Social capital as a resource is formed only through interaction and can be used by everybody who is involved in a particular network. Consequently, certain individuals have a lesser incentive of personal involvement in the formation of social capital. Thereby, social capital is often created as a by-product of various activities (Coleman, 1990). In the context of territorial development, it can be formed as a by-product of various organisations and networks (cultural, religious, political associations, territorial communities) connected with a territory.

Measurement and assessment of social capital

Social capital can be evaluated in groups and communities, and between groups and institutions: in the first case, social capital can be measured by analysing it at the level of individuals, in the second, at the level of relations between groups. Social capital is a multi-dimensional phenomenon and its assessment cannot be conducted taking into account separate indicators. Therefore, to enable a complex perspective, indicators in this article have been separated in two sets – quantitative indicators characterising social capital, and qualitative indicators characterising social capital. Five territories – Jaunpils, Kandava, Gulbene, Rezekne municipalities and Rezekne city – have been analysed as examples on the basis of data available in Latvia.

The assessment of social capital can be undertaken taking into consideration various indicators available in a specific territory or a country. Selection of those indicators depends on the objective of research (sector), the dimension of analysis and the data available. More often than not, data are available on territorial units of different scale (police precincts, statistical units, administrative and territorial units and others), on different time periods and with indeterminate frequency (Chaskin, et al., 2006).

At the same time, although increasingly more data are obtained and analysed, and presented in various ways, they are often unavailable for local communities and even local authorities (Coulton, Hollister, 1998), which would potentially be the most direct users of those data. Therefore, it is accentuated in this article that the indicators used in the assessment of social capital should, as much as possible, be made more easily available to anyone interested in a concrete territory.

To enable the assessment of the formation and accumulation of social capital, the data should be analysed on several dimensions of indicators:

- 1) population;
- 2) civic participation;
- 3) social interaction and networks.

Each dimension has been presented below in further detail.

People are indicators of social capital in a specific territory, therefore, the characteristic features of population are essential in terms of background for the formation of social capital. The analysis should take into account population number, population change trends in a territory, age structure and employment.

Civic participation directly illustrates resident activity in a territory. Participation can be analysed in view of a number of indicators – voter turnout rates, the number of NGOs per 1000 people, the number of the EU projects carried out and the amount of funding under those projects, activity in planning processes (e.g. public consultations), engagement in leisure activities (amateur art groups). The existence of a phenomenon such as local territorial communities, and their actions, should also fall within the realm of civic engagement and activism. These communities often are informal groups hard to identify and small scale territories, not municipalities should be more suitable for studying them.

Social interaction of people and networks relate to individual level– people's daily contacts, for instance, the frequency of contacts with neighbours, the existence of territorial community in a territory. These indicators directly point at the presence of social capital in a territory.

Possibilities for assessment in the context of statistical data available in Latvia

As mentioned above, in order to identify the available resources and understand the scale of their application, it is of vital importance that there are possibilities for assessing social capital in the territories of local governments, therefore, data should be easily accessible. The quantitative, regularly updated data used in this article have been regularly extracted from the Regional Development Indicators' Module (RDIM, 2014), in addition to publicly available data from the Central Statistical Bureau, the Office of Citizenship and Migration Affairs, the Population Register, the Central Election Commission, and information from the Lursoft company database.

Nevertheless, the authors are aware that these are not the only indicators that could potentially characterise social capital in certain territorial units; however, the other indicators are not so easily usable and accessible for anybody who would be interested and, therefore, only indicators from the above mentioned resources have been analysed in this article.

Indicators characterising **Population** as creators of social capital in the research territories have been selected to reflect the number of population, changes in population, its age structure and employment rates (Table 1).

Changes in the number of population, characterised by indicators of population change due to natural causes (births and deaths) and mechanical movement (migration) in the research territories are mainly negative, which is self-evident given the negative demographic situation in the country as a whole: in 2013, the number of population in Latvia decreased by 0.50% due to natural causes and by 0.37% due to migration. On the whole, both these factors have had an almost equal impact on decrease in population numbers over the past years; however, there are certain territories (Jaunpils municipality, Rezekne municipality) where the migration balance is positive, albeit slightly.

The most significant differences between the territories are those concerning unemployment rates: municipalities in Latgale region demonstrate much higher figures, which can largely be explained by less favourable overall socio-economic situation. The figures for the share of working-age population as an important part of the creators of social capital do not reveal significant differences in the selected territories, while demonstrating a common trend – decrease in the share of this segment of population, which is largely indicative of a gradual reduction of social capital.

Table 1

Indicators characterising population as creators of social capital

Indicators	Territories					Average in Latvia	
	Jaunpils municipality	Kandava municipality	Gulbene municipality	Rezekne municipality	Rezekne city		
Number of population at the beginning of the year (inhab., OCMA)	2012	2 743	9 691	24 604	31 164	33 936	-
	2013	2 698	9 605	24 311	30 901	33 438	
	2014	2 665	9 431	23 720	30 217	32 630	
Number of births per 1000 population (inhab., RDIM calc.)	2012	8.75	10.73	8.13	9.02	8.31	9.25
	2013	7.78	8.54	8.51	7.67	7.51	9.68
	2014	-	-	-	-	-	-
Share of working-age population (% , RDIM calc.)	2012	66.28	65.69	66.36	66.70	65.94	65.62
	2013	66.23	65.36	66.30	66.43	65.31	65.35
	2014	65.93	64.54	65.97	66.24	64.69	64.81
Unemployment rate (% , RDIM calc.)	2012	6.82	6.19	8.26	21.25	13.19	7.18
	2013	7.16	6.51	8.62	21.95	13.67	7.52
	2014	-	-	-	-	-	-
Impact of migration on population numbers %, RDIM calc.)	2012	0.18	-1.34	-0.61	0.12	-1.34	-0.29
	2013	-1.49	-0.42	-0.56	0.12	-0.84	-0.37
	2014	-	-	-	-	-	-

Source: author's construction based on the data of the Office of Citizenship and Migration Affairs (OCMA) and Regional development indicators module (RDIM)

Civic participation in social processes is the main indicator of population activity. Indicators selected for the assessment of participation point to the intensity of absorption of the EU funds, the work of non-governmental organisations, and elector turnout (Table 2).

The rate of absorption of the EU funds illustrates, to a great extent, the ability of people and institutions to cooperate in joint activities and towards common goals. The amount of the EU funding in projects per 1000 of population reveals dramatic differences among the selected territories; however, the number of population, the number of projects implemented, and also the local government's possibilities for applying for specific funding have a major role to play here. These indicators sooner point to good quality development management and ability to effectively embrace opportunities offered by the EU funds.

The number of organisations and their activities are the quantitative indicators that perhaps the most precisely characterise the level of population activity. Jaunpils and Kandava municipalities are in the lead here, having more than ten non-governmental organisations per 1000 of population, which is indicative of the ability of people to cooperate and a more pronounced horizontal communication.

The voter turnout is the most formal indicator of civic participation, and nevertheless, to a great extent indicative of civic activity. The analysis of voter turnout at the local elections of 2013 and the European parliamentary elections of 2014 reveals that the overall voter turnout is rather low. However, in the territories with a comparatively high rate of the non-governmental organisation activity, people also tend to be more active at elections.

Table 2

Indicators characterizing civic participation

Indicators		Territories					Average in Latvia
		Jaunpils municipality	Kandava municipality	Gulbene municipality	Rezekne municipality	Rezekne city	
EU project funding (EAGF, EAFRD, EFF) per 1000 population (thou. EUR, RDIM calc.)	2012	2 177.9	373.7	582.9	571.0	3.8	478.7
	2013	1 003.4	253.6	380.4	405.7	3.1	324.5
	2014	-	-	-	-	-	-
Number of projects under EU funds (EAGF, EAFRD, EFF) per 1000 population (number, RDIM calc.)	2012	88.9	106.8	131.7	289.6	0.4	114.9
	2013	88.6	103.5	136.7	287.5	0.5	116.5
	2014	-	-	-	-	-	-
EU project funding (ERDF, ESF, CF) per 1000 population (thou. EUR, RDIM calc.)	2012	21.8	410.5	362.3	97.2	370.2	268.8
	2013	34.2	228.3	597.5	242.4	384.4	322.9
	2014	0.3	0.0	26.6	6.4	3.2	13.1
Number of registered non-liquidated NGOs (Lursoft data base)	2012	-	-	-	-	-	-
	2013	25	92	128	212	179	
	2014	28	95	137	222	196	
Number of registered NGOs per 1000 population (author's calc.)	2012	-	-	-	-	-	-
	2013	9.3	10.2	5.6	7.5	5.5	7.6
	2014	10.5	10.1	5.8	7.3	6.0	8.8
Voter turnout (%, CEC)	2012	-	-	-	-	-	-
	2013	44.4	42.5	36.4	37.4	47.5	46.0
	2014	57.6	55.8	51.4	38.4	57.7	58.8

Source: author's construction based on the data of the Regional development indicators module (RDIM), Lursoft data base of enterprises, the Central Election Commission (CEC) and author's calculations

The existence of **Social interaction and networks** is the most essential and still the least easily identifiable element of social capital. The quality of human life is determined by the ability of the members of society to socially interact and trust each other; nevertheless, the existence of communities and their coordinated and targeted actions are essential preconditions for these processes to take place in a meaningful way. The formation and existence of communities is related to common priorities, beliefs, interests, traditions and mutual relations the functioning of which is conditional on social interaction and networks.

The most important qualities usually named as those behind the ability of communities to act, or social capital, are mutual trust, equality, availability, communication, participation, cooperation, adaptability and flexibility. To characterise those qualities of social capital, it is not enough to define separate selected quantitative indicators in selected territories, because the activities of this type usually take place disregarding administrative borders of territories and, for the most part, on a smaller scale.

Conclusions and recommendations

1. In view of the multidimensional character of social capital, a complex approach should be applied to its measurement and assessment, which includes both quantitative and qualitative methods.

2. In evaluation, it is of equal importance to include information both on population as creators of social capital, and civic participation in social processes as well as social interaction and networks.

3. Quantitative indicators are best suited for the assessment of population and civic participation. The characteristics of population should consider the number of population, trends of population changes in the territory, age structure and employment rates. The assessment of civic participation should examine activity in civic processes, from joint leisure activities to membership in non-governmental organisations, involvement of joint projects, participation in local development planning processes and elections.

4. The existence and actions of local territorial communities are essential for the assessment of social interaction and networks. Communities often are informal groups difficult to identify, and a quality-oriented approach sooner than definite quantitative indicators should be applied to study them.

5. Possible directions of further research should involve the identification of approaches to qualitative assessment of social capital.

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ASSESSMENT OF POSSIBLE REGIONAL ACCIDENTS AND CREATION OF DISASTER RELIEF MANAGEMENT SYSTEM

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Abstract. One of important state development aspects is ensuring even and stable development. Production being developed, big industrial objects being built at the regional level, there also appear problems related with great industrial accidents, assessment of such accident risks, as well as with accident risk reduction activities. Despite the remarkable technical and scientific progress in the safety field, there is an inherent risk in industrial establishments, where dangerous substances are produced or stored. In the article the assessment of possible regional catastrophes and the analysis of prevention management system are made on the example of Rezekne district. From the point of view of risk assessment, there are various dangerous objects in the territory of Rezekne district: the district is crossed by international railways and highways; there are several hydropower stations, as well as petrol and gas filling stations in the territory of the district. The aim of the paper is to make the analysis of existing threats and elaborate the methodology for creating systems of regional threats, as well as for elaborating the civil defence plan. In the article the analysis of certain local authority condition has been made and proposals for improving the system of civil defence activities have been put forward in the context of regional technogenic safety.

Key words: regional accident, disaster relief management system, chemical substances, risk assessment.

JEL code: Q50, R19, H59

Introduction

One of important state development aspects is ensuring even and stable development. Production being developed, big industrial objects being built at the regional level, there also appear problems related with great industrial accidents, the assessment of such accident risks, as well as with accident risk reduction activities. Every year in the world there break out

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devastating industrial accidents, fires, natural and technogenic disasters and catastrophes. They do great damage to environment, human life and health and incur great material losses. The issues of guarding towns, residential areas, commercial facilities from industrial accidents and other destructing accidents are placed at the level of nationally important tasks.

In the article the assessment of possible regional catastrophes and the analysis of prevention management system are made on the example of Rezekne district. From the point of view of risk assessment, there are various dangerous objects in the territory of Rezekne district: the district is crossed by international railways and highways; there are several hydropower stations in the territory of the district, petrol and gas filling stations as well. In connection with that, in the territory of the district there may appear crashes, fires, spill of dangerous substances, as well as there may arise other unexpected, undesirable and destructive events.

The aim of the paper is to make the analysis of existing threats and elaborate the methodology for creating regional threat systems, as well as for elaborating the civil defence plan. In the article the analysis of definite local authority condition has been made and proposals for improving the system of civil defence activities have been put forward in the context of regional technogenic safety.

Regional accidents and disaster relief management

Despite the remarkable technical and scientific progress in the safety field, there is an inherent risk in industrial establishments, where dangerous substances are produced or stored. Even if the risk cannot be avoided, however, it is possible to manage it to contain and minimise the consequences of accidental events. Complex process industries, such as the chemical industry, process hazardous substances within densely populated areas (Reniers, Dullaert, Foubert (2006)), and the dangers inherent in the storage, handling, processing and distribution of such materials continue increasing. Fires, explosions and toxic emissions are frequent in these processes (Khan, Abbasi (1999a); Kwon (2006)), potentially killing a large number of people (employees and the population) as well as provoking catastrophic damage to the environment. Industrial accidents occurring in the past, such as the Bhopal gas or Chernobyl nuclear disasters, reflect the risks inherent in these processes, and have raised public awareness about the negative effects of technology (Khan, Abbasi (1999b); Nivolianitou, Leopoulus, Konstantinidou (2004); Saraf, Karanjikar (2005); Willey, Crowl, Lepkowski (2005), Fernandez-Muniz, Montes-Peon, Vazquez-Ordas (2007)). Most authors studying emergency plans and emergency handling analyse the robustness of emergency plans and attempt to detect the failures in the plans (e.g., Kanno and Furuta (2006), Flaus (2008), Karagiannis *et al.*(2010)). To assist the work of emergency planners and reviewers, national emergency management and civil protection authorities of many countries publish emergency planning guides. These guides provide only a description of the steps to follow to apply preventive actions in case of emergency. This approach is followed by Ramabrahmam et

al. (1996). Additionally, emergency plans are often outlined by flow diagrams with the purpose of aiding the comprehension of the plan by an inexperienced user (Tseng et al., 2008).

In the recent years some attention has been paid to the development and implementation of incident management systems (IMS). As shown in (R.W. Perry, 2003) the IMS is a tool for marshalling pre-identified and pre-assembled resources to respond to an emergency or disaster. IMS is particularly useful when personnel and resources from many agencies and jurisdictions are required to manage large incidents successfully. Unlike the researches mentioned, the authors consider regional component of technogenic safety as an integral part of regional management. After 2000, researchers pay attention to prevention of possible risks and effective management of technogenic safety (Kim, J. K., Sharman, R., Rao, H. R., & Upadhyaya, S. (2007)). Development of the technogenic disaster prevention system also serves as basis of sustainable regional development and economic growth. As it is shown (Fernandez-Muniz, B.; Montes-Peon, J. M., Vazquez-Ordas, C. J. (2009)), there exist positive causal relationship between effective safety management and, respectively, the competitiveness and economically financial activities of regional and local businessmen performance. Major accidents in chemical industry have occurred world-wide. In Europe, the Seveso accident in 1976 prompted the adoption of legislation aimed at the prevention and control of such accidents. The resulting 'Seveso' directive now is applied to around 10,000 industrial establishments where dangerous substances are used or stored in large quantities, mainly in the chemicals, petrochemicals, storage, and metal refining sectors. The Seveso Directive obliges Member States to ensure that operators have a policy in place to prevent major accidents. Operators handling dangerous substances above certain thresholds must regularly inform the public likely to be affected by an accident, providing safety reports, a safety management system and an internal emergency plan. Member States must ensure that emergency plans are in place for the surrounding areas and that mitigation actions are planned. Account must also be taken of these objectives in land-use planning. (see also scientific discussion on EU regulations in O'Mahony, M.T., Doolan, D., O'Sullivan, A., Hession M. (2014), Nerin C., Seco B., Tena A., Calvo M. (2014), Wood, M.H. (2009), Gerbec, M., Kontic, B. (2009)).

Characterisation of local territory and the example of analysis methods

Establishing possible threats, one has to take into consideration administrative-territorial, industrial, as well as national economy aspects. Rezekne district is in the eastern part of Latvia, 245 km away from its capital Riga. Taking into consideration the specific features of Rezekne district civil defence plan, as well as the software available, for the elaboration of cartographic material with scenario of chemical substance spill, the computer programme ALOHA (see description for programme in National Oceanographic and Atmospheric Administration (2014)) and the map computer programme ARCGIS were used (for additional software analysis see also Arnaboldi, Valerio, Marco Conti, and Franca

Delmastro (2014)). Every object is subject to external threats, especially the objects situated near main motorways and railways. Malta village in Rezekne district has no ring roads. Dangerous chemical substances are transported by auto transport and railway transport. Spill of dangerous chemical substances during transportation can seriously endanger the territory of Malta village. That is why it is important to study possible threat, as a result of which spill of dangerous chemical substances may take place. The most mass and dangerous out of the cargo transported are oil products and ammonia. On the basis of cargo transportation statistic data, it was concluded that the amount of chemical cargo transported by railway as well as by motorway grows each year. Consequently, one can conclude that chemical substances are used in household and industry more and more widely. Computer programmes can be used, taking into consideration that wind velocity cannot be high, weather conditions should be stable, as well as one has to take into account wind direction and the concentration of the substance spilled. The result is calculated in the computer programme and it is possible to cartographically picture it in ArcGIS maps. As the location of cartographic modelling Malta village of Malta rural municipality in Rezekne district was chosen. Transit motorway Warsaw-St. Petersburg, as well as railway Warsaw-St. Petersburg goes through the centre of Malta. Every day different cargos are transported through Malta, including cargos with dangerous chemical substances. It is important to study possible threat in this location, as the centre of the rural municipality is densely populated and there are two secondary schools, a music school, a special orphan boarding-school, two kindergartens, a culture house and other institutions, where mass gathering of people is possible. Possible accident place can objectively be the crossroads in the centre of Malta village, where 1st May Str., Andrupenes Str. and Stacijās Str. cross. Risk scenarios (variants of undesirable event development) are made to design a logical model of accident development that describes the process of accident escalation from initiating event to undesirable effect of the accident on people. The consequences of „the worst case”, i.e. the most unfavourable result of an accident (100% total leakage amount of substance), is assessed. Practically, in all risk scenarios the following accident events are examined:

- Spill of dangerous substance or product,
- Substance or product slop fire,
- Substance or product vapour-air mixture fire,
- Spreading of substance or product vapour toxic concentration.

Atmospheric pollution is connected with the amount of substance dumped (slop size), the characteristics of the substance and meteorology. For each chemical substance examined, the assessment of situation toxicity has been made. The concentration dangerous for health and life with 30 min. time limit (IDLH) has been calculated. For situation analysis the depth of contamination area has been stated at the most unfavourable meteorology. Spreading of spilled substance or product toxic concentration in the air can be especially dangerous in windless condition and/or for dumped substances with density of vapour larger than that of the

air, when accumulating in low places (for example, caustic soda, etc.). Combustible substances or products can start burning while pouring out from burning initiators of mechanical, electric nature or other. Further accident escalation is connected with heat radiation emission. The consequences of such accidents are connected with accident location and the amount of substance involved. Other variant of accident consequences is connected with delayed burning of explosive vapour-air mixture, which can be caused by burning initiators mentioned before, if substance leakage is not stopped and there is a source of ignition. Further accident escalation depends on how effectively burning is localized. Leakage of substances the vapour of which is heavier than the air is especially dangerous. The vapour can spread to a distant source of ignition and catch fire. While performing the evaluation of accident consequences, it is accepted that the initiating factors of accidents can be: dissatisfactory technical condition of equipment and utilities, insufficient supervision of technological process, low qualification level of service staff, breach of labour protection and fire security requirements. In the calculations it is admitted that, according to the worst scenario, leakage of chemical substances happens through a hole with conditional diameter of 5 cm caused by external factors (for example, damage of reservoir body caused by another vehicle), as tanks, reservoirs and cisterns are regularly inspected and it is almost impossible that there may appear holes in the walls of a reservoir because of corrosion or wear. Scenarios of accident with dangerous chemical substances after motor transport accidents have been calculated: accidents with 32m³ petrol delivery tank-truck (scenario 1), 4 t ammonia leakage from the tank-truck (scenario 2). In case of scenario 1 (a tank-truck with petrol accident), the amount of dumped petrol is 32 m³, the petrol will pour out around free area, the mass of the petrol will be 21.7 tons. The area of leakage is not limited and it can reach 1145 m² maximum. The intensity of vaporizing from the slop is 171 kg/min; the time of vaporizing is 127 min. Explosive mass is stated as 262 kg. Computer programme states that the explosion of explosive mass in open space is unlikely, but the damage done as a result of explosion may be the following (See Table 1).

Table 1

Damage done as a result of 32 m³ petrol tank-truck explosion

Distance from explosion epicentre (m)	Damage
10-13	99-1% lethal outcome for people from direct effect of the explosion
16	Possible building collapse
14-37	90-1% eardrum injuries
42	Partial collapse of walls and roofs
18-70	Injuries from flying glass and other shivers
70-121	Breaking of window glasses

Source: authors' calculation

Leakage of 4 tons of ammonia from a tank-truck with capacity 32 m³ (scenario 2). Theoretically we accept that ammonia leakage was from one tank-truck section with 4 ton

volume as a result of a crash with other vehicle. Leakage of 4 tons of ammonia from a tank-truck is possible during its transportation. In this scenario the calculation of leakage parameter evaluation is made for free leakage of ammonia in non-limited area. Moreover, possible actions of participants and, corresponding response activities, the so-called „worst variant“, are not taken into account. In case of tank fracture, real leakage of its contents can last depending on leakage hole width. The effect of ammonia will depend on meteorology. Ammonia vapours can get into space through ventilation, damaged or open windows and doors. USA computer programme ALOHA is used (National Oceanographic And Atmospheric Administration (2014)) for the evaluation of effect from ammonia leakage into atmosphere. UNO Environmental program recommended it for use in modelling and planning emergency situations. Risk data are taken from computer programme CAMEO database (CAMEO (2014)). The authors examine the depths of ammonia contamination area (IDLH, +17 C⁰, -8 C⁰) for atmosphere vertical stability classes: B – convection (clear), D – isothermia (cloudy) and F – inversion (clear), wind velocity is 3m/s; 5m/s and 1 m/s correspondingly, relative humidity in summer is 75%, in winter - 80%, closed environment (trees, bushes)). Ammonia dangerousness is defined by its toxicity and capability to form the concentration dangerous for people in large area. The accident can express itself as ammonia leakage from a tank-truck as a result of damage in its body or armature. According to the scenario, ammonia leakage happens in the most unfavourable meteorology from the tank, through a hole with relative size 10x50 mm (Table 2).

Table 2

Value of threat area in case of ammonia leakage in different seasons

Summer			Winter		
Day		Night	Day		Night
B	D	F	B	D	F
2 km	1.3 km	1.7 km	1.7 km	0.965 km	1.5 km

Source: authors' calculation

Explosion of ammonia-air mixture is unlikely, as burning ammonia vapour cloud rarely causes explosion overpressure, it is possible only in closed space or in the case when there are obstacles that trouble free expansion of burning cloud (trees, dense building). Toxic vapours of ammonia relief into atmosphere reach maximum permissible concentration 300 ppm in the surrounding air at a distance of 2 km, but, taking into account short time of exposition (2 min.), this effect can be considered insignificant, as toxic effect with irreversible consequences for health and life is possible only if during 30 minutes from the moment of substance leakage no corresponding accident result aversion actions were taken. The possibility of implementation of such event is very little. Having drawn up cartographic materials with probable leakage of dangerous chemical substances, it was established that the consequences of the accident would cause human and material losses, similar situation having happened in populated area. In the chosen location of the incident, an accident having happened, there are

several dwelling houses, shops, a pharmacy engineering building, a bus stop, as well as a rescue service building in the lethal radius area. For chemical substance leakage cases prevention, readiness, response and liquidation emergency actions have been elaborated. If it is necessary to call a civil defence committee, this action plan can be used as an algorithm for co-operation between services and institutions as well as a succession of actions for liquidation and aversion of event consequences. Using ALOHA computer programme and CAMEO database of chemical substances (CAMEO, 2014), it is possible to precisely define the pollution area, probable explosion threat area, as well as the area of damage caused by explosion. However, great amount of information and time to enter necessary information into a computer are needed to be able to configure a computer programme precisely. It would be problematic to enter the necessary information in the place of the event quickly and precisely. The computer programme is easily used in training of the employees of high dangerousness objects, of the members of civil defence committee, as well as in defining the risk in case of dangerous chemical substance spill.

Conclusions, proposals, recommendations

1. Civil protection has become an engineering technical field which requires deep theoretical and practical knowledge of civil defence issues from State Fire-Fighting and Rescue Services, municipality institutions, managers of industrial and economy objects for their mutual co-operation, wide introduction of new co-operation methods and their use in real situations. The issues of protection of towns, populated areas, economy objects from industrial accidents and other destructive accidents are placed at the level of national importance tasks.

2. After evaluation of possible catastrophes in Rezekne district, chemical accidents, when poisonous gases and substances (chlorine, ammonia, prussic acid, sulphuric acid) are transported, are considered the most dangerous;

3. In case of possible accident threat the inhabitants of the district are subject to risk factors and the environment is under influence, as dangerous chemical substances can get into soil, water and air;

4. Cartographic materials have been elaborated and two possible scenarios have been examined. The cartographic materials can be used for training Rezekne district civil defence committee.

Analysing the essence of the problem, the authors have elaborated recommendations for facilitating evaluation of possible catastrophes and anticipated catastrophe management activities:

1. In civil defence plan it is necessary to envisage scenarios for possible catastrophes with particular solutions.
2. For developing the scenario and defining threat area, the access to computer programme for civil defence committee is necessary.

3. For preventing different kinds of catastrophes, it is necessary to organise regular theoretical and practical training for members of civil defence committee and the institutions involved.
4. Timely information for inhabitants in case of possible accidents and catastrophes should be envisaged.

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PREVENTIVE MEASURES FOR GRASS FIRE RISK REDUCTION

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Abstract. One of the problems within ecosystems is fire, which is a commonly recognized component of ecosystem disturbance regime. In the grassland ecosystem, such disturbances as fire and grazing or range management to some extent positively influence the productivity and plant diversity of the grassland ecosystem. But every year, as a result of last year's grass burning, people die; residential and household buildings are burnt down causing several tens or even hundreds of thousands of euros material loss. The problem of grass burning requires intense work for several years. The main aim of the paper is to create medium term solution for grass fire prevention and propose an action plan to reduce possible fire-extinguishing costs. Research is based on traditional economic science methods, such as analysis and synthesis, monograph method and practical experience of Latvian fire protection services. As main result of the paper, the authors elaborated proposals for plan of action for reducing the number of grass fires. Implementation of prepared recommendations gives a premise to ensure reduction of fire protection costs and ensure effective natural resource management.

Key words: grass fire, damage prevention, economics of fire- extinguishing.

JEL code: Q50, R19, H59

Introduction

Fire protection and fire prevention problems are not only technical and technological issues; they could also be evaluated as an economic problem, since fires are an important source of economic losses for municipalities and also a part of state budget costs. As a result of last year's grass burning, people die; residential and household buildings are burnt down causing several tens or even hundreds of thousands of euros material loss. In 2013 (State Fire and Rescue Service (2013)) there were registered 2,430 grass fires (including the fires possibly caused by grass fire) in Latvia. In comparison with 2012, when, according to the State Fire and Rescue Service (2012), there were registered 1,824 fires, their number increased by 25%. In

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2012 overall 8,536 fires were registered in Latvia. 21.3% out of these 8,536 fires are exactly grass fires. The number of grass fires tends to increase during last four years. In 2013 the State Fire-Fighting and Rescue Service spent for fighting grass fires the amount of LVL 20100.33 for petrol (the sum was calculated, taking into account the prices for petrol for summer, 2013). 6 vehicles were damaged in fighting such fires. The repair works cost LVL 560.99. (the State Fire and Rescue Service (2013)). The problem of grass burning requires intense work for several years. The main aim of the paper is to create medium term solution for grass fire prevention and propose an action plan to reduce possible fire-extinguishing costs. Research is based on traditional economic science methods, such as analysis and synthesis, monograph method and on practical experience of Latvia's fire protection services. As main result of the paper, proposals for the plan of action for reducing the number of grass fires have been worked out. Implementation of prepared recommendations gives a premise to ensure reduction of fire protection costs and ensure effective natural resource management.

Landscape fire problems

Fire is a commonly recognized component of ecosystem disturbance regime (see Cheney P., Sullivan A.(2008) as an example). In the grassland ecosystem, disturbances such as fire and grazing, or range management (haymaking) can positively influence the productivity and plant diversity of the grassland ecosystem (Li, M. and Guo, X.L. (2014), Anderson, R.C. (1990)). Also, grazing and burning behaviours are studied in scientific literature (Bond, W.J. and Keeley, J.E. (2005), Moreira F. *et.al.* (2011)). Because both of them not only have contributed to the evolution history in the past, but also are both forms employed in grassland management practice (cattle grazing and/or prescribed burning). Burning grass is not an ancient Latvian tradition. In ancient beliefs and reports there are no statements that it would be an ancient Latvian domestic tradition. It was even mentioned, that there was often lack of grass. For Latvians their land was sacred and they made maximal use of it and maintained it carefully, so there was no dry grass on the fields in spring. In Latvia burning grass started in Soviet times; it was introduced by immigrants from Russia and the Ukraine. In these countries, where there were large and non-maintained lands, grass was burned (TVNET (2013)). Mainly in the ecological literature, scientific researches are devoted to agricultural aspects of grass fire problems. As an example, Cruz M., Alexander M.E. (2013) and Alexander M.E., Cruz M. (2012) are examining flame length and fire line intensity modelling aspects. As shown in Sullivan A.L. (2010), thorough understanding of the behaviour of fire in grasslands is critical to the minimization of the impact of fires on agricultural and pastoral land as well as the successful management of the health, robustness, and species diversity of native grasslands. Some authors are exploring fire spread consequences (Carmel Y. *Et al* (2009), Velez R. (2010)). Only few papers are devoted to fire protection and fire prevention issues as a regional problem (Peattie S. *et.al* (2012), Pezzatti, G.B. *et al.* (2013)).

Unfortunately, nowadays burning last year's grass has become a kind of entertainment (BNN (2013)). Fire starters excuse their actions with the necessity to free the land from old grass and its fertilisation with ashes. But every year, as a result of burning last year's grass, people die; residential and household buildings are burnt down causing several tens or even hundreds of thousands of euros material loss.

Last year's grass fire starters often emphasize that they "control" burning process and are sure they are really able to control fire. Burning last year's grass cannot be controlled. Under the influence of wind and other factors the direction of burning can change, flames can rapidly expand and spread to buildings and other objects. Authors agree with Mourao P., Martinho V (2014) conclusion that the amount of municipal burnt area per forest fire depends on the economic dynamism of each locality, the population density of a municipality, the availability of trained teams of forest firefighters, and the presence of relatively high municipal expenditures on environment outlays and exactly the same is applicable for other types of landscape fires. Grass fires may appear only in the places where the land is not well-managed, the grass is not mown down in autumn. Additionally, not only countryside is not well-managed, but also urban territories are not well-managed in many places. Although, as compared to countryside regions, smaller areas burn down in towns, these fires are very dangerous, as there is denser building and grass fires endanger residential buildings, household buildings, historical monuments and other urban objects. As a result of fire urban territory gets smoked and polluted. In peaty soils there is lasting smouldering which creates fire hazard during longer period of time. Burning last year's grass can cause and also causes forest fires. The level of society awareness is often insufficient to understand that economically the most profitable method of maintaining weedy meadows – burning – cannot be joined to the modern person understanding of natural processes. Unfortunately, the unwillingness of land owners to invest financial means or their little financial possibilities sometimes force them to act imprudently and irresponsibly. One should emphasize that last year's grass is not burned only by private owners in their territories. According to the State Fire-Fighting and Rescue Service data (State Fire and Rescue service (2013)), 70% of grass fires occur exactly in the territories owned by local authorities. Burning last year's grass causes damage to nature and its biodiversity, destroys valuable plants, insects and small animals, bird nests. The greatest harm can be done when burning grass in late spring or even in summer when almost all animals have woken up, nests have been built and eggs have been laid. Additionally, wet meadows and river flood-lands, that are important for birds, are burnt. Authors agree with Malcolm Gill A. (2005) that 'landscape' fire problem is exemplified by the destruction of homes and human lives by landscape fires raging out of control. The 'problem' involves a series of landscapes (e.g. wild land and suburb), a series of systems (e.g. biophysical system and environmental-effects system), and a series of time phases (e.g. planning phase). It is a multi-stakeholder, multi-variable, multi-scale problem. Land uses, like 'farmland', imply a set of specific assets and, thus, particular perception of losses. In all land-use designations, at any one point, fire-

proneness may be seen as a function of exposure to ignition sources (members, burning brands or flame radiation and flame contact) and the ease of ignition. The landscape-fire problem has multiple partial 'solutions', not just one overall solution, and these involve social governance, land management (public and private), suppression capacity and personal preparedness. The problem needs to be addressed at multiple temporal and spatial scales in an integrated fashion for the outcome to be of maximal benefit. There will always be a residual risk of severe fire occurrence. Minimisation of residual risk requires effective land management, recurrent funding and the perpetual vigilance of all parties. Such kind of problems are common in many countries (see also Brown A., Davis K. (1973), Pyne S., Andrews P., Laven R. (1996)). Extinguishing grass fires is physically hard and even dangerous for fire-fighters work – there is no water and driveways, fire-fighters are forced to damage their vehicles driving over plough lands and ditches, to work long hours directly next to fire and in strong smoke, using dry fire-extinguishing method (with brooms, lashes). During the periods of intensive grass burning, the number of calls to the State Fire-fighting and Rescue Service reaches 300 times a day. It seriously endangers effective receiving of fire-fighters' help in other accidents.

Statistic analysis of grass fires

In 2013 2,430 grass fires were registered in Latvia (including the fires possibly caused by last year's grass burning). As compared to 2012, when 1,824 grass fires were registered, the number of fires increased by 25%. In 2012 there were in general registered 8,536 fires. 21.3% out of these 8,536 fires are exactly grass fires. The number of grass fires during last four years has tended to increase (see Table 1).

Table 1

The number of fires from 2000 to 2013

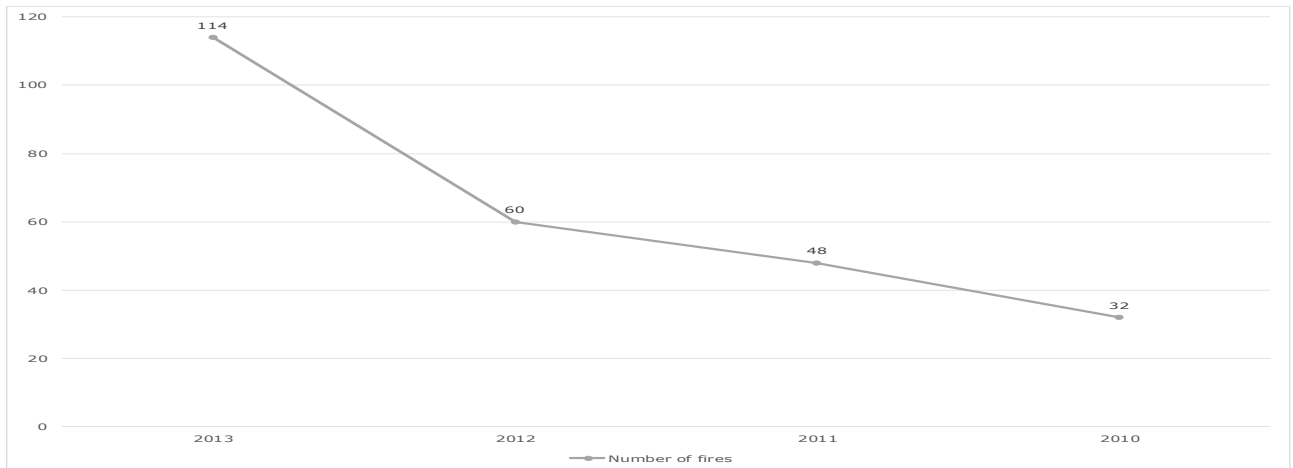
Year	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Number of grass fires	430	824	760	695	054	092	651	083	594	446	594	328	410	024
Total number of fires	-	8536	8120	8087	8997	8967	10179	16295	8853	9525	10574	11620	7479	7554

Source: author's calculations based on the State Fire and Rescue Service (2013)

Of course, the number of grass fires in each definite year depends on the totality of various conditions. The most essential aspects are: meteorology and the time of spring coming. Let us take spring of 2013 as an example. Spring came comparatively late, snow cover remained long, but, as soon as snow melted, it became warm very rapidly and the weather mostly remained sunny. Such weather conditions were a prerequisite for grass fires. Further follow

economic, social, society education level and other compulsory conditions, that can directly or indirectly influence the number of grass fires.

If total number of grass fires increases, the number of fires possibly caused by grass burning also increases. If in 2010 there were 32 fires of such kind, then in 2013 there already were 114 fires. It draws attention to dangerousness and non-predictable consequences that appear while burning last year's grass. The increase in the number of these fires during last four years we can see in Fig.1.



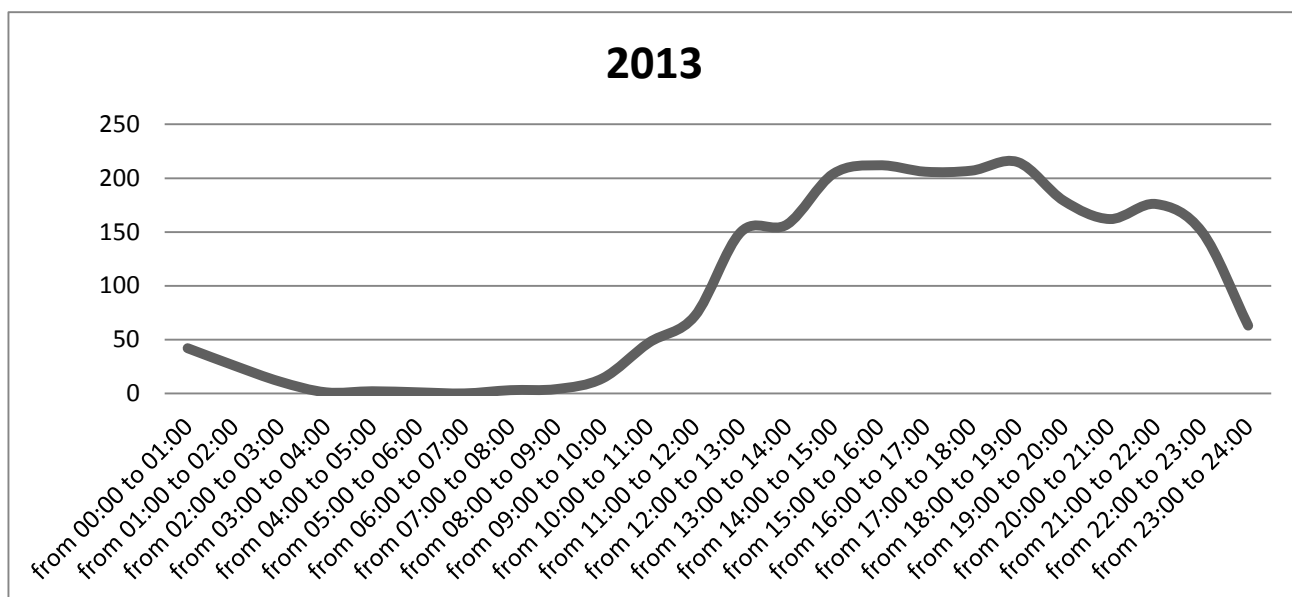
Source: author's calculations based on the State Fire and Rescue Service (2013)

Fig. 1. Number of grass fires possibly caused by grass burning, 2010-2013

The next figure (see Fig.2) shows the summary of the statistic data about grass fire according to the time of their starting. It is clearly seen that the most rapid increase in the number of grass fires can be observed from 11:00 till 16:00. This is the time when the children of school age return back home from school, but the people of working age are at work. It allows concluding, that during this period of time exactly schoolchildren are the ones that burn grass after returning from education institutions. After communicating with teachers, it was concluded, that educational institutions do not dedicate time to a separate lesson about grass fires, their threats and possible consequences. At several lessons children were briefly told about grass burning and its consequences. At the beginning of a school year, schoolchildren are instructed in fire security issues, as well as in actions in case of fire. To improve the situation, it would be necessary to introduce at least one lesson in the beginning of grass burning „season“ about issues of grass burning threats in education institutions.

It is clearly seen that the situation is very similar in all parts and positions every year. Special attention should be paid to the situation in the territories of those parts or positions, where most grass fires occur. There should be special control, if fields and other territories are in order, irresponsible owners should be punished: first, for not maintaining the territory and, secondly, for a grass fire, if it occurs. With the help of mass media, land owners should be recommended to manage their territories, stating that in the opposite case penalty will be inflicted. People also should be educated in grass fire dangerousness and its non-predictable consequences, its effect on nature and penalties applied. In that way, people would

understand real damage from burning grass. While people perceive grass burning as a matter of course, nothing will change.



Source: author's calculations based on the State Fire and Rescue Service (2013)

Fig. 2. Dynamics of grass fires depending on the time of announcement, 2013.

In regions, the number of grass fires depends not only on the number of inhabitants, but also on other essential factors: area of the territory, existence or non-existence of farmers in the region (if agricultural land is managed). But, examining last year statistics, one can find that every year there are such regions in Latvia, where the number of such fires is measured in tens and there are regions where there are no or little grass fires. Every year remarkably great number of grass fires is registered in Daugavpils, Dobele, Gulbene, Jelgava, Ogre, Olaine, Rezekne, Salaspils and Tukums districts. Special attention should be paid to these regions. Firstly, local authorities should be requested to manage their territories and, if it is not done, administrative penalty should be inflicted. Secondly, private properties should be inspected and owners should be informed about the consequences if the territories are not put in order. Thirdly, information campaigns about dangerousness, damage and consequences caused should be conducted. Not all grass fires can be quickly and easily reached by fire automobiles. As, for example, grass fires, that start spreading in remote territories which can be reached by several, in the worst case, by no stable road. As a result flames can spread for a distance of several kilometres already before fire-fighting brigades arrive. April is the most active grass burning period when the threat and danger for the society and environment are the highest. Grass burning starts in March and it ends in May, when new grass outgrows last year's grass. During last four years in grass fires 3 people have died and 7 have been injured. 144 buildings and 2 vehicles have been destroyed (State Fire and Rescue (2013)). Riga is the place where the most grass fires occur. It indicates that the greater possibility of fire occurs in the place where the greater number of inhabitants is concentrated. Comparing to rural regions, a lot smaller areas burn out in towns. But in towns the dangerousness of grass fires is much higher because of dense building and grass fires endanger dwelling houses, historical

monuments and other urban objects. As a result of fires urban territory gets fumed and polluted. Many non-maintained territories are the property of municipalities and the number of administrative violation reports is very little or they are not drawn up at all. To solve this problem situation, it would be necessary to involve municipal supervising institutions – the Ministry of Environmental Protection and Regional Development. As one of possible solutions of the problem, local authorities can organise grass mowing and sawing out bushes in their territories. After that they can be processed into granules and woodchips and used for heating, as in many municipalities there is heating equipment suitable for woodchips.

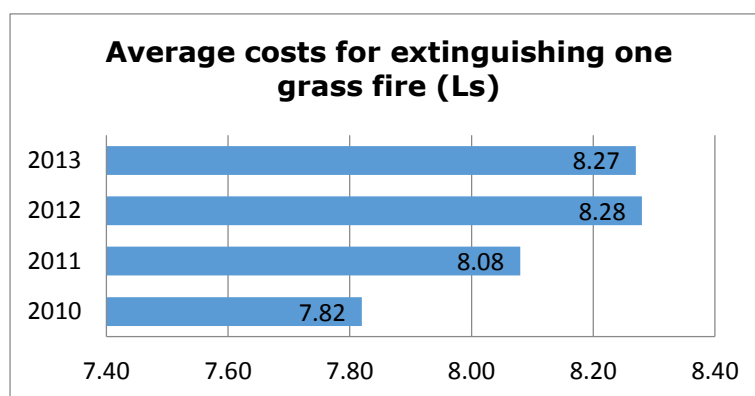
Table 2

Number of buildings, vehicles destroyed, injured, dead in 2010-2013

Year	Dead	Injured	Destroyed buildings	Destroyed vehicles
2013	1	1	44	2
2012	1	1	20	0
2011	1	2	48	0
2010	0	3	32	0

Source: the State Fire and Rescue Service (2013)

As analysed in Goldish M. (2012) and the International Association of Fire Chiefs (2009) extinguishing of grass fire leads to additional costs and is associated with additional requirements, competencies and needs for rescue services. In 2013 the State Fire-Fighting and Rescue Service spent for fighting grass fires the amount of LVL 20100.33 for petrol (the sum was calculated, taking into account prices for petrol in summer, 2013). In fighting such fires 6 vehicles were damaged. The repair works cost LVL 560.99. 2,430 grass fires were registered. In 2012 the sum spent on petrol for extinguishing grass fires was LVL 15099.10 (the sum was calculated, taking into account prices for petrol in spring, 2012). In fighting such fires 7 vehicles were damaged. The repair works cost LVL 481. 1,824 grass fires were registered. In 2011 the sum spent on petrol for extinguishing grass fires was LVL 14221.51 (the sum was calculated taking into account prices for petrol in spring, 2011). In fighting grass fires 4 vehicles were damaged. The repair works cost LVL 1035. 1,760 grass fires were registered. Every year considerable sums are spent on extinguishing grass fires, every year this sum differs, depending on the number of grass fires, petrol price, as well as area of fire. Several SFRS technical units are damaged, their repair works require financial means. On the background of total costs the costs for repair works are not really great, but one should take into account that, fighting grass fires, vehicles go along meadows, bad roads and even cross countries. In long term perspective such use of technical means can cause serious damage, the prevention of which will require large amounts of money. Comparing the costs for extinguishing grass fires with the number of these fires, there appeared an interesting tendency. Dividing the costs for petrol by the number of fires, one can see that every year for extinguishing one grass fire a very similar sum – about LVL 8 – is spent (see Fig.3).



Source: author's calculations based on the State Fire and Rescue Service (2013)

Fig.3. Average costs for extinguishing one grass fire (LVL), 2010-2013

In last years this sum is slightly higher than LVL 8, which, most certainly, is connected with growth in prices. Of course, it is only a number gained by dividing two statistic data, but it shows the tendency, which can be used for predicting costs for extinguishing grass fires depending on their number. One must not, in no case, rely this number to all grass fires, as in some fire there burn out only 1 square meter of grass, and in the other – several tens of hectares.

Plan of action for reducing the number of grass fires

When burning grass, essential damage is done to plants, insects and other invertebrates die, especially those whose evolution starts in early spring. These animals play an essential role in the ecosystem as food for bigger animals. Among them there are rare and protected species. The problem of grass burning cannot be solved in few years; it requires intense work for several years. To solve the problems stated, the authors propose an action plan for reducing the number of grass fires.

1. The Ministry of Environmental Protection and Regional Development should define in normative regulations minimum requirements for land maintenance and management to prevent the growth of last year's grass. The requirements should be equal for all local authorities.

2. Every year, without interruption, more actively in spring and autumn, there should be enhanced monitoring of the observation of requirements defined in normative regulations.

3. Every year in autumn the Ministry of Environmental Protection and Regional Development should gather information about non-maintained and non-mown lands and put this information into the information system of the State Real Estate Service. Municipalities, calculating the land tax, should raise the land tax, if the facts, testifying that the land is not maintained or there has been grass fire in it, are found.

4. Every year in summer and autumn the Ministry of Environmental Protection and Regional Development, the Ministry of the Interior should require from local authorities to maintain their territories already in autumn not to develop the possibility of fire starting in spring. They should send a letter to the Ministry of Environmental Protection and Regional Development,

which will send the letter to all local authorities. They should also control the maintenance of territories. Municipalities that have not maintained their territories should be punished administratively. The State Police, the Municipal Police should be involved in monitoring process.

5. Interdepartmental agreement between the State Land Service and the Information Centre of the Ministry of the Interior about co-operation and providing the data from the State Real Estate Service information system and State Address Register should be signed. Every year co-operation within interdepartmental agreement between the rural Support Service and the State Fire-Fighting and Rescue Service should be continued and information on grass fires should be given.

6. Every year the Ministry of the Interior, the Ministry of Agriculture, the Ministry of Environmental Protection and Regional Development should conduct timely information campaigns on the necessity to maintain territories already in autumn, stating the penalty for not doing it. It can be achieved by spreading the materials, prepared by institutions. In early spring they should conduct propaganda on dangerousness of grass burning as well as on the penalty inflicted (for example, placing the information in shops, at bus stops, etc.). They also should ensure the information for mass media according to institution competence and plans of action.

7. Every year the Ministry of Environmental Protection and Regional Development, the institutions stated in the Law on Protection Zones and the persons in charge of maintenance of protected zones should reduce areas, where last year's grass grows, by sustaining in fire safe condition the protection zones defined in the Law on Protection Zones along roads, railways and woods (land owner or legal possessor has to ensure maintaining road and railway zones, establishing and managing mineralized zones).

8. Every year the Ministry of Education and Science should raise the level of schoolchildren's education by including the issues of fighting grass burning into education program and extracurricular activities. It should include the issues of fighting grass burning in the contents of primary, compulsory and secondary education programs. It also should educate teachers in the issues of fighting grass burning.

9. Every year, on the basis of existing experience, the Ministry of the Interior should at regional level improve co-operation model of the State Fire-Fighting and Rescue Service with the State Police and the Municipal Police departments in the sphere of fighting grass burning, including practicing joint raids, monitoring. Complex of activities should be performed according to institution's annual plans of action.

Conclusions, proposals, recommendations

1. The number of grass fires during last four years has increased. In 2013, 2,430 grass fires were registered in Latvia (including the fires possibly caused by grass burning). As compared to 2012, when 1,824 grass fires were registered, the number of fires increased by 25%.

2. Having analysed the dynamics of the number of grass fires depending on the time of announcement, the most rapid increase in the number of grass fires can be observed from 11:00 till 16:00. This is the time when the children of school age return back home from school, but people of working age are at work. It allows concluding that, during this period of time, exactly schoolchildren are the ones that burn grass after returning from educational institutions. To improve the situation, it would be necessary to introduce at least one lesson in the beginning of grass burning „season“ about issues of grass burning threats in educational institutions.

3. Special attention should be paid to the situation in the territories of those parts or positions, where most grass fires occur. There should be special control, if fields and other territories are in order, irresponsible owners should be punished: first, for not maintaining the territory and, secondly, for a grass fire, if it occurs. In that way, people would understand real damage from burning grass. To improve the situation in land management, it would be necessary to ask for involving the police and the State Environmental Service resources in inspecting non-managed land already in autumn to motivate land owners to put their property in order by administrative penalties and prevent grass fire threat.

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ANALYSIS OF AGRICULTURAL SUSTAINABILITY INDICATORS SYSTEM

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Abstract. Agriculture provides the population with livelihood. It promotes commercial activities and sustainable employment in rural areas, thus, improving the living quality and retaining density of rural population. Rural development and sustainable agriculture are closely related components of sustainable development. The tool most frequently applied in practice for planning sustainable development and evaluation of the achieved results is a quantitative assessment of selected parameters, the aggregate of which in their mutual interaction constitutes an indicator system.

Vidzeme Planning Region (VPR) of the Republic of Latvia is a typical agricultural region; however, a balanced and sustainable development model for agriculture has not been developed so far, evaluation indicators are not clearly defined. The research summarizes and analyzes policy documents, previous research, international experience regarding long-term development concept based indicator systems; the development principles, methods and constituent parts; properties of the indicators and criteria of their selection. The research focuses on identification and formulation of the specifics of the agricultural sector which would suit as a basis of methodological recommendations for elaboration of a sustainable agricultural development model for the largest planning region of Latvia, improvement of its policy quality and successful implementation of plans. The study concludes that the current theoretical basis of the development of indicator systems is incomplete; there are generalized references, plurality of views and many unanswered questions which complicate the practical establishment of the system and its adaptation and jeopardize the quality and objectivity of the results.

Key words: agricultural sustainability, indicators, agricultural policy.

JEL code: Q

Introduction

"The principle of sustainable development provides for quality environment and balanced economic development for the present and future generations as well as rational use of

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natural, human and material resources, preservation and development of natural and cultural heritage" (Vidzeme Planning Region, 2014)

Sustainable agricultural development is essential both on the global and local scale as it plays a multidimensional role. The agricultural sector provides staple food for the population. The United Nations Population Division forecasts that world population will continue to increase (UNPD, 2005), "the absolute demand for food will also increase" (Pretty J., 2008). To better provide the increase of food products, it is vital to modernize agricultural production and make it more effective which in its turn may have a negative impact on preservation of environment and employability in agricultural areas.

The most significant aspects of agricultural policy in Latvia are: ineffective production and low competitiveness; inadequate skills and entrepreneurial habits; lack of effective management of nature resources (Ministry of Foreign Affairs, 2012).

Therefore, the developers of strategic goals and policy providers of the respective region should determine the features of sustainable agricultural development and affecting factors to find a balance between management and preservation on the basis of nature resources and economic viability, and social responsibility to achieve better results in the future. One of the most appropriate tools for development of scientifically proven proposals for agricultural policy is a balanced and sustainable agricultural development model providing both the evaluation of the existing economic relationships and the impact of specific decisions on particular indicators as well as possible sector development risks and analysis of other issues depending on specific features of the model.

The aim of the research was to compile and analyze policy documents of various levels, earlier research and international experience in different indicator systems to highlight further development directions regarding development of a balanced and sustainable agricultural model for Vidzeme Planning Region.

The following objectives were set for achieving of the goal: to study international and Latvian agricultural policy documents and scientific literature on sustainable agricultural development models; to carry out analysis of the previous experience and theoretical cognitions regarding the principles, methods and ingredients of the established indicator systems; to identify and formulate the specifics of the agricultural sector; to characterize properties of the indicators and their selection criteria; to draw conclusions and elaborate methodological recommendations. The author applied the following qualitative methods of economic scientific research: monographic and content analysis. The study covers the period up to December, 2014.

Research results and discussion

Methodology

Before starting the planning and implementation of a balanced and sustainable agricultural development model in Vidzeme Planning Region it is important to clearly identify the meaning of "sustainable agriculture" and its characteristic criteria.

Pretty J. maintains that "the interest in the sustainability of agricultural and food systems can be traced to environmental concerns that began to appear in the 1950s–1960s. However, ideas about sustainability date back at least to the oldest surviving writings from China, Greece, and Rome" (Pretty J., 2008).

The concept of Sustainable Agriculture and Rural Development (SARD) was one of a number of concepts that crystallized during the 1980s. SARD as a paradigm developed in response to the growing realization that national and international agricultural policies and programmes should encompass a wide range of economic, environmental and socio-cultural issues in addition to the traditional areas of agricultural productivity, production and food security (Food and Agriculture Organization ..., 1992). The different indicator systems based on this concept can inspect and evaluate the sustainability of the agricultural system, and can improve the sustainable development of agriculture (QIU Hua-jiao et al., 2007).

Since then various term definitions have been offered; however, interpretations of the term and discussions continue to this day. The lack of agreement about the definition has led some researchers to question the usefulness of the concept of "agricultural sustainability" (Binder C.R. et al., 2010).

The concept of sustainable development is an evolving one, and there are many definitions in literature, some very similar, and others markedly different (Food and Agriculture Organization ..., 1997).

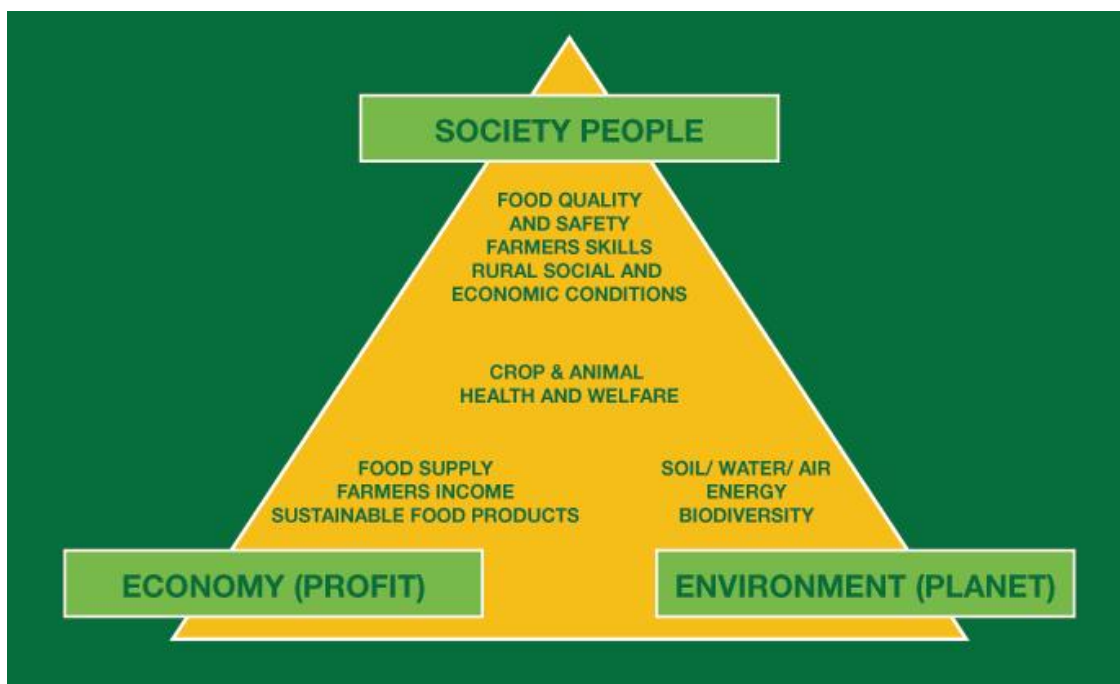


Fig. 1. **The concept of sustainable development**

Source: Sustainable Agriculture Initiative Platform

Researchers have pointed out the problems that may be faced when elaborating and analyzing the concept of sustainability. First, the temporal nature and its factors. Second, identification of features characterizing sustainability of the agricultural sector. (Gomez-Limon J.A, Riesgo L., 2008). Third, it is complicated to define the proportions and weights of the economic, social and environmental criteria and sub-criteria included in the models as these conditions are related to the multidimensional character inherent in the concept of sustainable development. Fourth, regarding sustainability, agriculture is inconsistent in one farming system. Fifth, sustainability indicators systems are created on the basis of different sources of cognition, different offers of statistical data and peculiarities of countries in different stages of development (Gomez-Limon J.A, Riesgo L., 2008; QIU Hua-jiao et al., 2007).

Gomez-Limon et al. propose the following solutions for some of the listed problems: "Sustainability can be interpreted as a social conception that can be changed in response to society's requirements. Thus the meaning of sustainability must be considered local and time specific. Both difficulties have limited for a long time the usefulness of this concept as a criterion for guiding the agricultural development. In order to avoid the difficulties mentioned above, a wide consensus has been built in order to consider that the sustainability embodies three main dimensions: environmental, economic and social" (Gomez-Limon J.A, Riesgo L., 2008).

To identify the future course of the study scenario for evaluation of sustainable agricultural development in VPR, the author has compiled previous research methodology.

Goldberger maintains that "environmental, social, and economic sustainability can be assessed using "objective" or "subjective" approaches. Objective approaches rely on

quantifiable sustainability indicators (Goldberger R.J., 2011). Objective approaches are useful for multidisciplinary research and cross-case comparison, they are limited by what can be measured and counted. Subjective approaches, in contrast, explore individuals' (e.g. farmers') perceptions of sustainability (Goldberger R.J., 2011). "Another relevant distinction can be made between goal oriented and means oriented approaches" (Binder C.R., 2010).

In most cases of previous research the author found "objective" approaches and the research methodology resulting from it.

Gomez-Limon's et al. research course ideologically and chronologically is related to Nardo et al., presented in 2005: 1) development of the theoretical framework; 2) selection of basic indicators; 3) multivariate analysis; 4) imputation of missing data; 5) normalization; 6) weighting and aggregation; 7) robustness and sensitivity; 8) links of composite indicators to other variables; 9) return to the real data; and 10) dissemination (Gomez-Limon J.A, Riesgo L., 2008; Gomez-Limon J.A., Sanchez-Fernandez G., 2010).

Binder et al. argue that "for a long time, sustainability assessment in agriculture has focused mostly on environmental and technical issues", thus, neglecting the social and economic aspects, the multifunctionality of agriculture and the applicability of the results (Binder C.R. et al., 2010). Therefore, several integrative sustainability assessment methods have been developed for the agricultural sector. Binder et al. in their research provide a review of indicator-based assessment methods for agricultural analysis with respect to three dimensions: normative, systemic, and procedural (Binder C.R. et al., 2010).

"Consequently, a wide variety of tools and methods have been developed to assess sustainability in agriculture. These include, among others: indicator lists; environmental assessment of production alternatives; indexes or Ecopoints; linear programming models; trade-off models of production alternatives, considering economic, ecological and health aspects" (Binder C.R. et al., 2010).

Scientists in the Netherlands have created a graphic picture of the study course with actors involved in the processes (Figure 2) which may serve as a basis for the development of VPR development model.

When developing a model, the specific features of the respective country or region should be taken into consideration. Researchers recommend selecting the development indicators based on theoretical guidelines in the given area's sustainable development programmes and plans (Tolon-Becerra A., Lastra-Bravo X., 2009).

Rural development policy has been strengthened and integrated into the Common Agricultural Policy in the second pillar. The aim of the reform is to raise competitiveness of agroforestry, strengthen the links between the primary activity and the environment, and improve the quality of life in rural areas, to promote cooperation and innovation, and economic diversification of rural communities (European Parliament, 2014).

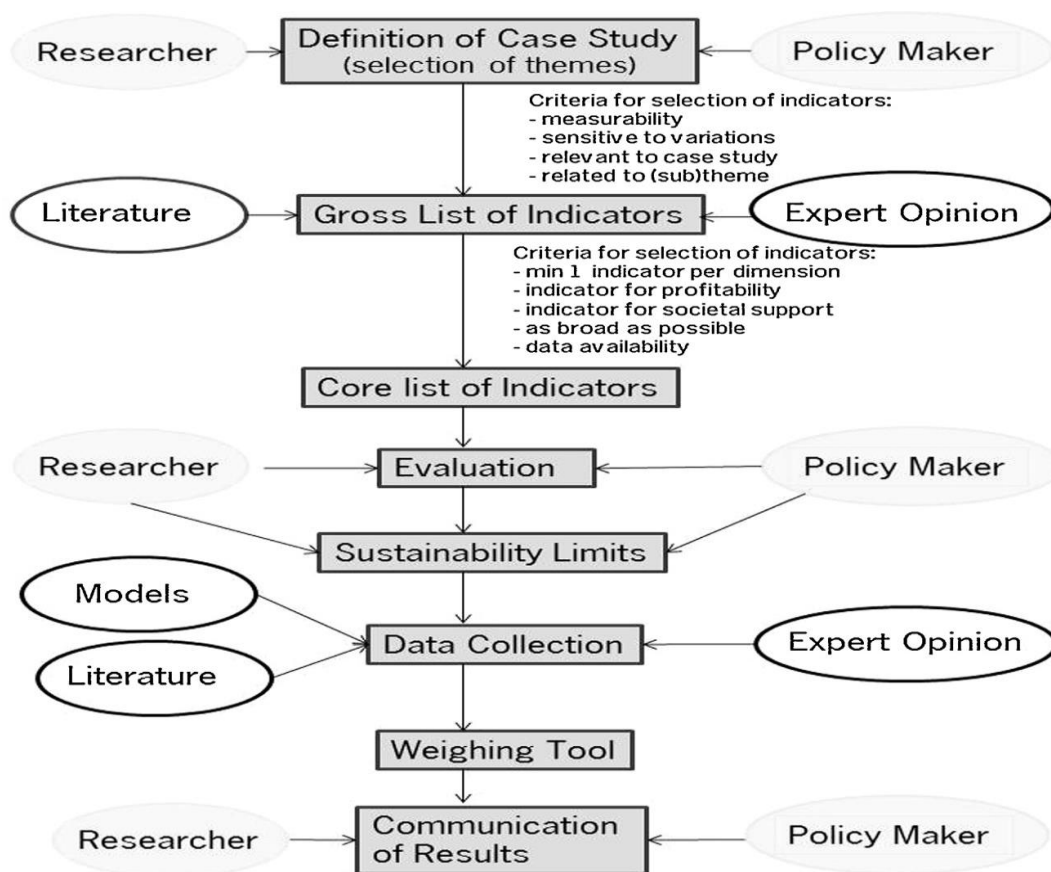


Fig. 2. **Protocol for evaluating the sustainability of agri-food production systems**

Source: Van Asselt E.D. et al., 2014

“Sustainable Development Strategy 2014-2030” for Vidzeme Planning Region, Latvia, is in the discussion stage; it has been developed considering the EU and Latvia’s regional and spatial development policy documents; it has taken into account the vision of the state future and the EU future guidelines (Vidzeme Planning Region, 2014).

The document sets Vidzeme development priorities, goals, and the necessary actions and indicators for achieving them. The regional strategy has been drafted considering requirements of sustainable development; it is permeated with interconnected dimensions: social, economic, and environmental dimensions. Characterizing the region, it is noted that it has an agrarian structure of economy. It is proven by a relatively large number of employees in the agrarian sector and high value added ratio in the industry. Agricultural activities are not diversified in rural areas, and sufficiently strong service economy sector has not been formed so far. In response to the growing demand for food in emerging market countries the impact of large scale intensive farming proportion could increase in Vidzeme. However, introduction of new technologies in production and agriculture leads to reduction in employment. Conservation of natural resources in the region is largely dependent on the economic activity. The strategic part of the document outlines factors influencing the future of the region: population decline and ageing of society associated with it, the country’s economic development rate after the crisis, technological progress, development of transport systems and related changes in

availability of the region, climate changes, scarcity of fossil fuels, national approach to territorial development, the background of international relations (Vidzeme Planning Region, 2014). In the case of a balanced and sustainable agricultural model development, the information provided by the strategic plan is important, yet it is not complete. Consequently, in the course of study it will be necessary to conduct interviews with policy makers of agricultural and territorial development, experts and representatives of agricultural enterprises, and to analyze the experience of other countries.

Indicators

“In the last two decades much attention has been paid to establishing indicator lists. Composite indicators can help in comparing policy options facilitate the decision making process of policy makers” (Van Asselt E.D. et al., 2014). “The indicators selected in terms of the scientific method can reliably reflect the state, development, and function of the systems” (QIU Hua-jiao et al., 2007).

However, the selection of these indicator lists is not always clearly described, the lists contain both qualitative and quantitative indicators, and they do not equally address all three dimensions (Van Asselt E.D. et al., 2014).

Chinese scientists QIU Hua-jiao et al. in their research “Analysis and Design of Agricultural Sustainability Indicators System” have compiled and analyzed recommendations of earlier researchers regarding indicator selection. For example, the Ministry of Agriculture, Fisheries and Food (MAFF) of England require that indicators should have analytical soundness, measurability, appropriate aggregation level, and be representative of social desirability; the Environmental Protection Agency (EPA) of America propose that indicators are important to the overall structure and function of the agroecosystem, and must be responsive to a range of environmental stresses. These must be simple, cheap, easily explainable, not redundant, with little variation, and of historical data. The indicators should be able to cover the system all-around and should be minimized in number (QIU Hua-jiao et al., 2007).

To establish the most appropriate indicators in the environmental sustainability in agriculture in further research and finding what indicators are most appropriate for tracking progress, the World Resources Institute research of 2014 may serve as an important basis for assessing the candidate indicators of environmental sustainability of agriculture and provisionally identify the landscape of existing agri-environmental indicators (Reytar K. et al., 2014). When drawing the list, it is important to take into account the nature of the indicator. The author has compiled insights of various authors regarding indicator pros and cons (Table 1).

“Of crucial importance is whether the indicators are aggregated into groups, e.g. social, economic and ecological, and how the groups are weighted. Finally, the indicators can be assessed in different ways, i.e. with respect to regulatory standards (e.g. nitrogen in groundwater), targets, thresholds, and ranges” (Binder C.R. et al., 2010).

Pros and cons of composite indicators

Pluses	Minuses
Indicators are used to make a complex system understandable and to give meaningful information.	The content of the indicators system is different from each other for different countries, regions, and development stages, and is of great subjectivity.
Indicators enable policymakers, farmers, businesses, and civil society to better understand current conditions, identify trends, set targets, monitor progress, and compare performance among regions and countries.	Indicators may send misleading policy messages if poorly constructed or misinterpreted.
They also enable us to visualise farm heterogeneity within a single agricultural system with respect to sustainability as well as to analyse the structural and decision-oriented variables that influence it.	They invite simplistic policy conclusions.
Indicators can summarise complex, multi-dimensional realities (such as agricultural sustainability) with a view to supporting decision-makers.	Indicators may be misused, e.g. to support a desired policy, if the construction process is not transparent and/or lacks sound statistical or conceptual principles.
They are easier to interpret than a battery of many separate indicators.	The selection of indicators and weights could be the subject of political dispute.
Indicators help assessing progress of farms, agricultural systems, regions and countries over time.	Indicators may disguise serious failings in some dimensions and increase the difficulty of identifying proper remedial action.
Reduce the visible size of a set of indicators without dropping the underlying information base.	Use of indicators may lead to inappropriate policies if dimensions of performance that are difficult to measure are ignored.
Place issues of farms, agricultural systems, regions or countries performance at the centre of the policy arena.	As indicators have different dimensions or operate at different levels, it is difficult to compare and assess sustainability.
Facilitate communication with general public (i.e. citizens, media) and promote accountability.	
Help to construct/underpin narratives for lay and expert audiences.	
Enable users to compare complex dimensions effectively.	

Source: author's construction based on Gomez-Limon J.A., Sanchez-Fernandez G., 2010; Reyta, K. et al. 2014, Van Asselt E.D. et al., 2014.

Conclusions, Proposals, Recommendations

1. The concept of sustainable development is a long-term balance between economic profitability, environmental stewardship and community vitality. Sustainability should be understood as a social construction which changes in certain geographical and temporary conditions.
2. Previous research of sustainability assessment in agriculture has highlighted the following main shortcomings: multifunctionality of agriculture, imbalance regarding ecological, economic and social dimensions of sustainability; the researchers' wish to fill

missing knowledge and technologies but to neglect to apply the knowledge for the benefit of the society; the evaluation results are difficult to be implemented in decision making as conflicting goals and the interaction between indicators have not been sufficiently considered.

3. The following issues have to be considered: the underlying sustainability concept; goal setting; and assessment type.
4. Although VPR is a typical agricultural region, the strategic plan of the area in the stage of discussion does not give a clearly defined sustainability goals and objectives for the agricultural sector. So far a balanced and sustainable agricultural development model has not been drafted for the area, there is no study to what degree farmers are achieving sustainable agriculture goals and producers moving in the right direction; and what prevents farmers from achieving better long-term results.
5. The author recommends involvement of researchers, policy makers and agricultural entrepreneurs in the development process of sustainable agricultural indicators as it is vital to consider farmers' perceptions of sustainability of their operations. Both "objective" and "subjective" approaches may be used to ensure that results reflect a realistic and comprehensive evaluation of sustainability.
6. It is important to understand the character of indicators for selection of sustainable development indicators on the basis of the following criteria: the indicator should be measurable; sensitive to variations; relevant to the case study; related directly to the theme.
7. Candidate indicators should be assessed by the following features: availability of data, accuracy and consistency in how data are gathered, frequency of data, data's proximity to reality, relevancy of data, and ability for data to differentiate among countries.
8. Agricultural, environmental and macroeconomic policy should provide conditions for sustainable agriculture and rural development. The main tools are: policy, participation, income diversification, land conservation and improved management of inputs. Success in development of sustainable agriculture and rural space development will depend largely on the support and participation of rural people, national governments, the private sector and international cooperation, including technical and scientific cooperation.
9. Indicator systems are increasingly applied as a tool for policy planning, result evaluation and as an instrument for observation of interaction of different processes and factors; they provide comprehensive information for decision makers. As concerns the elaboration and adaptation of the indicator systems, the previous studies manifest many variations, subjective attitudes, contradicting viewpoints and unanswered questions that threaten the result relevance, credibility, reliability, comparability and understandability.

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REGIONAL DIFFERENTIATION OF FINANCIAL SUPPORT FROM THE EUROPEAN UNION AND ITS IMPACT ON AGRICULTURAL EFFICIENCY IN POLAND

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Abstract. Main objective of this article is to establish whether there is dependence between how intensively EU agriculture-dedicated funds in individual voivodeships are utilized and the pace of efficiency improvement of that agriculture. During the first stage of study the level and dynamics of the EU funds utilized in agriculture across voivodeships were examined for the period between 2005 and 2011. Further, efficiency of agriculture in individual voivodeships was analyzed using traditional indexes (productivity of land and work), as well as multidimensional indexes based on Data Envelopment Analysis and Malmquist Productivity Index. The conducted study indicated lack of dependence between the extent to which financial aid funds from the EU budget were utilized and the pace of agricultural efficiency improvement.

Key words: agriculture, efficiency, Common Agricultural Policy

JEL code: Q10

Introduction

Between 2004 and 2011 Poland received from the EU budget the amount of EUR 76.8 billion (after deducting contributions paid to the budget, which amounted to EUR 22.8 billion, the positive balance of EUR 50.2 billion remained), due to which it was possible to accelerate the expansion and modernization of national technical and social infrastructure. Over 30% of the received EU funding has been allotted to agriculture as part of the Common Agricultural Policy (CAP) (Figure 1) (Czubak, 2012).

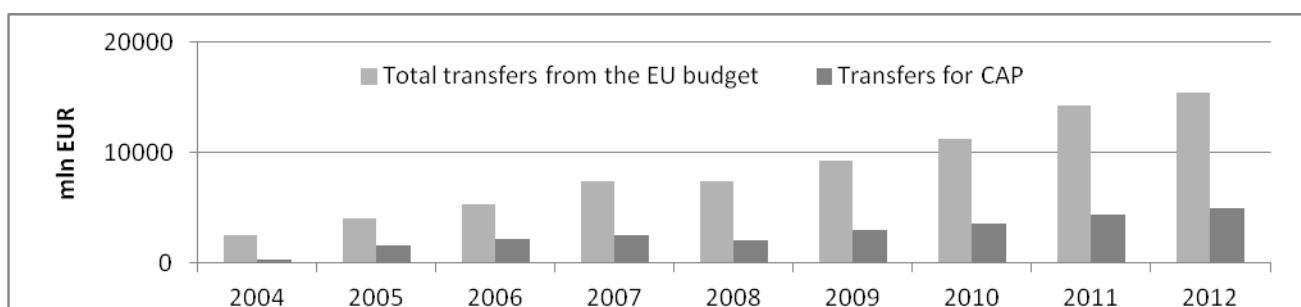
The main objectives of the CAP were balanced development of rural areas and improving competitiveness of agricultural food production economy (Golasa et al., 2014). A number of studies indicate that the accession and related changes in economic conditions of farming operations have led to a significant improvement in the income situation of Polish agriculture (Poczta, 2008; Czyzewski, Matuszczak, 2014). Many studies point to the fact that supporting agricultural investments from the EU budget contributes towards improved economic efficiency of farms. This, in turn, allows for implementation of biological, technical, economic and

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organizational progress which furthers the development of production capacity of agriculture, improves productivity of plants and animals, enhances the effectiveness of management and decreases the impact agricultural production has on the environment (Dziemanowicz et al., 2008; Rokicki, 2013).

It should be noted, however, that the impact of integration on the monetary income of agriculture within the country is diverse, due to the fact that agriculture in different regions of the country exhibits higher or lower levels of variation. This stems mainly from the scale of production and the structure of agricultural production, as well as the different levels of marketable agricultural production (Poczta, 2008).

The main purpose of this article is to describe the relation between the intensity of utilizing the EU funds for agriculture, and the pace of agriculture efficiency improvement in the respective Polish voivodeships. To achieve the aim, several research tasks were set: 1) to identify the level and the dynamics of support of agriculture sector with the EU funds in individual voivodeships of Poland; 2) to identify the efficiency of agriculture in Polish voivodeships. For the purpose of this study the following hypothesis was assumed: the voivodeships in which agriculture received the most support from the EU funds per 1 hectare of agricultural area achieved the fastest rate of work, yield and efficiency indicators between 2005 and 2011.



Source: <http://www.mf.gov.pl/ministerstwo-finansow/dzialalnosc/unia-europejska/transfery-finansowe-polska-ue>

Fig. 1. **Transfers to Poland from the EU budget between 2004 and 2012**

The study used Central Statistical Office of Poland data for the period 2005-2011 on agriculture, in particular, voivodeships published in the Statistical Yearbooks of Agriculture and data from the reports on the activities of the Agency for Restructuring and Modernisation of Agriculture (ARMA) for the period 2005-2011 as source materials. In the article, most valuable variable is expressed in PLN. The exchange rate for converting Polish zloty to Euro is 1 PLN = 0.23926 EUR (23.02.2015).

The Data Envelopment Analysis (DEA), Malmquist Productivity Index (MPI) and the Kruskal-Wallis test were employed in order to verify the research hypothesis on the basis of data for the agricultural sector in individual voivodeships. DEA is the non-parametric approach relied on

the linear programming (Baran, Zak, 2014). The DEA model may be presented mathematically in the following manner (Cooper et al., 2007):

$$\max \frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \quad (1)$$

$$\frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \leq 1$$

$$u_r, v_i \geq 0$$

where:

s – quantity of outputs;

m – quantity of inputs;

u_r – weights denoting the significance of respective outputs;

v_i – weights denoting the significance of respective outputs;

y_{rj} – amount of output of r -th type ($r = 1, \dots, R$) in j -th object;

x_{ij} – amount of input of i -th type ($n = 1, \dots, N$) in j -th object; ($j = 1, \dots, J$).

In the DEA model m of inputs and s of diverse outputs come down to single figures of “synthetic” input and “synthetic” output, which are subsequently used for calculating the object efficiency index (Rusielik, Switlyk, 1999). The quotient of synthetic output and synthetic input is an objective function, which is solved in linear programming. Optimized variables include μ_r and v_i coefficients which represent weights of input and output amounts, and the output and input amounts are empirical data (Cooper et al., 2007).

By solving the objective function using linear programming it is possible to determine the efficiency curve called also the production frontier, which covers all most efficient units of the focus group. Objects are believed to be technically efficient if they are located on the efficiency curve (their efficiency index equals 1, which means that in the model focused on input minimization there is no any other more favourable combination of inputs allowing a company to achieve the same outputs). However, if they are beyond the efficiency curve, they are technically inefficient (their efficiency index is below 1). The efficiency of the object is measured against other objects from the focus group and is assigned values from the range (0, 1) (Charnes et al., 1978).

Malmquist Productivity Index is the most frequently used approach to quantification of changes in total factor productivity. MPI first introduced by Malmquist has further been studied and developed in Färe (Malmquist, 1953; Färe et al., 1992; Färe et al., 1994). Färe constructed the DEA-based MPI as the geometric mean of the two Malmquist productivity

indices - one measures the change in technical efficiency and the other measures the shift in the frontier technology. Färe developed it into the output-based Malmquist productivity change index (Färe et al., 1994). The input-oriented Malmquist productivity index of a DMU can be expressed as

$$M(y_{t+1}, x_{t+1}, y_t, x_t) = \left[\frac{D^t(y_{t+1}, x_{t+1})}{D^t(y_t, x_t)} x \frac{D^{t+1}(y_{t+1}, x_{t+1})}{D^{t+1}(y_t, x_t)} \right]^{\frac{1}{2}}$$

(2)

where x_t and x_{t+1} are input vectors of dimension l at time t and $t+1$, respectively. y_t and y_{t+1} are the corresponding k -output vectors. D^t and D^{t+1} denote an input - oriented distance function with respect to production technology at t or $t+1$, which is defined as:

$$D(x, y) = \max\{\rho : (s/\rho) \in L(y)\}$$

(3)

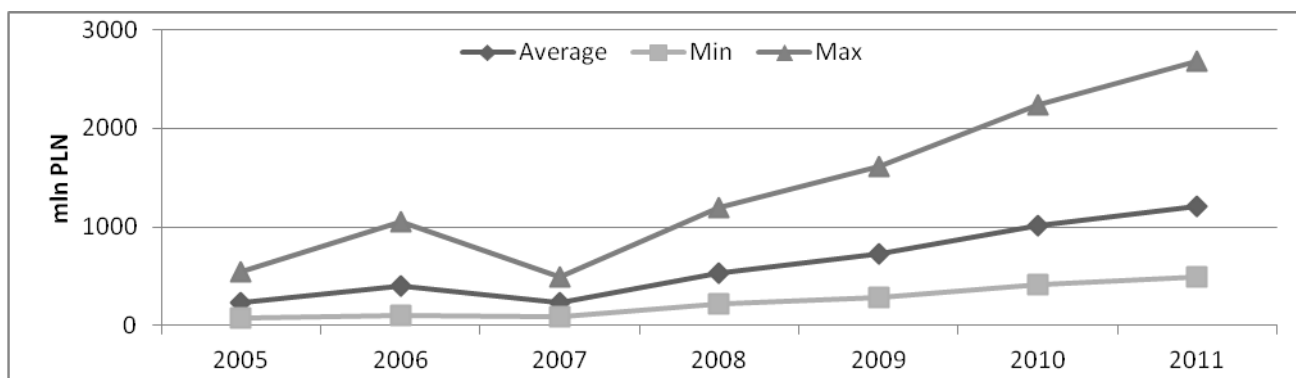
where $L(y)$ represents the number of all input vectors with which a certain output vector y can be produced, that is, $L(y) = \{x : y \text{ can be produced with } x\}$. ρ in eq. (3) can be understood as a reciprocal value of the factor by the total inputs could be maximally reduced without reducing output.

M measures the productivity change between periods t and $t + 1$, productivity declines if $M < 1$, remains unchanged if $M = 1$ and improves if $M > 1$. The frontier technology determined by the efficient frontier is estimated using DEA for a set of DMUs. However, the frontier technology for a particular DMU under evaluation is only represented by a section of the DEA frontier or a facet.

The DEA method and MPI were used to evaluate and create efficiency rankings of various entities, such as hospitals, educational bodies (schools, universities), banks, farms, agribusiness companies, industrial enterprises (Rusielik, Switlyk, 1999; Lenort et al., 2014; Wysokinski et al., 2014).

Research results and discussion

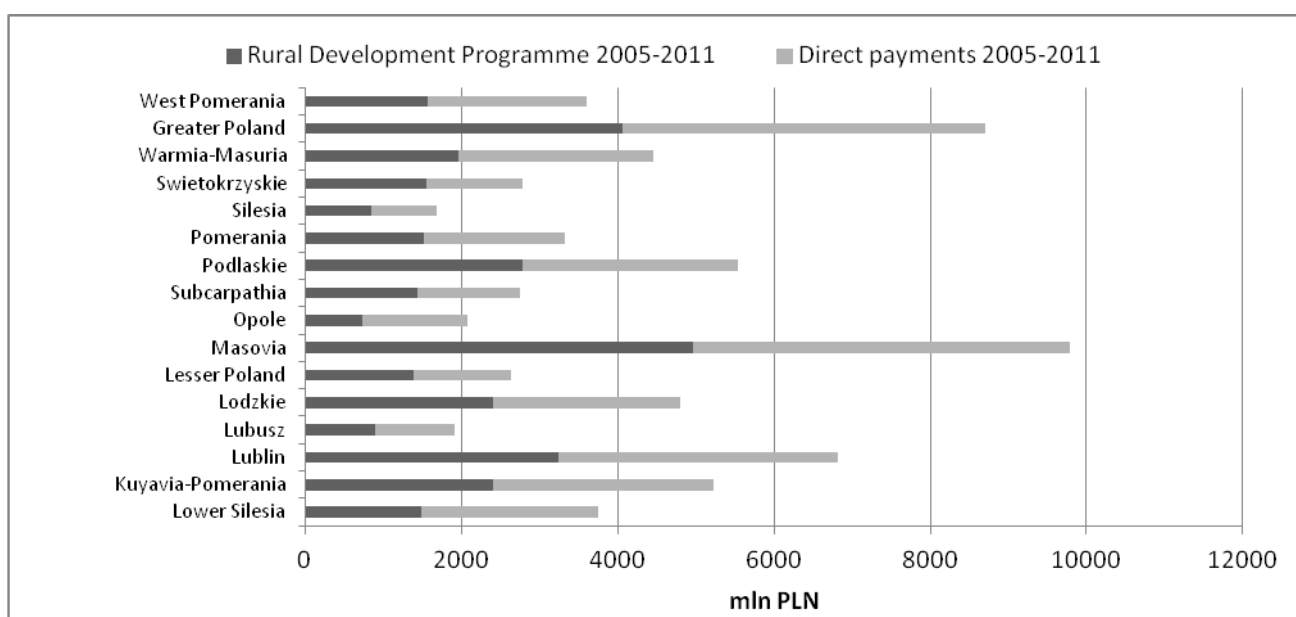
During the first stage of study, the level and dynamics of the EU funds utilized in agriculture across voivodeships was examined. The study took into account the following categories of expenditures as part of financing the CAP activities: direct payments and tasks performed within the Rural Development Programme (RDP) in the periods from 2004 to 2006 and from 2007 to 2011.



Source: author's calculations based on the reports of the ARMA, 2005-2012

Fig. 2. **General expenditure financed within the CAP (minimal, average and maximal value per voivodeship between 2005 and 2011)**

Between 2004 and 2011 total expenditures for the CAP in all voivodeships of Poland amounted to PLN 70090 million. It is notable that over 50% of all expenditures were made in the period between 2010 and 2011. Average annual spending for the CAP per voivodeship in the analyzed period increased from PLN 232.7 million to PLN 1214.5 million, which is a fivefold increase (Figure 2). It is also visible in the studied period that agriculture support varies greatly from one voivodeship to another, which is shown in large differences between minimal and maximal values in Figure 2.

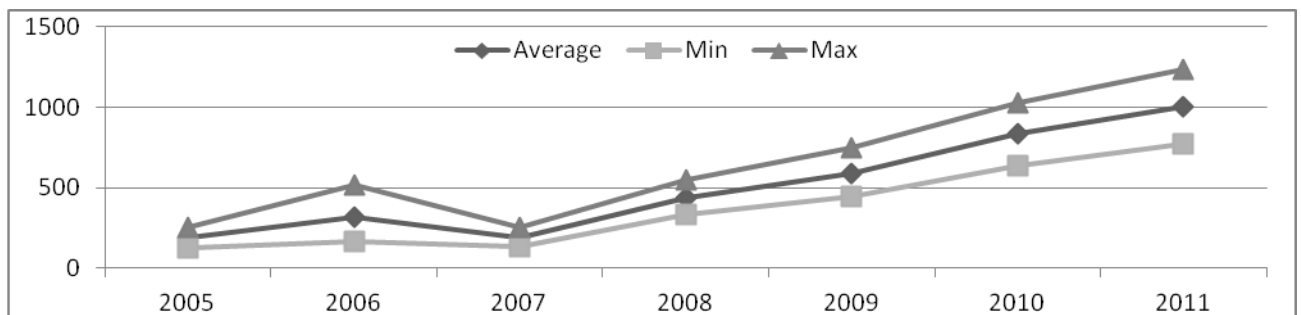


Source: author's calculations based on the reports of the ARMA, 2005-2012

Fig. 3. **Total expenditures financed as part of the CAP across the voivodeships**

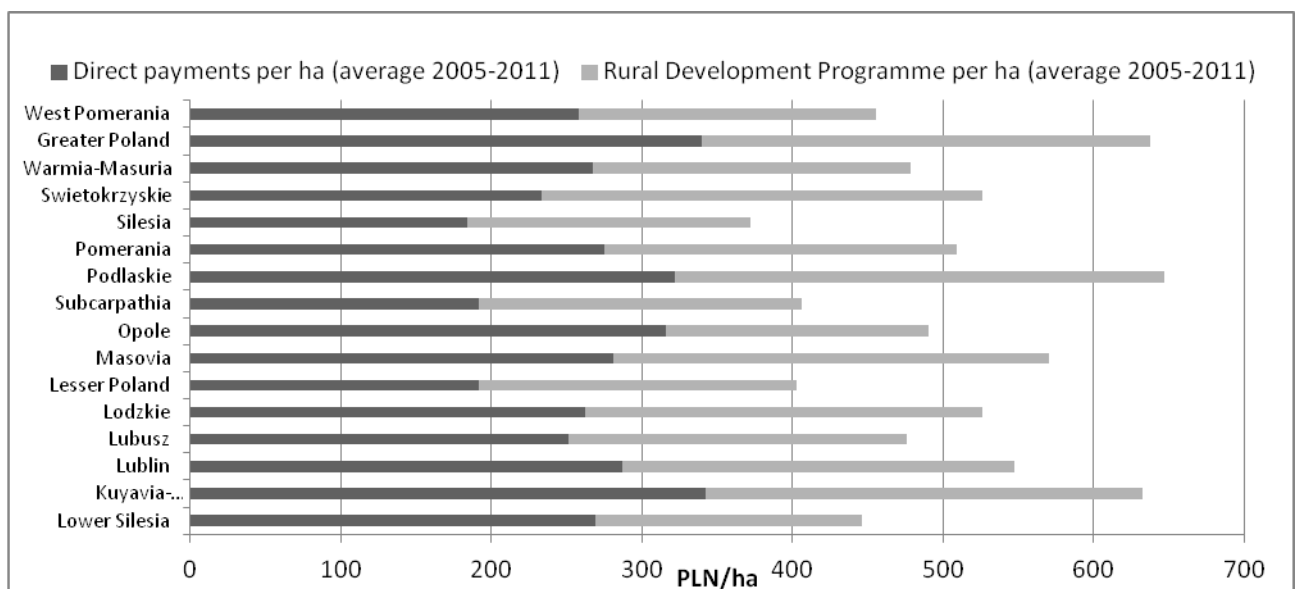
The distribution of total expenditures (sum from 2005 to 2011) as part of the CAP across voivodeships is shown in Figure 3. The amounts of general EU agricultural support vary greatly – from PLN 9790 million in Mazovia voivodeship to PLN 1681 million in Silesia voivodeship and PLN1902 million in Lubuskie voivodeship. The CAP expenditures in Mazovia voivodeship were almost six times higher than in Silesia voivodeship and over five times higher than in Lubuskie

voivodeship. It can be observed that out of PLN 70 billion which has been spent as part of the CAP in Poland since 2004, over 30% was used in three voivodeships: Mazovia, Silesia and Lubelskie. Accounting for the difference between individual voivodeships with respect to agricultural area, number of workers, structure of the economy, urbanization level and many other aspects that are of vital importance for division of public funds for agriculture it seems more justified to analyze the distribution of expenditures financed with the EU funds when we consider not the global expenditure sums per voivodeship, but the amounts per 1 hectare of agricultural area or per agricultural worker. Having carefully considered the above, the CAP expenditures per 1 hectare of agricultural area were analyzed.



Source: author's calculations based on the reports of the ARMA, 2005-2012

Fig. 4. CAP expenditures per 1 hectare of agricultural (minimal, average and maximal value per voivodeship between 2005 and 2011)



Source: author's calculations based on the reports of the ARMA, 2005-2012

Fig. 5. CAP expenditures per 1 hectare of agricultural area across the voivodeships

Despite the decreasing role of land as a production factor, it is still the essence of agriculture and it is the decisive element in terms of production potential and economic strength of farming (Wysokinski, Dziwulski, 2013). In the period between 2004 and 2011 the

level of annual EU expenditures in agriculture made in voivodeships per 1 hectare of agricultural area, increased fivefold. On average in the studied period the CAP expenditures amounted to PLN 507 per hectare, whereas Podlasie, Wielkopolska and Kujawy-Pomerania voivodeships dominate with relation to the average value, while Silesia, Małopolska and Podkarpacie voivodeships close the list with the lowest values. In direct payments, values of average amount for a voivodeship per 1 hectare change from 69 to 128 percent of national average; in case of RDP the distribution of voivodeship averages is somewhat higher – from 72 for Opole voivodeship to 135% for Podlasie voivodeship (Figure 5).

In the subsequent stage of study a question was posed: did the voivodeships which in the period between 2005 and 2011 benefited the most from the EU agricultural support also improve their agricultural efficiency the most? In order to answer that question, single and multi-dimensional agricultural efficiency indexes were calculated. Further analysis was based on the following indexes:

- productivity of work in agriculture calculated as the value of sold agricultural goods per 1 agricultural worker (in PLN per person) and the dynamics of this index between 2005 and 2011 (in percent);
- productivity of the land calculated as value of final product per 1 hectare of agricultural area (in PLN per hectare) and the dynamics of this index between 2005 and 2011 (in percent);
- Data Envelopment Analysis index illustrating efficiency of individual voivodeship's agriculture in comparison with efficiency of other voivodeships' agricultures;
- Malmquist Productivity Index, comprehensively illustrating the change of agricultural productivity in the period between 2005 and 2011 in individual voivodeships.

Table 1

Productivity and efficiency indexes across voivodeships

Group	Voivodeship	Productivity of work [PLN/person] 2005	Productivity of work [PLN/person] 2011	Land productivity [PLN/ha] 2005	Land productivity [PLN/ha] 2011	Dynamics of work productivity 2005=100 [%]	Dynamics of land productivity 2005=100 [%]	Efficiency according to DEA (average 2005-2011)	Malmquist Index (2005-2011)
Group 1	Lower Silesia	2152	3691	2627	3295	171	125	1.00	2.33
	Lesser Poland	4406	3850	3243	4137	87	128	0.75	1.78
	Subcarpathia	3973	3326	2102	2274	84	108	0.66	1.27
	Silesia	10761	13239	3209	4403	123	137	0.80	1.96
	Average	10178	14334	2795	3527	116	125	0.80	1.84
Group 2	Lublin	8419	13835	2564	4036	164	157	0.80	2.23
	Lubusz	30569	37267	2270	3113	122	137	0.98	1.17
	Lodzkie	13410	21503	3716	5287	160	142	0.86	1.69
	Opole	21944	43587	2989	4444	199	149	0.98	1.76
	Pomerania	18439	48327	2316	3959	262	171	0.79	2.47
	Swietokrzyskie	4767	7971	3155	4636	167	147	0.64	2.13
	Warmia-Masuria	31476	59460	2473	3231	189	131	1.00	1.95
	West Pomerania	35920	61695	1920	2735	172	142	1.00	1.88
	Average	20618	36706	2675	3930	179	147	0.88	1.91
Group 3	Kuyavia-Pomerania	24197	44670	3509	4138	185	118	0.95	1.85
	Masovia	13805	29921	3490	5367	217	154	0.96	1.73
	Podlaskie	18183	30685	2603	3732	169	143	0.99	1.59
	Greater Poland	28389	46399	5153	5429	163	105	1.00	1.30
	Average	21144	37919	3689	4667	184	130	0.98	1.62

Source: author's calculations based on Statistical Yearbooks of Agriculture, 2005-2012

In order to analyze the differentiation of efficiency of agriculture depending on the amount of the EU support used, the voivodeships were divided into three groups with the use of quartiles. The following divisions were formed: Group 1 (25% of the data set) characterized by the lowest level of utilized EU support per 1 hectare of agricultural area, Group 2 (50% of the data set) characterized by the average level of utilized EU support per 1 hectare of agricultural area, and Group 3 (25% of the data set) characterized by the highest level of utilized EU support per 1 hectare of agricultural area (Table 1).

Conducted analysis showed that agriculture characterized by the highest level of EU support per 1 hectare of agricultural area indeed noted the highest work productivity and land productivity as well as a faster change of land productivity.

In order to determine efficiency and changes in total productivity of agricultural production in individual voivodeships, the input-oriented DEA model and Malmquist

Productivity Index were used. The models have been oriented to input minimisation, since in the light of current EU legislation on environmental policies and the disseminated principles of sustainable development, it is assumed that currently the only option for the development of European and Polish agriculture is to increase agricultural production through innovation and investment deintensification. The calculated models use the following variables: output y_1 – value of sold agricultural goods (million PLN), input: x_1 – agricultural land area (ha), x_2 – number of people employed in agriculture (people), x_3 – NPK and CaO fertilization (t), x_4 – number of tractors (pcs), x_5 – livestock (thousands).

Considering the agricultural efficiency indexes average for the group, determined with the use of DEA method, it is visible that efficiency was enhancing along with the increase of EU agricultural support. In turn, when analyzing the improvement of agricultural efficiency in the period between 2005 and 2011, it is visible that the groups which received the smallest and medium support from the EU funds in the studied period have achieved the biggest improvement in agricultural efficiency.

Subsequently, in order to verify the statistical relevance of differences, variance analysis was carried out on the variables illustrating efficiency, productivity and agricultural efficiency as dependent variables with level of EU expenditures per 1 hectare of agricultural area as the grouping variable. In the first stage of the analysis, the premises regarding normal distribution were verified, while the second stage involved the verification the premise of homogeneousness of dependent variable variance in groups. Due to formal imperfections of the variance analysis (not fulfilling the conditions regarding homogeneousness of the variance), an alternative, non-parametric method was agreed upon - the Kruskal-Wallis test. It was used to verify the zeroth hypothesis stating that all groups were extracted from a population with the same distribution or distributions with the same median.

The Kruskal-Wallis test result is the following: for all studied indexes, that is, land productivity, work productivity, efficiency measured with the use of DEA method and change of agricultural productivity measured according to MPI, there are no grounds for dismissal of the zeroth hypothesis on relevance level of 0.05, which means that the level of EU support per 1 hectare of agricultural area does not substantially differentiate individual voivodeships' agricultures based on efficiency (Table 2). The conducted analysis did not confirm the assumed hypothesis that the voivodeships in which agriculture received the most support from the EU funds per 1 hectare of agricultural area achieved a better growth rate than the agriculture of remaining voivodeships.

The Kruskal-Wallis test result

Variables	H	<i>p</i> - value
Productivity of work	4.25	0.12
Land productivity	4.34	0.11
Dynamics of work productivity	4.34	0.11
Dynamics of land productivity 2005=100	4.96	0.08
Efficiency according to DEA	2.02	0.36
The change of agricultural productivity based on Malmquist Productivity Index	2.13	0.34

Source: author's calculations

The analysis may lead to the conclusion that the EU funds were not the substantially decisive factor of agricultural efficiency improvement in the individual voivodeships and that the voivodeships developed "at their own pace", regardless of the size of the EU help.

Conclusions, proposals, recommendations

The analyses conducted in this article can be used to draw the following conclusions:

1. In the period between 2004 and 2012, Polish agriculture received from the EU budget PLN 70090 million, of which over 1/3 was used in three voivodeships: Mazovia, Lubelskie and Wielkopolska. Considering the above, it should be stated that in the period between 2004 and 2011 the goal of increasing social and territorial cohesion was not reached because more support was directed to the voivodeships which at the point of Poland's accession to the EU already were in possession of better infrastructure and greater potential for agricultural development.

2. The conducted analyses point to lack of relation between the size of financial aid from the EU budget used by the agricultural sector, and the pace of land productivity, work productivity or agricultural efficiency measured with the DEA method and the Malmquist index. Therefore, it can be assumed that in the period between 2004 and 2011 the EU funds were not the substantially decisive factor of agricultural efficiency improvement. The present study is supported by analyses of other authors (Misiąg et al., 2013; Kuszewski, Sielska, 2012). This phenomenon requires further and more detailed analysis aimed at explaining its causes.

3. One of the manners of explaining the above situation can be the fact, that the use of EU funds in agriculture is only one of the factors influencing the pace at which agricultural efficiency improves. Other external factors also influence agricultural efficiency. Assumption can be made that in the studied period, agricultural efficiency was negatively influenced by ongoing global economic crisis. Explanation can also be sought in the EU funds distribution mechanisms among individual voivodeships as well as in procedures of establishing the directions for using those funds.

4. It seems fit to recommend a proposition of changes regarding the rules of funds distribution, leading to, for example, a decrease in differentiation of fund flow values as per 1 hectare of agricultural area across the voivodeships.

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ENGAGEMENT OF AGRICULTURAL NONGOVERNMENTAL ORGANISATIONS IN MAKING THE COMMON AGRICULTURAL POLICY

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Abstract. The Common Agricultural Policy (CAP) is one of the oldest, competent and complicated policies in the European Union (EU). As the number of the Member States increased, making identical government policies became more complicated. With the number of the Member States and the number of individuals engaged in governmental decision-making increasing, an increasing role is played by various nongovernmental organisations that advocate the interests of farmers and the rest of society. The purpose of nongovernmental organisations is to advocate the interests of farmers at national and international institutions as well as not to allow organisations unrelated to agriculture make decisions instead of them. The EU nongovernmental organisations, of course, most actively advocate producer interests in the agricultural industry, which also includes fisheries and forestry. This is also evidenced by the large number of agricultural organisations involved in cooperation with national institutions in the EU compared with other industries. The research aim is to analyse the historical development of the CAP and the engagement of agricultural nongovernmental organisations (NGOs) in making the CAP. Methods used in the research: the monographic and descriptive methods, analysis and synthesis, the logical and constructive methods. The paper concludes that is important to encourage farmers of all types to engage in NGOs, which would actualise the problems of not only large industrial farmers and result in making a common not a similar agricultural policy.

Key words: Common Agricultural Policy, nongovernmental organisations, COPA-COGECA, farmers' organisations.

JEL code: N50, O10, O13

Introduction

At the early stages of economic development in countries, agriculture played the leading role in national economies. Agricultural products had the dominant position in exchange of goods and in the subsequent exchange of goods and money (Upite I., Pilvere I., 2013). The agricultural industry becomes especially important after wars or economic crises. It is understandable that agriculture provides people with food; agricultural goods may be sold,

thus, earning revenue for investment in economic development. Yet, agriculture is also very complicated, which according to Balaceanu C. (2013) is affected by the special economic and social problems which normally do not affect the other sectors. The most significant factor affecting agricultural production is climatic conditions, the unpredictability of which makes impossible to forecast the quantity, quality and production cost of agricultural products to be produced; this finally affects farmers' revenues. Upite I. and Pilvere I. (2013) in their research indicate that other affecting factors are as follows: price fluctuations, market inelasticity, high capital intensity, slow turnover of capital, irreplaceability and immobility of land as the main resource in agricultural production, low labour mobility etc. Agricultural professionals are aware of the fact that this industry is not able to exist and develop without government support owing to its specifics. The purpose of this support is to equalise farms' revenues under the changeable market and climatic conditions. Balaceanu C. (2013) states that in agriculture, absence of an official support, the prices of the agricultural products tend to decrease, while the prices of the raw materials and other industrial products, tend to increase. It is important that farmers' incomes and living standard are not lower than of those being employed in cities, as only then the industry's development can be sustainable. In this context, Matthevs A. (2012) points out that agriculture is an integral part of the European economy and society. In terms of indirect effects, any significant cut back in European farming activity would in turn generate losses in GDP and jobs in linked economic sectors – notably within the agri-food supply chain, which relies on the EU primary agricultural sector for high quality, competitive and reliable raw material inputs as well as in non-food sectors. Rural activities, from tourism, transport, to local and public services will also be affected. Depopulation in rural areas would probably accelerate. There would, thus, be important environmental and social consequences.

The research aim is to analyse the historical development of the CAP and the engagement of agricultural NGOs in making the CAP.

The following research tasks were set to achieve the aim:

- 1) to analyse the historical development of the EU CAP and the engagement of the Member States;
- 2) to assess the performance of the largest nongovernmental organisations in advocating the interests of EU farmers;
- 3) to examine the performance of Latvia's agricultural NGOs in the EU farming organisations and in other institutions;

In order to carry out the present research, the authors have used research papers related to the topic, and the information published by the European Commission (EC), the National Rural network and the information available on the websites of agricultural NGOs.

Research methods: the monographic and descriptive methods, analysis and synthesis, the logical and constructive methods.

Research results and discussion

Historical development of the Common Agricultural Policy

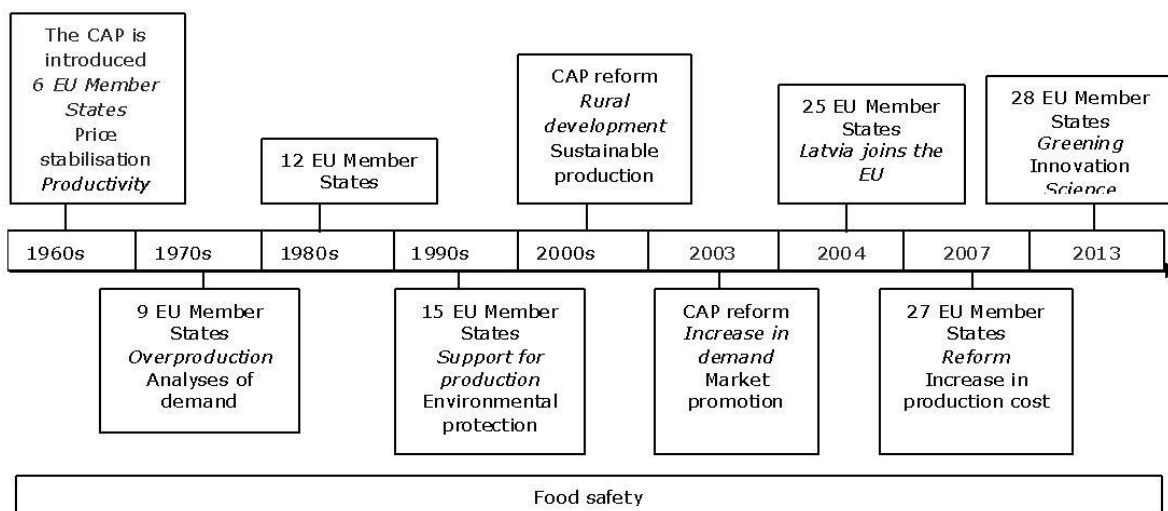
In 1957 in Rome, six European countries – Belgium, France, Germany, Italy, Luxembourg and the Netherlands – decided to establish a union of countries – the European Economic Community. According to Balaceanu C. (2013) in order to establish a common market, they were using various customs taxes, variable taxes, subventions for production and market intervening methods, so that they could protect their markets from “the negative effects of importations” and sustain the prices of their farmers.

After establishing the union of countries, common policies had to be made as well. Undergone changes, a few of the common policies are still functioning. One of them is the CAP, which has been in force since 1962. Initially, the CAP was mainly used for price support, while today the CAP is a complex system for price support, import tariffs, export subsidies, quotas and reserves and direct payments (Oxford Economic Forecasting, 2005). During the course of time, this policy has changed and undergone many reforms to adjust to the changes in climatic conditions, markets and other processes in the world, which affected agricultural production and consumer purchasing power.

Initially, the CAP had to ensure stable prices on agricultural products, increases in the output of food and availability of food. The output of agricultural products increased, and problems with surpluses of food emerged in the 1970s. Changes were made to adjust production to market needs. A substantial CAP reform was implemented in the beginning of the 1990s when the CAP was oriented towards support for production, reducing assistance for price stabilisation. The next considerable changes or reforms in the CAP took place in the 2000s, when according to Lucian P. (2014) the reform policy was reorganized into two complementary pillars, funded through entirely different funds. Thus, the rural development policy becomes separate and specific, rather than common. Within the new system of pillars, the CAP does not focus only on support for agricultural production; it retains the existing market and direct support system (Pillar 1) complemented with a rural development system (Pillar 2) whose purpose is to ensure long-term investment in rural development through other support instruments that do not directly focus on production (European Commission, s.a.). In 2003, the reform’s purpose was to motivate farmers to produce products based on market demand, reducing direct support for production, yet, retaining compensations if market prices were volatile in export markets. Stricter standards on environmental protection, animal welfare and food quality were set for farmers. The goal of these standards was to foster organic farming. Lucian P. (2014) indicates that the purpose of reform since 2013 is to bring new several new challenges: maintaining competitiveness of European agriculture within global markets and the promotion of organic farming and creating new jobs (Figure 1).

Making policies is affected by the large number of the Member States, the strong positions of the old Member States and the inability/reluctance of young entrepreneurs to engage in

agriculture in order to provide a similar standard of living for their families as in cities. In the result, to ensure prices on agricultural products are adequate to consumers' purchasing power, it is required to contribute to science and innovation in agriculture, use new technologies and regulate agricultural activity through reducing food waste (Milestones of the CAP, 2013).



Source: authors' construction based on Milestones of the CAP, 2013

Figure 1. **Historical development of the Common Agricultural Policy in the period 1960-2013**

With the accession of every new Member State to the EU, the CAP and other policies become more complicated. The EU Member States feature diverse climatic and geographic conditions; accordingly, support payments under Pillar 1 and rural policies under each Member State's Rural Development Plan (Programme) are different. The CAP is no longer the same, only similar, across all the Member States. However, the CAP's historical principles concerning food quality and providing people with food are still effective.

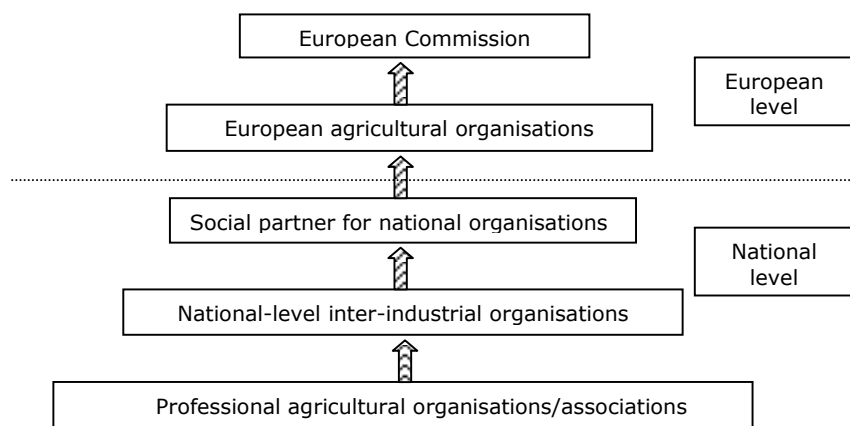
In the authors' opinion, educated individuals are the most necessary resource for rural areas and agricultural production. Problems with the rapid migration of people to cities emerged in the world already in the 1950s. Cities grow faster than rural areas develop, and rural territories close to large cities are especially endangered, as they decline at the expense of the expansion of urban territories. In this context, Keller W.J. (2000) stresses that the key factor of urbanisation is the low standard of living in rural areas and the limited availability of services; individuals prefer territories with developed infrastructures, public safety, communal, medical and education services available etc. Even though in the 1970-80s agricultural professionals understood that urbanisation had increased too fast and it was necessary to stimulate the return of people to rural areas, in the authors' opinion, until today nothing had changed regarding reducing migration. The year 2014 was declared the International Year of Family Farming; during this year, various activities aimed at popularising agriculture and educating the population about the role of agriculture in food security and the need for a new generation working innovatively and efficiently in rural areas were carried out.

Rivza B. with co-authors (2013) highlights that a great example of economic growth and use of the EU funds is Ireland in which, after signing the union's agreement in 1992, the priorities of the state were defined: education, idea sharing, training, youth issues, health care, culture and human rights.

The part of society that represents farmers has to actively engage in shaping agricultural policies. Pertev R. (1994) reveals that if there is one principal lesson farmers can draw from history, it is the following: that, when farmers are not strong, many sections and sectors of the society are ready not only to tell the farmers what they should do but even worse, to speak on their behalf. He also points out that in the world, there are millions of farmers. To engage in any sensible dialogue with the rest of society, farmers need their representative organizations, the farmers' organizations, structured from grassroots to the international level, as their legitimate voice.

The leading agricultural nongovernmental organisations in the European Union

Historically, the public has made its contribution to shaping any government policy through NGOs. An analysis of industries shows that the greatest number of NGOs is reported in advocating the interests of farmers and environmentalists. Sources of information define these agricultural organisations as farmer organisations and nongovernmental farmer organisations. In agriculture, NGOs are classified into various levels, and their cooperation with the EC is important at the EU level (Figure 2).



Source: authors' construction

Figure 2. **Desired hierarchy of farmer organisations in the EU**

The smallest organisations are farmer associations or professional organisations that contribute to the professional growth of a particular industry. The next level is national-level inter-industrial organisations (horizontal organisations) whose members are farmer associations and individuals. At national level, the key organisation is the social partner for national institutions; its activity is regulated by a law and the heads of inter-industrial organisations participate in making its decisions on rural development. This social partner is responsible for information exchange with the national government and European-level farmer organisations, the EC and other institutions. Given the specifics of agriculture, the models of farmer organisations are similar across the Member States.

The key European-level farmer organisation in communication with the EC – the agricultural policy maker – is the Committee of Professional Agricultural Organisations and Agricultural Cooperatives (COPA-COGECA). When establishing the European Community in 1957, the Treaty of Rome envisaged that the formation and further development of the CAP would take place in close cooperation with farmers, and in 1958 farmers were invited to participate in the Stresa Conference as observers. Stresa is a city in Italy where many historic meetings on designing or approving policies have taken place. The farmers were convinced they had to participate in shaping the policy, and the Committee of Professional Agricultural Organisations (COPA) was founded on 6 March 1958; the General Confederation of Agricultural Cooperatives (COGECA) was established a year later. However, the unification of both organisations took place in 1962 (COPA History, s.a.). Initially, COPA included 13 member organisations from the then six Member States. Its membership rose, as new countries joined the EU, and in 2015 COPA was represented by 60 agricultural NGOs from the EU Member States and 36 partner organisations from such European countries as Island, Norway and Switzerland. COPA has 50 various working groups – horizontal and those on crops and livestock – for tackling agricultural problems. In decision-making and in everyday work, COPA and COGECA closely cooperate, while in cooperation with agricultural organisations they used to work individually, based on the specifics of problems tackled. However, COGECA represents 38 agricultural nongovernmental cooperative organisations from the EU Member States (COGECA History, s.a.). Farmers from each EU Member State are represented in COPA-COGECA, including those engaged in forestry and fisheries.

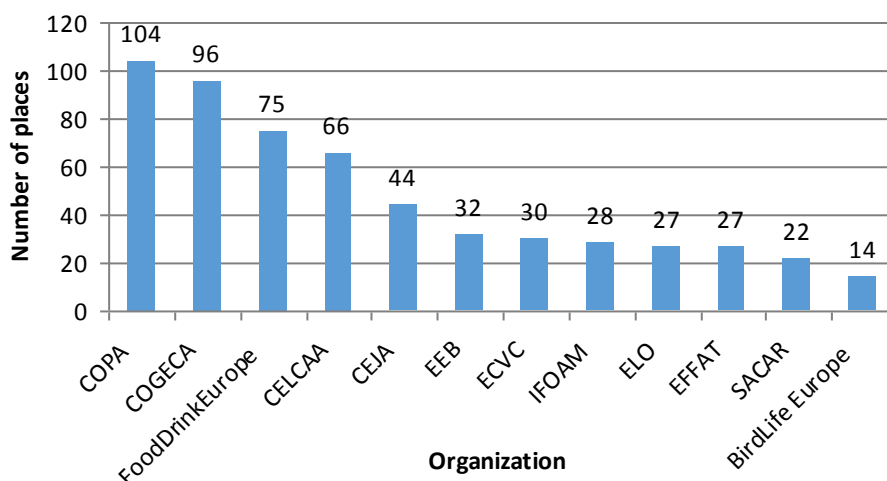
The organisations having the right to participate in the EC civil dialogue groups (CDG) may be regarded as the most important advocates of interests of agricultural NGOs. An organisation's influence in any particular CDG is determined by how many participants from the organisation are allowed by the EC to participate. In the EC civil dialogue groups, COPA-COGECA has the largest number of representatives, including farmers of the Member States and employees of the Secretariat. Before changes in the EC CDGs were adopted in July 2014, any representative of each Member State had a possibility to participate in person; yet, due to spending cuts, the number of representatives in the civil dialogue groups was reduced and, as a result, the civil dialogue groups were attended by the representatives of those Member States whose agricultural problems were the most essential in their country. Expenses on trips to meetings of these CDGs were covered by the EC, and a significant amount of funding was saved by reducing the number of participants.

The decisions made by the EC affect a broad spectrum of the public; accordingly, environmental and food producer organisations are also invited to the civil dialogue groups. After a unification of the civil dialogue groups, thirteen ones have remained, and the authors will examine those organisations that have places for representatives in all the civil dialogue groups; the organisations with a few places for their experts have specialised in a certain agricultural sector and attend only one or two civil dialogue groups.

The total number of places for experts in the EC CDGs is equal to 773 but Figure 3 shows only 12 largest organisations that occupy only 565 places or 73% of their total number, although, there are 68 organisations having the right to participate in the civil dialogue groups, which, of course, confirm the decisive role of the largest organisations in making political decisions (Civil Dialogue Groups, s.a.).

The organisations may be classified into four categories:

- nongovernmental farmer organisations:
 - COPA – the Committee of Professional Agricultural Organisations;
 - COGECA – the General Confederation of Agricultural Cooperatives;
 - CEJA – the European Council of Young Farmers;
 - ECVC – the European Coordination Via Campesinal;
 - ELO – the European Landowners’ Organisation;
 - IFOAM – the International Federation of Organic Agriculture Movements.
- organisations of environmentalists:
 - BirdLife Europe;
 - EEB – the European Environmental Bureau.
- organisations of food marketers and producers:
 - CELCAA – the European Liaison Committee for Agricultural and Agri-Food Trade;
 - SACAR – the Joint Secretariat of Agricultural Trade Associations;
 - Food Drinks Europe.
- organisations for employment and social issues – EFFAT – the European Federation of Food, Agriculture and Tourism Trade Unions.



Source: authors’ construction based on Civil Dialogue Groups, s.a.

Figure 3. Number of places for the experts of the largest EU farmer organisations in the EC CDGs from July 2014

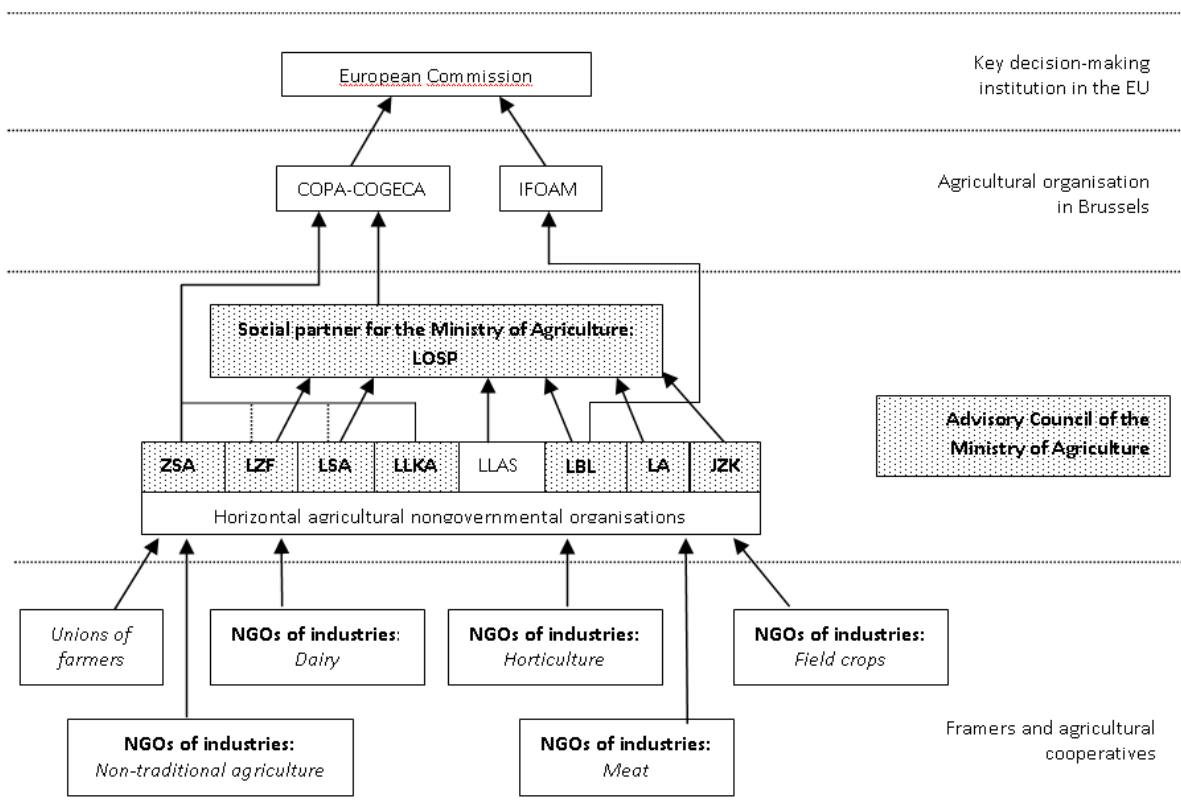
The largest number of places, 329, belongs to farmer organisations, and food seller and producer organisations have 163 places. The third group is environmental organisations with 46 places, which, perhaps, is not many, given the number of large farmer organisations; yet, the opinions of these organisations have the decisive role, as the CAP objectives involve

environmental protection. The environmental organisations actively struggle for environmentally-friendly management practices, demanding to ban many chemicals used in conventional farming. EFFAT, however, has 27 places, and this organisation advocates employee safety at workplace and fair international employment (Civil Dialogue Groups, s.a.).

Nongovernmental farmer organisations in Latvia

Just like in the other EU Member States, in Latvia farmers have to defend their interests in order that no restrictive and unfavourable conditions are adopted by the EC. Cooperation between farmers and legislative institutions has to take place through agricultural NGOs.

In Latvia, the smallest agricultural NGOs are producer associations or professional organisations that may be classified by the kind of products they produce, such as meat, milk, vegetables etc. (Figure 4). However, the horizontal level organisations unite small organisations and provide support for cooperation with the Ministry of Agriculture (MoA) and European-level farmer organisations. The producer associations or professional organisations play a significant role in shaping agricultural policies, providing information and statistical data to the MoA on the real situation in agriculture. In terms of influence on decision-making and cooperation with the MoA, the horizontal level organisations are the most influential. The agricultural NGOs are partially funded from the national government's budget in order that they regularly provide reports to the MoA regarding the situation in Latvia's rural areas. Those agricultural NGOs that participate in the Advisory Council of the MoA are also funded from the national government's budget; they are: the Farmers Parliament (ZSA), the Latvian Farmers Federation (LZF), the Latvian Agricultural Cooperatives Association (LLKA), the Latvian Agricultural Organisation Cooperation Council (LOSP), the Latvian Young Farmers Club (JZK), the Farmers Association (LA) and the Latvian Organic Farmers Association (LBLA) (Regulations regarding National..., 2013).



Source: authors' construction

Figure 4. **Hierarchy of farmer organisations in Latvia in 2014**

After joining the EU, Latvia has to coordinate any amendments in its legislation with the European Commission. A position on agriculture is shaped from two sides, the first one is the MoA and the second one is agricultural NGOs. The MoA as a government institution immediately defends its position at the European Commission, whereas agricultural NGOs have no such an opportunity; thus, they need to use some of the above-mentioned agricultural NGOs, recognised by the EC, in Brussels. Latvia's agricultural NGOs defend their interest through COPA-COGECA. There are some agricultural NGOs in Latvia, such as LBLA and the Forest Owners Association that believe COPA-COGECA is too weak to defend their interests and, hence, use other agricultural organisations in Brussels, such as IFOAM (International Foundation for Organic Agriculture) and CEPF (European forest owners organization). It is understandable that COPA-COGECA cannot equally defend all agricultural sectors just as specialised producer organisations do it. According to LBLA and the Forest Owners Association, COPA-COGECA mainly focuses on large agricultural industries and fields such as grain, oil crops, meat livestock, dairy, rural development, the CAP, international trade etc.

LZF is the only NGO from Latvia that has joined some European-level organisation focusing on employment and social issues. This organisation is the Employers' Group of Professional Agricultural Organisations (GEOPA-COPA). GEOPA-COPA actively cooperates with EFFAT, and this cooperation gives an opportunity for GEOPA-COPA members to participate in the EC civil dialogue groups. In recent years, there have been discussions on potential gains if both organisations unite, as presently meetings of their members are jointly held and their decisions are made jointly.

The experience of Latvia's farmers and their NGOs in being members of European-level organisations is still small compared with the NGOs of the EU Member States that have functioned since the foundation of COPA-COGECA. Latvia's farmer organisations joined COPA-COGECA in 2006. Initially, a lot of efforts were made to introduce and explain why such a small country should be taken into consideration. Latvia's farmers gained the greatest recognition in 2011 when intensive work started on equal direct payments. It became clear very soon that in order to attract attention, the farmer organisations of the Baltic States and Finland had to act together, thus, stressing problems of a considerably larger region, which increased the probability to achieve the necessary outcome. In 2015, Latvia's recognition increased, and its NGO representatives held three important positions in the organisations (head of the COPA-COGECA Working Group for Rural Development, a member of the COPA Executive Board and head of the EC CDG for Direct Payments and Greening). As the presiding Member State of the Council of the European Union in the first half of 2015, Latvia has opportunities to positively prove itself and to stress essential agricultural and rural development problems in order that the EC solves them as soon as possible.

Conclusions and recommendations

1. Since the origin of the CAP, many changes have taken place adapting to the production and market conditions, while the largest reforms were implemented in the year 2000, introducing a two pillar support system; the purpose of Pillar 2 is to ensure sustainable and targeted economic, social and cultural development in rural areas.
2. The key European-level farming organisation for cooperation with the European Commission is COPA-COGECA, which represents farmers from all the EU Member States.
3. One agricultural nongovernmental organisation, which is the social partner for national institutions, is needed, whereas in Latvia this function is performed both by NGOs and LOSP.
4. Latvia's agricultural NGOs actively participate in European-level farming organisations; it is confirmed by some leading job positions in the COPA-COGECA Working Group for Rural Development, in the COPA Executive Board and in the EC CDG for Direct Payments and Greening.
5. The NGOs and educational institutions have to continue perfecting cooperation in order to engage youths in agriculture and in making agricultural policies both at the national and European levels.

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