

GASIFICATION MODEL AS A FACTOR IN SUSTAINABLE DEVELOPMENT OF RURAL AREAS

Oleg Chekmarev¹, Doctor of economics/associate professor; Pavel Lukichev², Doctor of economics/professor; Pavel Konev³, PhD in economics/ associate professor

¹Saint-Petersburg State Agrarian University, Russia; ²Balic State Technical University “VOENMEH”, Russia; ³Leningrad state University named after A. S. Pushkin, Russia

Abstract

Achieving sustainable development is impossible without ensuring access of rural communities to uninterrupted and cost-effective supply of energy. The article examines comparative efficiency of connections of rural communities to sources of gas supply against other methods of energy supply in rural areas. The analysis is made for purposes of regional planning for building a sustainable energy supply system for rural communities and does not provide for studying use of gas by non-household customers. Comparative advantages and disadvantages of connections to distribution pipelines vs. use of gasholders are evaluated. The paper analyses one of the regions of the North-West Federal District of the Russian Federation.

Aim

The purpose of the study is to develop recommendations for economically and environmentally efficient energy supply to the rural population.

Tasks

Firstly, the environmental and economic advantages of using gas as a source of energy supply to the rural population are revealed. Secondly, calculations and comparative analysis of various gas supply options are carried out to ensure sustainable development of rural areas. Thirdly, cost-effective gas supply options are substantiated, depending on the characteristics of the population distribution.

Materials and methods

The use of natural gas as a source of energy supply has a number of environmental advantages. Approximately 90 percent of natural gas produced is delivered to customers as useful energy. By comparison, only 30 percent of energy converted to electricity reaches consumers.

It is necessary to determine the economic feasibility of conducting pipeline gas to households and to create a method for choosing a gas infrastructure development model between the “pipeline gas” and “gasholder” alternatives. It is necessary to take into account in calculations not only private, but also government spending on the formation of a gas supply system in connection with a significant level of state funding for these processes. With this simulation, it is necessary to take into account differences in the patterns of settlement of rural residents in the territory. Two factors that have most influence: the number of consumer gas and cumulative distance to them from the gas supply source. To provide opportunities for comparing alternative costs at the primary model level, it is advisable to simulate a typical gas supply facility - a conditional rural house. In the calculations below, we assume that due to the gasification of such a house, issues of its heating, hot water supply and other household needs, except for generating electricity, should be addressed.

Results

Use of natural gas and LPG makes it possible to reduce emissions of pollutants and carbon dioxide multiply compared to other types of fuel, both at the production stage and at the stage of operation of energy supply facilities. Ensuring access of communities to gas supply is the most important element in maintaining ecological balance and it is demanded from the point of view of the goals of sustainable development of territories. Consequently, natural gas is the ultimate alternative fuel of the future.

The service life of gasholders, judging by the suppliers' passports, is 20–25 years, which is comparable to metal gas pipelines and is approximately two times shorter than that of polymer pipes for gas supply networks. The cost of installing a gasholder and the gas distribution system in an average household (rural house) is about EUR 4 K. When bringing the gas line to the houses and indoors, it is also required to spend funds in the range of RUR 100-150 K per average rural house.

Consequently, operation of the gas distribution system within the household using gasholder has a comparable service life. The downside is that it is necessary to incur additional costs for supply of pipeline gas in the range of EUR 1.33-2.00 K for a standard rural house with a floor area of 100-120 m². The advantage of this solution is that, compared with the pipeline gas option, it does not require construction of a gas supply pipeline. The authors proceed from the assumption that all additional costs of gas infrastructure development with gasholders are borne by the regional authorities, just as it occurs with the costs for construction of intra-settlement gas pipelines under the option of supplying pipeline gas. The government should compensate the households for the difference in prices per unit of energy supplied in the form of LPG and in the form of pipeline gas to ensure equal access of households to the gas infrastructure. This difference is EUR 0.03 per kWh as seen in Table 1. If a standard household of three of its members uses no more than 4,000 litres per year LPG (28161 kWh), then the annual compensation for the cost of LPG use should be EUR 845. Accordingly, for 25 years of operation of a gasholder, undiscounted expenses of the region for compensation, the price of LPG will amount to EUR 21.12 K per standard household, and taking into account discounting, with a discount rate of 6.25 % (the current key rate of the Central Bank of the Russian Federation) – EUR 10.55 K. Thus, provision of a separate conventional household with gas using gasholders will cost the government no more than EUR 13.9 K of the present value. At the same time, the costs in the first year of installation will not exceed EUR 4.2 K.

As a result, it becomes possible to assess feasibility of connecting sparsely populated communities and communities remote from gas mains to pipeline gas. For example, if we take the cost of laying a gas pipeline for EUR 64.36 K / km, then, with the current introductory gas pipeline with a total length of even 1 km, it is not expedient from the point of view of spending government funds for programmes of providing gas to households if it provides less than 5 standard households with gas. Financing a gas supply scheme using gasholders by the region would be economically feasible in this case.

LPG market is more competitive than the market of pipeline gas in Russia. While the pipeline gas is provided, in fact, by one company, LPG can be produced and delivered by a much wider number of suppliers from gas and petrol industry. Therefore, the region's active policy of maintaining competition in the LPG market can mitigate risks of reducing the economic affordability of gas supply for households.

Conclusion

1. Natural gas and LPG have a high environmental safety in comparison to other types of fuel and allow organizing simultaneous provision of most of utility services to households. Ensuring sustainability of the delivery of public services to households, in addition to gas supply, also requires supplying electricity, and, in some cases, stimulating organization of energy supply using local resources.
2. The main factors for the region to choose a gas connection scheme for individual groups of households (“pipeline gas” or “gasholders”) are: difference in tariffs for pipeline gas and LPG, cost of capital expenditures for building gas supply infrastructure, remoteness and density of households in the territory, lifetime of gas supply systems, structure of sources of funding for gas infrastructure development programmes, model to ensure the level of competition in the LPG market, capacities of the region in providing long-term guarantees for price subsidies and LPG.
3. Preparation of documents for territorial planning and location of households, especially in the framework of the settled farm model of settlements, requires not only gas infrastructure development plans for pipeline gas and measures to regulate LPG prices, but also subsidization of costs for supplying individual households with gas using individual gasholders and communal gasholders in remote areas with dense arrangement of households.

**THE INTERNATIONALISATION OF HIGHER EDUCATION IN THE
REGIONS: CASE OF LATVIA**

Inga Jekabsone, Dr.sc.admin., assist.prof.
RISEBA University of Applied Sciences

Abstract

Internationalisation is set as a horizontal priority of higher education in the context of the quality assurance by the government of Latvia. However, higher education institutions (hereinafter – HEI) in Latvia find it challenging to attract talented international students and academic staff, especially in the regions, thereby the internationalisation rates in HEI differ. The internationalisation is a complex concept – it is understood not only by the attraction of international students and academic staff, but also by internationalisation of local students and staff.

Aim

to analyse the dimensions of the internationalisation of regional HEI in Latvia

Tasks

1. to review scientific background;
2. to assess the internationalisation approaches of the regional HEI in Latvia;
3. to provide recommendations for regional HEI in Latvia.

Materials and methods

In order to achieve the aim, the following research methods are used: scientific literature studies, statistical data analysis, case study method, expert interviews.

Main information sources: scientific literature, published studies, political planning documents and normative legal acts, as well as official statistical databases.

Results

Considering the versatile nature of internationalisation of higher education as well as conclusions of the scientific literature review, the analysis of regional HEI in Latvia is provided focusing on these dimensions: administrative perspective, teaching and learning perspective, environmental perspective (Fig.1).

Fig.1. **Dimensions of higher education internationalisation**



Source: author's visualisation based on Clarke et al., 2018; Smaliakou, 2019; Bernnell, 2020

Taking into account these criteria, the case study analysis is provided for regional HEI in Latvia.

Referring to the administrative aspects of the internationalisation of the higher education, most of the HEI have signed the agreement with the Ministry of Education and Science of Latvia on good practice in attracting foreign students (except RTA). Some of the HEI (ViA and LLU) have International Advisory Board that brings additional international aspect to the management of the HEI. However, none of the HEI has foreign representatives in the government. All HEI have a large number of agreements with other HEI within Erasmus+, so there are wide opportunities for students and academic staff for mobility. At the same time, the number of students going on mobility could be higher. Larger HEI like LLU and DU are members of international organisations and networks, other HEI develop collaboration based on bilateral agreements with other HEI. In the Development Strategies of the HEI, mostly the international cooperation is set as a horizontal priority. Internationalisation of higher education directly is indicated as a priority in the case of LLU and RTA. No HEI has developed separate strategy for internationalisation.

As concerns teaching and learning dimension, in this planning period all HEI are using the ESF funds for improvement of the content quality of the study programmes. In some cases, the internationalisation aspects are taken into account. All HEI offer the wide spectrum of study programmes in English, so foreign students can choose to study in the regions. The data show that in the most cases the share of international students and international staff is below the average national level. Only in RTA the share of international students and academic staff corresponds to the average national level. All HEI uses opportunities of Erasmus+, both students and academic staff; however, the share of mobility of students and academic staff is still not sufficient.

Pertaining to the environmental dimension, all regional HEI offer information about the study possibilities in English. There are special positions for employees who work with international students. Concerning the implementation of concept of environment of equity and equality, regional HEIs do not highlight this concept.

Conclusion

1. The internationalisation of higher education is topical challenge for all HEI as it enhances both the quality of higher education and financial well-being of HEI. Taking into consideration the various aspects of the internationalisation concept, the most important dimensions of this concept are following: administrative, teaching and learning, and environmental.
2. In case of Latvia, the internationalisation of higher education is stated as a horizontal priority – HEI have been actively working on attraction of international students. Regional HEI focus on attraction of international students as a major source of income due to significant declines in government funding, as well as the demographic calculus in Latvia.
3. In case of regional HEI in Latvia, mostly they are focusing on attraction of international students via widening the offer for study programmes in English. Also, regional HEI use Erasmus+ possibilities for student and staff mobility. As concerns other dimensions of internationalisation of higher education, regional HEI do not focus on creation of environment of equity and equality that supports inclusion of international students and staff to the daily life of HEI. Also, the internationalisation of the governance of the HEI is not implemented according to the good governance practice.
4. Regional HEI in Latvia should pay more attention to more comprehensive understanding of the internationalisation concept, covering various dimensions of it. The role of internationalisation of the higher education should be more clearly indicated in the strategic documentation of the HEI, indicating objectives and tasks towards implementation of it. In addition, the HEI should focus on development of inclusive environment that supports international students and staff as well as promotes the internationalisation of local students.

Abstract

The problem of the environmental contamination influence on the rural population health was investigated using the example of the Ryazan region. Statistical indicators of rural population morbidity and mortality based on medical data were used. The ranking of municipalities in the region was made using spatial comparative analysis. The integral region health index was calculated based on accounting environmental and social significant pathology indicators - the neoplasm incidence and mortality indexes, the infant mortality index, the tuberculosis mortality index.

Aim

To classify rural areas according to the environment and population health state.

Tasks

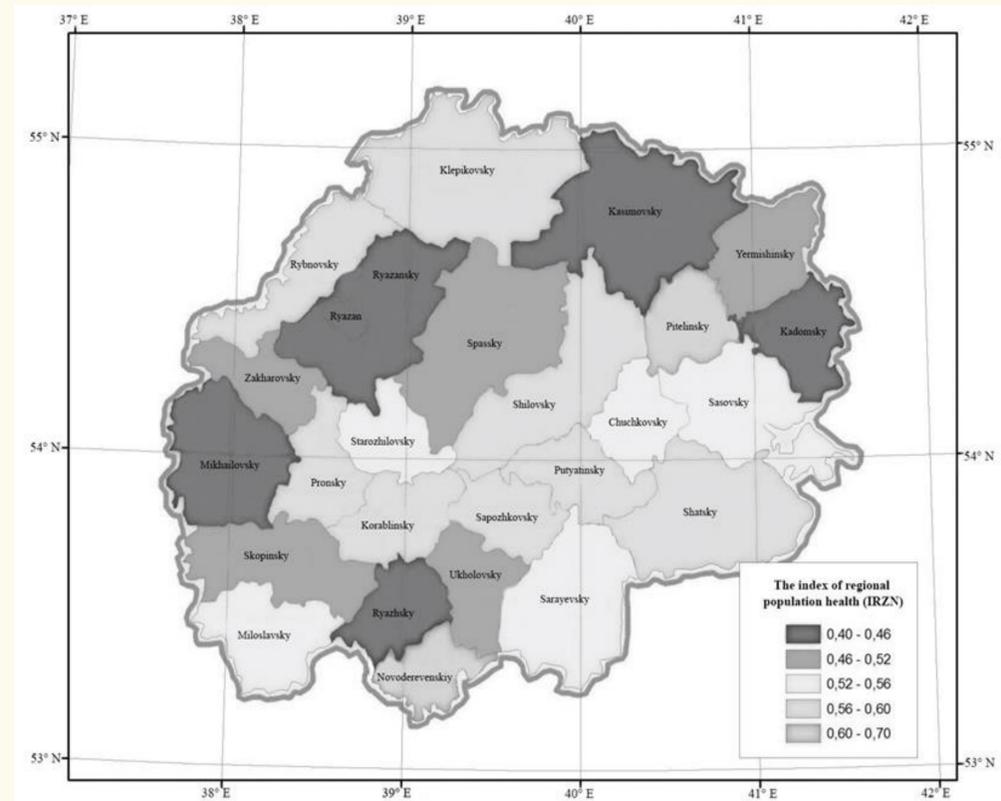
First, to identify the relationship between the environment state and the population health. Second, develop a point system using calculated indexes. Third, determine the negative rural development trends.

Materials and methods

The spatial-comparative analysis is based on a comparison between municipalities with similar environmental conditions but differing in economic development and the diseases risk. To identify the relationship between the environment state and the population health rate calculations and the score were made. This allows us to determine the negative trends degree for rural development and to make the classification. The rural population morbidity and mortality data statistics were used.

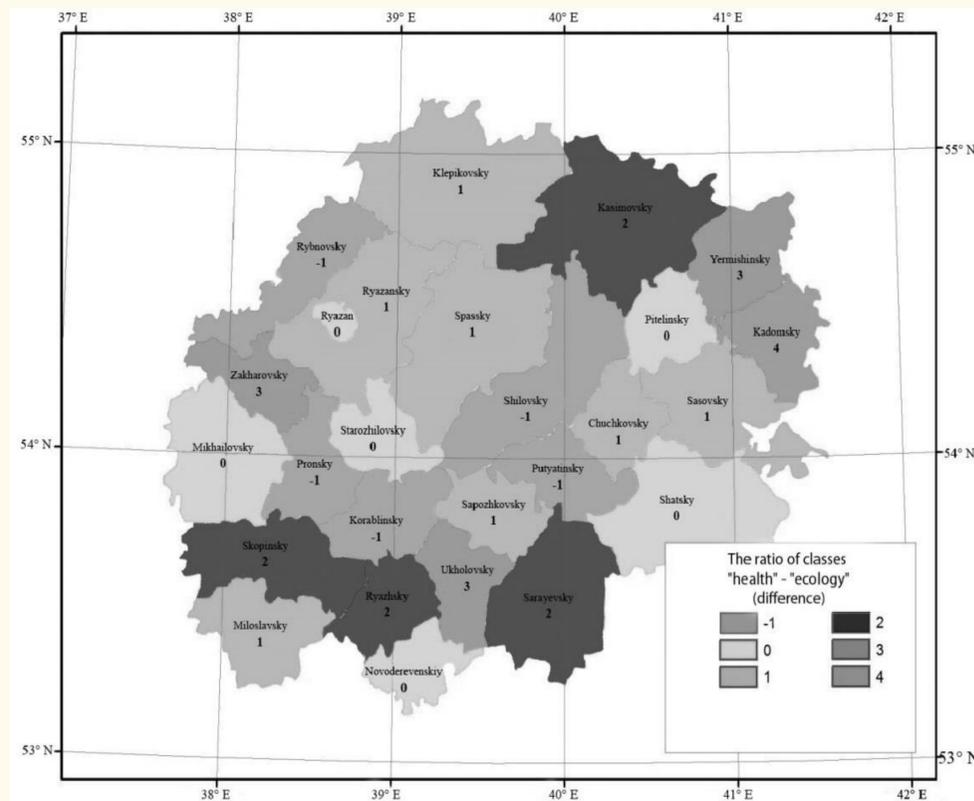
Results

1. The typological classification of the municipal districts by the value of the regional health integral index was carried out. Each rural area is assigned to one of five taxa. The results of the classification for the Ryazan region districts according to the regional population health level are presented in the figure 1.
2. To identify the dependence of the population health level region on the negative environmental impacts in the Ryazan, the combined ranking of rural areas was carried out according to two indicators - the regional population health index and the indicator of assessing the environment.
3. It was established that the intraregional differentiation of the public health state largely corresponds to the spatial distribution of background pollution indicators. This is reflected in figure 2.



Source: author's calculations based on Gosudarstvennyy doklad, 2014; Semenova, 2010

Fig.1. Population health status for municipal districts of the Ryazan region, numerical score



Source: calculations based on Gosudarstvennyy doklad, 2014; Prohorov, Tikunov, 2005

Fig. 2. Population health rate zoning in the Ryazan region by geo-ecological situation, as score

Conclusion

1. The intraregional differentiation of the population health status largely corresponds to distribution of regional background pollution.
2. So the geographical and temporal trends for the regional population health index are the appropriate indicators of environment quality changes.
3. When establishing the connection between these indicators based on medical and demographic statistics, it is concluded that the quality of the human environment is decreasing and this decrease is a negative result of economic activity.

21st International Scientific Conference ECONOMIC SCIENCE FOR RURAL DEVELOPMENT 2020

12-15 May 2020, Jelgava, Latvia

THEMING DISCOURSE IN VILLAGE DEVELOPMENT

Ingrida Kazlauskienė, Phd. stud.; Vilma Atkociuniene, Prof. dr.
Faculty of Bioeconomy Development, Vytautas Magnus University, Lithuania

Abstract

It has been investigated that theming is an experience and sensory marketing strategy, which incorporates the needs of postmodern society. It combines a theme-driven set of visitors' senses and experiences with local products and services. This strategy is being used by village communities and other stakeholders to transform their village into a unique, attractive area for locals and visitors. Village theming strategy contributes to the economic, environmental and social development of the area today and in the future.

Aim

To determine what village theming is and how it may influence village area development.

Tasks

To analyse the phenomenon of theming and village theming; to identify the potential influence of village theming on the development of the village area.

Materials and methods

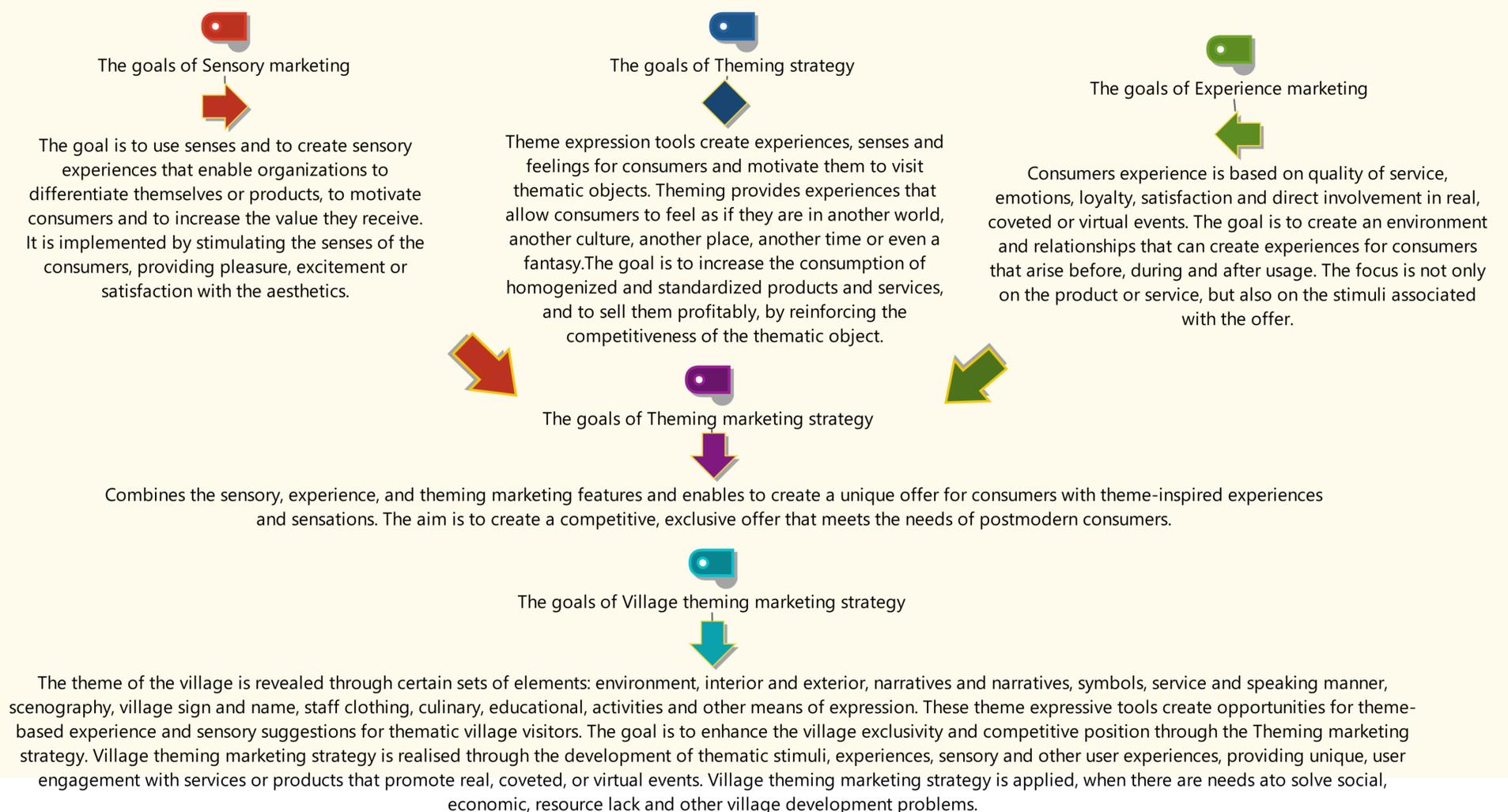
In order to analyze the phenomenon of village theming and its impact on the development of the village area, the analysis, comparison and synthesis of scientific literature was carried out. From various databases, scientific publications on the theming itself and its impact on the development of the thematic object and its area were selected. The research analyzed scientific articles on various thematic objects: thematic locations, services, products, cities, villages, cruises, tourist routes, parks, restaurants, hotels.

Results

This scientific discussion suggests that village theming has features of **experience and sensory marketing strategy** (Table 1). The village theming creates the uniqueness and competitiveness of the village, creates conditions for attracting visitors to the village and giving them new experiences and sensations within the scope of the theme. Visitors stimulate economic and social activities in village areas and contribute to solving village development problems. Village theming marketing strategy is chosen when the village community seeks to increase village development issues.

Table 1

Sensory and experiential marketing links to village theming marketing strategy



Conclusion

1. Theming has experience and sensory marketing features because it is implemented through thematic products and services by creating theme-related experiences and sensations for consumers.
2. Village theming marketing strategy allows to select a unique theme that reflects the uniqueness and identity of the area, providing the direct experience and sensation of the visitor through direct involvement in real, coveted or virtual events.
3. A village theming marketing strategy contributes to the economic, environmental and social development of the area today and in the future.

AGRITOURISM IN THE CONTEXT OF SUSTAINABLE TOURISM DEVELOPMENT

Diana Foris, Dr. Eng, Associate Professor; **Baiba Rivza**, Dr. habil. Oec., Professor; **Maiga Kruzmetra**, Senior researcher; **Ioana Sonia Comanescu**, Dr. Eng, Associate Professor; **Tiberiu Foris**, Dr. Oec, Professor
^{1, 4, 5} Transilvania University of Brasov, Romania ^{2, 3} Latvia University of Life Sciences and Technologies, Latvia

Abstract

This research presents an analysis of the evolution of the agritourism infrastructure and of the main tourism indicators for Romania. Quantitative and comparative analyses were carried out regarding the number and the existing accommodation capacity for agro-tourist boarding houses and the numerical evolution for domestic and international arrivals related to agritourism. A better understanding of processes occurring in the country could be achieved by comparing the processes with similar ones in another country, which, in the present research, is Latvia.

Aim

The objective of the research is to demonstrate that agritourism in Romania has undergone a continuous development process between 2009 and 2017, in order to confirm the viability of rural areas.

Tasks

To demonstrate that the numerical evolution of agro-tourism boarding houses and the tourist accommodation capacity is increasing, that agri-tourism activities are sustainable and that agri-tourism plays a role of great importance within the country's tourism industry.

Materials and methods

The analysis was carried out on the basis of the statistical data provided by the National Institute of Statistics published in the Romanian Tourism Statistical Abstract. Quantitative and comparative analyses were carried out regarding the total number and the existing accommodation capacity for agro-tourist boarding houses and the numerical evolution for domestic arrivals and international arrivals throughout the period between 2009 and 2017. Data on agritourism in Latvia were acquired from the Statistical Bureau of Latvia

Results

- Analysing the numerical evolution for agro-tourist boarding houses in Romania and Latvia in Table 1, we notice that the number of boarding houses for agro-tourists rose in both countries in the analysis period. Besides, this process was much faster in Romania than in Latvia (181.01% in Romania; 142.8% in Latvia).
- Analysing the tourists' arrivals in agro-tourist boarding houses in Fig. 1, we notice a significant increase, except for the period 2009-2010, when there is a small decrease in the number of tourists, both Romanian and foreign, as a result of the effects of the economic crisis.
- Agri-tourism plays an important role in sustainable development, but the question is whether agri-tourism plays an important role in the tourism industry of the respective country. In order to answer such a question, we will carry out an analysis to determine the contribution (in percentage) of the number and the accommodation capacity of the agri-tourism pensions in the total number and the accommodation capacity of the accommodation units in Romania and Latvia. In Romania we notice that in 2009 the total number of registered units was 5095, of which 1412 were represented by agri-tourist boarding houses. In 2017, the total number of units was 7905, of which 2556 were agro-tourist boarding houses, namely 32.33% of the total number of units and compared to 2009, their number increased, the results following a positive trend. The same processes were observed in Latvia too – the total number of tourist accommodation establishments rose, and the number of those located in rural areas rose as well. However, in terms of increase rate, Romania outpaced Latvia.

Table 1

The numerical evolution of agro-tourist boarding houses

No	Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
1.	Romania	1412	1354	1210	1569	1598	1665	1918	2028	2556
2.	Latvia	327	375	390	385	307	306	257	291	467

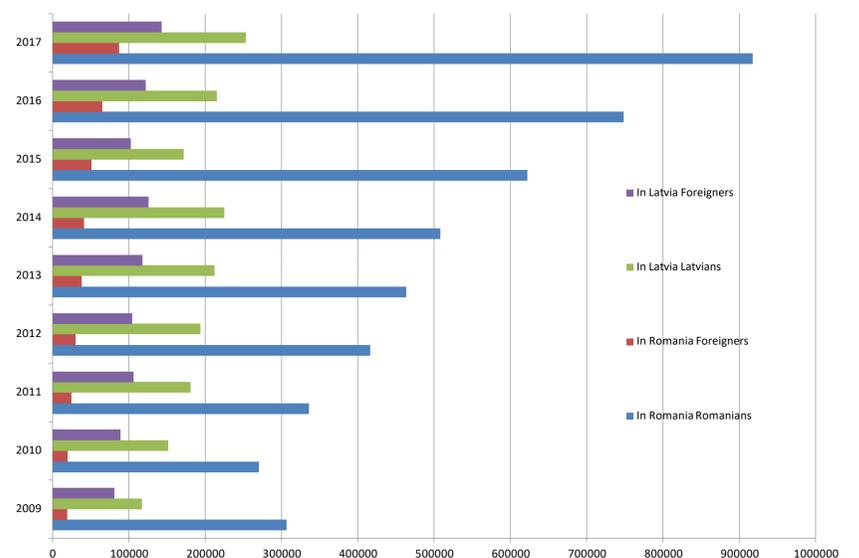


Fig. 1. Tourists' arrivals in agri-tourist boarding houses

Conclusion

- During the period 2009 – 2017, agri-tourism has experienced a real development in Romania and also in Latvia. In Romania, the continuous development of the agro-tourism units is noticed, this resulting in an increase in the number of arrivals both internally and internationally. The development of agri-tourism was based largely on the non-reimbursable financial support granted to entrepreneurs through the European programs for rural development.
- In Latvia, just like in Romania, an important role is played by the maintenance of viability of rural areas, thereby providing decent living conditions to rural residents as well. Economic diversification could contribute to it, and tourism is one of the options. According to statistical data, the number of agro-tourist boarding houses increased in Latvia. The numbers of visitors – both residents and foreigners – rose as well. Although these processes are taking place more rapidly in Romania than in Latvia, they confirm the importance of tourism as a socio-economic and cultural activity in Latvia.

FOUR-LINK SPIRAL MODEL IN THE CONCEPT OF “SMART SPECIALIZATION” INNOVATIVE INDUSTRIAL DEVELOPMENT

Olga Chernova , professor/Dr.oec.¹; Vladimir Klimuk , assoc. professor/ Dh.D.²;
Andrejs Lazdins , assistant professor/Dr.oec.³.

Southern Federal University Russia¹; Baranovichi State University²; Latvia University of Life Sciences and Technologies³

Abstract. One of the mechanisms for enhancing innovative processes in the industry is the application of the concept of the “four-link spiral”. In contrast to the 3-link spiral, this model as one of the most important components includes a “society”, acting as one of the actors of innovative transformations. Firstly, it is society that is the main consumer of innovative products being created and, thereby, establishes “requirements”, forming demands for the quality and parameters of future products; secondly, society, in turn, acts as the initiator and generator of innovations, forming the so-called "social capital" necessary for the implementation of directly innovative transformations. In this scientific work, the problems of the formation of a “smart specialization” strategy for the innovative development of the industrial sector of the national economic system based on the application of the four-link spiral concept are investigated. A system of quantitative indicators for assessing the innovative level of industrial development is presented. The experience of introducing the concept of a four-link spiral as a mechanism of innovative development of industry (on the example of the Republic of Belarus and the Russian Federation) is given.

Introduction

Modern problems of regional development are inextricably linked with the solution of the tasks of stimulating innovative processes in the industrial sector in order to build up competitive advantages and conquer new market. In the Commonwealth of Independent States (CIS) countries, in the Republic of Belarus and the Russian Federation, universities are the main generator of innovation, in contrast to the developed countries of the world, where these functions are performed by large corporations. The most important problem in the process of creating innovation is the low level of commercialization of scientific ideas. The main challenge of most national economies, including the Russian Federation and the Republic of Belarus, is the need to harmonize the interactions of individual subjects of innovation systems in the regions.

The aim of the article is to describe innovation processes in the Russian Federation and the Republic of Belarus and to develop an innovation transfer model. Main tasks: to describe the theoretical achievements of innovation processes in cooperation between science and enterprises; to develop a knowledge transfer model from science to production. The research used situation analysis method, statistical data analysis method, modelling and monographic method.

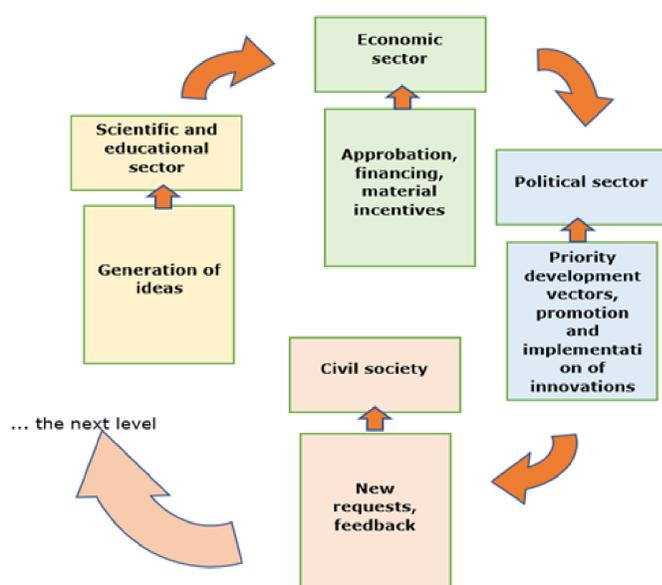


Fig.1. Interaction of components in a 4-link spiral model

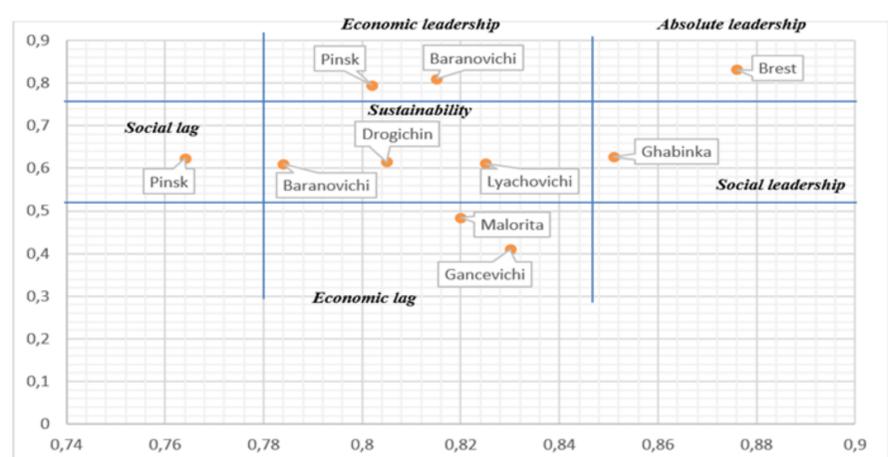


Fig.2. The matrix "Regional socio-economic development" (on the example of the Brest region of the Republic of Belarus)

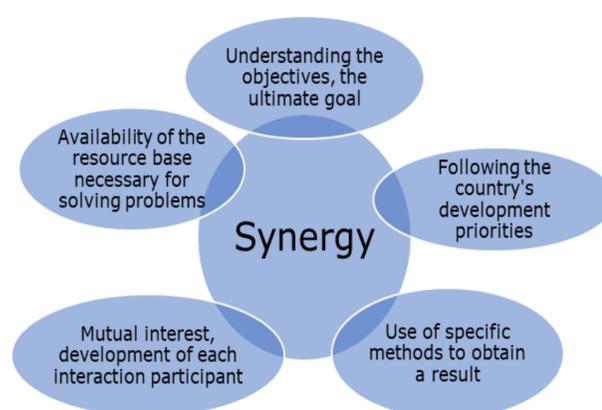


Fig.3. Conditions for obtaining synergistic effects in the implementation of the four-link spiral model of industrial development

Conclusions

The transition to a knowledge economy necessitates the further development of national innovation systems based on the construction of a four-link spiral model of industrial development. This paradigm suggests that innovation arises as a result of the interaction of science, society, industry and the state. At the same time, the main consumer of innovation is society, which suggests taking its role into account when developing “smart specialization strategies” based on the generation of knowledge as a strategic resource from the region’s scientific specifics. Consequently, the directions of further research by the authors are associated with the development of effective organizational and managerial mechanisms for the interactions of the main actors - participants in innovative processes in the industrial sector.

21st International Scientific Conference ECONOMIC SCIENCE FOR RURAL DEVELOPMENT 2020

12-15 May 2020, Jelgava, Latvia

THE CONCEPT OF URBAN AGRICULTURE – HISTORICAL DEVELOPMENT AND TENDENCIES

Madara Dobele, MBA, Andra Zvirbule, Dr.oec., professor
Latvia University of Life Sciences and Technologies

Abstract

The change in the concept of urban agriculture has been driven by social, political and economic factors, changing the role of agriculture in the urban environment. From the second half of 20th century topicality and practices of urban agriculture are growing widely not only in social initiatives but also in scientific research. Growing interest has identified variations and tendencies in the interpretation of the concept of urban agriculture, thus creating a number of risks in the interpretation of the concept, including limited possibilities for quantitative comparisons between studies.

Results

As the level of urbanization increases at accelerating speed, the interest in the role of agriculture and its potential in cities is renewed. However, there is relatively little research on the historical aspects of the concept and tendencies in the development of the concept of urban agriculture. Moreover, although the focus of scientific research on urban agriculture has been increasing rapidly since the 1990s, the Food and Agriculture Organization's definition is still very broad, thus creating various possibilities for interpretations and trends in the usage of the concept of urban agriculture in scientific researches. Historical development of the importance of urban agriculture is relevant to the redefinition of the role of agriculture in cities, while trend analysis in scientific articles provides an opportunity to classify different approaches to urban agricultural research by identifying directions in the field of research.

In the development of urban agriculture, three different stages can be identified, that is influenced by different social, political and economic factors. During the stages of historical development of urban agriculture

Development stage of urban agriculture	Influencing factors
Urban agriculture – <i>the basic principle for urban planning</i>	- formation of cities - the need for territorial autonomy - population growth
<i>Changing functions</i> of urban agriculture	- industrialization - the economic stratification of society - economic migration to cities - period in time of World Wars - economic and social depression - insufficiency of resources
The <i>renaissance</i> of urban agriculture	- the concept of sustainable development - science and research activities - technological development - changing the values of society

the frequency of other concepts' usage varies.

Terms "urban agriculture" and "urban farming" are often used as synonyms, but the relatively less commonly used concept in the context of urban agriculture is "urban gardening". Some authors associate urban gardening with a non-commercial way of producing food that is directly related to the urban environment (Schram-Bijerk et al., 2018). Even with the growing interest of academic society in urban agriculture, the primary focus was initially on analysing the practices of the Global South, where urban agriculture plays a major role in food security and poverty reduction. The social practices of urban agriculture and its cultural, economic and social dimensions were researched relatively later (Tornaghi, 2014). Africa is a region where a great number of researches have been done, analysing the role of urban agriculture in poverty reduction, thus also highlighting the major tendencies in usage of the concept of urban agriculture in the Global South. Of the articles published in Africa (622), most have been published in South Africa (144), Ghana (103) and Kenya (75). Most of these countries are characterized not only by advanced research, but also by their historical experience in urban agriculture, providing opportunities for research into tendencies based on different practices and economic and social aspects.

Aim

to identify the historical development stages of the concept of urban agriculture by identifying tendencies in its use in research

Tasks

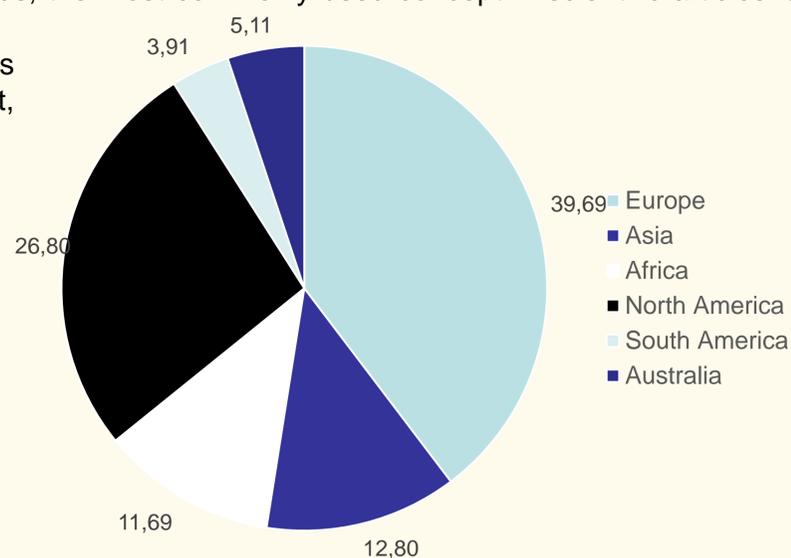
to identify the historical development stages of urban agriculture; to determine and analyse research tendencies in urban agriculture

Materials and methods

Monographic and descriptive analysis was used for theoretical discussion, analysis, synthesis and deduction - for information gathering, logical systematization and classification. The scientific databases Scopus, Web of Science, EBSCO, ScienceDirect, Wiley Online Library were used to collect statistical data.

scale, using not only land resources in their traditional sense, but all the available space in cities - walls, roofs, balconies etc. The diversification of urban agriculture practices also led to a dynamic shift in the focus of research and science. As a result, the historical development and change of meaning and importance of the concept of urban agriculture, as well as the modern technological, social and economic capabilities and context of sustainable development, have determined the focus of scientific research on urban agriculture, resulting in a rapid increase in scientific articles and variations in research tendencies.

Urban agriculture is only understood in scientific research by **four concepts** - *urban agriculture, urban farming, urban gardening and urban horticulture*. Analysing the statistical information about articles in databases by these keywords, the most commonly used concept in scientific articles is "urban agriculture", which is used as a basic concept, although



Source: authors' construction based on Scopus, Web of Science data analysis

Fig.1. Number of publications by keywords "urban agriculture" in databases 1996-2019, %

Conclusion

- There are three distinct stages in the development of the concept of urban agriculture - urban agriculture as the basic principle for urban planning, changing functions of urban agriculture and the renaissance of urban agriculture. Separation of stages is influenced by political, economic and social factors as the role of agriculture and the spread of practices in cities change.
- In the 21st century, tendencies in the concept of urban agriculture are largely influenced by research focus – in science-field classified system articles in environmental sciences, agriculture, social sciences and ecology dominates. Geographically, most articles have been published in Europe (especially the UK, Germany, Italy, France) and North America.
- Further research is possible in the analysis of the concept of urban agriculture by the comparative analysis of the definition aspects according to the scientific fields, geographical regions and the focus of the research.

ECONOMIC POTENTIAL OF RECREATIONAL FISHING FOR SUSTAINABLE DEVELOPMENT OF COASTAL AREA

Tamara Grizane¹, Dr.oec.; Līga Jankova², Dr.oec.; Aija Sannikova³, Dr.oec.; Inguna Jurgelane⁴, Dr. oec.

¹ Turība University; ² Latvia University of Life Sciences and Technologies; ³ University of Economics and Culture; ⁴ Riga Technical University

Abstract

The current economic crisis caused by both the coronavirus disease and the global prevention measures, will have significant negative impact on the tourism sector. Some of the negative consequences possibly can be averted by increasing return from tourism industry. One of the opportunities is to develop the recreational fishing tourism. Until now the economic potential of the recreational fishing for ensuring sustainable development of Kurzeme coastal area was not acknowledged. The aim of the research was to determine the residents and non-residents coastal recreational anglers at the Baltic Sea coast of Kurzeme region and their total expenses. Through use of primary data acquired in recreation fishing environment the demographic data and habitual data of resident and non-resident anglers were analysed and compared to those of different regions in the EU and Australia.

The calculated result is EUR 4,558 698 and that underlines the assumption on the economic potential of recreational fishing in the Baltic Sea coast of Kurzeme Region.

Aim

Determination of the resident and non-resident coastal recreational fishermen and determination of total expenses

Tasks

1) to determine the demographic indicators of fishing tourism;

2) to calculate the expenses of recreational fishermen in a given area;

3) to compare the results with those of similar research in Europe and World.

Materials and methods

information provided the LRATC, LMA, LCSB, documents, statistics and research studies done in Latvia and international organizations.

Research methods: monographic, comparison, abstract-logical method, synthesis and analysis, induction and deduction; in processing the primary data, the authors used statistic data analysis – descriptive statistics

Results

Travel costs constitute a significant part of the expenditures of the fishermen, most significantly impacting the non-resident fishermen (Fig.1).

1) The KPR_R research is the first of such kind in Latvia and the only one focusing on the fishing tourism in the Baltic Sea Kurzeme coastline, which has been carried out on-field, unlike the LRATC research, which took place only in online environment. The following demographical and habitual indicators (Fig. 1) were identified: average age of an angler - 45.9 years, number of senior anglers greater than 12%; total number of days spent on fishing 33 days; by 16% fewer fishermen from Riga; geographical origin – Latvia, Lithuania, Germany.

2) Largest expenses for anglers-residents are spent on accommodation 36%, catering 25% and touristic activities 24%, but largest expenses for angler's non-residents on fuel 47%. The average expenses for residents are around EUR 274 and for non-residents EUR 236, which differs most significantly from Sweden and Germany (Table1 and Table 2).

3) EUR 4,558 698 is the financial illustration of the possible positive impact on the sustainable development and coastal area development at the Baltic Sea coastal area of Kurzeme region.

4) In the further research it is necessary to continue in-depth analysis of the coastal area fishing tourism potential, to monitor, accumulate statistical database, based on the real-world environment.

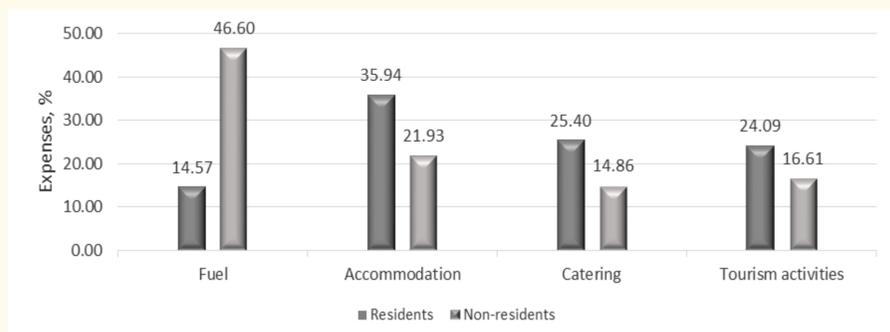


Fig. 1. The average expenses of residents and non-residents per single trip, %

Table 1
Demographical data of fishermen

Fisherman determining variable	Number	Distribution in percentage (%)
Gender		
Female	4	6.2
Male	61	93.8
Nationality		
Resident	57	87.7
Non-resident	8	12.3
Age (years)		
<15	2	3.1
16-30	8	12.3
31-64	46	70.8
65>	9	13.8

Table 2
Average annual and per trip costs of coastline anglers of Kurzeme coastline, EUR

Expenditure category	Total expenses of anglers residents in each category (year) (EUR)	Total expenses of angler non-residents in each category (year) (EUR)	Average expenses of angler residents (per trip*) (EUR)	Average expenses of angler non-residents (per trip*) (EUR)
Direct expenses				
Fuel	37457.02	10913.65	13.47	91.18
Accommodation	92432.91	5137.52	33.24	42.92
Catering	65320.37	3480.88	23.49	29.08
Entertainment	61955.63	3890.25	22.28	32.50
Total:	257165.92	23422.3	92.48	195.68
In-direct expenses				
Fishing gear (in destination)	227565,57	15810.8	5.41	30.45
Fishing gear (at home)	1472252,38	0	42.90	0.00
Boat	1707355,27	0	102.87	0.00
Boat trailer	293276,06	0	18.56	0.00
Fishing clothing	494 066,63	4 089	10.91	8.25
Licence and card	32 910,02	1 105,67	0.69	1.34
Additional expenses	28864.43	813.96	0.27	0.50
In total:	4256290.357	21819.43	181.60	40.54
Total:	4513456.277	45241.73	274.08	236.22

FACTORS INFLUENCING SALARIES OF PRE-SCHOOL TEACHERS IN LATVIA REGIONS

Anda Grinfelde, Dr.oec.; Inga Vanaga, PhD student; Liga Paula, Dr.sc.soc.

^{1,3} Latvia University of Life Sciences and Technologies; ² University of Latvia; Latvian Trade Union of Education and Science Employees

Abstract

Educators are the most important factor for children's well-being, learning and development outcomes especially at pre-school level. The problem of an unequal workload of pre-school teachers and the corresponding salary in regions of Latvia has defined the research aim. The paper reflects the results of a study on inequalities in the payroll and monthly salaries of pre-school teachers. Results show that the salary of pre-school teachers depends on local political decisions of the municipalities on the organization of pre-school work, the subsequent workload and the monthly salary rate determined by each municipality. Pre-school teachers have a limited right to equal pay for work of equal value in different regions of Latvia. According to a survey of local trade unions, all respondents believe that funding for pre-school teachers should be provided by the state budget in order to prevent local governments from setting different monthly salary rates.

Aim

The aim of the study is to identify problems in ensuring equal opportunities in pre-school teachers' workload and average wages in the regions of Latvia, as well as to develop proposals to reduce inequalities.

Tasks:

- 1) to conceptualize the factors influencing the wages of pre-school teachers in the context of inequality,
- 2) to investigate the workload and monthly salary rate of pre-school teachers in Latvian municipalities and comparisons by region
- 3) to develop proposals for reducing inequalities among pre-school teachers in different regions and regions of Latvia.

Materials and methods

The research data was obtained from interviews with members of 12 local trade unions of Latvian Trade Union of Education and Science Employees throughout Latvia and quantitative survey of 119 municipalities, which was conducted in Autumn 2019 to find out the average workload and monthly salary rate of pre-school teachers in municipalities. At the second stage of the research, chairpersons of the local trade unions were interviewed in order to collect suggestions for improving the pay model for pre-school teachers.

Results

In Latvia, pre-school education is provided to children from 1.5 years of age, but the availability of this service and the involvement of teachers depend on the priorities and financial resources of each municipality. **Pre-school teachers who work with children aged 1.5 - 4 are paid by local governments from their own budget, while salaries of teachers who work with children of pre-school age (5-6 years) are paid from the state budget.** The workload and wages of pre-school teachers include inequalities: the minimum wage rate is the same for all teachers, while **the workload for pre-school teachers is significantly higher than for other teachers.**

The average monthly salary in the education sector is increasing every year (Fig.1); however, **there is a significant gap between salaries of those who work in education sector and the average salary in the country** (Fig. 2). The biggest difference in the last five years is between teachers in Riga and Latgale. As a result, in regions with lower average teachers' salary there is a smaller difference between the average wage in the country and the average wage in the education sector than in regions with higher average wages.

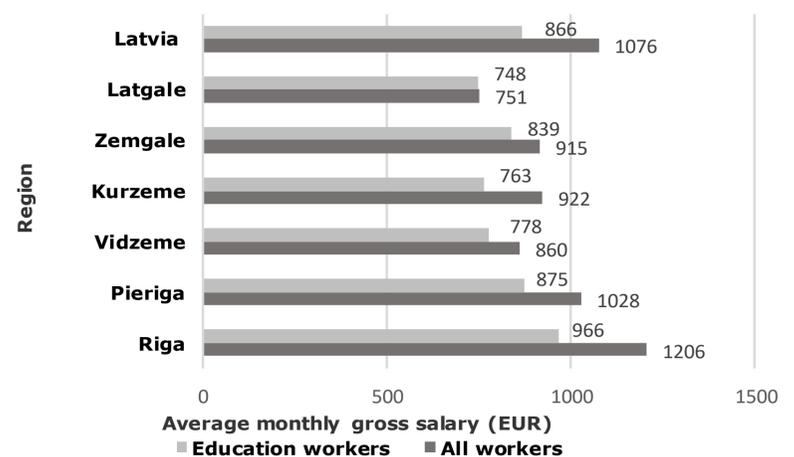


Fig. 2. Average monthly gross wages in statistical regions of Latvia in 2019, EUR

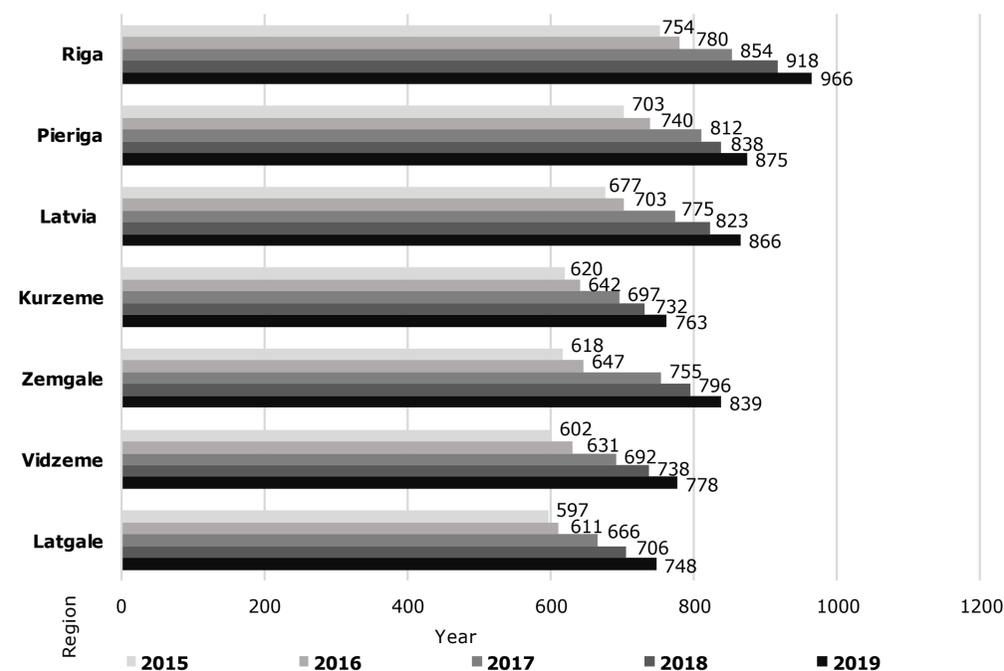


Fig. 1. Average monthly gross wages in education sector by regions in 2015-2019, EUR

Table 1
Number of municipalities in Latvia where preschool teachers work full-time, October 2019

Region	1.5 - 4 years old children		5 - 6 years old children	
	Number of municipalities	%	Number of municipalities	%
Riga city	1	100	1	100
Pieriga	15	52	16	55
Vidzeme	16	62	16	62
Kurzeme	6	30	7	35
Zemgale	14	64	17	77
Latgale	3	14	5	24
Latvia	48	40	29	24

Factors influencing salaries of pre-school teachers

- **Municipalities have different patterns of teacher workload organization in preschools.** The workload of pre-school teachers is the most important factor influencing wages. If there is a difference in the amount of workload, there is also a difference in the average monthly wage in the regions.
- **Municipalities are unable to provide full-time workload for teachers** (Table 1) and as a result, in Latgale region, unlike Pieriga region, the average monthly salary is below the minimum wage in almost all municipalities.
- **Preschool teachers have a limited right to equal pay for work of equal value** in different regions of Latvia.

Conclusions and proposals

1. In Latvia, the salaries of pre-school education teachers are three times lower than the OECD average, but their growth tendency is upward; however, lower than the average salary in Latvia. In regions with higher average monthly wages (in all sectors overall) there is a larger difference compared to the average monthly wage in education.
2. There are regional disparities in the provision of workload for pre-school teachers, leading to marked disparities in average monthly wages.
3. In order to reduce inequalities between regions in the provision of workloads and the corresponding wages for pre-school teachers, the funding of pre-school teachers' salaries should be provided from the state budget.
4. Reduction of inequality in pre-school education institutions requires improvement of the pre-school teacher remuneration model by reducing the proportion of hours with students and providing for a greater number of hours for class preparation.

Sources

1. Central Statistical Bureau. Retrieved: <http://www.csb.gov.lv/en/dati/data-23959.html> Access: 05.03.2020.
2. Council of Europe Development Bank (2017). Educational inequality in Europe: Tackling Inequalities in Europe: the Role of Social Investment. Retrieved: https://coebank.org/media/documents/Part_2-Inequality-Education_lowres.pdf Access: 05.03.2020.

**MUNICIPAL COASTAL GOVERNANCE SYSTEM DEVELOPMENTS IN LATVIA:
GOVERNANCE SEGMENTS, SECTORS AND PROCESS INSTRUMENTS**

Raimonds Ernsteins, Prof./Dr.habil.paed., Erika Lagzdina, M.Env.Sc., Ivars Kudrenickis, Asoc.prof./Dr.ing., Anita Lontone-levina, M.Env.Sc.
Environmental Science Dept., University of Latvia, Riga, Latvia

Abstract

Integrated coastal management (ICM) is still a challenge for **small size rural local communities** facing a range of obstacles for establishing and functioning of the municipal coastal governance (MCG). The paper summarizes **research-and-development (R&D)** study conducted in the Salacgriva rural coastal municipality within the international **BaltCoast** project “Systems Approach Framework (SAF) for Coastal Research and Management in the Baltic” (2015-2018), within **EU BONUS Programm and related National funding**. Project utilized known SAF methodology, combining this with also testing National Research grant **SUSTINNO project** (2014-2017) coastal R&D elaborations. Research results are complemented by the coastal science-policy interface related **recommendations**, e.g. to design MCG system proposal, based on governance segments, content and process dimensions; incl., governance instruments, esp. **collaborative communication instruments** - information, education, participation, coastal-friendly behavior; also **key preconditions – systems approach, complementarity and collaboration**; as well as **mixed ICM** applications in general.

Aim and tasks

R&D project aimed at studying existing coastal **governance process (structure & elements) of rural municipalities** in order to **develop locally feasible tools** for governance resources/capacities enhancement, using innovative for Latvian MCG approaches, building on the existing positive practice of both **top-down and bottom-up** general management elements in the piloting Salacgriva municipality. R&D study tasks were to explore main governance process problem issues both in the frame and each separately of all triple complementary governance dimensions - **governance content, process and stakeholders’ segments in order to study/recognize the key preconditions** for the MCG process functioning and building elements for MCG system.

Approaches, methods, frames

Applied System Approach Framework (SAF) methodology embodies approaches of **social-ecological system (SES)** and **stakeholder participation, being** adjusted to typical Latvia’ coastal circumstances. **Case study research (CSR)** was built on complementary sociological research methods: document/data banks studies, stakeholders mapping/interviews, summarized as **SWOT analysis (see below Tab.1.)**. The situation of **Salacgriva piloting coastal municipality** was evaluated within the context of expanding SES approach with detailed focusing on nature environment (incl. coastal, risk, utility and spatial environments) and other SD dimensions, incl. social, culture, economic, but **esp. governance & communication**. During studies was approved complex MCG content framework proposal, based on systemically integrated **costal governance content 4-dimensional model** - four basic governance sectors (dimensions/environments): Social-economic; Joint nature and culture heritage; Infrastructure; Governance and communication. **(see below Tab.2.)**

Results

Tab.1. Salacgriva coastal governance backgrounds: SWOT analysis

Strength	Weakness
<ul style="list-style-type: none"> Generally positive attitude of local people towards coast Different developed forms of local citizen self-organization Presence of local opinion leaders General interest of people in the coastal management improvement Awareness and support of people to the municipal Green Declaration Active municipal public relations Diversity and attractiveness of coast Absence of very urgent problems on the coast Gradual improvement of the coastal quality Close relation of local small business to the coast 	<ul style="list-style-type: none"> Underdeveloped citizen awareness and understanding about coastal problems Lack of sufficient coastal infrastructure Fragmentation of coastal problems and individual perceptions of different stakeholder Lack of main capacities, resources and also instruments for MCG Low locally active NGOs interest on the coastal problems Limited interest in public monitoring from both top-down and bottom-up perspective Locally designed projects seldom focus on coastal problem solving Limited enforcement for action of bottom-up elected, known, active Village Elders Low stakeholders’ interest in collaboration
Opportunities	Threats
<ul style="list-style-type: none"> Coastal behaviour and attendance improvement by national planning and funding on infrastructure and services Complex coastal science knowledge used for development planning and zoning Presence of the UNESCO Biosphere Reserve administration and active participation Information platforms and media for coastal information dissemination Disperse pollution loads reducing by environmentally sound business activities (eco-farming etc.) Availability of prototypes/standardized models for small-scale coastal infrastructure Inter-municipal planning and partnerships National level initiatives: Coastal public infrastructure planning policy (2016) 	<ul style="list-style-type: none"> Tourism flow reduction due to lower quality of coast resources and services Increased unregulated flow of coastal visitors Visitors behavior degrades coastal biotopes, worsening due to lack of management Increased coastal littering as a seasonal and limited infrastructure pressure Transboundary pollution pressures deteriorate bathing waters quality Increasing impacts of climate change (storms, floods, heat) Coastal erosion threatening coastal quality Limited fish stocks and invasive species causes reduction of the coastal fishery Restrictions for economic activities for statutory coastal zones

Tab.2. Municipal Coastal Governance Program Framework Guidelines: integrated sectors and related main work directions based on governance content 4-dimensional model

MCG sectors	Directions of action	Sub-directions of action
1. Coastal governance and communication environment	1.1. Governance environment 1.2. Communi-cation environment	1. Top-down governance 2. Bottom-up governance 3. Coastal integrated governance 4. Access to environmental/coastal information 5. Environmental/coastal education – formal, informal, life-long learning 6. Environmental/coastal participation 7. Pro-environmental/pro-sustainable coastal behavior
2. Coastal infrastructure environment (including spatial planning)	1. Technical environment (utilities) 2. Spatial environment 3. Coastal infrastructure environment	1. Water supply and sanitation compliance for all 2. Wastewater treatment and management of sewage sludge 3. Household waste management 4. Heat supply and air quality 5. Land management 6. Integrated in the environment public outdoor space 7. Climate change adaptation and risk governance 8. Built environment (Coastal Construction Guidelines) 9. Amelioration and non-depleting access to environment 10. Sanitary infrastructure 11. Climate change adaptation and risk governance: safe public infrastructure 12. Complete information infrastructure on nature guides, municipal services, destinations
3. Coastal socio-economical environment	1. Sustainable living environment 2. Environmental-friendly business	1. Social services 2. Education – support system for locally and visitors required skills/professions: 3. Environmentally friendly and Climate adaptive housing 4. Pro-environmental mobility 5. Environmentally and health friendly food (incl. seafood; local market) 6. Pro-environmental behavior in public space/environment 7. Development of local communities 8. Countryside, sea, forests, tourism, and ecotourism 9. Real estate management
4. Joint coastal nature and culture environment	4.1. Nature environment 4.2. Culture environment 4.3. Unified coastal heritage	1. Basis for coastal development – unity of natural and cultural values 2. Material heritage: home production, crafts 3. Intangible heritage (traditional festivals, events) 4. Cultural-historical monuments 5. United phenomena of nature and culture (history, ship building, sailors)

Conclusions

- R&D study done in coastal rural municipality of Salacgriva exploring existing coastal governance process problemsituation have been leading to more detailed understanding and following confirmation of succesfull applicability of **all triple complementary governance dimensions model**, both as the methodological governance research frame and as the eventual **framework for coastal governance system** design and development, subsequently, based on **governance content, governance process and governance stakeholders’ segments**.
- Main stakeholders and their MCG segments**. Interviews with representatives of all main municipal stakeholder groups, as well as studies of municipal documents, data resources and locally designed projects allowed to recognized **limited understanding** of the coast as complex socio-ecological system, week acknowledgement of the coastal problems and a lack of vision for sustainable use of the coastal resources, subsequently, **limited contribution to MCG**.
- MCG content**. Existing statutory and other planning and management documents do not fully represent neither coastal issues/resources, nor conceptualize coastal system development, e.g. **failing to reflect specificity and perspective of the coastal municipality**. Relatedly developed recomendations as **MCG Program Framework Guidelines** proposes SES governance approach, based on systemically integrated **costal governance content 4-dimensional model**, which could be recognized as pre-requisite for adequate MSG process planning and management.
- MSG process and instruments**. Wide range of existant general municipal development governance instruments are neither necessarily complementary nor does fully cover MCG issues. Recomendations include accordingly to replan/restructure all set of six main instrument groups and establish several MCG sector instruments, e.g. MCG monitoring and reporting. Coastal **collaborative communication** shall be based on complementarity of application of **all four main groups of communication instruments**.
- Application of mentioned governance research frame, but studying separately each of three governance dimensions are permitting to figure out and to make initial confirmation (also in the relation to the former studies done) on the three **basic pre-conditions** for the MCG process functioning and building elements for eventual MCG system: **systems approach, complementarity and collaboration**, however their further detailed studies have been planned for the next stage of BaltCoast project.

21th International Scientific Conference ECONOMIC SCIENCE FOR RURAL DEVELOPMENT 2020

12-15 May 2020, Jelgava, Latvia

LOCAL COASTAL GOVERNANCE ASSESSMENT DEVELOPMENT: COASTAL GOVERNANCE FRAMEWORK REPORTING

Raimonds Ernšteins, Dr.habil.paed./Prof.; Maija Štokmane, MSc.biol.; Artūrs Pudāns, BSc.env.sc.
Department of Environmental Science, University of Latvia, Riga, Latvia



Abstract

Coastal governance practice at the local level in Latvia has several shortages, including that the coastal municipalities **do not have sufficient coastal information and understanding**, integrative planning tradition and experience. The **case study research** suggest, that the municipality has only limited focus on the sustainable coastal governance – **there are underdeveloped integrated coastal management (ICM) approaches**, neither specially designed coastal planning/management system, nor developed ICM integration into development planning process and products.

Aim and tasks

To assess complex municipal environmental & coastal governance situation and develop action policy. Methodological coastal governance **analytical framework - structured all the triple complementary governance dimensions' system** - governance content, process and instruments stakeholders' segments (adopted for local governance level).

Materials and methods

The research methodology used for this Jurmala city model municipality case was **Case Study Research complex set of methods**, framed via **Research-and-Development approach**, to get complex system study and overview of temporary phenomenon – document studies, stakeholder interviews, coastal site observations. On that basis the preparation of the initial version of the **Jurmala Coastal Governance Report (CGS Report)** as pre/post planning document was carried out.

Results

The pilot and model territory chosen for the present study was the municipality of Jurmala city, being by its area as well as by the number of its inhabitants the largest resort city on the coast of the Baltic Sea visited by more than a hundred thousand tourists every year. The city, being just 20 km from Riga, the capital city of Latvia, actually, is located on a kind of narrow and long stretched peninsula. Besides, it is unique municipality in Latvia as being the only city in Latvia which: (1) has officially granted the status of a resort and (2) also the status of a healthy city, but, in the same time, threatened by anthropological pressure, what may lead to the loss of some unique coastal health and other resources, ecosystem services, and, also unique, coastal cultural-historical resources of Jurmala resort, being developed as early as in the beginning of 19th century.



Fig. 1. The general map of Jurmala city location at the Baltic Sea coast.

Jurmala as coastal and environmental sensitive municipality have been step-wise developing various environmental protection and management planning studies and documents incl. **municipal Environmental Policy Plan (2002)**, Sustainable Energetics' Program (2013), **Water Resources Protection Plan (2016)**, as well as coastal resort, tourism, river harbor etc. development plans, and also having several coastal issues related thematic studies, but also - still **limited information on the whole socio-ecological coastal complex system**, partial public collaboration, and, no ICM process and document.

Jurmala municipality has a particularly great responsibility for the conservation and sustainable use of the coastal multidimensional resources, especially in circumstances when the **integration version of ICM approach has been chosen**, which **requires a very high level of coordination of all management services and instruments**, without support of any thematic coastal assessment and/or planning document in the municipality and with limited purposeful systemic and systematic coastal management coordination instruments that would provide guidelines and supervision in approaching ICM.

Methodological analytical framework for coastal governance studies applied was detailed structured around all the **triple complementary governance dimensions' system - governance content, governance process** (incl. documents) **and its realization instruments as well as governance stakeholders' segments** (incl. their understanding and contribution) – adopted for local governance level (Ernšteins et.al., 2017b). The collaboration R&D planning with Jurmala municipality was oriented to **find out the main deficiencies** and subsequently develop recommendations for the improvement of the whole situation of the coastal governance, eventually designing coastal governance framework and process guidelines at the later stage of this study.

This initial **CG Report document** was designed and structured being based methodologically on those three main governances' dimensions' approach, but altogether in their **interlinked sectorial-integrative ICM complex frame**.

Relatedly the table of contents of the CG Report:

- Part 1.** An overall characterization of the municipality's sustainable development dimensions (7x as for further studies context);
- Part 2.** Development of the **coastal governance frame (CGF)**: The formal place and **integration of the CGF** in the overall development planning process and **statutory and other planning documents** of the municipality;
- Part 3.** Supervision/monitoring of the CGF: The elements of the **CGF monitoring system** within the formal municipality's planning documents and practice;
- Part 4.** **CG stakeholders** in the local area: Characterization of the interest groups and their governance;
- Part 5.** **CG content**: Characterization of all sectors and cross-sectors of social-ecological systems, their governance;
- Part 6.** **CG process**: Characterization of all main six groups of the coastal governance instruments;
- Part 7.** **Sectoral versus integrative development** of the CGF and **Recommendations** for planning and management documents.

Conclusions

1. Besides good number of coastal related planning, infrastructure etc. developments, incl. existing governance instruments and their application, not all aspects related with the coastal environment and its governance have been integrated within statutory planning (and/or voluntary) and, subsequently, municipal practice (incl. monitoring and stakeholders collaborations) - **coastal governance is comparatively limitedly integrated into municipal development governance**.
2. Taking into account mentioned and known context of **overall limited municipal coastal governance in Latvia**, it could be recommended to consider and to elaborate **coastal governance framework** (eventually, system) as minimum as network of all main and to be complementary coastal oriented governance **instrument groups – policy and legislation, institutional and administrative, planning, infrastructure, economic-financial, communication and collaboration**.
3. Piloting of innovative in Latvia municipal coastal pre-/post- planning document, the **Municipal Environmental Governance Report**, there was recognized that its design based on the **three governance dimensions – coastal governance sectors, governance segments and governance instruments** – is comparatively easy to be understood and utilized by all main stakeholder groups as utmost necessary for coastal governance development, since answering those three main everyday practice based questions regarding the coastal governance: **What, How and by Whom system based coastal governance is to be realized**.

21st International Scientific Conference
ECONOMIC SCIENCE FOR RURAL DEVELOPMENT 2020

12-15 May 2020, Jelgava, Latvia

THEORETICAL ASPECTS OF REMUNERATION AND PERFORMANCE IN THE CONTEXT OF PROVIDING GENERAL EDUCATION IN THE CONDITIONS OF LATVIA REGIONAL DISPARITIES

Ilze Prizevoite, Mg. oec.; Gunta Grinberga-Zalite, Dr. oec.

Latvia University of Life Sciences and Technologies



Abstract

Ensuring a consistently high level of education performance across Latvia is difficult because the current funding arrangements do not provide equal opportunities to pay for all teacher responsibilities in regional and urban schools. As a result, teachers' performance may vary. The article introduces the key elements between remuneration and performance. Remuneration is defined as a motivating factor for employees and the organization

Aim

The aim is to investigate the theoretical aspects of remuneration and to identify performance determinants

Tasks

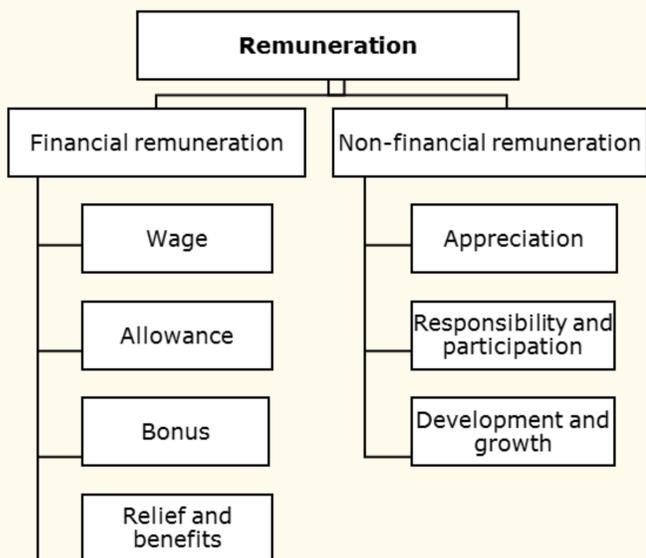
1) to characterize the financial and non-financial dimension of remuneration; 2) to explore the theoretical basis of performance; 3) to explore the relationship between remuneration and performance

Materials and methods

(1) **monographic or descriptive method**, the application of which helped to find a detailed idea of the problem under investigation from a theoretical viewpoint, based on a broad review of scientific literature; (2) **graphic method** - using graphical method helped to clearly and efficiently reveal object's relationships and dynamics; (3) **method of synthesis and analysis** - separate elements of the object under investigation were connected in a single system by studying their interrelations

Results

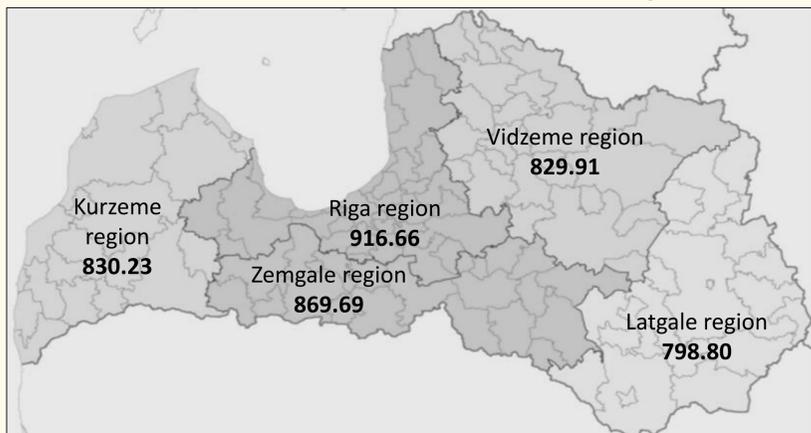
1. The financial and non-financial dimensions of remuneration



Source: Authors' authors' illustration

Fig. 1. Remuneration system

2. Motivation and the link between remuneration and performance



Source: Authors' calculations based on VIIS data

Fig. 2. The average salary of teachers per one pedagogical rate in general education institutions in the planning regions of Latvia in 2019/20, EUR

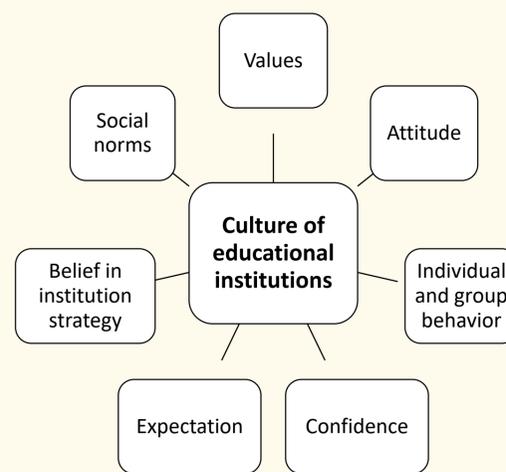
Table 1
 Salaries of two Latvian language teachers in different local schools representing the same county 2019/20

Tariffication	Smiltene secondary school	Bilka primary school
Contact hours (lessons)	21	21
Correction of student's works/papers	4	1
Preparation for lessons	4	0
Consultations	4	0
Total workload:	33	22
Salary per rate, EUR:	942.87	796.40
Total salary, EUR:	1037.16	584.03
Difference, EUR:	453.13	

Source: Authors' calculations based on VIIS data

Given the current model of teacher funding «Money follows the student» the authors believe that the equity theory plays an important role in the relationship between remuneration and performance.

3. Organizational culture and politics



Source: Authors' authors' illustration

Fig. 3. Cultural elements of educational institutions

The political environment is also observed in Latvian educational institutions. 16% (n = 854) of teachers of general education institutions in the regions of Latvia believe that the tariffication process is not carried out objectively (Prizevoite I., 2013)

Conclusion

- The study of theoretical sources has shown that remuneration and salaries have different meanings. Salaries are financial remuneration paid to an employee in monetary terms, while remuneration have a broader meaning. Remuneration consists of both financial remuneration and the moral incentives of the employer (appreciation, praise, trust) - non-financial remuneration.
- Remuneration is closely linked to performance and that this relationship is formed through motivation. Remuneration is considered an element of motivation that generates specific behaviours related to performance. The theory also recognizes the potential impact of an organization's cultural and political environment, as well as the fact that the level of skills and knowledge influences the performance level. However, according to this study, it is assumed that the level of skills and knowledge of teachers is neutral. In this paper, the explanatory power of the theoretical framework was used to test the relationship between remuneration and performance in relation to teachers in general education in Latvia.
- The current payroll financing model for teachers in Latvia creates a situation where teachers with the same workload have different wage per one pedagogical rate – the average teacher pay gap in the regions is up to 15 percent and different hours for extra work, which is a particular problem in rural schools. As a result, teachers' performance in different regions of Latvia may vary. This highlights the need for the Ministry of Education and Science to review funding arrangements for low-achieving educational institutions and to conduct research to determine whether remuneration is a key driver of performance.

MODERNIZATION, INNOVATION AND EFFICIENCY OF AGRI-FOOD INDUSTRY IN THE REGIONAL DEVELOPMENT OF SLOVAKIA

Izabela Adamickova; Barbora Begerova; Henrietta Nagy; Jan Lajda; Peter Bielik
 Department of Economics, Slovak University of Agriculture in Nitra, Slovak Republic
 Tomori Pál College Hungary

Abstract

Increasing competitiveness in the Slovak market for agricultural and food products has necessitated an acceleration of the structural development of agricultural holdings and improved conditions of production and product quality. It has contributed to a more balanced regional development of rural areas in small and medium-sized enterprises. However, enterprises, particularly in the agricultural sector, are still characterized by lack of innovation demand, poor motivation and awareness of enterprises to transfer to the latest technologies.

Aim

Our aim in this paper was to reflect on the recent approach by businesses to investments in innovative developments.

Tasks

To examine if growth of fast-growing trees contributes to strengthening the economic dimension of sustainable rural development.

Materials and methods

The main aim of this article is to investigate impacts of producing biogas via anaerobic digestion on agriculture sector in Slovakia. Data were used from Green reports, Agriculture and Food Sector SR and individual research. Net present value (NPV) was used as valuation criteria in order to forecast economic viability of biogas plants. NPV determines the present value of an investment and represents sum of estimated future cash flows in today's value of money.

Results

The boom in biogas industry development in Slovakia started in 2010 when 11 new BGPs were launched with total electric capacity of 10,3 MWh. The trend was continually increasing, with an increase of 26 BGPs in 2011, 30 BGPs in 2012 and 41 BGPs in 2013. In 2014, the development suddenly stopped at total number of 110 BGPs and 103.5 MWh total electric capacity. To forecast economic viability of biogas sector NPV tool was used. The model of a biogas plant was constructed in the way so that it represents as many BGPs in Slovakia as possible and contains general similarities. The scenario does not count with any other income than the one from sale of electricity and only one single input is used. Some BGPs benefit from using different types of inputs that are less costly than corn silage even though they may not be as effective as the corn silage or there are also options of selling heat and fertilizers; however, these investments are costly and extremely difficult to generalize. One of the most criticized weak spots of the payback period tool is the fact that it does not consider time value of money. To overcome this drawback, payback period was calculated also based on discounted cash flow. The result is very similar to the previous one and it estimates 10 years for the investments to be recovered. The following years will show how biogas sector in Slovakia will develop under current legislation and support system; however, one of the main drawbacks – silage maize as the main input, is still not regulated by legislation. Structure of subsidies depending on input material may work out this problem. According to the indicators, the net present value as well as the payback period, the biogas plant is in good economic condition and thus the overall biogas sector in Slovakia is stable with positive financial and economic benefits for anaerobic digestion (AD) farms. On the other hand, the accuracy of the analysis depends particularly on the accuracy of the forecasting of the price of corn silage.

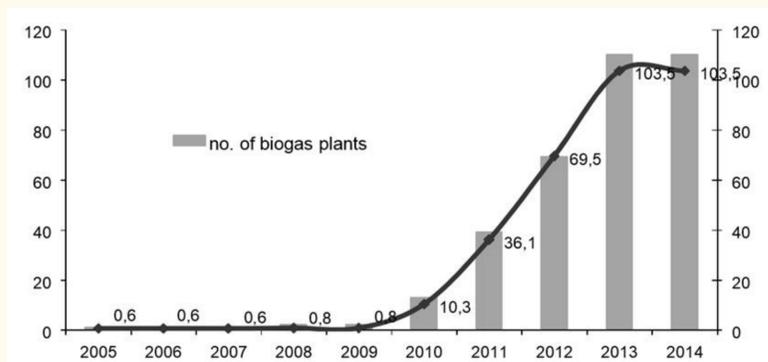


Fig. 1. Development of biogas industry in Slovakia for years 2005 – 2014

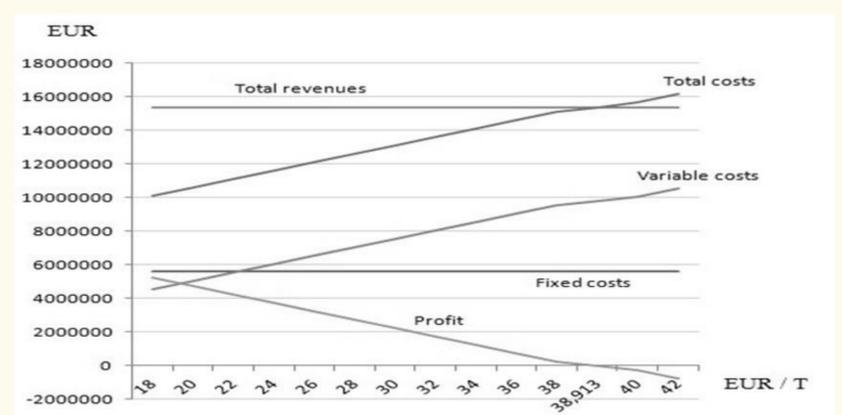


Fig. 2. Profitability of BGPs in Slovakia at different prices of maize silage

Conclusion

1. Innovation possibilities of farmers in Slovakia are mainly concentrated on the production of biomass serving for renewable energy sources.
2. The net present value of the investment is positive, which confirms the economic efficiency of the project in which is worth investing. The payback period is estimated at 10 years, even at discounted cash flow.
3. It is necessary to adapt the legislative environment of business in this area, as well as the tools of subsidy policy, to support wider use of anaerobic technology through biogas stations (BPS) for electricity production.

Acknowledgements