

ИНСТИТУТ ЗА ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ ПРИ БАН

ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ

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SOCIAL ENTREPRENEURSHIP IN BULGARIA

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ИНСТИТУТ ЗА ИКОНОМИЧЕСКИ ИЗСЛЕДВАНИЯ НА БЪЛГАРСКАТА АКАДЕМИЯ НА НАУКИТЕ
**ИКОНОМИЧЕСКИ
ИЗСЛЕДВАНИЯ**
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POTENTIAL OF SUSTAINABLE REGIONAL DEVELOPMENT IN VIEW OF SMART SPECIALISATION

Potential of sustainable regional development is studied through demographic, economic, social, socio-cultural and ecological indicators in order to determine the strategy development areas of regional SMART specialisation on the example of Cherkasy oblast (the central region of Ukraine).

Cherkasy oblast was selected for the study because it is one of the pilot regions for the implementation of the SMART specialisation strategies.

The following methods were used in the course of the study: the system-structure analysis, comparative-geographic method, mapping (GIS – MapInfo Professional, Surfer Golden Software, and program for gravity modelling of the potential field calculation), interpolation, correlation and description-statistical method.

The results of the study are intended for national and regional policy-makers, representatives of self-governance, researchers dealing with regional development problems, NGOs, representatives of small and medium business, public activists and others.

The proposed results of the study of the sustainable regional development potential in view of SMART specialisation on the example of Cherkassy oblast may be used in the countries of the Eastern Partnership (Belarus, Georgia, Moldova, Azerbaijan, Armenia).

JEL: M14; M15; G21

1. Introduction

Modern tendencies of innovation development are characterized by their ecological nature due to opportunities of achieving sustainable development. Achieving the regional sustainable development means overcoming regional disparities caused by environmental damage and deep crises due to poverty and gender inequality, unemployment, etc., as well

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as preserving the environmental, economic, social and socio-cultural benefits for the future generations. Regional innovation policy (SMART specialisation of the region) can become a key element for achieving the sustainable development goals of the region. To this end, in our opinion, it is necessary to study the potential of sustainable regional development in order to identify the territorial disparities and thereby to determine areas for implementation of the SMART specialisation strategy in each separate district of the region, depending on the specificity of the identified territorial problems. This publication reviews the internal territorial problems of the region and indicators of ecological, economic, social and socio-cultural development of the Cherkasy region. The identified territorial problems require urgent solutions for equalizing the regional situation. Implementation of the SMART specialisation strategies is one of the effective methods for improving the acute socio-ecological and economic problems in the region.

The aim is to study the regional aspects of building the sustainable development potential of the region as a prerequisite for developing SMART specialisation regional strategies on the example of Cherkassy oblast.

2. Literature Review

With the steady growth of the importance of regions in the world, scientists do not yet have a consistent approach to the regional development concept. Regional development is characterized by the continuity and irreversibility, transformation of capital and accumulation of new values. Sustainable development characterized by balancing in the economic, ecological and social spheres of the region is one of the regional development concepts. Implementation of the sustainable development concept in the regional development management provides dynamic balanced nature management process and preservation of valuable resources for future generations (Bedrunka, 2020, p. 11-18).

It is difficult to measure sustainable development with one characteristic because of its multidimensional nature. In the period from 2003 to 2013 sustainability of sixteen regions of Poland was assessed on the basis of three components: social, economic and environmental. This allowed identifying the internal structure of sustainable development, as well as externalities affecting the region. This analysis allowed classifying the regions and identifying territorial disparities in the regional development in Poland (Cieślak, 2019, pp. 565-575).

Potential of the sustainable regional development is studied for achieving the goals of sustainable development, in particular, poverty reduction. Diversification of crops is a cost-effective way to reduce the uncertainty of farmers' incomes. While implementing the concept of sustainable development in combating poverty in the agrarian regions, it is necessary to consider gender equality, food security, as well as climate vulnerability (Feliciano, 2019).

One of the approaches to achieving sustainable development is based on SMART specialisation. SMART specialisation of rural regions is very important for the balanced, sustainable development of the state. This was confirmed by the research in 19 districts of

Latvia. The quantitative assessment included the differences in the development of the regions in Latvia. This allowed finding the integrated index of smart development based on four indicators: resources, population, economy and management. The qualitative assessment was based on the results of an expert survey among the population and representatives of the government and business. The research findings reveal SMART-specific activities, which allow implementing the sustainable development concept in rural areas, taking into account socio-economic development and territorial differences in the regions (Šipilova, 2017, pp. 82-105).

Natural resources, human resources, goods and technology are unconditional factors of economic growth. However, innovation is yet another evident factor of economic growth, providing opportunities. This should be taken into account in the regions trying to overcome the crisis (Kreslins, 2016).

The SMART specialisation is an approach of the European Union to achieve sustainable regional development. It involves close cooperation and dialogue between government, business, science and community, as well as a shared vision of the region's economic, innovative and scientific potential (Brzóška, 2012).

The issues of SMART specialisation are not the focus of only EU officials. This concept is presented in the works of Ya. Bzhuska, I Pick, P. David, D. Frey, B. Hol, M. Cardas, and G. Tobor including attempts to use it.

The SMART specialisation strategy is the subject of discussion of the innovation policy and regional innovation systems. It is also an instrument of innovation policy for the growth of competitiveness and economic development in the region (Asheim, 2019, pp. 8-25).

The research discovered that the creation of food industry centres based on the SMART specialisation could be beneficial for the regional economic development in Australia (Esposito, 2019).

This article presents the organizational and institutional features of SMART specialisation development. It is discovered that in the course of SMART specialisation strategy implementation problems can arise in various regions from less developed, medium and to advanced. It has been found that SMART specialisation in less developed regions focuses on the policy of learning, and in the more developed ones – on the policy of reorientation and transformation of the regional systems (Tripl, 2019).

Approaches to the SMART specialisation strategy are used in the cohesion policy of the European Union for the period of 2014-2020. This experience is a unique example of industrial policy in the modernization of the industrial sectors (Foray, 2018, pp. 1505-1520).

The study is aimed at identifying factors that best explain the effectiveness of regional innovation. Linear regressions as statistical methods are used for developing methodology. As a result, regions are divided into innovative, strong, medium and weak. Activities for improving innovation interventions in these regions are proposed (Farinha, 2018, pp. 2114-2124).

The study analyzes shortcomings in approaches to SMART specialisation. They are traced in the regional innovation systems existing in the European policy. There is a number of unsolved problems that can negatively affect the innovation policy. This is important for policy officials operating in the multilevel governance systems. The SMART specialisation can be used in different regions, but it is important to understand what challenges and problems will face the policymakers in this area (Pugh, 2018, pp. 530-547).

The SMART specialisation is very difficult to categorize because of its multidimensional nature. However, Poland has identified regional SMART specialisation within the internal potentials of the regions. In total, 81 SMART specialisations were identified. The SMART specialisation study is based on the endogenous potential of the regions. The regional policy should strengthen the competitive industries. However, SMART specialisation strategies are often aimed at supporting underdeveloped or emerging sectors of the economy (Banski, 2018, p. 5-30).

SMART specialisation makes it possible to overcome structural deficiencies in the European social market economy. This is stated in the Europe 2020 Strategy agenda. Also, this agenda specifies the importance of determining the key areas of the resource regions and their readiness for SMART specialisation. Due to cluster analysis, it is found that the developed regions are ready for SMART specialisation by attracting investments into the private sector. Regions of the second type are ready only for public-private partnership. Regions of the third type require state support for increasing investment attractiveness before implementing SMART specialisation (Eder, 2017, pp. 727-734).

Universities and research institutions are drivers of innovation development in the regions. However, they do not pay enough attention to SMART specialisation strategies (Vallance, 2018, pp. 219-238). Using the potential of universities can successfully affect the economy of the remote regions. The role of universities in the regional development is increasing with the actualization of SMART specialisation in the EU (Kempton, 2015, pp. 489-496). Research institutions, as well as educational institutions, play a crucial role in promoting the economic and technological development of the regions. Today knowledge plays a very important role in regional innovation processes. The transfer of knowledge from research institutions to local communities in the social, economic and environmental aspects remains important. Human capital is a major factor in the regional innovation. Innovation is not only a technology but also a change in the human lifestyle (Koprivsek, 2017, pp. 117-135).

When implementing the SMART specialisation strategy, the regions are required to identify the unique regional features for gaining competitive advantages. Material, social and intellectual assets concentrated in the industry and universities are the foundation for SMART specialisation (Knop, 2016, pp. 1876-1882).

The SMART specialisation strategy involves identifying links between technological areas in the region. This is necessary to identify the related industries in the region and to form regional ties with other regions (Iacobucci, 2016, pp. 5-28).

For several years, key issues in the implementation of SMART specialisation in the European Union focused on supporting entrepreneurship (Mäenpää, 2018, p. 20). The study

of urban areas revealed that companies operating on the basis of SMART specialisation have positive performance indicators. However, a positive effect of SMART specialisation on the company performance was observed not in all regions. Positive developments are typical for highly urbanized regions (Nilsson, 2017, pp. 153-174).

Business development is needed to maintain the balance of regional systems. It provides people with jobs and maintains optimal living standard in the region. However, there are a number of barriers for initiating businesses based on high technology of the fourth industrial revolution. Ineffective state support is the main barrier to the development of innovation business. Recommendations were developed for improving the condition of small and medium enterprises in Ukraine (Antoniuk, 2017).

Economic conditions are different in every region. Therefore, every region has its specifics of implementing SMART specialisation strategy. The success of implementing the SMART specialisation strategy depends on the relationship between the local and regional governance (Philip McCann, 2014, p.409-427).

Implementation of the SMART specialisation policy allows eliminating a number of disadvantages of the territorial planning, in particular, achieving balanced territorial development (Polishchuk, 2019).

3. Methodology Data description

The need in identifying the scope of sustainable development potential is relevant for all areas of life, society and all subject areas. However, currently in Ukraine, such areas as the industrial sector, nature-resource sector, innovation, information, structural changes, energy efficiency and economic security are of the top priority (Alymov, 2014).

In order to unify the activities of the regions, the European Commission has developed the manual of RIS 3 Guide (David, 2007). We tried to offer recommendations on the implementation of the SMART specialisation strategy based on the study of the potential of sustainable regional development.

In developing SMART specialisation strategies in the region, it is necessary to understand the territorial differentiation of the potential for sustainable regional development.

Objective assessment of the potential of sustainable development of the oblast region included two main stages: a selection of statistical information and rating assessment of the potential components of the sustainable regional development (Pokliatskyi, 2016).

Statistical information was selected and systematized from the data of the Main Department of Statistics in Cherkasy oblast for 2017-2018. The relevant statistical information was organized according to the following subsystems: economic, social, ecological, socio-cultural and demographic potential.

The economic subsystem included 8 indices characterizing production potential, small business, export-import potential, investment attractiveness and incomes of the population.

The social sphere of the districts of the Cherkasy oblast was evaluated by 9 indices, characterizing such areas as consumption of goods and services, provision of housing to population, housing improvement and public utility services, education infrastructure, situation in the labour market and public health status.

The ecological situation was assessed by four indices characterizing the level of air pollution, the waste management situation and a contamination level of water bodies.

Socio-cultural component included six main indices characterizing the state of infrastructure and tourism, criminal level and family well-being.

The demographic potential was assessed by five indices characterizing population density, natural and migratory population movement, gender-age harmony, economic activity and working capacity of the population.

These indices were used to rate components of the sustainable development potential. As there are many indices pertaining to the components of the sustainable development potential, and they have different dimensionalities, the first step of the methodology is to perform their preliminary rationing (bringing into a similar form). As a result of sequence scaling the districts receive weighting factors from 0 to 1 with dimensionality 0.05 and are sequenced from 1 to 20 for indicators-incentives and in a reverse order for indicators-disincentives.

Each group of indices was divided into five subgroups with high, upper-middle, middle, lower-middle and low indicators. Reducing these indicators into indices allowed estimating situation of the districts in comparison to each other in the oblast region.

Indices of every component of sustainable development potential were calculated as follows:

Index of a favourable economic situation:

$$I_{\text{econ}} = (I_1 + I_2 + I_3 + I_4 + I_5) / 5 \quad (1)$$

where I_1 is an index of production potential; I_2 is an index of export-import potential, I_3 is an index of small business development; I_4 is an index of investment attractiveness; I_5 is an index of population income level;

Index of social sphere development:

$$I_{\text{social}} = (I_1 + I_2 + I_3 + I_4 + I_5 + I_6) / 6 \quad (2)$$

where I_1 is an index of goods and services consumption; I_2 is an index of housing provision to population; I_3 is an index of housing improvement and public utility services; I_4 is an index of education infrastructure; I_5 is an index of public health status; I_6 is an index of situation in the labour market;

Index of favourable socio-cultural development of the population:

$$I_{\text{culture}} = (I_1 + I_2 + I_3) / 3 \quad (3)$$

where I_1 is an index of infrastructure and tourism state; I_2 is an index of family well-being; I_3 is an index of criminal level;

Index of a favourable ecological situation:

$$I_{\text{ecology}} = (I_1 + I_2 + I_3) / 3 \quad (4)$$

where I_1 is an index of air pollution level; I_2 is an index of waste management situation; I_3 is an index of contamination level of water bodies;

Index of demographic potential:

$$I_{\text{demography}} = (I_1 + I_2 + I_3 + I_4) / 4 \quad (5)$$

where I_1 is an index of population density in districts; I_2 is an index of natural and migratory population movement; I_3 is an index of gender-age harmony; I_4 is an index of economic activity and working capacity of the population.

The results of calculations of these indices demonstrate that by quantitative parameters, the districts of the Cherkasy oblast are located in each of the subsystems in the order of favourable level increase (decrease). The integral indices of the sustainable development potential reflect the objective assessment of the potential of sustainable development, according to official statistics.

However, the regional study involves spatial analysis of expanding the phenomena in the region. Therefore, regional indices of the localization of socio-economic phenomena were used, and corresponding mapping diagrams were plotted.

For example, the index of localization of sales volumes (goods, services) was calculated as follows:

$$I_{\text{local}} = (X_i/X_j) / (Y_i/Y_j), \quad (6)$$

where X_i is sales volumes in district i located in the oblast region j ; X_j is sales volumes in the oblast region j ; Y_i is the population size of district i located in the oblast region j ; Y_j is the population size of the oblast region j .

Other indices were calculated in the same manner. Mapping method was used to visualize the results obtained for Cherkassy oblast districts.

The gravity modelling method was used to design mapping interpolation of index values for 20 districts according to the demographic potential index.

4. Research Results

The demographic potential is a set of population characteristics necessary for its reproduction. The natural movement of demographic potential is changed with a change in social conditions.

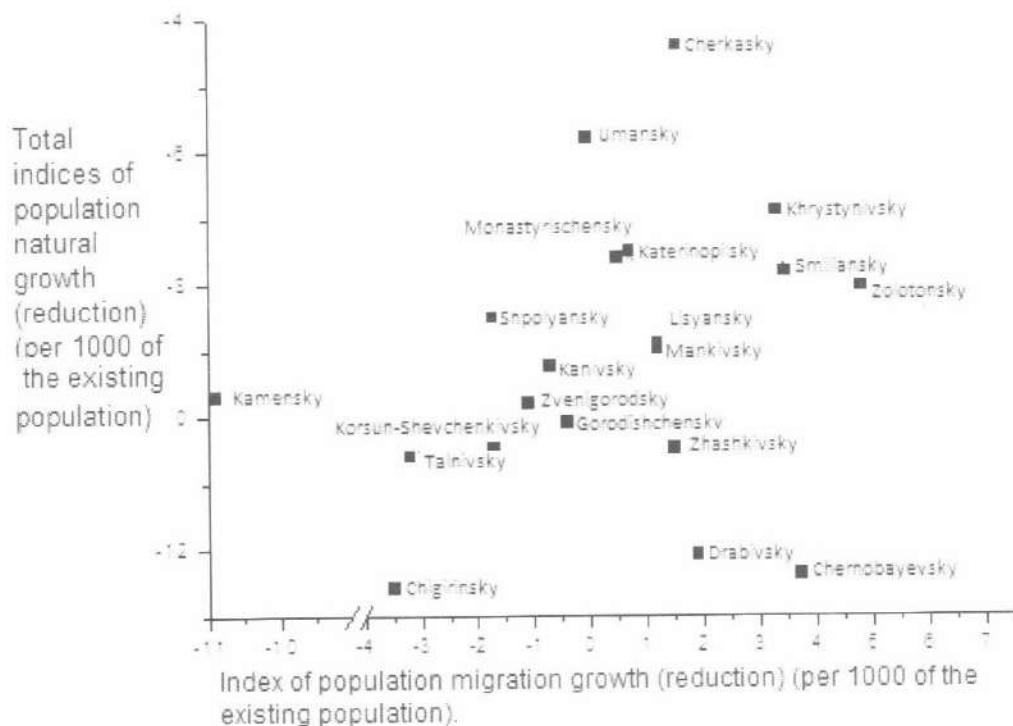
The integral index of demographic potential was calculated by the following indices:

- population density index calculated by the population size available as of January 1, 2018;

- index of natural and migratory population movement calculated on the basis of general coefficients of the natural population growth (reduction) and coefficients of migration growth (reduction) of the population (per 1000 of the existing population) in 2017. The areas of Cherkassy, Umansky, Khrystynivsky, Smiliansky, Katerinopolsky, Monastyryshchensky and Zolotonsk districts are most dynamic by these indices (Fig. 1);
- index of gender-age harmony includes the male to female sex ratio (per 1000 persons) in 2018;
- index of the population economic activity and working capacity calculated by the average population age in 2018.

Figure 1

Natural and migratory population movement in Cherkasy oblast, 2017 (according to the data of the Main Department of Statistics in Cherkasy Oblast)



The gravity model of the demographic potential field (Fig. 2, Fig. 3) shows the available regional centres as growing centres of attraction, which are the cities of Cherkasy, Smila, Uman, Zvenigorodka and Vatutine.

Figure 2
The gravity model of the field of the demographic potential of Cherkasy region, 2017
(according to the data of the Main Department of Statistics in Cherkassy Oblast)

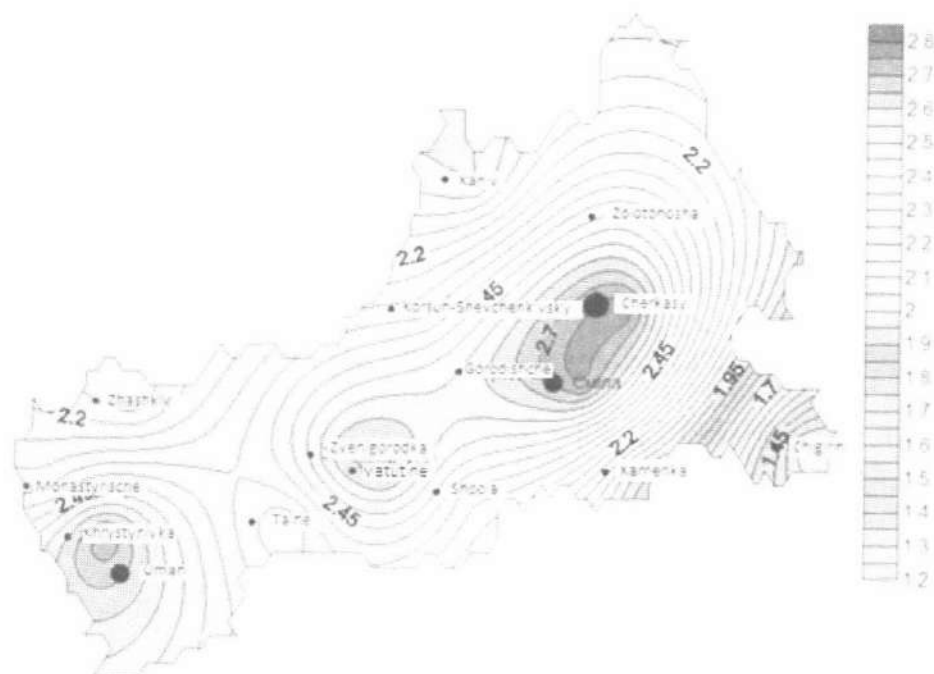
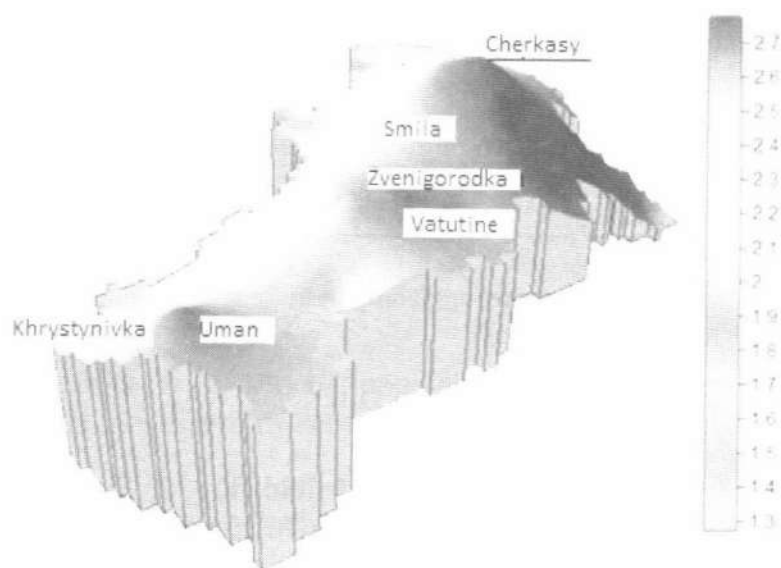


Figure 3
The three-dimensional gravity model of the field of the demographic potential of Cherkasy oblast, 2017 (according to the data of the Main Department of Statistics in the Cherkasy Oblast)



4.1. Economic subsystem

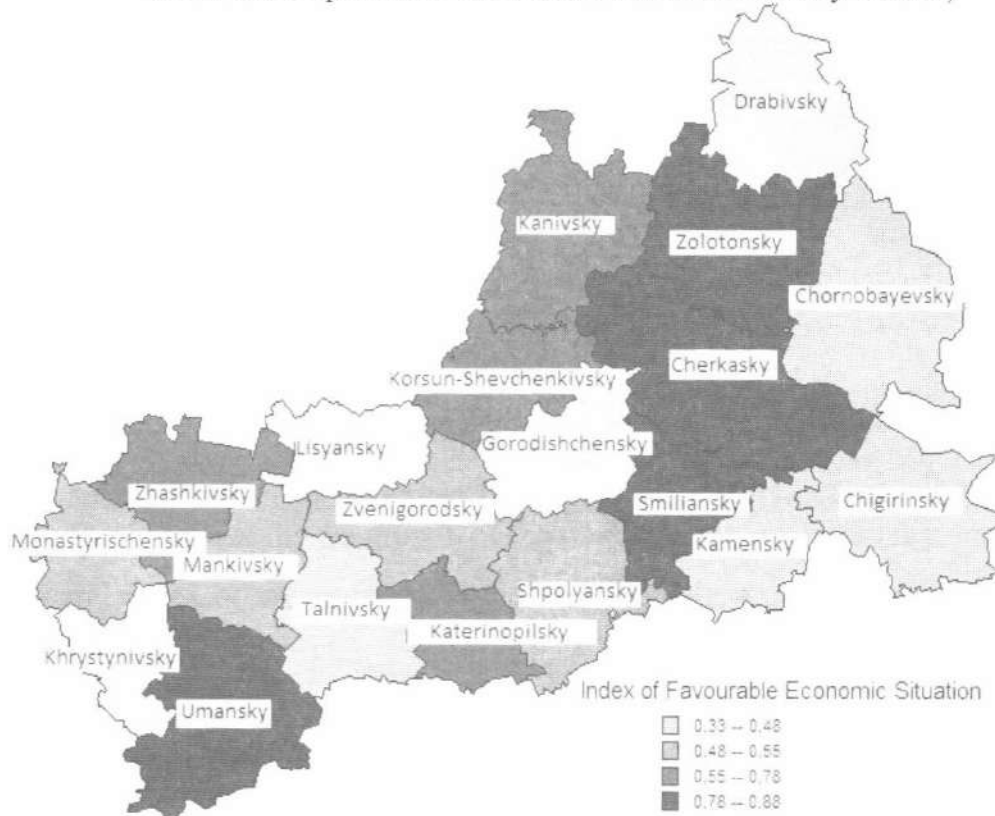
The economic component of the sustainable development potential of the region is revealed through indices reflecting the economic conditions of the population, development of the social sphere and the capacity to meet the needs of the population (Pokliatskyi, 2016). In order to display the economic component, the following indices were selected:

- index of production potential calculated by the sales volumes (goods and services) in 2018 (millions UAH), the number of legal persons and economic entities in 2018;
- small business index (the number of small businesses in 2018);
- export-import potential index (export and import of goods and services (millions USD));
- investment attractiveness index (investment in fixed assets, thou UAH);
- population income index (average monthly nominal wage of full-time staff, UAH)

The highest values of the index of the economic component are observed in Cherkassy, Zolotonsky, Smiliansky, Kanivsky, Korsun-Shevchenkivsky, Zhashkivsky and Umansky districts. Three leading districts are Cherkasky, Smelyansky and Zolotonosky (Figure 4).

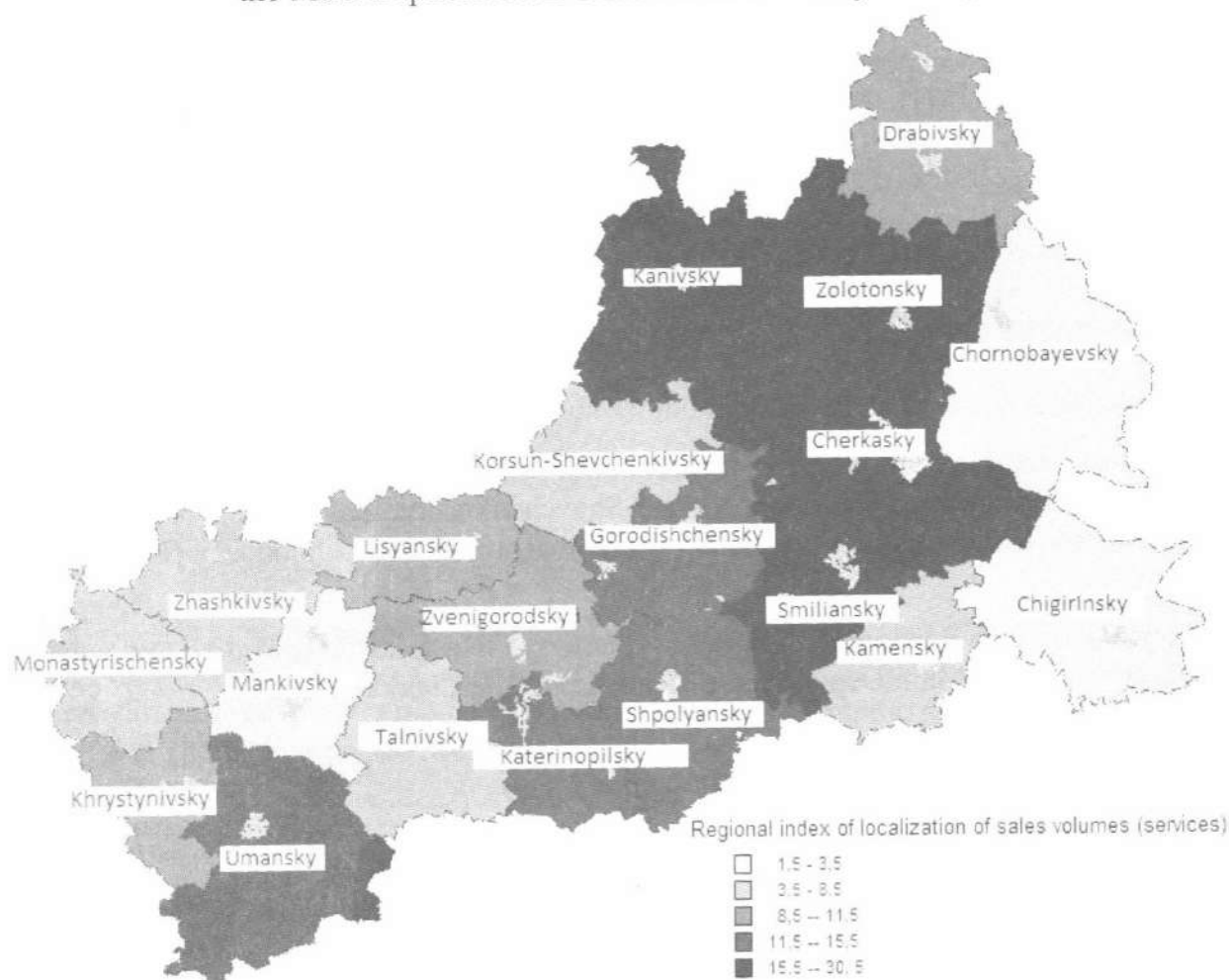
Figure 4

Index of Favourable Economic Situation in Cherkasy Oblast, 2017 (according to the data of the Main Department of Statistics in the Cherkasy Oblast)



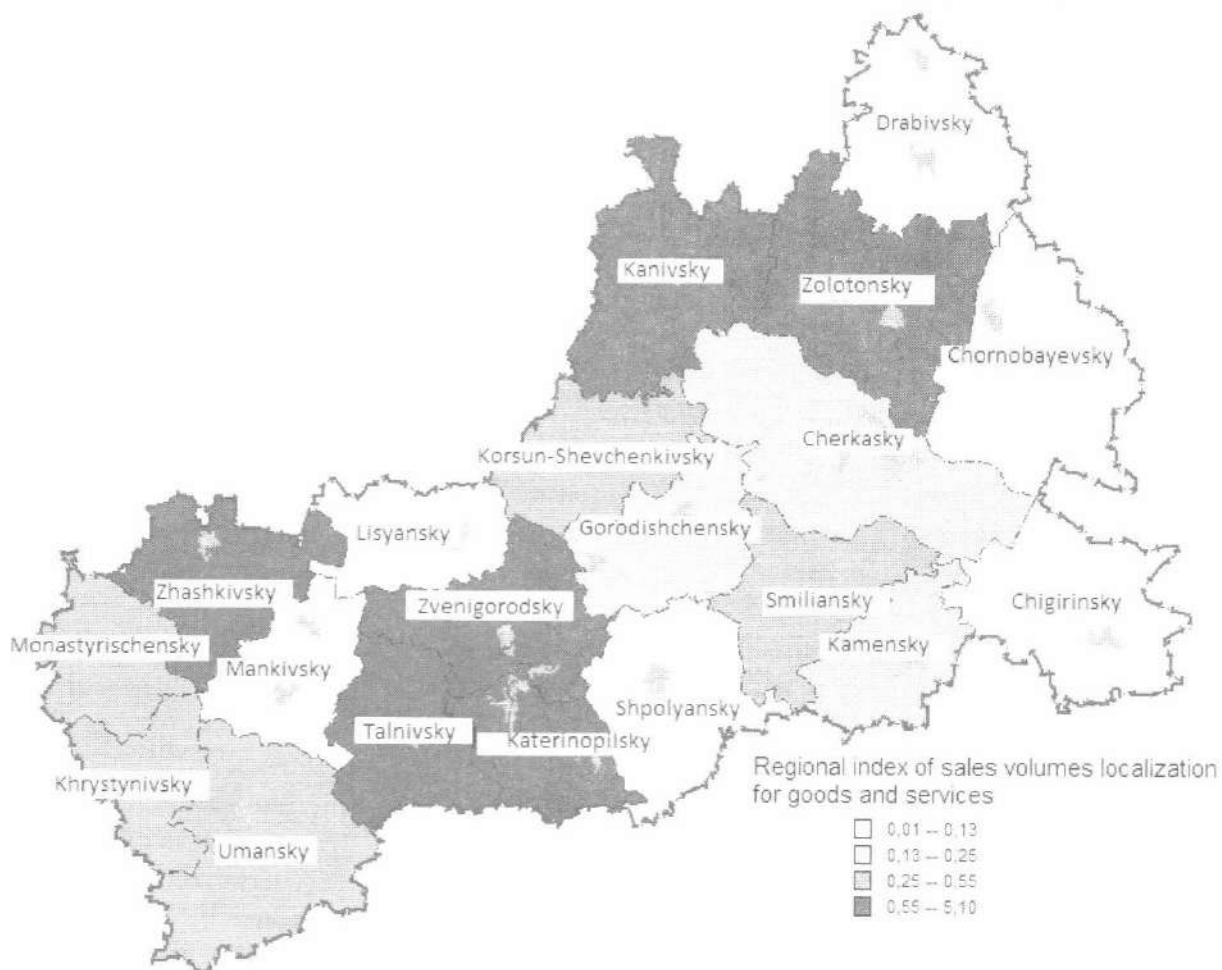
The index of localization of sales volumes of services has similar values for these regions (Fig. 5)

Figure 5
Regional index of localization of sales volumes (services), 2017 (according to the data of the Main Department of Statistics in Cherkasy Oblast)



At the same time, the localization index of sales volumes of industrial products has inverse values: districts with low values of the previous index of sales volume of services to population have high values of this index (Fig. 6)

Figure 6
Regional index of sales volumes localization for goods and services, 2017 (according to the data of the Main Department of Statistics in Cherkasy Oblast)



4.2. Social subsystem

Human capital is a major factor in regional innovations. Innovations are not only technologies but also a change in people's lifestyle (Koprivsek, 2017, pp. 117-135).

Human capital, as the main resource of society, cannot fully develop without social sphere, which in fact is crucial for the growth of the potential of sustainable regional development.

The integral index of the situation in the social sphere was calculated on the basis of the following indices:

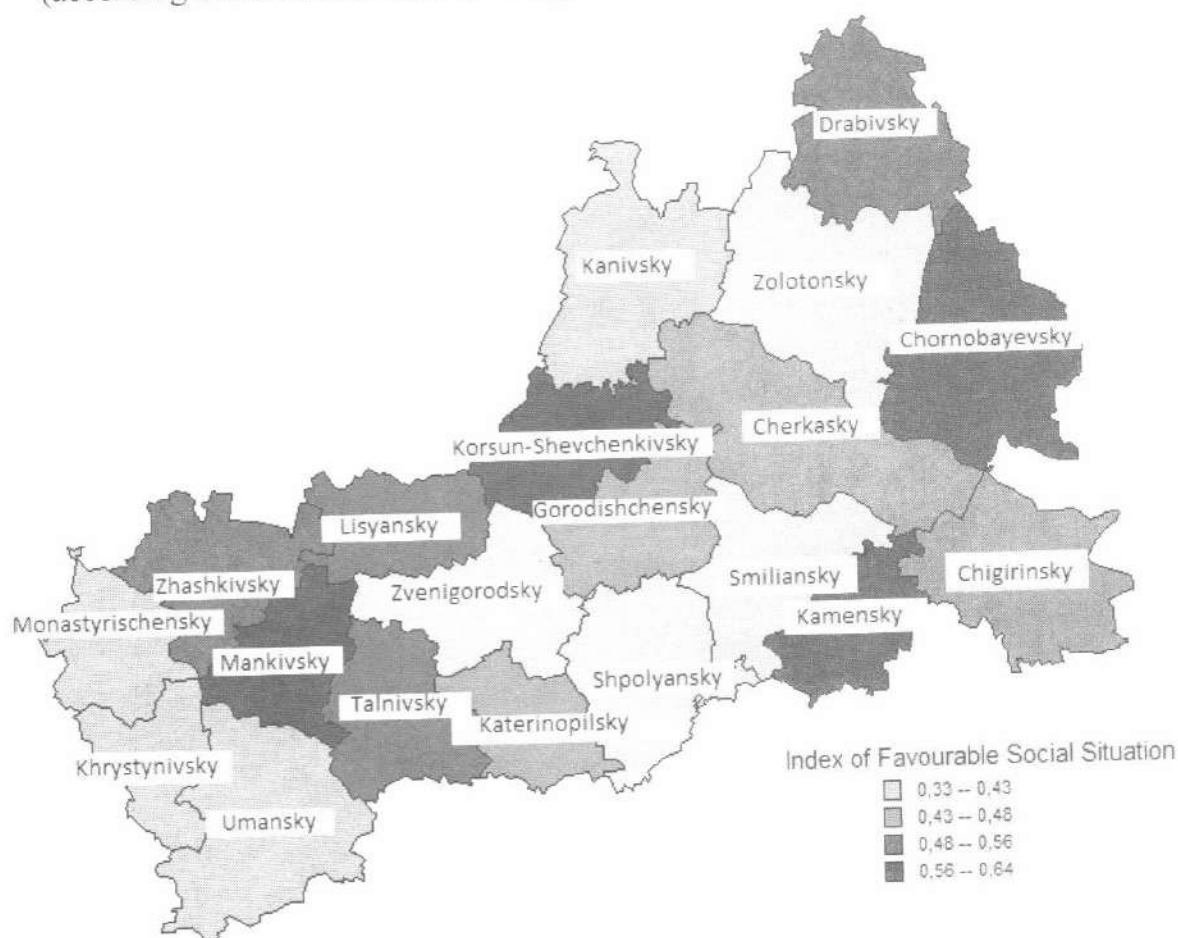
- index of consumption of goods and services, which characterizes the living standard of the population and ability of the residents to meet their vital needs (calculated on the basis of the volume of services provided to population per capita in cities and districts (in market prices, UAH);

- index of housing provision (calculated by average values of the total housing area per person in m², in 2017). This index demonstrates an improvement of living conditions, which depends on the working capacity of the population, its social health, productive use of free time, marital and demographic situation (Pokliatskyi, 2016);
- index of amenities and public utilities condition. It is calculated by indicators of the dilapidated housing stock (m² of the total area), emergency housing (m² of total area), equipment of the housing with water supply (cold and hot), heating as of January 1, 2017 (share of the equipped total area). Availability of the necessary amenity elements is one of the conditions for the creation of the appropriate psychological climate and a sign of physical comfort of the inhabitants of the region;
- index of education infrastructure. Educational sector allows people improving their worldview and forming relations in the society. It is calculated by coverage of children with pre-school educational institutions (as a percentage to the number of children of the corresponding age); the number of students of general educational institutions per 10 thousand population; the number of students in higher educational institutions of I-IV accreditation levels in 2017;
- the public health index. Health depends on many factors and well reflects the living standards of the population. It is calculated by the mortality rate of children under the age of 1 year by cities and districts in 2018;
- index of the labour market situation. The situation in the labour market indicates the employment level of the population, its integration into public activities. It is calculated by the indices of the registered unemployment rate (the number of citizens with the status of the unemployed during the reporting period, (persons in 2017) and occupational injuries (per 1000 employees).

According to the index of favourable social situation, the following districts with a favourable (Zolotonsky, Zvenigorodsky, Shpolyansky and Smiliansky) and unfavourable (Drabivsky, Chornobayevsky, Kamensky, Korsun-Shevchenkivsky and Mankovsky districts) social component were identified (Fig. 7).

Figure 7

The Index of the favourable social situation in social component Cherkasy Oblast, 2017
(according to the data of the Main Department of Statistics in Cherkasy Oblast)



4.3. Ecological subsystem

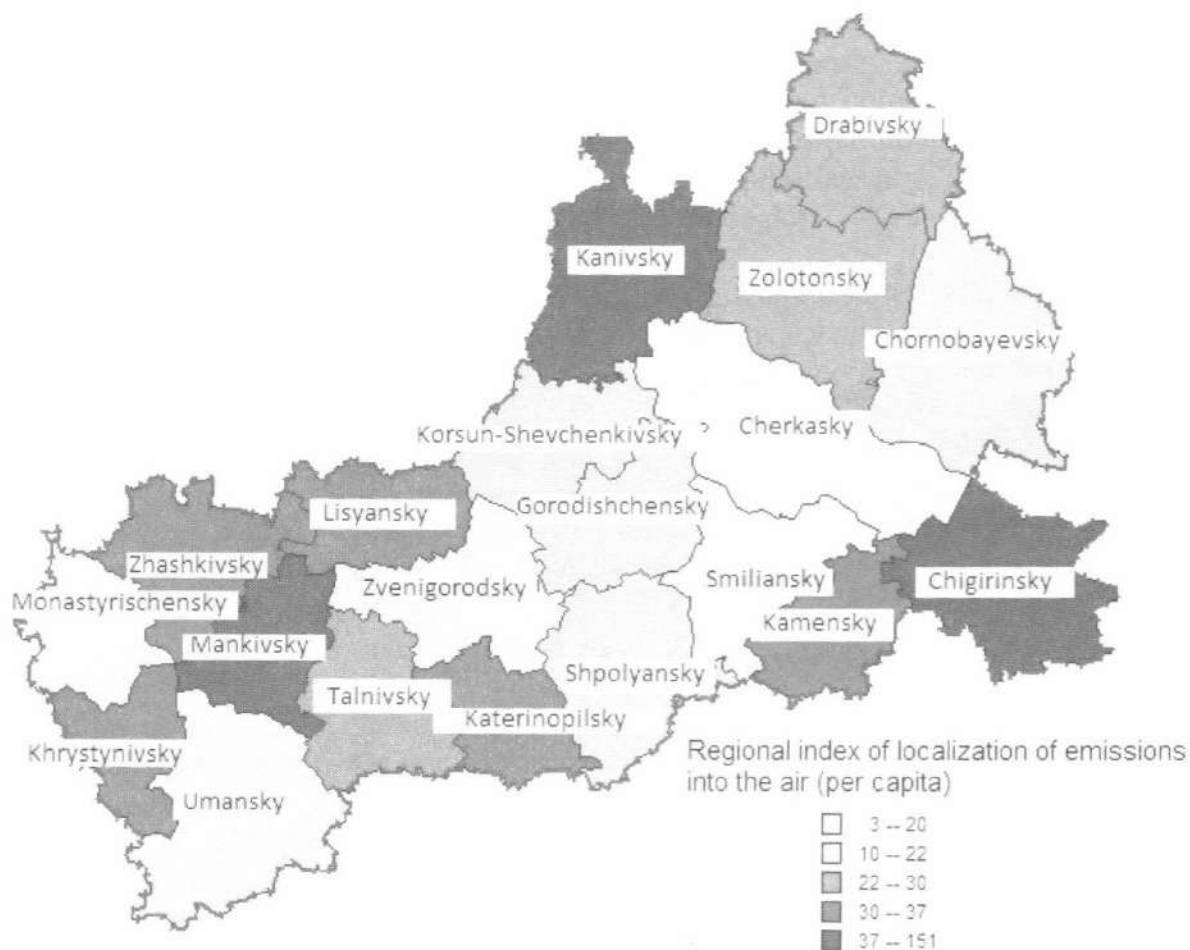
Ecological factor plays a very important role in shaping the potential of sustainable regional development.

Ecological component in the Cherkassy oblast districts was evaluated by three indices: index of air pollution characterizing the volumes of emissions from stationary and mobile sources in the districts, calculated per capita; the index of the waste management situation (the availability of wastes of I-III class); the index of the state of water resources, calculated by indices of freshwater use and the capacity of water treatment facilities (mln.m³) (Pokliatskyi, 2016).

Mapping of localization index of emissions in the atmosphere (per capita) is differentiated and versatile. It shows that the highest levels of contaminations are observed not in the central regions but in the periphery (Fig .8).

Figure 8

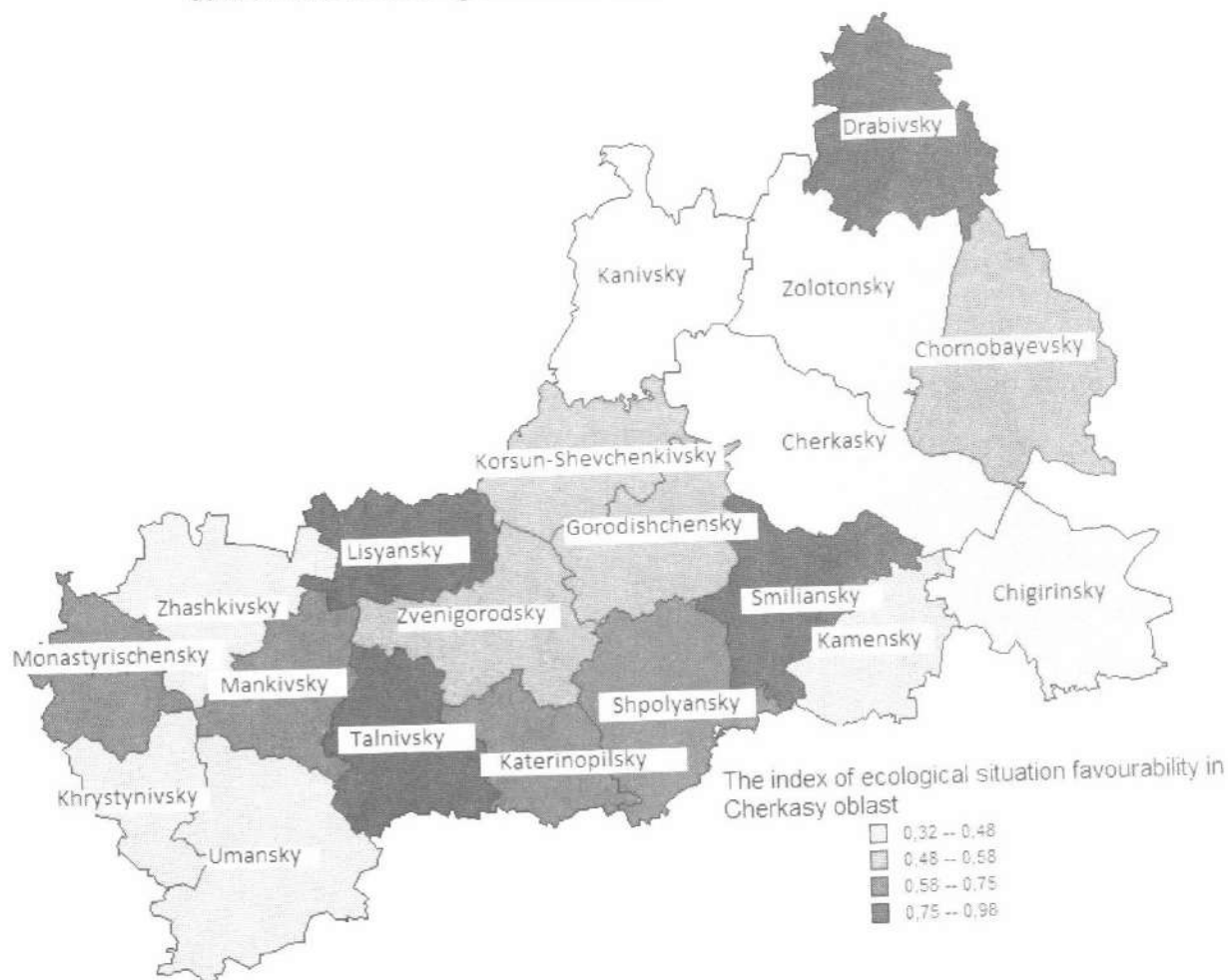
Regional index of localization of emissions into the air (per capita) in Cherkasy region, 2017 (according to the data of the Main Department of Statistics in Cherkasy oblast)



The general ecological subsystem of the potential of sustainable regional development is as follows: the highest indices of ecological favourability are in Drabivsky, Smiliansky, Lisyansky and Talnivsky districts. The most vulnerable ecological situation is in the Kanivsky, Zolotonsky, Cherkasky and Chigirinsky districts associated with indices of industrial and economic development (Fig. 9).

Figure 9

The index of ecological situation favourability in Cherkasy oblast, 2017 (according to the data of the Main Department of Statistics in Cherkasy Oblast)



4.4. Socio-cultural subsystem

Culture meaning cultivating human values, by which humans improve their intellect, develop physically and spiritually, is of great importance in the development of the region. Culture not only creates the intellectual potential of the society but also forms the norms of behaviour, resistance to social pathologies, a sense of community and belonging to a certain territorial community (Pokliatskyi, 2016).

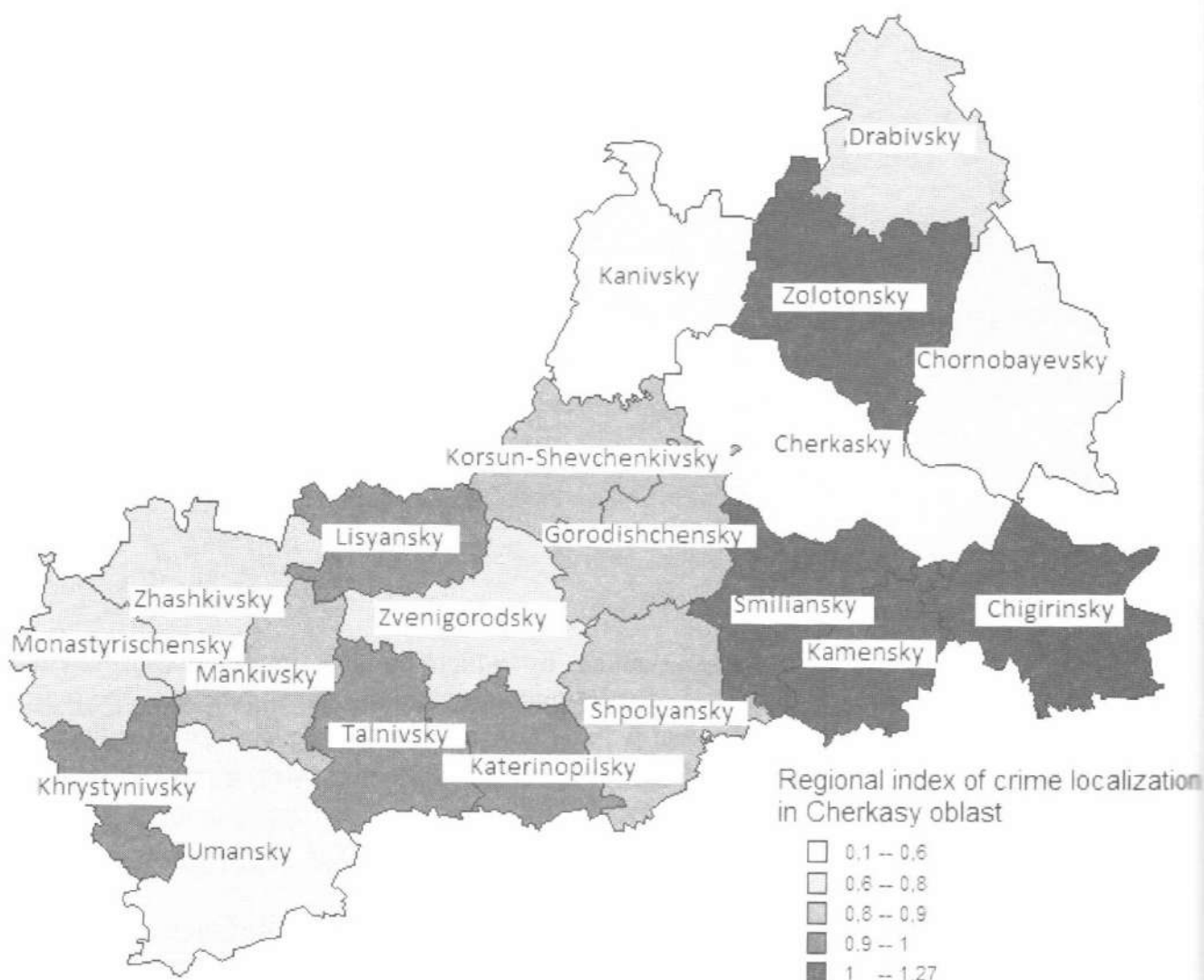
The integral index of social well-being was calculated on the basis of the following indices:

- Index of the state of infrastructure and tourism. Cultural sector constantly confirms its own significance for the population and its status of the system-forming social institution. In general, urban population leisure is potentially more diverse and rich as compared to rural areas.

- Index of the crime situation. Crime expansion is one of the main factors threatening the safety of the society. The regional index of crime localization in the Cherkasy oblast indicates a high social risk in Zolotonsky, Smiliansky, Chigirinsky and Kamensky districts. Such indices are associated with a significant concentration of population of various property status groups on a small area, an intensive manifestation of deviant behaviour, a higher degree of aggressiveness in the society (Fig. 10)
- Index of family well-being. Family well-being in the modern world acquires new features, when the institution of marriage has transformed from the traditional type to the modern one with typical "postponement" until completion of socialization: completion of education, acquiring a profession, attaining certain social status

Figure 10

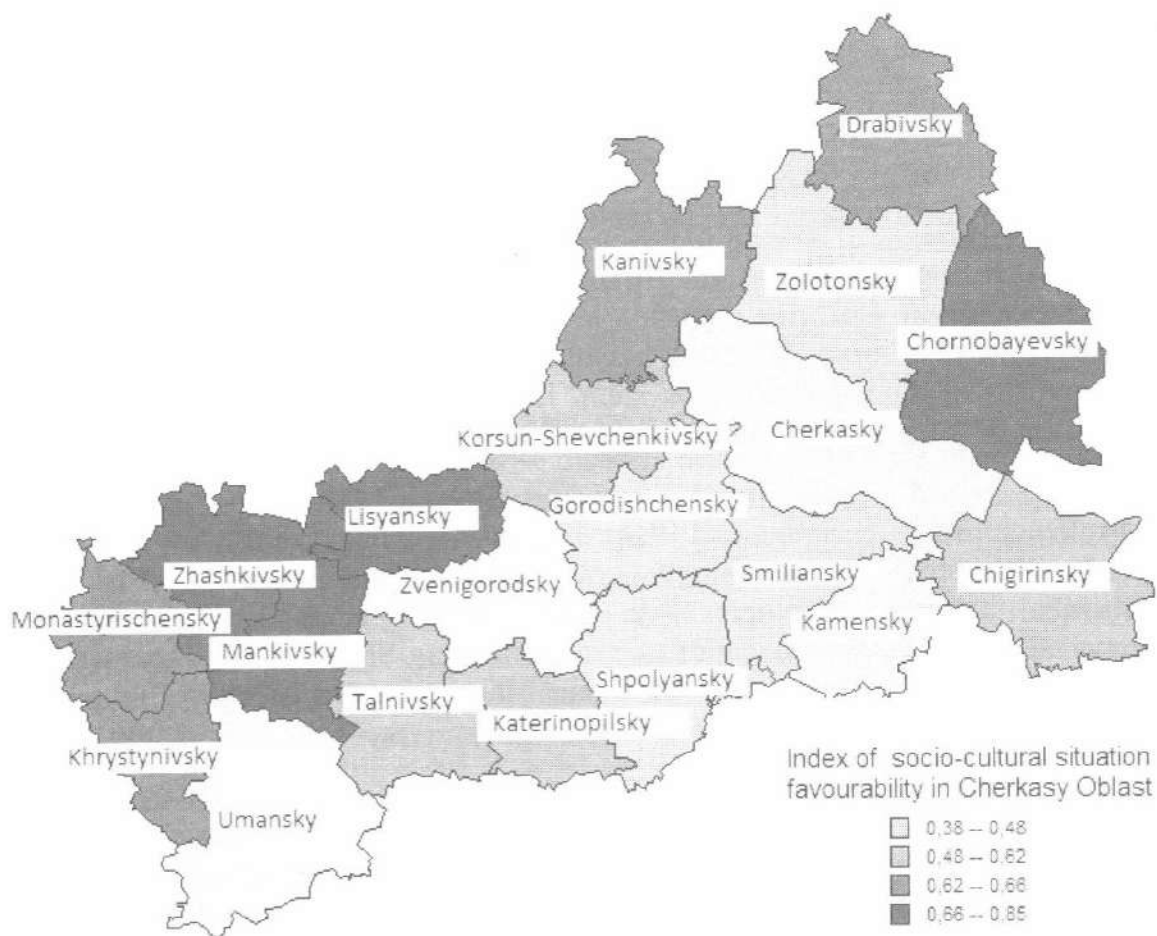
Regional index of crime localization in Cherkasy oblast, 2017 (according to the data of the Main Department of Statistics in Cherkasy oblast)



As it is seen from the mapping (Fig. 11), the northern areas of Cherkasy oblast demonstrate the highest indices of social well-being, which can be associated with bordering on the capital region. At the same time, the central and southern areas of the oblast have low social well-being indices which can be attributed to the remoteness from the capital region and proximity to the depressed and poor Kirovograd oblast.

Figure 11

Index of socio-cultural situation favourability in Cherkasy Oblast, 2017 (according to the data of the Main Department of Statistics in Cherkasy Oblast)



Conclusions

The following steps for encouraging changes in the regional economy are determined in the regional SMART specialisation strategies:

- state support centred on innovations and development based on knowledge, problems and needs;
- instruments are provided for attracting private investments to the R&D area;

- regional and state authorities accept innovation approaches to development (Brzóška, 2012).

Study of the internal differentiation of sustainable development potential in the Cherkasy oblast has revealed the 'foci' of social, economic and environmental advantages or disadvantages among districts of the oblast region.

This stands for the need to consider this territorial inequality in developing SMART specialisation strategy. Grouping of the districts of Cherkasy oblast allowed us to identify groups of districts according to the indices of the economic, social and ecological subsystems, each requiring recommendations for implementation of the SMART specialisation strategy.

Material, social and intellectual assets concentrated in the industrial and educational institutions of strong regions are the foundation for SMART specialisation. The Zolotonsky, Cherkasky, Smiliansky and Umansky districts belong to this category due to their high indices of the economic component. Active investment in innovations is proposed in these districts for the private sector.

Typically, the regional policy should strengthen the competitive industries. However, SMART specialisation strategies are often aimed at supporting underdeveloped regions. These are Drabivsky, Gorodishchensky, Lisyansky and Khrystynivsky districts because of their low indices of the economic subsystem. It is recommended to provide training for representatives of the local government to identify the potential of SMART specialisation in the districts.

Kanivsky, Zolotonsky, Cherkasky and Chigirinsky districts demonstrate low indices of the ecological subsystem. These districts have high economic development indices. Consequently, economic development in these districts is achieved at the cost of environmental losses. Recommendations on implementing SMART-specialisation strategy in these districts include the use of environmental innovative technologies able to reorient industry for not only to increasing capital but also for preserving the natural resource potential of the region.

Human capital is a major factor in the regional innovations. High indices of the social subsystem are observed in Chornobayevsky, Korsun-Shevchenkivsky, Kamensky and Mankivsky districts. For these districts, it is recommended to develop the potential of national and cultural crafts in combination with innovations strengthening specifics of the national identity. Kanivsky, Zolotonsky, Cherkasky and Chigirinsky districts have low indices. These are the districts developed economically but weak in the social component. For these districts, it is recommended to implement social programs for adapting the population to rapidly changing economic conditions. In particular, programs are proposed for adaptation of boarding school graduates, assistance to families in difficult living conditions, programs of providing housing for young families, programs for reducing unemployment.

A strong correlation between the population density index and the integral index of economic development was revealed in the Cherkassy oblast. To a certain extent the field of the demographic potential index "repeats" the mapping of the index of economic

attractiveness. In fact, the indices overlap, demonstrating the joint socio-economic process. Basically, this is a completely interrelated and logical phenomenon as the population is concentrated in the largest cities offering opportunities for economic activity. At the same time, types of economic activity are common in the districts with relevant labour and intellectual demographic potential for this. Such districts are Cherkasky, Zolotonsky, Smiliansky and Umansky. At the same time, the ecological component indicates a deterioration of living conditions in these districts. The environmental situation in these districts is unfavourable. Therefore, it is appropriate to implement SMART specialisation focusing on harmonization of environmental indices and elimination of the existing ecological losses.

Indices of the field of the demographic potential of the districts and high indices of economic development do not guarantee welfare in the social and socio-cultural spheres. Districts with high indices of social and socio-cultural development are the districts with the lowest (with the exception of Kaniv) indices of economic and industrial development and demographic potential. High indices of crime localization in some districts with increased economic favourability (Zolotonsky, Smiliansky) affect this situation. We hope that socially 'quiet' districts of the Cherkasy oblast will be able to improve their economic situation due to the implementation of the SMART specialisation strategy.

The externalities influencing the formation of the sustainable development potential of the Cherkasy oblast include the geographical location, namely, remoteness from the state border (which is a barrier to development) and proximity to the metropolitan area (the most favourable externality). It is precisely those districts bordering on Kyiv oblast that have the highest socio-cultural and social benefits: Zhashkivsky, Lisyansky, Korsun-Shevchenkivskiyi, Kanivsky, Drabivsky, Chornobayevsky (the latter is affected by bordering on the Poltava oblast in the east). Western districts bordering on Vinnitsa oblast have the highest development indices (Khrystynivsky and Monastyrishchensky) as compared to the central and southern districts. The lowest indices of socio-cultural attractiveness are in the central and southern districts, which can be explained by the proximity to the depressed Kirovograd region.

Cherkasy oblast has two regional nuclei with high indices of economic development. These are Cherkasy and Uman. At the same time, these regional centres have weak internal territorial ties. An important way of overcoming the territorial disparities in the development of Cherkasy oblast with their acute socio-economic consequences is to form, implement and continuously improve the mechanism of stimulating sustainable development in the context of SMART specialisation, which should be based on fostering the development of innovative green technologies, nature conservation levers and overcoming social and economic disparities at the basic territorial level.

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components, in particular, in supporting the development of a modern economy. Intellectual factors, directly or indirectly, due to the influence on other factors, are becoming key in ensuring high positions in today's highly competitive environment. Identifying the influence and role of intellectual factors in achieving leadership positions in the global economy is enabled by the analysis of the intellectual component in different approaches to determining leadership positions. Methodical approaches for estimation of the intellectual leadership of multilevel entities in the global economy are offered. The presented methodology is based on the identification of the three levels of intellectual leadership implementation: the level of resources, the level of results and the level of final results. Each of these levels is characterized by an appropriate system of indicators for different subjects, which allows them to determine their positions according to different criteria at different levels of competition. This research can be used by economists, management specialists.

JEL: I23; I25

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POTENTIAL OF SUSTAINABLE REGIONAL DEVELOPMENT IN VIEW OF SMART SPECIALISATION

Potential of sustainable regional development is studied through demographic, economic, social, socio-cultural and ecological indicators in order to determine the strategy development areas of regional SMART specialisation on the example of Cherkasy oblast (the central region of Ukraine). Cherkasy oblast was selected for the study because it is one of the pilot regions for the implementation of the SMART specialisation strategies.

The following methods were used in the course of the study: the system-structure analysis, comparative-geographic method, mapping (GIS – MapInfo Professional, Surfer Golden Software, and program for gravity modelling of the potential field calculation), interpolation, correlation and description-statistical method.

The results of the study are intended for national and regional policy-makers, representatives of self-governance, researchers dealing with regional development problems, NGOs, representatives of small and medium business, public activists and others.

The proposed results of the study of the sustainable regional development potential in view of SMART specialisation on the example of Cherkassy oblast may be used in the countries of the Eastern Partnership (Belarus, Georgia, Moldova, Azerbaijan, Armenia).

JEL: R11; R53

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EFFECTS ON THE ECONOMIC GROWTH IN BULGARIA DURING THE TRANSITION TO LOW-CARBON ECONOMY IN THE ENERGY SECTOR

The paper analyses the potential macroeconomic effects that the transition to a low-carbon economy would generate on investment activity and employment in the energy sector in Bulgaria. Global and European initiatives and regulations are reviewed. They trace the changes in the structure of the energy sector and may be assessed as an external shock to the country's economic growth. Using the

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