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EVALUATION OF RURAL COMMUNES IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

Key words: rural area, sustainable development, indicators

ABSTRACT. The aim of the study is to determine whether the development of selected communes entirely located in rural areas is progressing towards achieving integrated order in line with the concept of sustainable development. Detailed research covered typically rural communes located in the Lower Silesian Voivodship. Research was carried out according to 5 functional regions of rural areas of the voivodship. The research period covered the years 2011-2017. The research takes into account three orders: social, economic and environmental. Sustainable development indicators and the linear normalization method in the form of zeroed unitarization were used. In the analyzed rural communes of the Lower Silesian Voivodship, the indicator of striving for environmental order (E) ranged from 0.403 to 0.571, the indicator of striving for economic order (G) from 0.403 to 0.571, and the indicator of striving for social order (S) from 0.320 to 0.459. Finally, a synthetic indicator (SI) was calculated to determine the level of integrated order, which ranged between 0.370-0.452 (the lowest values were recorded for the 2nd functional region, and the highest for the 4th functional region of Lower Silesia). The synthetic indicator of the pursuit of integrated order grew, with the exception of the 5th region. Changes should be assessed as positive.

INTRODUCTION

Rural areas constitute a separate part of the territorial area of the country. You can meet different criteria for their extraction. Their definition is related to the criterion of administrative or demographic division (population density) [Depraz 2008]. According to the Central Statistical Office in Warsaw, the entire rural area covers 93.2% of the country's area (administratively, these are typically rural communes and the rural part from urban-rural communes), while according to OECD and EUROSTAT criteria, rural areas of Poland cover a slightly smaller area – 91.0% and 85.7%, respectively. The above data define the territory, which is of great importance for development processes of society as rural areas have many functions: housing, production, water, recreation, construction and protection [Szymańska 2002]. Rural areas may carry out exogenous (external) functions implemented for a region or state – functions of the forestry and agricultural sector, services for the agricultural, tourism and recreation functions, curative and manufacturing functions, functions for servicing the labor market in cities, as well as endogenous (inter-

nal) functions implemented for commune society – functions of housing and the sector offering products and services for the local community. The rural area is a huge resource of natural (nature, landscape) and cultural goods. The whole society uses these goods, which is why they are a strategic element in the structure of the country. Their development should be multi-functional, i.e. taking into account the harmonious development of all functions performed in rural areas. It is becoming ever so more necessary to prevent degradation of the rural landscape while maintaining its production functions through the use of good agricultural practices [Staniak 2009]. These activities should be based on the forecasting and planning of all spheres of socio-economic life to lead to the selection of appropriate development paths [Bański 2014].

Searching for a new model of human-friendly and non-threatening nature management, resulting from the premises of environmental protection and social well-being, creates new activities in the countryside. These activities should be based on a new development paradigm, which is one of the basic concepts for the development of present-day civilization. This concept is sustainable development, a process where activities are integrated in economic, social and environmental spheres to improve the level and quality of life of a particular community. Improving the quality of life, as the overarching goal of the concept, is to take place through economic growth and environmental protection while maintaining social equality, biodiversity and an abundance of natural resources. The protection of biodiversity is the protection of nature with particular care for the richness of species, which has a huge impact on the correct functioning of ecosystems [Dobrzański 2002]. The concept of sustainable development includes three orders; economic, social and environmental. These orders can be achieved by implementing principles that determine actions [Adamska 2015]. Economic activity, carried out in accordance with the principles of sustainable development, should give positive economic effects, while at the same time caring for the natural environment as much as possible and limiting the overexploitation of resources so that they can be used by next generations [Minta et al. 2013]. The concept of sustainable development is based on a holistic approach with specific application to the functioning areas of the economy, environment and society. Monika Stanny [2013] believes that sustainable development is a compromise between environmental, economic and social goals that determine the well-being of current and future society.

For a proper understanding of what sustainable development is, two terms are key: the concept of basic needs and the idea of limited possibilities. Using the language of economics, it can be said that, according to the idea of sustainable development, society should live as much as possible “on interest” and not “on capital”. Sustainable development means that economic growth leads to increased social cohesion (including, among others, reducing social stratification, equalizing opportunities, counteracting marginalization and discrimination) and improving the quality of the natural environment through a reduction of the harmful effects of production and consumption on the environment and the protection of natural resources [Piontek 2001]. According to Józef Zegar, based on Agnieszka Wlazły [2018], the strategy for sustainable rural development should be based on multidirectional action that involves the development of human resources, soil care, improvement of the water system, care for biodiversity, energy supply in rural areas and increased public participation in choosing directions of resource use.

The implementation of development activities related to the concept of sustainable development requires monitoring and control of regularities. This is of great importance in making the right decisions at all levels of management.

The most difficult issue related to sustainable development is its measurement. The difficulty results from the fact that it covers many spheres: economic, social and environmental. It is a multi-stage, multi-faceted, multi-dimensional and dynamic process. It raises many doubts, and it is necessary to conduct empirical research [Stanny, Czarnecki 2011, Ossowska, Janiszewska 2016]. In this case the main tools for measuring are indicators of sustainable development [Borys 2005]. Real implementation of sustainable development must be considered as a decision-making strategy. Reliable indicators and sustainable development assessment based on them are powerful tools supporting the decision-making process [Waas et al. 2014]. Indicators of sustainable development help to visualize phenomena and identify trends, as well as simplify, quantify, analyze and convey complex and complicated information in an easier way [Singh et al. 2009].

The main goal of the paper is to assess the development of typically rural communes in terms of striving to achieve integrated order (in line with the concept of sustainable development and covering three orders: social and environmental economic).

RESEARCH MATERIAL AND METHODS

The analyzed period covered the years from 2011 to 2017. The conducted research is empirical and aims to achieve the goal of the paper. During research the following methods were used: horizontal and vertical analysis, synthesis, logical inference and statistical. Methods of analysis were used to describe the subject of the study in terms of time and space, taking into account the division into functional regions of rural areas of Lower Silesia. The basic source material that was used to assess the development of typically rural Lower Silesian communes in accordance with the sustainable development paradigm came from public state statistics and was of secondary nature.

Detailed research only covered rural communes located in the Lower Silesian Voivodship (research did not include rural areas from urban-rural communes). There were 78 altogether. Rural development considerations were made for 5 functional regions of this province [Resolution No. XXXV/583/2001]:

- 1st region I (intensive agriculture) – 35 rural communes,
- 2nd region (agriculture and recreation) – 7 rural communes,
- 3rd region (industrial, recreational and touristic) – 14 rural communes,
- 4th region (agricultural and industrial) – 13 rural communes,
- 5th region (agricultural, industrial and recreational) – 9 rural communes.

The research used a broad list of indicators as the baseline. Sustainable development indicators were analyzed, allowing to monitor the pursuit of the particular order of sustainable development: economic, social and environmental [Borys 2005].

When choosing the initial base of indicators, their significance and meaning in the development and improvement of living conditions in rural society served as a guide, as well as the possibility of comparability and the availability of data in the analyzed period.

The indicators for three orders were analyzed; social (11 indicators), economic (9 indicators) and environmental (8 indicators). In total, 26 indicators were analyzed. Synthetic indicators were determined for them and an indicator covering all analyzed orders was determined. The arithmetic mean was used for aggregation. One of the methods of zeroed unitarization known in the theory of normalization was applied. It enables the values of accepted features to be compared [Korol 2007, Strahl 2006, Wysocki 2010]. Different formulas were set for indicators (the so-called stimulant and destimulant).

Formula for stimulant type indicators:

$$Q_i = (W_i - W_{min}) / (W_{max} - W_{min})$$

Formula for stimulant type indicators:

$$Q_i = (W_{max} - W_i) / (W_{max} - W_{min})$$

where: W_i – the value of the indicator for the i -th feature, W_{max} – the maximum value of the indicator for the i -th feature, W_{min} – the minimum value of the indicator for the i -th feature, W_{nom} – the nominal value of the i -th characteristic considered optimal or desirable, Q_i – the unified indicator value for the i -th feature [Borys 2005].

The adopted formulas allowed to determine the values of all indicators in the range of 0-1, providing ample opportunity to compare the examined features.

RESEARCH RESULTS

The basis for estimating the implementation of the concept of sustainable development is the integration of three orders; economic, social and environmental. and setting a synthetic indicator as an expression of the pursuit of integrated order. In the presented research, a synthetic indicator of striving for environmental order was first determined, thus allowing to determine environmental changes in rural regions of the Lower Silesian Voivodship. Shaping the natural environment is a priority in almost all development activities, which is also based on the concept of sustainable development. To determine the synthetic indicator of the environmental order (E), indicators from the following areas were used: greening spatial planning, the protection and sustainable development of the forest, water management and water quality. Finally, eight indicators of sustainable development were included: the share of the remaining area in total area (%), the population density (persons/km²), the share of the legally protected area in total area (%), the share of forest land area in total area (%), water consumption per 1 inhabitant (dm³/year), population served by sewage treatment plants (%), the share of municipal and industrial wastewater treated in the total amount requiring treatment (%), the length of the sewage network (km/km²).

In the years 2011-2017, the value of the synthetic indicator of striving for environmental order increased in a selected area. This may indicate an increase in activities aimed at improving the environmental condition of rural areas and a focus on achieving environmental governance (Figure 1). This phenomenon is observed in all regions of the

Lower Silesian Voivodship. In the 1st region, the E indicator increased from 0.427 (2011) to 0.515 (2017), in the 2nd region from 0.403 to 0.483, in the 3rd region from 0.508 to 0.571, in the 4th region from 0.465 to 0.544 and in 5th region from 0.464 to 0.534. The highest increase occurred in the 1st region (over 20%), and the smallest in the 3rd region (by 12%). In the entire analyzed period, the value of the synthetic indicator of striving for environmental order was the highest for the 3rd region. The increase in the synthetic indicator was influenced by activities in the scope of water and sewage management (a reduction in the amount of untreated sewage to almost zero and an increase in the percentage of the rural population using sewage treatment plants).

The economy is the main element affecting the state of the environment and the standard of living of society. It is dependent on the environment by using resources that enable development. In rural areas, alternative directions of economic development are sought without additional burden on the environment. This is because agriculture is decreasing its share of the income of people living in rural areas. As part of determining the synthetic indicator of striving for economic order (G), four areas were analyzed: making profits, entrepreneurship and the structure of the economy, agriculture and infrastructure.

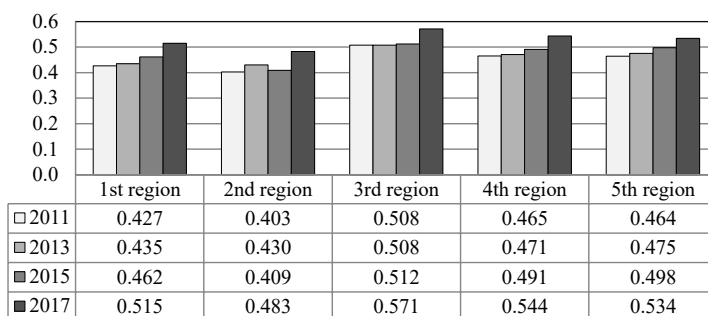


Figure 1. Synthetic indicator of striving for environmental order (E)
Source: own calculations based on the Local Data Bank [GUS 2019]

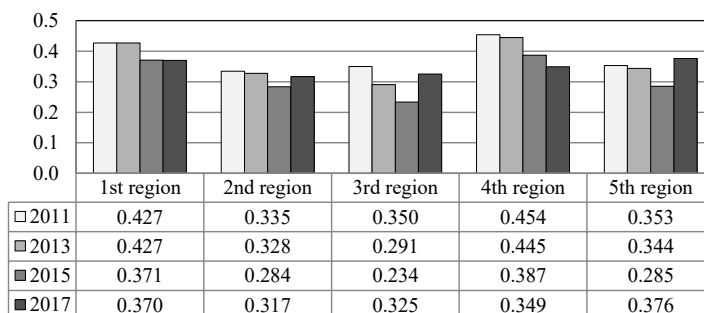


Figure 2. Synthetic indicator of striving for economic order (G)
Source: own calculations based on the Local Data Bank [GUS 2019]

Finally, nine indicators were taken into account: own commune revenue (PLN/1,000 persons), total commune budget expenditure (PLN/1,000 persons), investment expenditure in total expenditure (%), number of business entities (number/1,000 inhabitants), share of arable land in total area (%), share of arable land in arable land (%), arable land area per 1 inhabitant, length of distribution sewerage and the water supply network (km/km²).

In the analyzed period, the value of the synthetic indicator of economic order varied (Figure 2). Its values in individual regions changed in different directions. The highest value of the indicator was in the 4th region (agro-industrial). Overall, the value of indicator E decreased in regions 1, 2, 3 and 4. In the 1st region, changes ranged from 0.427 (2011) to 0.370 (2017), in the 2nd region from 0.335 to 0.317, in the 3rd region from 0.350 to 0.325, in the 4th region from 0.454 to 0.349. Only in the 5th region was there a slight increase from 0.353 to 0, 376. These changes were mainly influenced by the income situation of individual municipalities in the regions.

According to the concept of sustainable development, all three partial orders are equally important in striving for integrated order. However, social order determines the quality of life of the society and special attention is paid to it in development processes. Determining the value of the synthetic indicator of striving for social order was made by taking four areas into account: demography and the aging of the society, education and development, level and quality of life, poverty and social exclusion. Here, 11 indicators were included: the demographic burden, population density (persons/km²), the share of expenditure on education and upbringing in total expenditure (%), the unemployment rate (%), the share of budget expenditure on social security (%), the number of flats per 1000 inhabitants, average flat area (m²), the number of rooms in a flat, the number of flats delivered, expenditure on housing, health care and sport per capita.

The highest values of the social order indicator (S) were noted in 2015 and concerned all regions. The most favorable social conditions occurred in the 4th region, where the value of the S indicator was 0.436 in 2011 and 0.459 in 2015 (Figure 3). The differences in the indicator values are small. Therefore, on the basis of the obtained values, it is difficult to say whether there was a significant improvement in the living conditions of the inhabitants of Lower Silesian villages.

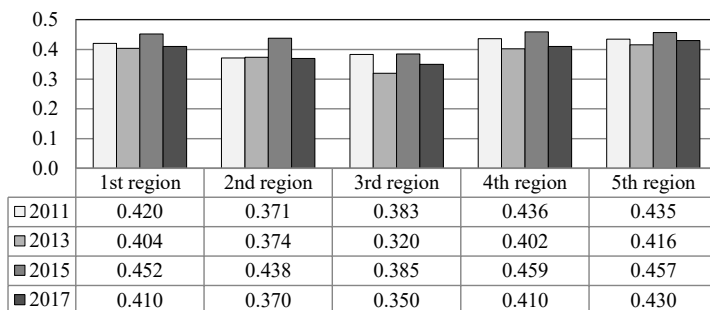


Figure 3. The synthetic indicator of striving for social order (S)

Source: own calculations based on the Local Data Bank [GUS 2019]

In accordance with the concept of sustainable development, there is a direct relationship between its individual elements, appropriate proportions and equal treatment of particular orders are taken into account. With this in mind, the synthetic indicator (SW) was defined as a comprehensive approach to three orders; social, economic and environmental. It defines the impact of three spheres on the implementation of the concept of sustainable development. Changes in the value of the SW indicator in the years 2011-2017 for 5 functional regions of the Lower Silesian Voivodship are presented in Figure 4.

The values of the SW indicator ranged between 0.370-0.452. Analyzing the entire analyzed period, the SW achieved the highest values in the 4th region (agro-industrial), while the lowest in the 2nd region (agro-recreational). It is worth noting that, in the analyzed period, changes in the SW indicator in individual regions were small (e.g. in the 1st region from 0.425 in 2011 to 0.434 in 2017), but in most cases they had an upward trend (the 5th region came out best - a change from 0.417 in 2011 to 0.447 in 2017). A downward trend was only recorded in the 4th region, where the SW fell from 0.452 in 2011 to 0.434 in 2017.

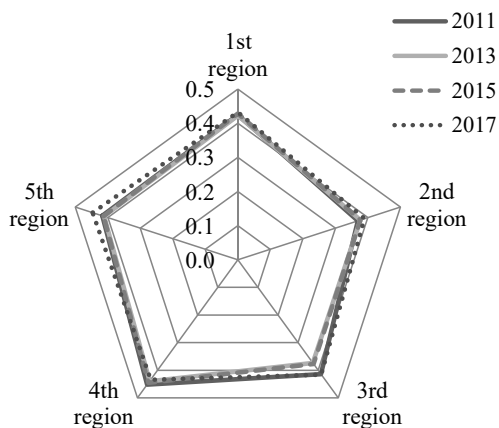


Figure 4. The synthetic indicator of striving for integrated order (SW)

Source: own calculations based on the Local Data Bank [GUS 2019]

SUMMARY

Rural areas have great importance in modern economies. This is due to the large area they occupy, and also due to the performance of various and valuable functions useful to societies. Their development should be viewed broadly, taking into account economic, environmental and social aspects, and, hence, in accordance with the concept of sustainable development. This will meet current and future social needs, while at the same time respecting economic, social and environmental goals. When conducting development policy in rural areas, it should be supported by appropriate methods and indicators for assessing sustainable development, which facilitate decision making and accelerate the implementation of sustainable development assumptions and help in achieving a good level of integrated order.

The study focuses on assessing changes in the implementation of the concept of sustainable development in typically rural communes of the Lower Silesian Voivodship, taking the division into 5 functional regions into account. In the years 2011-2017, the differences in the value of the synthetic integrated order indicator (SW) were not large in individual regions, but it should be noted that the lowest values of SW were obtained for

the 2nd region (agricultural and recreational), and the highest in the 4th region (agricultural and industrial). The obtained results indicate that the speed of changes was low, although generally an upward trend of changes of the SW synthetic indicator was visible (except the 4th functional region). It seems that the process of striving to achieve integrated order should be more dynamic. Regional authorities should take it into account when making decisions favoring the further implementation of the concept of sustainable development in the studied area.

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OCENA ROZWOJU GMIN WIEJSKICH W KONTEKŚCIE ZRÓWNOWAŻONEGO ROZWOJU

Słowa kluczowe: obszar wiejski, rozwój zrównoważony, wskaźniki

ABSTRAKT

Celem opracowania jest określenie, czy rozwój wybranych gmin w całości położonych na obszarach wiejskich postępuje w kierunku osiągania ładu zintegrowanego, zgodnego z koncepcją rozwoju zrównoważonego. Badaniami szczegółowymi objęto gminy typowo wiejskie zlokalizowane na terenie województwa dolnośląskiego. Rozważania przeprowadzono według 5 regionów funkcjonalnych obszarów wiejskich województwa. Okres badań obejmował lata 2011-2017. W pracy uwzględniono trzy łądy: społeczny, gospodarczy i środowiskowy. Wykorzystano wskaźniki zrównoważonego rozwoju oraz metodę normalizacji liniowej w postaci unitaryzacji zerowanej. W wybranym okresie w analizowanych gminach wiejskich województwa dolnośląskiego wskaźnik określający dążenie do ładu środowiskowego (E) wahał się od 0,403 do 0,571, wskaźnik dążenia do ładu gospodarczego (G) wynosił od 0,403 do 0,571, a wskaźnik dążenia do ładu społecznego (S) – od 0,320 do 0,459. Finalnie wyznaczono syntetyczny wskaźnik (SW) do określenia poziomu ładu zintegrowanego, który wahał się między 0,370 a 0,452 (najniższe wartości odnotowano dla 2. regionu funkcjonalnego, a najwyższe dla 4. regionu funkcjonalnego Dolnego Śląska). Syntetyczny wskaźnik dążenia do ładu zintegrowanego miał charakter rosnący, z wyjątkiem 5. regionu. Zachodzące zmiany należy ocenić jako pozytywnie.

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