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LEVEL OF SPATIAL PLANNING CULTURE OF RURAL GMINAS IN THE CENTRAL REGION OF POLAND

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Abstract

Spatial planning in Poland undergoes constant changes due to the activity of the legislative body. These changes to a varying extent affect the activity of local authorities of rural gminas in the scope of spatial planning. The diversity in rural gminas is especially noticed in the application of land-use plans, and consequently also the planning permissions. Similarly, this diversity concerns changing the status of farmland from agricultural to residential and deforestation of agricultural and forest land. These factors are the elements forming the level of spatial planning culture that results from the regulations forming the spatial planning system. The equivalent element that forms the spatial planning culture is use of tools available by law, taking into consideration their gradation due to their complexity.

These assumptions allowed for using the Central Statistical Office's resources to form indexes related to the area of spatial planning. These indexes became the component parts involved in the construction of Hellwig's synthetic measures of development. By using synthetic measures, it was possible to form the classification of rural gminas in the central region of Poland due to their level of spatial planning culture.

The obtained results allowed for the evaluation of the level of spatial planning culture both in the central region and in the particular voivodeships comprising the region. The obtained results enabled the analysis of spatial diversity of spatial planning culture The results also confirmed a great diversity of rural gminas regarding the adopted attitude with reference to the application of spatial planning tools. An important conclusion

was the fact that a low level of spatial planning culture was identified in rural gminas located in the urban areas and in the neighbourhood of cities.

Keywords: spatial planning culture, synthetic measure, central region, level of development.

INTRODUCTION

The system of spatial planning in Poland in the current form has been functioning since 2003. However, it cannot be stated that the spatial planning system does not undergo changes. Since the legislative process in the country leads to the introduction of constant changes in law, which are generated by new legal acts appearing in the Polish legislation. The Revitalization Act of 2015 can be included in this type of legal acts in the recent years, which apart from the new guidelines for the study of land use conditions and directions, also introduces a new local legal act – the local revitalization plan which is a form of a local land-use plan. Similarly, the Act of Urban Unions of 2015 introduced to the spatial planning system a new terminology and new strategic formulations necessary in fulfilling regulations of this legal act and directly affecting the future ways of land management, especially in the area of rural gminas located within the borders of urban unions. The acts that influence spatial planning in gminas are also: the Landscape Act and the Farm and Woodland Conservation Act.

The legal articles that change the reality of managing spatial policy in gminas, at the same time do not lead to the improvement of operation principles of the current spatial planning system, and often complicate it by the lack of properly prepared and published on time regulations allowing for their implementation. The changes that affect spatial planning also do not have any effect on the promotion of solutions that support and encourage gminas to make an effort to draw up local land-use plans and to carry out sustainable spatial economy, which, according to the principle, should focus on having the least amount of interference in agricultural and forest lands. The lack of gminas' activity concerning preparing local legal acts in the area of spatial planning, forces local authorities to issue planning permissions, which often are a spatial disintegrative element (Nowak 2012a, 2012b).

From the perspective of rural gminas, a significant element in protecting agricultural and forest lands is omitting the exclusion of lands from agricultural and forest land production in the prepared land-use plans. Similarly, in the case of preparing the study of conditions, the proceeding concerning the records referring to the need to point out agricultural and forest lands should be minimized, because naturally in the case of new investments on rural areas, it is necessary to focus this type of activity on the areas already urbanized. The consequence

of this kind of attitude is concern about the costs incurred because of the need to build new infrastructure and increase the intensity of land development in the rural areas already urbanized (Krzyk *et al.*2008)

The problem of the spatial planning system in Poland is constantly connected with the lack of thoroughly formulated local land-use plans, which would include in its range gmina's strategic areas. An important element in a comprehensive view of rural gminas is the reference to their typologies (Bański 2009, 2014; Komornicki and Śleszyński 2008), types of which condition often the behaviour of local authorities in the scope of preparing local-use plans. It is necessary to highlight that the location of rural gminas regarding the regional centres and large cities is also a factor that forces proper spatial management in order to limit unwanted phenomena in space.

In the case of spatial planning, one cannot neglect the dependency that results from statutory laws and regulations, which directly indicate that the spatial development of gminas left with no local land-use plans is accomplished by the planning permissions which, except for the indicated spatial disintegration, also have an impact on omitting aspects connected with direct social participation in spatial planning. There is no doubt that the information included in the study of conditions and directions concerning the designation of areas, which should be provided with land-use plans, is often a blank record. This is not implemented because of the complexity of planning procedures, gminas' financial burdens and the lack of possibility of a complex control of the local regulations by the voivode, after the approval of the study of land use conditions and directions for spatial planning by this authority.

The provisions of the act concerning spatial planning are becoming the basis to build spatial planning culture. The issues related with this notion do not generally occur in the source literature; however, from the beginning of the 21st century, suggestions referring to this subject can be found (Kaminski 2002, Damurski 2015, Kolipinski 2010, 2015). The article uses the definition of spatial planning culture proposed by Bartłomiej Kolipiński (2015) who claimed that it is "a set of values and norms that constitute intellectual achievements of the planning thought as well as a degree of the society's preparation and readiness to use it". Based on the definition, in this paper, it is assumed that spatial planning system consists of specific tools for spatial planning at the local level. Those tools constitute the norms for the functioning of spatial planning system. However, a particular evaluation has to be adopted – a scope of such evalutaion results from the source literature (Nowak 2012a, 2012b; Kolipiński 2015) indicating the fact that land-use plans are the basic tool that allows for the creation of the sustainable development of the area of a gmina, which is not unambiguous in case of the planning permission.. Additionally, it has been assumed that using the study of land-use conditions, and thus land-use plans, to reduce the areas free from construction, is not harmonious with the idea of spatial planning culture.

The presented assumptions influenced determining the paper's purpose. According to them, activities undertaken in the text aim at indicating gminas characterized by the highest level of development in the scope of spatial planning culture. It is possible due to the formulation of the indexes that constitute a basis for the evaluation of the tools available by law used by rural gminas. A complex assessment of the spatial planning culture occurs by using of synthetic measures of development introduced to literature by Hellwig (1968). It is based on the concept of the development model that is the aim of the researched units.

MATERIAL AND METHODS

The research carried out in the article aims to present the classification of rural gminas, which will enable to indicate the leaders and outsiders of the classification, accomplished with the use of the synthetic development measure. Due to the nature of the required data necessary to formulate the synthetic measurement, it was assumed that the spatial scope of the study would concern the area of Poland's central region and rural gminas located within it. This approach was especially dictated by the availability of the data concerning spatial planning, which in public statistics is able to reach up to the 5th level of the Nomenclature of Territorial Units for Statistics (NUTS 5). This prevents the conduct of an identical analysis for the rural areas located in the urban-rural gminas. The data obtained from the Local Data Bank (LDB) concerned sets collected for the year 2015 and referred to: the area of the binding local land-use plans, the number of planning permissions in the area of a gmina, the areas indicated in the study of conditions and directions in order to prepare local land-use plans, the areas that require modification from being agricultural and forestlands to non-agricultural and non-forest.

Based on the data obtained from 361 rural gminas (133 gminas in Lodz voivodeship and 228 in Masovian voivodeship), it was possible to calculate indexes that concerned:

- the share of the areas of the binding local land-use plans within the gmina's area (W1) – stimulant,
- the number of planning permissions for each 1000 ha of the area (W2) – destimulant,
- the share of the areas indicated in the study of conditions and directions in order to prepare local land-use plans within the gmina's area (W3) – stimulant,
- the share of the areas indicated in the study of conditions in order to change the status of farmland from agricultural to residential within the gmina's area (W4) – destimulant,

- the share of the areas indicated in the study of conditions for deforestation of agricultural and forest land within the gmina's area (W5) – destimulant.

In all the cases, the value standardizing the index was the area of a gmina, although in the case of areas intended for changing their status of farmland from agricultural to residential and deforestation of agricultural and forest land, the proper value of standardization should be the surface area of agricultural and forest lands in a gmina. The basic inconvenience of this approach was the fact that the studies of conditions and directions effecting in rural gminas were passed in different years, which would force reaching for the collections of data which were time incoherent. The other determining factor concerning the acceptance of construction of W4 and W5 indexes was the fact that some studies originated before 1998, which is the last moment of time for available data from the set of LDB.

Table 1. Correlation of data used in a synthetic measure

	W1	**W2**	**W3**	**W4**	**W5**
W1	1				
W2	-0,41623	1			
W3	0,230673	-0,12221	1		
W4	0,027508	0,007845	0,125673	1	
W5	-0,0149	0,01262	0,129741	0,630764	1

Source: own work.

An important element of the study was to verify the correlation between indexes and to make a decision concerning the acceptance of the proposed measures for further steps in order to determine a synthetic development measure in the scope of spatial planning culture. In accordance with the obtained results (Table 1) the highest index of correlation occurred in the case of W4 and W5 indexes. However, it has been acknowledged that the level of relation of these two features can be allowed in the ongoing discussions, in accordance with Guillford's scale (1956), in which it is considered as a moderate level of correlation.

When taking into consideration the measure of the development, it has been assumed that the method of the development pattern is based on specifying the type of variables with a division into stimulants and destimulants. The following step for the preparation of data concerned their standardization based on the formula (1).

$$z_{ij} = \frac{x_{ij} - \overline{x}_j}{s_j} \qquad \text{for (i = 1,…, n; j = 1,…, m)} \tag{1}$$

where:
z_{ij} – the standardized value of j characteristic for gmina i,
x_{ij} – the value of j characteristic in gmina i,
$\overline{x_j}$ – the arithmetical average of j characteristic,
S_j – standard deviation of j characteristic,
m – the number of characteristics,
n – the number of gminas.

Based on the normalized data, the choice of a development pattern is being made with the use of formulas (2) and (3).

$$z_{0j} = \max z_{ij} \text{ if } j \in I, \text{ where I is a set of stimulants} \quad (2)$$

$$z_{0j} = \min z_{ij} \text{ if } j \notin I, \text{ where I is a set of stimulants} \quad (3)$$

After determining the development pattern, it is possible to count the distance of particular rural gminas from the development pattern, which is a base for determining the eventual development measure based on the formula (4).

$$d_i = 1 - \frac{d_{i0}}{d_0} \quad (4)$$

where:
d_0 is a variable norm and takes the value of $d_0 = max\ d_{i0}$ (Tarczynski, Luniewska 2006, p. 43);
d_{i0} is an Euclidean distance between this gmina and the development pattern.

The last stage of work with the obtained results of the synthetic development measure is determining the affiliations of rural gminas to specific development classes, which are obtained by the classification based on the value of the arithmetical average and the standard deviation. For the purpose of this, the property of the curved normal distribution was used, and the classes were distinguished on the basis of the formula $\left(\bar{x} \pm \frac{1}{2} S_x\right)$ (Runge 2006, pp. 344-348).

THE RESULTS AND DISCUSSION

The data of the spatial planning culture of rural gminas in the central region used in the analysis allowed for carrying out the initial statistical analysis. In accordance with this approach, 13% of the analyzed statistical population possessed land-use plans for the entire area within the administrative border of a gmina. At the other extreme, there have been units that did not have current land-use plans, which amounted to 18.3% of the investigated statistical population. The median value among the 361 investigated rural gminas was 6.1% of the areas with land-use plans, which is a low value for the spatial planning culture.

With regard to the vision of local authorities in the scope of planned activities concerning preparation of local land-use plans and information about this topic in the study of land use conditions and directions, 10.8% of rural gminas planning to prepare local land-use plans for the entire gmina have been identified. Such information was not found in the 28.5% of studies, which means that the local authorities did not introduce this type of assumptions on the stage of completion of the document determining the spatial policy of the gmina. The consequence of this type of approach was also the information about the median value of the data sets, which accounted for about 4.2% of the area of a gmina intended for preparation of a local land-use plan. It is necessary to emphasize that in the case of gminas that did not designate new areas for the local land-use plans in the study, there are some units which in the year 2015 took pride in owning these compilations for the entire administrative area of a gmina, which justifies the lack of guidelines in the study of conditions.

In the case of changing the status of farmland from agricultural to residential and deforestation of farmland, the information included in the studies of conditions allows for verifing that in both of these cases the median equaled 0%. This means that at least half of the investigated statistical population did not decide on changing the status of farmland from agricultural to residential and deforestation of farmland. However, some units have been identified which decided to change the status of farmland from agricultural to residential with reference to over 50% of the area of a gmina. In case of deforestation of a farmland, the highest value accounted for 30% of the area of a gmina.

The last index used in the study was the number of permissions for every 1000 hectares of the area of a gmina. More than 24% of gminas recorded this index on the level of 0%, which means that the planning permissions are not issued in the area of the gmina. Such a situation mainly applied to gminas that had land-use plans for the areas exceeding 90% of the gmina's area. The maximum value of the index exceeded 47 permissions per 1000 hectare. However, using the properties resulting from the division of the statistical population into quartiles, it should be noted that 25% of the analyzed gminas had the index higher than 5 permissions per 1000 hectare.

The results coming from the data analysis allow for stating that the gmina of Kiełczygłów in Lodz voivodeship was characterized with the highest level of development. The position of a leader was achieved due to the recommendations in the study of conditions and directions that it is necessary to enforce local land-use plans for the entire area of the gmina and accomplish these assumptions. This also caused zero values for the indexes of the number of issued permissions and the level of changing the status of a farmland from agricultural to residential and deforestation of farmlands. The gmina of Bodzanów in Masovian voivodeship was classified as the lowest in the rank, with synthetic development measure of spatial planning culture equaling 0. This type of situation resulted from very high

values of indexes concerning changing the status of a farmland form agricultural to residential and deforestation of farmlands, which caused the Euclidean's distance value d_{i0} between the gmina and the development pattern reach its highest value. This translated into the obtained level of the development measure.

Table 2. Classes' range derived from the value of a synthetic measure

Name of a class	Value of a class
Class I	(0,873;1>
Class II	<0,787;0,873>
Class III	<0;0,787)

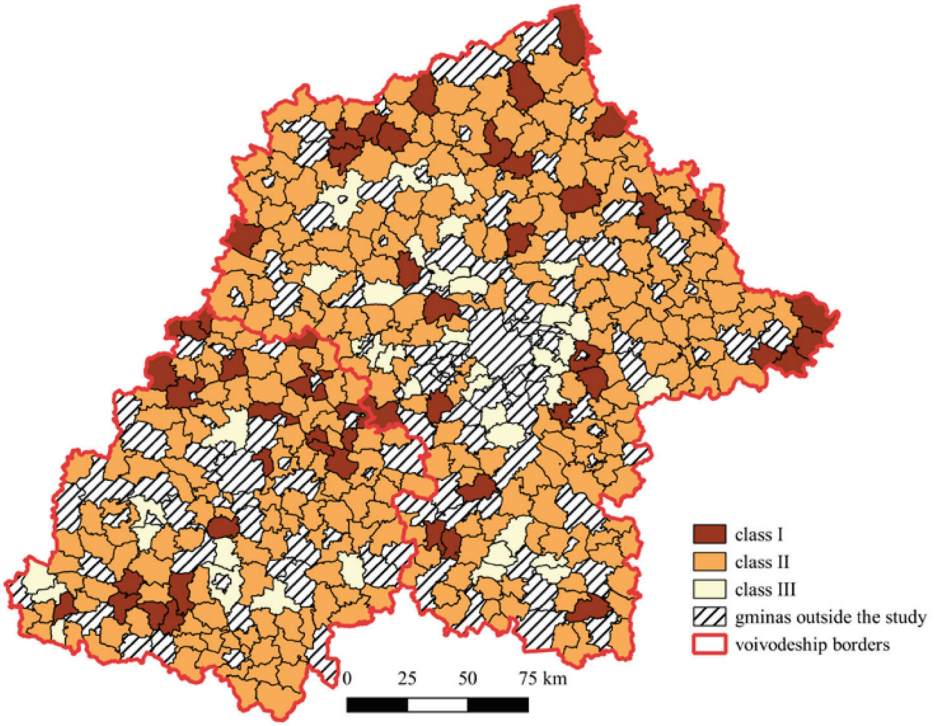
Source: own work.

The use of the classification of the investigated statistical population into classes, according to the formula $\left(\bar{x} \pm \frac{1}{2} S_x\right)$ allowed for the indication of three ranges, in which gminas were included (Table 2). Due to determining the range of classes, it was possible to make an evaluation of the structure of rural gminas in the central region in terms of affiliation to individual types of development. Among the 51 gminas, which were included in class I, i.e. the statistical population with the highest values of synthetic development measures, 21 units were located in Lodz voivodeship and 30 in Masovian. Despite higher values of the absolute number of gminas with the highest spatial planning culture in Masovian voivodeship, the shares in the structure of rural units indicate that 15.8% of Lodz voivodeship's gminas belonged to the highest classified group, whereas in Masovian voivodeship the number was only 13.2%.

With reference to gminas with the lowest values of the synthetic development measure, it is necessary to point out that 39 councils in the region were classified in that set. When making a classification of individual voivodeships, it has been noted that 10 gminas are located in Lodz region and the remaining 29 in the Masovian. As a consequence, the participation of the gminas from class III in the analyzed community accounted for 10.8%, (7.5% in Lodz and 12.7% in Masovian voivodeships).

The evaluation of the index of spatial planning culture development in the rural gminas allows for the conclusion that the vicinity of the capital of the region is not the factor correlating with the level of measure. The gminas that have an index on a higher level than 0.873 are spread irregularly on the area of the central region. When evaluating spatial distribution of the gminas from class I, it is necessary to indicate that the significant part, in the case of Lodz voivodeship, is located in the northern part of the voivodeship. Additionally, it should be highlighted that in the southeastern part of Lodz region, there are no gminas with

a high level of spatial planning culture. In case of Masovian voivodeship, spatial dependency cannot be clearly stated.



Source: own work based on the spatial data of CODGiK.

Figure 1. Classification of rural gminas with the use of the synthetic measure

With reference to the gminas with a low level of spatial planning culture development, the general approach to the central region does not allow for indication of spatial dependency. In the case of Lodz voivodeship, it should be emphasized that the majority of these units is located in the central part of the voivodeship, and a significant percentage borders with the urban gminas. In the case of Masovian voivodeship, a significant percentage of the units with a low development is located in the Warsaw Metropolitan Area or borders directly with it. This situation is also noticeable in the gminas bordering with Radom, Ciechanów and Raciąż. The remaining gminas of this type are spread randomly in different parts of the voivodeship.

CONCLUSION

The obtained results allow for stating that rural gminas located in the central region have a highly varied level of spatial planning culture development, measured with the use of proposed indexes consisting of the synthetic measure. Unfortunately, the obtained results also allow for stating that the authorities of the analyzed rural gminas, for the purpose of achieving the highest level of the synthetic development measure, still have a lot to do. In particular, this involves introducing land-use plans for the gmina's areas, which allows for the protection of essential, in a perspective of a sustainable development, elements of the natural environment of a gmina. At the same time, it has to be emphasized that guided by the same assumptions concerning the environmental area, many rural units have to verify provisions of the spatial policy in terms of modifications of the use of agricultural and forest lands for the purposes unrelated to their initial use. Similar conclusions appear in planning permissions, which as an alternative solution to the local land-use plans repeatedly constitute a basic tool for gmina's spatial planning. This leads to restrictions in the scope of social participation in spatial planning, but at the same time allows for a localization of different types of facilities in the area of rural gminas with no full social control of the process.

The conclusions referring to the low level of spatial planning culture are surprising, especially in case of rural gminas located in the urban areas or bordering with large cities. This is because those units are subject to the impact of factors resulting from the proximity of the urban centre, therefore exposed to urban sprawl. As a result, gminas located in the neighbourhood of urban centres should take care of the area and its advantages, especially by preparing local land-use plans and protecting agricultural and forest lands free from land development.

The indexes obtained in the study of spatial planning culture development largely allow for stating that the diversity in the group of 361 gminas is very high. This also shows that the authorities in the rural gminas differ in their actions in terms of spatial planning and adopt different attitudes with reference to the use of spatial planning tools. In accordance with the interpretation of the obtained measures, those are very different attitudes. This also allows for claiming that there is no standard approach for spatial planning in rural gminas.

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