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OWN INVESTMENT CAPACITY OF COMMUNES IN NATURALLY VALUABLE AREAS AND LOCAL CONDITIONS OF TOURISM DEVELOPMENT

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ABSTRACT: The aim of the research was to identify the level of the Polish municipality's own investment capacity with the most significant share of naturally valuable areas in the years 2014-2016 and the level of tourism development of these areas. The methods of economic analysis – comparative, indicative and tools of taxonomic analysis were used here, which allowed for ranking of the surveyed units in terms of the level of naturally valuable, tourism function, the level of local development and own investment potential. The surveyed entities had their own investment capacity, however, due to the scope of infrastructure needs, it should be assessed as low. The conducted research indicates a small scope of development of tourism in communes with the with the highest naturally valuable areas. In results, it can be concluded that this development opportunity has not been effectively used. In the authors' opinion, the development of the tourist function in the most naturally valuable areas which ensures that tourism will be the basis of local development of these areas is not possible without external support in the form of subsidies from the national budget and the implementation of knowledge on how to manage these areas.

KEY WORDS: local development, legally protected areas, communal investments, synthetic measure, tourist function

Introduction

Development of infrastructure on the naturally valuable areas is difficult because of some legal and financial obstacles. For these reasons, tourism is seen as a desirable course of local development. Local development strategies based on tourism activity not require the creation of large objects of economic, and technical infrastructure. Some investments in energy, road or water networks are, of course, necessary. Therefore, it is important to describe whether the level of the Polish municipality's own investment capacity with the most significant share of naturally valuable areas is significantly differ from others. The second question is whether tourism activity on the naturally valuable areas is higher than others.

An overview of literature

Naturally valuable areas are an important element of the environment in the policy of sustainable development, which requires special attention from the creators of local and regional development. These are either legally protected areas, such as national parks, landscape parks, nature reserves, protected landscape areas, Natura 2000 sites, or unprotected environmental elements that should be preserved for future generations. The most important resources include forests and waters, due to their important role in maintaining biodiversity and the cleanliness of the natural environment (Cieszewska, 2008, p. 239-250; Steiner, 2000; Dobrzańska, 2007, p. 61; Zielińska, 2007, p. 168). Poland is a country with a high forest cover, the area of the forests increases, and the number of species of animals endangered with extinction increasing due to various protection forms. High environmental values predispose these areas to the development of tourist functions (Dębniewska, Skorwider-Namiotko, 2015, p. 169). However, their development may be difficult due to legal and financial restrictions in the area concerning creation of new infrastructure (Puciato, 2009, p. 228). Tourism can also have a negative impact on the environment (Jurkiewicz-Karnkowska, 2016, p. 70; Skorwider-Namiotko, Skorwider-Namiotko, 2016, p. 311-317; Jalinik, 2016, p. 227). It should also be taken into account that the high share of naturally valuable areas with insufficiently developed tourist function reduces the economic base of the local economy and thus becomes an additional barrier to development that cannot be overcome without the support of external resources. On the other hand, there are examples indicating that sustainable development of tourism in these areas is possible (Dedeke, 2017, p. 161-172).

Local development is a process that aims to improve the quality of life of inhabitants. The stream of local public expenditures should improve the infrastructure (first of all technical, which creates the economic base) and the investment climate, which will induce entrepreneurs to develop new economic activities and thus increase the income and assets of residents. This higher activity should be reflected in the higher own budget revenues of communes (in particular due to the share in income from PIT and CIT income taxes and in real estate, agricultural and forest tax) (Warczak, 2015, p. 111-122; Kołodziejczyk, 2014, p. 198-206).

The possibilities of financing investments in municipalities to a large extent depend on the amount of operating surplus in the budget. According to the current law, the structure of the budget is to ensure surpluses on financing current operations consisting in satisfying the current needs of residents through communal and social services. Thanks to these surpluses, it will be possible to repay the existing debt and allocate part of the funds for new investments. Lack of operating surplus significantly reduces or prevents investment activities (Gubernat-Ulatowski, 2016, p. 48-54; Zawora, 2014, p. 554). Investment potential can be determined at various levels (Skorwider, Garbowski, 2012, p. 233). From the point of view of the conducted research, the study of own investment capacity of communes was considered the most important.

Research methods

The aim of the research was to identify the level of the Polish municipality's own investment capacity with the most significant share of naturally valuable areas in the years 2014-2016 and the level of tourism development of these areas. The methods of economic analysis – comparative, indicative and tools of taxonomic analysis were used here, which allowed ranking of the examined units and measurement of statistical relationships between the studied phenomena. Those methods were used commonly in works of Krakowiak-Ball (2005), Nowak (1975), Skorwider-Namiotko and Skorwider-Namiotko (2016), but sometimes with different tool of taxonomy analysis. In order to identify communes with the predominance of naturally valuable areas, three indicators were used which, in the opinion of the authors, reflect the nature of the phenomenon under investigation in the best way. These included: the share of the legally protected area, the share of forest areas and the share of the surface underwater (including the area of sea waters within the boundaries of communes) (Dębniewska, Skorwider-Namiotko, Wojtowicz, 2016, p. 27). In Poland, the most of natural naturally valuable areas are legally protected but forests and water areas are important to develop flora

and fauna and touristic activity as well. On the other hand, mountains areas were partially omitted because some of them are in one of the previous groups. Some mountain areas are attractive to development of tourism but are not so naturally valuable if there are few or common plants and animals or are even barren, like some mountain peaks. These indicators were not separable, as some forest and water areas also had the status of legally protected areas.

The synthetic measures illustrating the level of naturally valuable, tourism function, the level of local development and own investment potential was built on the basis of the Perkal index (Karmowska, 2011, p. 87), so an equal influence of particular variables on the studied phenomenon was assumed. The data was obtained from the Online Local Data Bank of the Central Statistical Office and information from the Ministry of Finance regarding long-term financial plans of communes. Data was collected for all communes in Poland, after which they were subject of the normalization procedure, using the method of zero unitarization (Jarocka, 2015, p. 113-125; Walesiak, 2014, p. 365-369; Kukuła, Bogocz, 2014). All variables were stimulants. They were characterized by an appropriate level of differentiation, as the coefficient of variation was above 10%. Variables were not correlated significantly. The value of R=0.81 was assumed as the correlation limit because this value gives an explanation of the variability of one feature in 2/3 (R^2=0.66). In the second stage, diagnostic variables were transformed to eliminate their titer. For this purpose, the method of zero unitarization was applied in accordance with the following formula:

$$z_{ij} = \frac{x_{ij} - \min_{i}\{x_{ij}\}}{\max_{i}\{x_{ij}\} - \min_{i}\{x_{ij}\}} \tag{1}$$

where:
z_{ij} – normalized value of the *j* variable for the *i* object,
x_{ij} – value of the *j* variable for the *i* object,
min – maximum value of the variable,
max– the minimum value of the variable.

As a result of the transformation applied, normalized variables adopted values from the interval [0,1]. In the next stage, previously normalized variables were aggregated according to the following procedure:

$$z_i = \sum_{j=1}^{k} w_j \cdot z_{ij} \tag{2}$$

where:
k   – number of variables,
w   – variable weight.

In that way, three synthetic measures: the level of naturally valuable, the level of tourism function, and the level of local development were calculated. Then they were compared with the indicators of own investment potential i.e. relative investment capacity (% of current revenues) and investment capacity per capita (PLN/person) with the use of Pearson correlation index.

Results of the research

Identification of communes with the predominance of naturally valuable areas and their tourist functions

Based on the distance of a synthetic measure of a given commune from the average and a multiple of the standard deviation, five types of communes have been distinguished (table 1). Conducted research indicates that in Poland dominate communes in which naturally valuable areas are an important element of the local economy. In over 84% of Polish communes, the synthetic measure of the level of naturally value has exceeded 0.05, and in over 42% it exceeded 0.20. Although the level of 0.05 is low, compared to other surveyed units, it already indicates that areas are an important element of the natural and economic environment of the commune, and thus this resource will require appropriate management.

Table 1. Types of communes by the level of naturally valuable areas in Poland

Type of commune	Division criteria	Synthetic measure interval	Number of communes
1 − the highest share of NVA	higher than x + 2s	higher than 0.505	108
2 − high share of NVA	higher than x + s	(0.353 − 0.505>	348
3 − average share of NVA	higher than x	(0.202 − 0.353>	585
4 − low share of NVA	higher than x − s	(0.051 − 0.202>	1045
5 − the lowest share of NVA	till x − s	<0.000 − 0.051>	392

x − mean, s − standard deviation, NVA − naturally valuable areas.

Source: author's own work based on data of Central Statistical Office in Poland [17-11-2017].

Municipalities from the group number one were chosen as subjects of research. These were municipalities for which the value of the synthetic measure was higher by two standard deviations from the average. They constituted 4.35% of the total population. Their list is presented in table 2. In the identified entities with the highest level of naturally valuable, the average share of the legally protected area exceeded 93%, forests accounted for over 62% of the communes area (more than twice the national average), and water approx. 3% (so 1.5 times more than average for the country).

Table 2.   Communes with the highest level of naturally valuable areas by voivodships

Voivodship	Number of communes	Synthetic measure interval	List of communes
Dolnośląskie	1	0.549	Stronie Śląskie (3)
Kujawsko-pomorskie	5	0.510-0.596	Osie (2), Śliwice (2), Wielka Nieszawka (2), Bobrowniki (2), Solec Kujawski (3)
Lubuskie	3	0.511-0.584	Dobiegniew (3), Kłodawa (2), Drezdenko (3)
Małopolskie	18	0.505-0.612	Rytro (2), Łabowa (2), Sękowa (2), Szczawnica (3), Muszyna (3), Piwniczna-Zdrój (3), Uście Gorlickie (2), Kamienica (2), Ochotnica Dolna (2), Czorsztyn (2), Krynica-Zdrój (3), Poronin (2), Bystra-Sidzina (2), Kościelisko (2), Krościenko nad Dunajcem (2), Kamionka Wielka (2), Lipnica Wielka (2), Bukowina Tatrzańska (2)
Mazowieckie	8	0.506-0.619	Podkowa Leśna (1), Izabelin (2), Zielonka (1), Wilga (2), Celestynów (2), Nowy Duninów (2), Nieporęt (2), Maciejowice (2)
Opolskie	7	0.508-0.601	Tułowice (2), Murów (2), Lasowice Wielkie (2), Zębowice (2), Kolonowskie (3), Turawa (2), Ozimek (3)
Podkarpackie	19	0.509-0.669	Cisna (2), Lutowiska (2), Krempna (2), Komańcza (2), Baligród (2), Solina (2), Krasiczyn (2), Jaśliska (2), Czarna (2), Ustrzyki Dolne (3), Bircza (2), Tyrawa Wołoska (2), Horyniec-Zdrój (2), Narol (3), Olszanica (2), Krzywcza (2), Adamówka (2), Fredropol (2), Niwiska (2)
Podlaskie	8	0.506-0.647	Białowieża (2), Narewka (2), Mielnik (2), Nowinka (2), Płaska (2), Czarna Białostocka (3), Zbójna (2), Giby (2)
Pomorskie	5	0.584-0.633	Osieczna (2), Osiek (2), Hel (1), Lipusz (2), Dziemiany (2)
Śląskie	9	0.511-0.622	Kuźnia Raciborska (3), Boronów (2), Ujsoły (2), Wisła (1), Herby (2), Szczyrk (1), Janów (2), Nędza (2), Czernichów (2)
Świętokrzyskie	12	0.506-0.608	Brody (2), Bliżyn (2), Suchedniów (3), Wąchock (3), Zagnańsk (2), Daleszyce (3), Stąporków (3), Ruda Maleniecka (2), Smyków (2), Raków (2), Bodzentyn (3), Łączna (2)
Warmińsko-mazurskie	6	0.512-0.612	Jedwabno (2), Stawiguda (2), Janowo (2), Kruklanki (2), Ruciane-Nida (3), Łukta (2)
Wielkopolskie	3	0.509-0.561	Powidz (2), Sośnie (2), Wronki (3)

(1) – urban commune, (2) – rural commune, (3) – urban-rural commune.

Source: author's own work based on data of Central Statistical Office in Poland [17-11-2017].

In order to determine the tourist function of the studied areas, five indicators were used (Szromek, 2013, p. 91-103; Hendel, 2016, p. 159-168), which were then normalized and used to construct a synthetic measure of the level of tourism function development using the Perkal indicator (table 3):

- Baretje-Defert indicator expressed in the number of tourist beds per 100 permanent residents,
- Defert indicator expressed in the number of tourists using accommodation per 1 square km of the area,
- Schneider indicator, expressed by the number of tourists using accommodation, per 100 inhabitants of the area,
- Charvat indicator expressed in the number of overnight stays per 100 inhabitants of the area,
- accommodation density indicator expressed in the number of beds offered to tourists per 1 square km of the area.

Table 3. Indicators of the level of tourism function development in the analysed communes in 2014

Item	Baretje-Defert indicator [pc./100 p.]	Defert indicator [pc./sq. km]	Schneider indicator [pc./100 p.]	Charvat indicator [pc. /100 p.]	Accommodation density indicator [pc./sq. km]	Synthetic measure of the tourism function development level
Communes with the highest naturally valuable areas						
Average	12.6	159.5	249.8	986.9	7.8	0.029
Median	2.5	17.2	43.5	93.1	1.1	0.004
Standard deviation	32.2	423.4	514.1	2 471.2	25.6	0.067
Coefficient of variation	2.6	2.7	2.1	2.5	3.3	2.3
Min	0.0	0.0	0.0	0.0	0.0	0.000
Max	292.7	2 751.9	2 798.9	19 598.0	239.4	0.535
Communes in Poland overall						
Average	2.7	129.9	55.8	196.1	4.5	0.008
Median	0.3	3.1	5.2	12.0	0.3	0.001
Standard deviation	16.1	666.1	237.0	1115.3	29.4	0.038
Coefficient of variation	6.0	5.1	4.2	5.7	6.6	4.7
Min	0.0	0.0	0.0	0.0	0.0	0.000
Max	374.2	16540.9	5656.0	22467.8	619.7	0.691

Source: author's own work based on data of Central Statistical Office in Poland [17-11-2017].

Based on the data form table 3 it can be stated that the communes in the most naturally valuable areas were characterized by low level of development of the tourist function, because of the low average value of the synthetic measure (0.029). Most of them were classified in the fourth or fifth category

of tourism function development (and therefore the lowest ones). Only the commune of Mielno was in the first category and the commune of Między- zdroje in the third category, i.e. above the average for all communes. Despite such low results, the analysed communes were characterized by a higher than average for Poland level of development of the tourist function – in total as well as in each of the variables used for its construction. The obtained results indicate that the surveyed municipalities failed to build adequate accommodation infrastructure. This lack of touristic facilities partially was the result of legal system in which are some restriction related with building process in naturally protected areas (Kistowski, 2008; Zielińska, 2007, p. 165-166). Sometimes tourist activity was not shown in the official statis- tics of the Central Statistical Office. To a large extent, this situation concerned agritourism farms. It can also be said that the authorities of these municipal- ities did not manage to stop the tourist for longer than a one-day stay.

Determinants of investment capacity in the communes with the highest level of naturally valuable areas

The larger economic base gave larger own revenues of these communes. The five most important indicators referring to the level of local development are presented in table 4. There were: own income per inhabitant, percentage users of the public water and sewage network, users of gas system and num- ber of companies registered in REGON system per 100 000 inhabitants. On the basis of their normalized values, a synthetic measure of the level of local development was built (also using the Perkal indicator). The average values of own revenues and the average number of enterprises from 2014- 2016 were used in the analyses due to their volatility in analysed years. Data about the availability of infrastructure simultaneously illustrate the scope of investment needs.

Table 4. Average values of indicators of the level of local development in the analysed communes in 2014-2016

Item	Own income per inhabitant [PLN/person]	Users of the public water network [%]	Users of the public sewage network [%]	Users of gas network [%]	Entrepreneurial level [pcs./10,000 people]	Synthetic measure of local development level
Communes with the highest naturally valuable areas						
Average	1 751.9	75.8	55.0	18.0	880.7	0.319
Median	1 407.4	87.5	56.5	0.7	725.7	0.319
Standard deviation	1 092.0	26.5	27.6	27.0	426.2	0.121
Coefficient of variation	0.62	0.35	0.50	1.50	0.48	0.38
Min	547.5	0.2	0.0	0.0	419.7	0.086
Max	6 787.8	100.0	99.9	95.8	2 902.1	0.611
Communes in Poland overall						
Average	1 566.3	87.6	48.6	25.4	787.7	0.342
Median	1 382.3	93.5	47.2	7.4	716.9	0.322
Standard deviation	1 223.8	17.4	28.5	31.0	346.3	0.121
Coefficient of variation	0.78	0.20	0.59	1.22	0.44	0.35
Min	482.6	0.0	0.0	0.0	277.6	0.014
Max	46 844.8	100.0	100.0	98.5	7 919.5	0.764

Source: author's own work based on data of Central Statistical Office in Poland and Ministry of Finance [17-11-2017].

The analysed communes were characterized by a slightly lower average level of local development than all communes in the country. There was a low population density in the majority of studied areas (about 61 people per square km, while the country's average is 123 people per square km). Approx. 25% of inhabitants of these areas have not had access to public water system, 45% to sewage system, and 82% to gas network.

The level of own income per capita was higher than the average for Poland by approx. 12%; higher level of public sewage system by just over 6 percentage points (although it should be noted that this level was low – around 55%) and a higher level of entrepreneurship, also by approx. 12%. However, these units were characterized by lower access to public water supply infrastructure (by about 12 percentage points) and lower access to gas infrastructure (by about 7 percentage points). These results indicate the existence of an infrastructure gap in the studied area. It is the effect of dispersed settlement and dispersed economic activity. However, such conditions cause the necessity to increase investment expenditures.

Own investment capacity is the difference between current income and current expenses less repayment of instalments of credits, loans and redemption of municipal bonds in a given year, increased by income from the sale of assets, budget surplus from previous years and revenues from privatization and returns of previously granted loans. Therefore, the received subsidies and debts incurred – old (in the form of free funds) or new debts – are funds coming from outside the municipality. They were compared to current income and per capita (table 5).

Table 5. Average values of indicators of the level of local development in the analysed communes in 2014-2016

Item	Relative investment capacity [%]	Investment capacity per capita [PLN/person]
Communes with the highest naturally valuable areas		
Average	7.84	302.15
Median	6.20	216.16
Standard deviation	8.15	353.93
Coefficient of variation	1.040	1.171
Min	-24.38	-900.81
Max	48.47	2 302.35
Communes in Poland overall		
Average	7.54	310.8
Median	6.30	207.6
Standard deviation	9.34	2 312.8
Coefficient of variation	1.24	7.44
Min	-53.19	-6 655.3
Max	229.47	113 709.corr

Source: author's own work based on data of Ministry of Finance [17-11-2017].

Municipalities in Poland, on average, had a small own investment capacity. Funds that can be used for investments accounted for approximately 7.5% of current revenue, i.e. approx. PLN 300 per year per capita. Such investment potential will not allow quick elimination of the emerging infrastructural gap. However, there is a large variation in this potential, both in percentage and per capita terms. A disturbing phenomenon, however, is the occurrence of negative indicator values in some communes. Such situation occurred in 193 communes, of which only three (communes: Janów, Płaska

and Krempna) were in the studied group. Municipalities with the highest naturally valuable areas were characterized by slightly better than average ratio of relative investment capacity and a slightly lower index of investment capacity per capita. In the studied group, the lower variability of the analysed phenomena was also observed.

Analysis of the coexistence between the analysed factors and the level of naturally valuable areas suggests the lack of significantly statistical connections both in the studied group and in the whole population. Pearson correlation coefficients ranged from –0.12 to 0.14, and among synthetic measures from –0.03 to 0.06.

Conclusions

The vast majority of local government authorities are struggling with the proper development and protection of naturally valuable areas. The greater the share of naturally valuable areas is, the more difficult building of a local development strategy is, as development processes will require intensive support. Most of the analysed communes in the naturally valuable areas were rural one, but the level of entrepreneurship development was higher than the national average, which should be assessed positively. The existing infrastructural gap must have been fulfilled independently by the inhabitants. The researched communes had own investment capacity, but due to the scope of those needs, it was too low. The most widespread method of using naturally valuable areas is the development of tourism. However, the surveys carried out among Polish communes, indicate the limited scope of tourism development in the communes with the largest share of these areas. This development opportunity has not been effectively used.

In the authors' opinion, the obtained results indicate that a significant development of the tourist function in the most naturally valuable areas, i.e. such a level of development that will make tourism the economic base of the local economy, is not possible without external support. The appropriate financial resources in the form of non-repayable subsidies and grants are necessary here. Without this, there is a real threat that the level of protection of these areas will be reduced, and some of them will degrade. Secondly, it is necessary to implement in communes know-how to show how effectively manage these areas. Creating a catalogue of good practices combined with financial support for their implementation gives better results than waiting for bottom-up development, it was proved by the absorption of funds from the European Union. However, support should be provided firstly from

national budgets and government agencies, as the negative effects of abandoning such activities will have a national dimension, not just a local one.

The contribution of the authors

Jarosław Skorwider-Namiotko – conception, literature review, acquisition of data, analysis and interpretation of data – 60%
Anna Skorwider-Namiotko – conception, acquisition of data, analysis of data – 20%
Marianna Dębniewska – conception, interpretation of data – 20%

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