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EVALUATION OF CONDITIONS CONCERNING THE DEVELOPMENT OF TOURISM. INVESTIGATION INTO THE BASIN OF THE PARSĘTA RIVER

ABSTRACT. The article presents the results of multidimensional evaluation of conditions concerning the development of tourism in rural areas of Parsęta basin. For the purpose the synthetic measure has been applied in reference to 27 variables divided into two groups: suitable for tourism or investing.

Having conducted the analysis of the selected variables, the investigated area was divided into three regions: the seaside at the North with very good conditions for the development of the touristic function as its core function, the central region, highly diversified with only moderate touristic capabilities, and finally the southern region, the lake district, with adequate features for the development of tourism.

KEY WORDS: Poland, Pomerania, rural areas, tourism, a synthetic measure of tourist attractiveness.

INTRODUCTION

The process of transformation of the political and economic systems in Poland, after 1989, among other things has increased the importance of the tourism sector in respect to shaping phenomena and processes connected with local economy. Since the 1990s tourism started to be recognised as an important factor in restructuring and modernising economy, stimulating complimentary trade and economically backward regions including rural areas and districts with a high unemployment rate (Pawlusiński, 2005). At the local level, according to B. Stankiewicz (2008), tourism supports activities aimed at the diversification of local economy, where besides traditional enterprises, new levels of local initiatives are introduced in turn making those regions more competitive.

No matter which level of administrative units is considered, each time the stocktaking and assessing natural, cultural and touristic resources should proceed the planning of touristic development of particular regions (Brudnicki, 2007). As rightly noticed by Kiryluk and Borkowska-Niszczota (2006), from a broader perspective only establishing how already planned development of the tourist sector merged with a broader socio-economic context will guarantee a permanent and balanced functioning in the long run.

SUBJECT MATTER AND METHODOLOGY

The spatial distribution of investigated area encompasses all 20 rural commune (gmina – administrative region of the 3rd order – NUTS–5) found in the basin of Parsęta river. Taking into account only rural communes was a consequence of the differences in the conditioning of the touristic function development in towns and the countryside (Mika, 2007a:319–328; Mika, 2007b:330–333). The investigated area amounts to 1.5% of Poland's surface, and amounts to 4737 sq km, and is inhabited by 0.28% of Polish population, reaching 109.5 thousands in 2008.

The analysed basin of the Parsęta river is characterised by a significant physical-geographical diversification which is reflected in zoning of the terrain. The coast of the Baltic Sea encompasses the northern part of the area, Trzebiatowskie and Słowińskie Coasts, the middle part is longshore lowlands with low lake occurrence, Gryficka and Białogardzka Plain, the south-east one is plentiful with lakes and forests, Łobeska Plateau and Drawskie Lakeland. The mentioned features together with their interdependencies were described by J. Warszyńska (1970:103) as the primal determinant that has an impact on how a particular area may be used from the perspective of a touristic function, and in consequence as a factor influencing the area's socio-economic development.

The following work supposes that the spatial layout of the synthetic measure of the touristic attractiveness in the countryside in the Parsęta Basin, characterised by a high landscape and management variability, depends on zoning of mesoregions concerning this area.

The method applied in the research was the synthetic measure of the touristic attractiveness developed by Gołembski *et al.* (2002). The method belongs to multidimensional comparative analyses. The tool is commonly used in numerous research in spatial analysis of developmental conditioning of touristic functions (Pawlusiński, 2005; Brudnicki, 2007; Ossowska, 2008). The method requires identifying a number of features and corresponding variables which allow for evaluation of a given phenomenon. The research procedure included a choice of a group of diagnostic features, ascribing weight to particular variables, subgroups,

and groups, unifying preferences direction and normalisation of features as well as estimating a touristic attractiveness of particular communes.

In order to determine the conditioning of tourism development 27 variables were used, which characterise the units researched in a quite complex way; at the same time the variables which were correlated strongly and copying information were eliminated. The variables were divided into two sets S_1 and S_2. S_1 set was used to evaluate the touristic attractiveness of communities (13 variables), while S_2 set (14 variables) was used to evaluate attractiveness of the communes researched from the point of view of potential investors (Tab. 1).

Table 1. The conditioning of tourism development variables with weights

Set	Subset	Variable	Weight
S_1 set: Variables describing touristic attractiveness	Touristic amenities weight: 0.55	A share of forests in the area of a commune (%) [1]	0.15
		A share of meadows and pastures in the area of a commune (%) [1]	0.05
		A number of lakes per 1 km² [4]	0,05
		Lake occurrence (%) [4]	0.30
		Sea access, zero-one method [4]	0.30
		A number of religious centres per 1 km² [4]	0.05
		A number of natural monuments per 1 km² [4]	0.05
		A number of architectural monuments per 1 km² [3]	0.05
	Transport availability weight: 0.15	A length of roads per 1 km² [4]	0.70
		A frequence of train stops [5]	0.25
		A number of working railway stations per 1,000 inhabitants [5]	0.05
	Touristic infrastructure weight: 0.30	Baretje/Defert's rate [1]	0.80
		A number of hotels and restaurants per 1,000 inhabitants [1]	0.20
S_2 set: Variables describing investment attractiveness	Service infrastructure weight: 0.30	A number of shops per 1,000 inhabitants [1]	0.35
		A number of petrol stations per 1 km² [1]	0.35
		A number of pharmacies and ambulatory care facilities per 1,000 inhabitants [1]	0.20
		A number of post offices per 1,000 inhabitants [1]	0.10
	Technical infrastructure weight: 0.25	A percentage of inhabitants served by sewage treatment plants (%) [1]	0.35
		A percentage of inhabitants using waterworks (%) [1]	0.35
		Sewage network in km per 1 km² [1]	0.15
		Waterworks in km per 1 km² [1]	0.15
	Socio-demographic conditioning weight: 0.30	A number of non-productive age inhabitants per 100 persons in productive age [1]	0.20
		Population density per km² [1]	0.30
		A share of working inhabitants among the productive age inhabitants (%) [1]	0.30
		A share of the unemployed with relation to the working age inhabitants (%) [2]	0.20
	Economic conditioning weight: 0.15	Revenue per 1,000 inhabitants [1]	0.80
		A share of expenditure on culture and national heritage (%) [1]	0.20

Source: (1) Bank Danych Regionalnych GUS [http://www.stat.gov.pl], (2) Wojewódzki Urząd Pracy w Szczecinie [http://www.wup.pl], (3) Wojewódzki Konserwator Zabytków w Szczecinie [http://www.wkz.szczecin.pl], (4) ZMiGDP [http://www.parseta.org.pl], (5) Polskie Koleje Państwowe [http://www.pkp.pl], 2007.

Among the above mentioned variables some doubts can be perceived by using such pairs of variables as: a number of lakes per sq km (weight 0.05) and lake occurrence (weight 0.30), a frequence of train stops (weight 0.25) and a number of working railway stations per 1,000 inhabitants (weight 0.05). Although there is a strong correlation (r=0.93) between the lake occurrence and the number of lakes, they were treated as complementary variables due to the fact that the number of lakes influences the heterogenity of terrain and increasing landscape attractiveness. Similarly, a number of working railway stations treated as accessibility to railway system in a commune was perceived as a complementary variable to a frequency of train stops (r=0.87), which shows accessibility of a railway system to a commune.

The paper uses the term tourist attractiveness as used in Kurek and Mika (2007:24) understood as „a quality of an area or a town resulting from a group of natural features or non-natural ones that cause interest and attract tourists". The term includes three elements as a basis for a development of all touristic activity: touristic quality, transport accessibility, and touristic management. It should be specified though that those components, when developed and connected functionally, give optimal possibilities of satisfying tourist demand at the area of tourist reception. They also define a touristic function of a given area as an active constituent of its socio-economic structure in an unequivocal way (Warszyńska, 1970). On the other hand, investment attractiveness was defined as a resultant of four features: a state of service and technical infrastructures, socio-demographic and economic conditioning (the finances of communes) (Gołembski et al., 2002).

Considering the number of assorted variables (27) and their homogenous time section (2007) the research uses a method of multivariate analysis of variance. A representation of the above mentioned set of numbers is a geographic matrix forming a rectangular arrangement with m rows and n columns:

$$[x_{ij}] = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ x_{11} & x_{12} & \cdots & x_{1n} \end{bmatrix}$$

where:
i – number of unit (i = 1, …, m),
j – number of feature (j = 1, …, n),
x_{ij} – value of j-th variable in i-th unit.

Individual variables and their subsets represent different levels of importance in the forming of the eventual estimate. For this reason they were associated with different weights here. The assumption of the weights equality was realised only on the highest level of generalisation, namely for sets S_1 and S_2, which were given the weight of 0.5 (Tab. 1).

The next step necessitated a transformation of particular variables, which were destimulants, into stimulants, according to formula given by Gołembski et al. (2002):

$$y_{ij} = x_{imax} - x_{ij}$$

where:
i – number of the commune (i = 1, …, m),
j – number of variable (j = 1, …, n),
x_{ij} – value of j-th variable in i-th commune,
y_{ij} – value of j-th variable of stimulant character in i-th commune
x_{jmax} – maximum value of j-th raw variable in communes

Within the paper the following are treated as destimulants: the number of people in non-productive age per 100 people in the productive age, population density, and the share of the unemployed in relation to the total of people in the productive age.

Another methodological problem directly related to the data was caused by differently quantified raw units: square kilometres, percentages, and number of people per square kilometre (Tab. 1). Moreover, the values those variables reached were very diversified. In some extreme situations the differences were as big as a few orders of magnitude, which rendered further calculations impossible. In order to avoid the faults mentioned above, the author introduced normalisation through the comparison of a value given to a commune with the best commune considering the analysed variable.

$$z_{ij} = \frac{y_{ij}}{y_{jmax}}$$

where:
z_{ij} – normalised value of stimulant,
y_{ij} – value of j-th variable of stimulant character in i-th commune
y_{jmax} – maximum value of j-th variable of stimulant character in communes

A normalised feature characterises the level of realisation of the most suitable value of a variable for a particular commune. All numerical values are in the range [0, 1].

RESULTS AND DISCUSSION

As a result of the utilised investigative approach normalised values of variables and subsets were received, and consequently, of sets S_1 and S_2. A sum of measures from S1 set (a synthetic measure of tourist attractiveness) and S_2 set (a synthetic measure of investment attractiveness) determines the attractiveness in total S_0 (Tab. 2). After arranging So values a ranking of the communes was received, and additionally, its spatial representation was prepared in the form of a cartogram.

Table 2. Table of synthetic measures of tourist attractiveness – S_1, investment – S_2 and general measure – S_0

Gmina	A synthetic measure of tourist attractiveness S_1 Value/Rank[1]		A synthetic measure of investment attractiveness S_2 Value/Rank[1]		General measure of tourist attractiveness $S_0=(S_1*0.5)+(S_2*0.5)$ Value/Rank[1]	
Ustronie Morskie (UsM)	0.519	1	0.815	1	0.667	**1**
Kołobrzeg (Koł)	0.511	2	0.489	4	0.500	**2**
Czaplinek (Cza)	0.502	3	0.384	16	0.443	**3**
Szczecinek (Szc)	0.455	4	0.422	14	0.439	**4**
Borne Sulinowo (BoS)	0.347	5	0.461	7	0.404	**5**
Dygowo (Dyg)	0.273	11	0.505	2	0.389	**6**
Gościno (Gos)	0.284	10	0.494	3	0.389	**7**
Biały Bór (BiB)	0.248	13	0.471	6	0.360	**8**
Tychowo (Tyc)	0.306	8	0.415	15	0.360	**9**
Bobolice (Bob)	0.324	7	0.383	17	0.353	**10**
Biesiekierz (Bie)	0.241	14	0,461	8	0.351	**11**
Połczyn Zdrój (PoZ)	0.346	6	0.350	19	0.348	**12**
Karlino (Kar)	0.258	12	0.423	13	0.341	**13**
Grzmiąca (Grz)	0.219	16	0.455	10	0.337	**14**
Barwice (Bar)	0.291	9	0.382	18	0.336	**15**
Sławoborze (Sła)	0.200	17	0.448	11	0.324	**16**
Rymań (Rym)	0.193	18	0.439	12	0.316	**17**
Rąbino (Rąb)	0.143	19	0.458	9	0.300	**18**
Białogard (Bia)	0.227	15	0.339	20	0.283	**19**
Siemyśl (Sie)	0.068	20	0.472	5	0.270	**20**
mean value	0.298	-	0.453	-	0.376	-

[1] value 1 represents the best commune in the group.

Source: author's calculation;

As it can be seen in Tab. 2, within the area of the Parsęta basin there are significant differences in the values of synthetic measures of tourism development conditioning. The tendency is visible in both component measures (S_1 and S_2) and the general measure S_0.

Note: The origin was defined on the basis of the value of a median for the measure S_1 (0.278) and S_2 (0.452). A – a synthetic measure of tourist attractiveness S_1, B – a synthetic measure of investment attractiveness S_2.
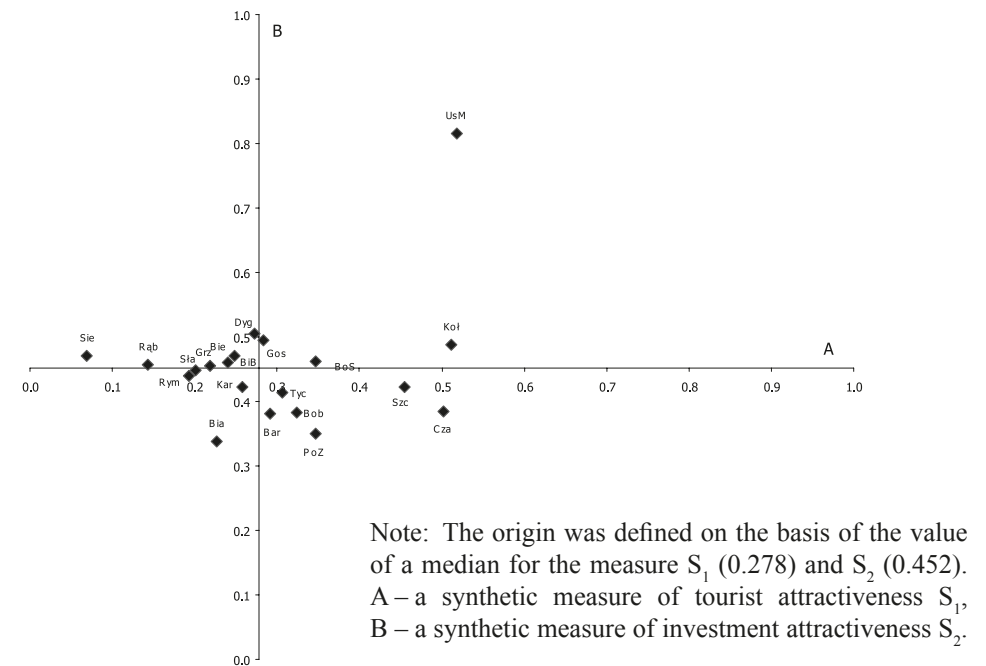
Fig. 1. Graphic representation of the synthetic measure of tourist attractiveness distribution S_1 and the synthetic measure of investment attractiveness S_2

Source: author's calculation on the basis of data from Tab. 2.

Taking into consideration the synthetic measure of tourist attractiveness (S_1) one can enumerate 10 communes which are characterised by high (0.278 – 0.346) and very high (0.346 – 0.519) values of the measure. Those communes when analysed spatially tend to form two compact stripe-like complexes, which in their form correspond to physical-geographical stripes in the region (Fig. 2). The first complex in the north part of the basin encompasses Ustronie Morskie and Kołobrzeg communes. They are most attractive touristically, which is confirmed by the highest values of the S_1 variable within the analysed set reaching 0.519 and 0.511 respectively (Tab. 2). Both communes are situated at the coastline, where the Baltic Sea is the most influential factor, both touristically and economically. Kołobrzeg commune is characterised by an easy transport accessibility and together with Ustronie Morskie by high values of variables depicting tourism base.
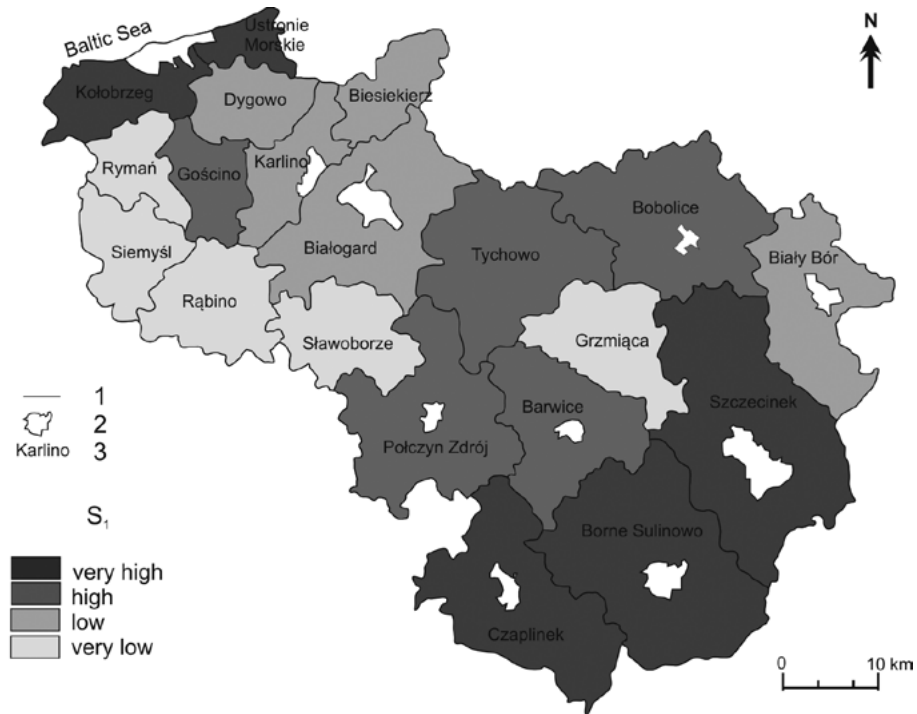
Note: (1) commune borderline; (2) town area; (3) name of a commune; very low 0.068–0.225; low 0.225–0.278; high 0.278–0.346; very high 0.346–0.519

Fig. 2. Spatial layout of a synthetic measure value of touristic attractiveness S_1

Source: author`s own study based on data from Tab. 2.

A second distinguished complex in terms of tourist attractiveness are the communes lying in the south and south-east part of the area. Among those communes one can notice the best development conditions in terms of touristic attraction in: Czaplinek (0.502), Szczecinek (0.455), and Borne Sulinowo (0.347), which can be characterised by a high share of forest areas and high lake occurrence. These features are a basic factor of tourism development on these terrains. A certain complement to that complex are the communes lying to the north-east: Połczyn Zdrój (0.346), Bobolice (0.324), Tychowo (0.306) and Barwice (0.291). These terrains are also characteristic in terms of high share of forest areas, however, they have a definitely lower lake occurrence, which is a result of different geomorphological conditioning. It should be specified though that spatial distribution of other measures of tourist attractiveness such as a number of religious centres, architectural monuments, natural monuments as well as transport accessibility and tourism base development at the area analysed

is quite similar. A particular position in the set is taken by Grzmiąca commune (0.219), which has a significant lowering of measure value of lake occurrence with retention of high forest occurrence and average values of other variables from the subset of touristic qualities. Moreover, the commune lies out of the way of road transport and can be characterised by lower development of tourism base if compared to neighbouring communes. These factors hindered Grzmiąca commune to be qualified to the set of communes with a high value of the synthetic measure of touristic attractiveness S_1.

On the other hand, the communes with low and very low value of S_1 measure are concentrated in the central-western part of the basin: Siemyśl (0.068), Rąbino (0.143), Rymań (0.193) and Sławoborze (0.200). The terrains are almost bare in touristic attractiveness qualities and additionally, they lie in the shadow of main transport routes. The negative situation is amplified by the fact that there is a low
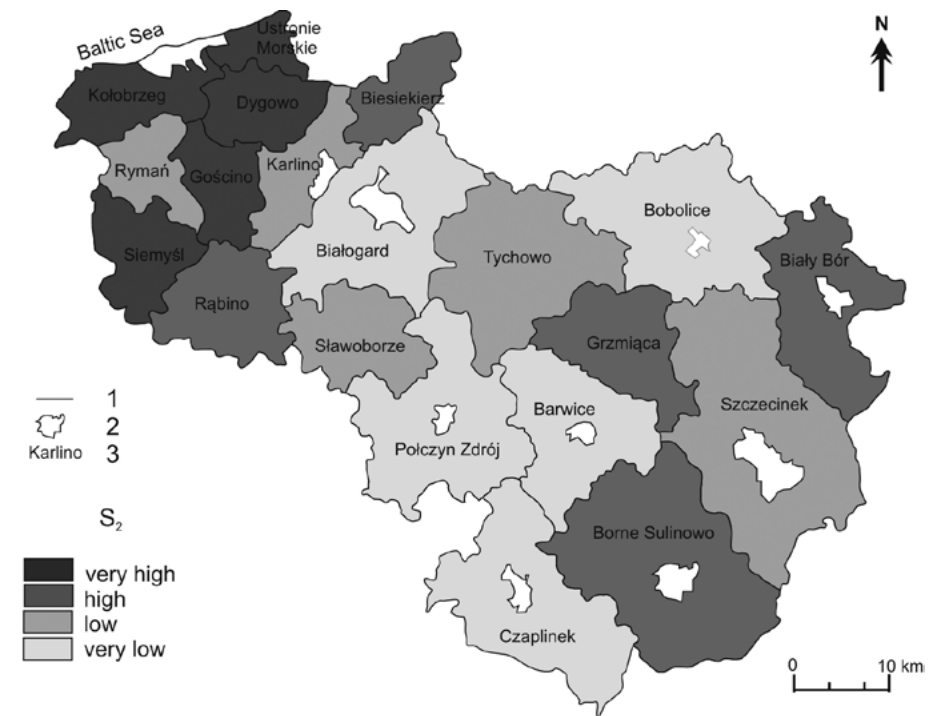
Note: (1) commune borderline; (2) town area; (3) name of a commune; very low 0.339–0.407; low 0.407–0.452; high 0.452–0.471; very high 0.471–0.815

Fig. 3. Spatial distribution of a value of investment attractiveness of a synthetic measure S_2

Source: author`s own study based on data from Tab. 2.

level of tourist base development. In the central-western part, the communes Białogard, Biesiekierz, Dygowo, and Karlino can be described as having a low value of a possibility to develop tourism (0.227–0.273). A special position is taken by Gościno commune, in which touristic attractiveness is higher. The situation is conditioned by a high level of transport accessibility since it is crossed by the voivodeship road no.162 (province road) and a railway line Kołobrzeg-Poznań. All the above mentioned communes lie in the longshore lowlands area.

Having analised the spatial distribution of the values of the synthetic measure of investment attractiveness (S_2) the following regularities were found (Fig. 3). The communes lying in the northern part of the basin such as Ustronie Morskie, Kołobrzeg, Dygowo, Gościno, Siemyśl and in the southern-east part such as Borne Sulinowo, Biały Bór, Grzmiąca have high values of S_2 measure (Tab. 2). In the case of the complex of units lying in the north of the area a justification for such a distribution of the measure discussed can be found in a highly developed touristic function of those terrains: Kołobrzeg and Ustronie Morskie communes. However, in the case of the rest of the communes it can be found in dynamic development of socio-economic connections with the city of Kołobrzeg, which in the Western Pomerania is the main seashore holiday resort. One of the consequences of those connections is a high revenue of the communes analised which results in a high expenditure on investment, e. g. communal infrastructure. A confirmation of the situation can be seen in the values of variables for the above mentioned communes such as a percentage of inhabitants serviced by sewage treatment plants ($x_{mean}>60\%$) and a percentage of inhabitants using waterworks ($x_{mean}>90\%$). Moreover, those communes can be characterised by high values of social conditioning variables, except destimulants of population density and demographic dependency ratio. The two destimulants are highest in Kołobrzeg for the whole area. The fact influenced decrese in the synthetic measure S_2. High indications of the mentioned measures of a destimulant character are a result of local migrations directed from the city of Kołobrzeg to suburban areas of Kołobrzeg commune. The migrations concern persons in post-productive age who having finished their professional activity move to the countryside (suburban to Kołobrzeg city), which is currently a dynamically developing detached houses residential area. Some communes from the northern part of the basin lying right beside the Baltic Sea such as Ustronie Morskie, Kołobrzeg can be characterised by high values of measures in servicing infrastructure. The element influenced a significant rise in the value of the synthetic measure of investment attractiveness S_2 of those communes. The increased value of the measure is an effect of a high number of commercial posts that in summertime satisfy a demend from tourists.

As it was mentioned above, the second area in terms of investment attractiveness is the south-east part of the basin. The complex encompasses the following communes: Borne Sulinowo, Biały Bór, and Grzmiąca. Two first territorial units are rural with a central urban area. The situation influences advantageously the value of particular measures in the result of numerous socio-economic connections of the countryside, frequently also of suburban character, with a town as a centre of a given territorial unit.

The rest of the basin contains the communes with low and very low values of the measure S_2.

While considering two presented component measures (Fig. 1) as well as their spatial distribution at the area of the Parsęta basin, it can be noticed that the touristic attractiveness is not accompanied by the investment attractiveness, Czaplinek commune among others, or the other way round, the investment attractiveness is not accompanied by the touristic attractiveness: Siemyśl, Rąbino and Sławoborze communes in the north-western part, and Grzmiąca commune in the southern part. The confirmation of this fact is a lack of correlation
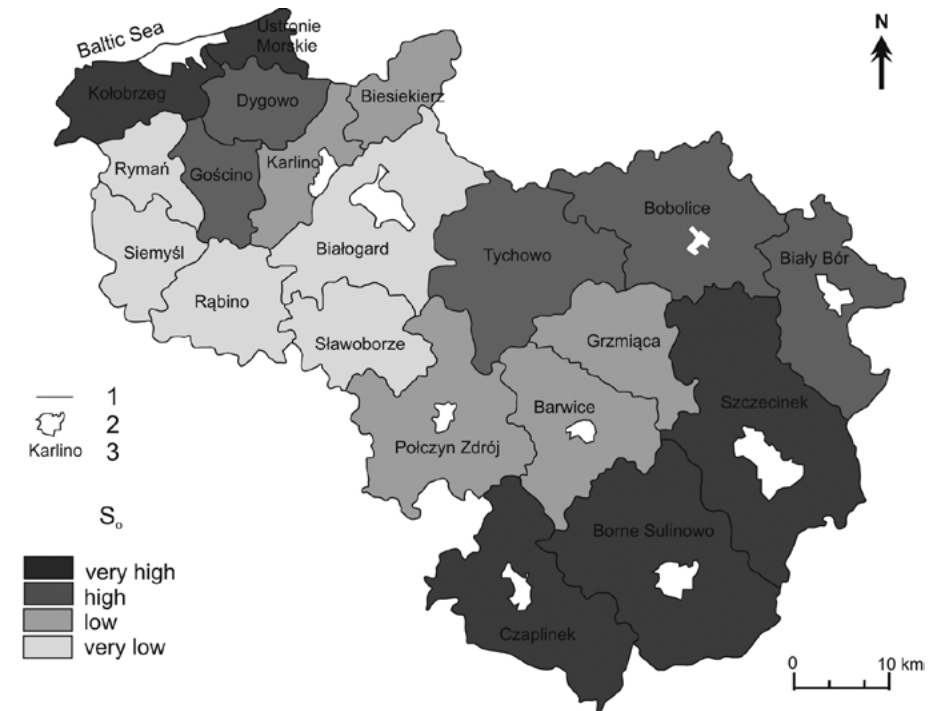
Note: (1) commune borderline; (2) town area; (3) name of a commune; very low 0.270–0.333; low 0.333–0.352 high 0.352–0.393; very high 0.393–0.667

Fig. 4. Spatial distribution of the synthetic measure of tourism development in total S_0

Source: author`s own study based on data from Tab. 2.

between S_1 and S_2 sets (r=0.29). The above mentioned lack of connections does not favour a development of tourism. The most crucial issue concerning the functioning of tourism sector at the research area is a lack of strong connections of local economy and socio-economic conditioning with *natural capital*.

Analising spatial distribution of the measure S_0 (Fig. 4), two areas of commune concentration with high and very high values of the measure So were distinguished simultaneously. These include, as it was in the case of previously considered measures S_1 and S_2, the communes lying in the northern part of the basin such as Ustronie Morskie, Kołobrzeg, Gościno, Dygowo, and in the southern part these include Czaplinek, Borne Sulinowo, Szczecinek, Tychowo, Bobolice, and Biały Bór. The situation is fully understandable since the variable So is a sum of the composite measures. The rest of the communes, lying in the centre and central-west part of the basin can be characterised by a low potential of tourism development.

The results received in the view of the synthetic measure of the evaluation of tourism development within the Parsęta basin proved that at the area tourist attractiveness is strongly connected to natural environment and mirrors the stripping arrangement of physical-geographical mesoregions of the area.

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