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## SUSTAINABLE DEVELOPMENT AT A LOCAL LEVEL. CASE STUDY: THE ELBLĄG DISTRICT<sup>1</sup>

**Abstract.** Sustainable local and regional development is associated with a number of factors. At local and regional level, local authorities have important tasks to cope with. They establish local policies and regulations, maintain the infrastructure, support bottom-up initiatives, cooperate with one another and are responsible for implementing the economic, social and environmental policy in order to improve the quality of life of local communities. The district of Elbląg is a part of the Warmińsko-Mazurskie voivodeship and includes 9 municipalities (6 rural and 3 urban-rural municipalities). The Elbląg district cooperates very closely with the city of Elbląg and the Braniewo district. While the region exhibits high natural and cultural values, it is affected by some economic problems (a relatively high unemployment rate, low average income per capita, insufficient basic infrastructure etc.). The purpose of this paper is to present an analysis of selected local-level sustainability indicators for the Elbląg district (based on statistical data provided by the Central Statistical Office) and to compare the results with the goals set out in the development strategy for the Elbląg district. The analysis also involves using the Perkal method to classify the municipalities by local development level based on selected sustainability indicators.

**Keywords:** sustainable development, Elblag district, development strategies

### INTRODUCTION

Sustainable development was defined for the first time as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). However, the concept has evolved and, as a result, sustainable development goals are nowadays a commitment for authorities at different levels, enterprises and citizens (Zalewska,

2015). That process resulted in engaging an expanding circle of stakeholders and in the emergence of sustainable development issues, including at local and regional level. Section III of the “Agenda 21” emphasizes the role of local communities, non-governmental organizations and local authorities’ initiatives supporting the implementation of sustainable development principles (Agenda 21, 1992; Lorek and Sobol, 2003).

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The fundamental model (referred to as the three-overlapping-circles model) of sustainable development is based on three equal dimensions: social, economic and environmental (ecological) ones. Some authors also identify the institutional (or “institutional and legal”) dimension, which generally is a component of the social (Borys, 2011; 2016; Miś, 2015) and/or spatial dimension, and is separated from the environmental one (Borys, 2016).

M. L. M. Graymore defines regional sustainability as development that “requires the human population to live within the limits of the region’s supporting systems (social, economic and ecosystem), ensuring equitable sharing of resources and opportunities for this and future generations in the region” (Graymore et al., 2008). It may be assumed that at local and regional level, the predominant goals of sustainable development are as follows: ensure a lasting improvement in the population’s welfare (including all aspects, whether tangible or intangible); meeting the population’s needs according to rule of inter- and intragenerational equity; reduce poverty and social exclusion; rationally use natural resources (while respecting the carrying capacity of ecosystems); and maintain the most valuable environmental components (biodiversity protection) and regional culture (Kruk, 2011). Local and regional sustainable development is a combination of decisions taken by economic operators (producers and consumers) based in the region, authorities (urban and rural municipalities and voivodeships), government and supranational institutions (i.e. the EU institutions). Therefore, it depends on internal and external factors. Local and regional authorities play a highly important role in socio-economic growth: they set the development targets, prepare strategies and framework plans, ensure good environmental status and infrastructure, provide public goods and services, combat poverty and social exclusion, and carry out many other tasks.

Sustainable development is also related to the concept of multifunctional development, especially when it comes to rural areas (multifunctional agriculture or forestry) which should fulfill other functions in addition to farming and wood production while comprehensively addressing the issues of regional development. Involving citizens in the dialogue and decision-making processes (building the civil society) is also an important part of sustainable development (Adamowicz and Zwolińska-Ligaj, 2009; Baran-Zgłobicka, 2015; Jezierska-Thöle, 2013; Paschalis-Jakubowicz, 2011; Płotkowski, 2010).

Many researchers highlight the important role of rural areas, emphasizing the close links between agriculture and environment, and defining sustainable rural development as a development which assures proper living conditions, meets the populations’ needs, develops aesthetic and amenity values, provides people (rural population and food consumers) with health and comfort, and ensures agricultural production without disturbing ecological balance or adversely affecting the environment while enabling biodiversity conservation (Adamska, 2009; Baum, 2008). Additionally, Bańkowska (2017) emphasizes the special role of rural areas in implementing environmental measures and meeting sustainability assumptions.

Sustainable development is particularly important for “green municipalities” located within the boundaries of protected areas or in areas with large forest cover in a region with high natural values. On the one hand, such areas are important for preserving biological diversity, and provide a natural basis for social development and progress in some sectors (tourism, leisure etc.). But on the other hand, due to numerous restrictions and constraints, may they be seen as an obstacle for local development (Boltromiuk 2003; Kruk 2014; Pieńkowski and Zbaraszewski, 2016).

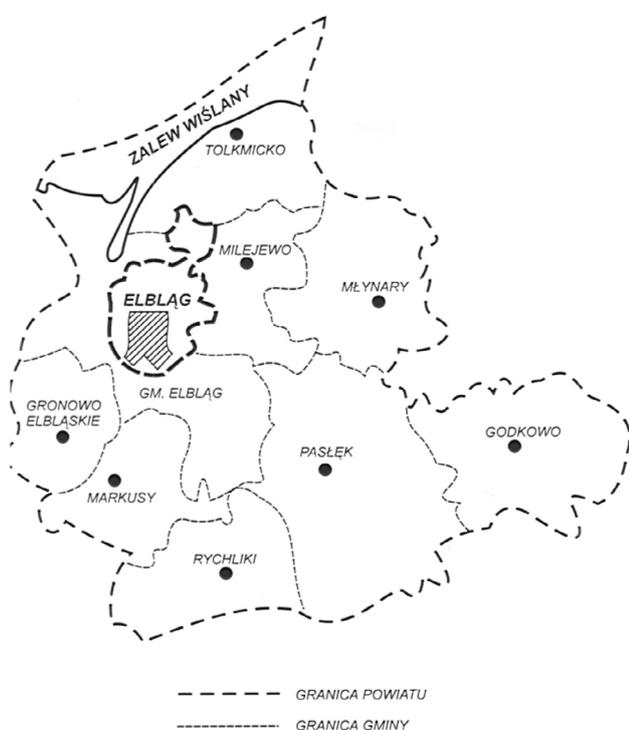
## PURPOSE, SUBJECT MATTER AND RESEARCH METHODS

The main purpose of this research is to analyze selected sustainable development indicators and the level of sustainability in the Elbląg district and its municipalities.

The research focuses on the Elbląg district, located in the north-western part of the Warmińsko-Mazurskie voivodeship. The district also includes a part of the Vistula Lagoon and is located around the city of Elbląg (Fig. 1). There are 9 municipalities in the district: 6 rural municipalities (Elbląg, Godkowo, Gronowo Elbląskie, Markusy, Milejewo and Rychliki) and urban-rural municipalities (Młynary, Pasłek and Tolkmicko).

This is a typical agricultural area with considerable environmental and cultural values (Kotliński, 2000). However, the lack of a significant and well developed manufacturing industry (both in the district itself and in the neighboring city of Elbląg) results in high unemployment and related social problems. As mentioned earlier, the Elbląg district extends over a part of the Vistula Lagoon, and is located in an area with diverse types

of landscapes (Elbląg Heights, Vistula Delta, Warmia Plain and Iława Lakeland). In the northern part of the district, the Landscape Park of the Elbląg Heights is located. The district is also home to natural reserves, protected landscape areas, Natura 2000 areas and one Ramsar site (Drużno Lake). The most valuable cultural objects include the Elbląg Canal with a unique system of 5 inclined planes, the mansion and village of Kadyny, mansions in Janowo, Dawidy, Kwitajny, Anglity, Drulity and other locations, churches and other historic buildings (Kotliński, 2000; Strategia..., 2007).



**Fig. 1.** Map of the Elbląg district  
Source: Kotliński, 2000, p. 6.

During the analysis, statistical data was grouped and allocated to three dimensions (namely: social, economic and environmental ones) of sustainable development. The data was published by the Polish Central Statistical Office (sustainable development indicators: *Wskaźniki...* n.d., *Bank...*, n.d.) and the Statistical Office in Olsztyn (published in *Statystyczne...*, 2017). The research is divided into two main parts: the analysis of

2011–2016 data for the Elbląg district (which allows identifying the variation in time) and the analysis of sustainable development potential in municipalities of the Elbląg district in 2016. The Perkal method was used in the second part of research. The results were compared to objectives and assumptions set out in strategic documents for the Elbląg district and for particular municipalities.

### ANALYSIS OF SELECTED INDICATORS OF SUSTAINABLE DEVELOPMENT IN THE ELBLĄG DISTRICT

A set of 21 indicators was selected for the analysis. All indicators were assigned to one of the three main dimensions of sustainable development: 7 indicators were allocated to the social dimension, 5 to the economic dimension and other 7 to the environmental dimension (Table 1).

The ageing population remains a significant problem for the entire district. The demographic dependency ratio (post-working-age population per 100 working-age population) increases while the rate of natural change is diminishing, and so is the net outward migration (Bank..., n.d.). It may be presumed that young people do not consider the Elbląg district as an attractive place to live.

Despite the increasing number of kindergarteners in the Elbląg district (an increase by 10.5 percentage points in 2016 over 2010), only one out of three children in rural regions has access to pre-school education. 33.7% of such children had places in pre-schools in the country in 2016.

One of the main economic and social problems in all municipalities of the Elbląg district are high unemployment rates (Fig. 2). This matter is also emphasized in all development strategies prepared by local authorities (at municipal and district level).

On the one hand, the reason behind high unemployment levels is that the education system and employee skills do not match labor market needs (employers' expectations). But on the other hand, it results from a limited number of jobs in the region (closure of many enterprises and liquidation of state farms after the transition period). These factors, in turn, contribute to people migrating to other regions (Strategia..., 2007; Strategia..., 2016b; *Statystyczne...*, 2017). Even though the registered unemployment rate in the Elbląg district follows

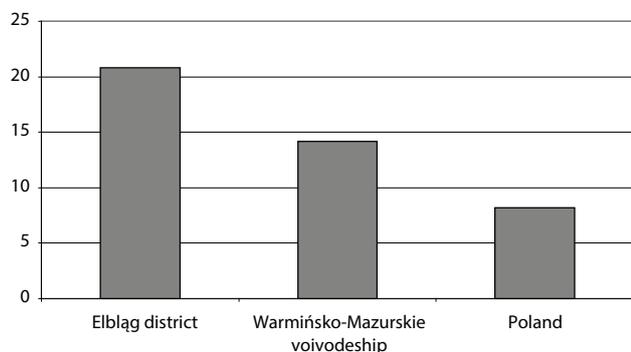
**Table 1.** Selected indicators of sustainable development in the Elbląg district

No.	Indicator	2011	2012	2013	2014	2015	2016
Social dimension							
1	Rate of natural increase per 1,000 population	1.6	1	1	0.8	0.6	0.4
2	Demographic dependency ratio: post-working-age population per 100 working-age population	21.3	21.9	22.8	23.7	24.9	26.3
3	Migration for permanent residence: net migration per 1,000 population (total)	-0.7	-0.4	-2.6	-2.7	no data	-2.6
4	Share of social aid beneficiaries in the total population (%)	18.2	17.3	18.7	17.9	16.7	15.6
5	Registered foundations, associations and social organizations per 10,000 population	35	37	37	38	39	40
6	Share of children in pre-schools in the total number of children aged 3–5 (%)	37.8	43.7	46.5	50.6	58.7	48.3
7	Share of children in pre-schools in the total number of children aged 3–5 in rural areas	22.6	29.3	32.4	35.6	40.6	33.7
Economic dimension							
8	Average gross monthly salary (in the case of operators with more than 9 employees) in PLN	2,781.25	2,917.00	3,030.43	3,113.02	3,199.49	3,323.73
9	New economic operators entered to the REGON register per 10,000 working-age population	113	100	108	105	107	113
10	Economic operators entered to the REGON register per 10,000 working-age population	944.2	979	1022.5	1048.8	1069.4	1092.4
11	Registered unemployment rate (%)	26.6	28.2	28.9	26	22.9	20.8
12	Share of long-term unemployed (over a year) in the total registered unemployed population (%)	36.8	40.6	43.1	46.7	46.5	46.5
Environmental dimension							
13	Share of particulate air pollutants from plants particularly harmful to air quality neutralized by emission reduction equipment in total emissions (%)	23.7	27.3	64.5	68.8	65	85.4
14	Electricity consumption per capita (kWh)	761.3	722.7	709.9	672.2	639.7	681.8
15	Forest cover (%)	19.1	19.2	19.4	19.5	19.6	19.8
16	Total acreage of protected areas (%)	40.77	40.77	40.77	40.77	40.77	40.98
19	Waste generated annually (thousand tons)	4.3	4	9.1	9.7	17.5	21.1
20	Number of domestic wastewater treatment plants	193	221	361	455	524	594
21	Amount of mixed municipal waste collected from households per capita (annual collection, kg)	119.8	130.5	127.7	141.9	141.3	150.3

Source: Wskaźniki..., n.d., Bank..., n.d.

a downward trend (26.6% in 2011, 28.9% in 2013 and only 20.6% in 2016), it still noticeably exceeds the levels recorded in the entire Warmińsko-Mazurskie voivodeship or in Poland as a whole. Women contributed 56.9% to total unemployment (Statystyczne..., 2017). Note that

almost half of the registered unemployed have been jobless for more than a year. As another consequence of high unemployment, the share of people eligible for social assistance is higher than in the voivodeship as a whole, reaching 15.6% in the Elbląg district, with the average



**Fig. 2.** Registered unemployment rate (%) in 2016  
Source: Statystyczne..., 2017.

figure for the Warmińsko-Mazurskie voivodeship being only 10.9% (as at 2016).

There is an increasing number of operators entered to the REGON register, including registered foundations, associations and social organizations (non-profit organizations), which could suggest a growing community involvement.

As far as environmental aspects are concerned, air pollution control systems clearly become more efficient. The emission of particulate air pollutants from environmentally hazardous industrial plants was significantly limited: from 64,000 tons in 2012 to 55,000 tons in 2016. By contrast, they doubled their emission of gaseous air pollutants: from 146,000 tons in 2012 to 299,000 tons in 2016 (Bank..., n.d.; Wskaźniki..., n.d.).

The amount of produced waste and municipal mixed waste per year also increased noticeably over the study period. These figures could suggest that the population follows wrong consumption patterns and has little understanding of environmental issues. Therefore, some measures are necessary to improve environmental awareness.

Note that in 2016 only 49.7% of Elbląg district residents were served by wastewater treatment plants, compared to 75.7% in the Warmińsko-Mazurskie voivodeship as a whole ([olszyn.stat.gov.pl](http://olszyn.stat.gov.pl)). Increasingly more people in the district used domestic sewage treatment plants, which is a positive trend. In 2011, there were only 193 domestic treatment plants, whereas in 2016 there were 594 of them (additionally, 2864 households were equipped with septic or holding tanks).

In the Elbląg district, energy consumption per capita was also reduced. In 2011, it was above the average for

the entire voivodeship (voivodeship = 100): the index for the district in 2011 and 2016 was 110.3 and only 97.3, respectively (Wskaźniki..., n.d.).

## DIFFERENCES IN SUSTAINABLE DEVELOPMENT OF MUNICIPALITIES ACROSS THE ELBLĄG DISTRICT

The analysis of the municipalities situation in the context of sustainable development in 2016 was based on a set of 12 selected indicators. However, the research was somehow hampered by the lack of statistical data at municipality (NUTS 5) level. Most indicators are published for higher levels. A multidimensional analysis was performed based on the Perkal method to rank the municipalities by sustainability level (current situation and potential). That method enables comparing different variables, and provides a synthetic indicator of the municipalities' sustainability potential. It is important to select the appropriate indicators which enable the economic and social situation and the environmental condition of the municipality to be assessed simultaneously. The determinants which describe the situation in the units (including the variation coefficient, with the critical value set at 15%), were chosen, allocated to one of the three dimensions of sustainable development and grouped as having a stimulating, inhibiting or neutral effect (Table 2). Subsequently, all determinants were standardized. Each determinant was assumed to have the same impact on the level of a given phenomenon. The last part of the analysis included the calculation of synthetic indicators of municipal development (GUS, 2013; Dudzik and Głowacki, 2010).

The municipalities were grouped into various classes by using two taxonomic parameters, namely: mean and standard deviation (GUS, 2013). It enabled the identification of three classes:

- class 1: municipalities with the highest potential: Młynary, Pasłęk and Tolkmicko,
- class 2: municipalities with a medium potential: Elbląg and Milejewo,
- class 3: municipalities with a low potential: Godkowo, Gronowo Elbląskie, Markusy and Rychliki.

The highest value of the Perkal indicator was recorded in all urban-rural municipalities of the Elbląg district. It may be assumed that is strictly connected with their specificity, i.e. the location of a town. The second class (with a medium value of the indicators) includes two municipalities located near the city of Elbląg. However,

**Table 2.** Variables used in the analysis of municipalities

Dimension	Variables	Effect of the variable
Economy	Economic operators entered to the REGON register per 1,000 population	stimulating
	Share of investment expenditure in total expenditure from the local budget (%)	stimulating
	Share of registered unemployed in the total working-age population (%)	inhibiting
Society	Educational subvention (PLN thousand)	stimulating
	Foundations, associations and social organizations per 10,000 population	stimulating
	Books lent by public libraries per reader per year	stimulating
	Total net migration	inhibiting
	Share of social aid beneficiaries in the total population (%)	inhibiting
Environment	Total acreage of protected areas (%)	neutral
	Forest cover (%)	neutral
	Population served by sewerage networks (%)	stimulating
	Population served by wastewater treatment plants (%)	stimulating

Source: own elaboration based on Statystyczne..., 2017; Bank..., n.d.

interestingly, Gronowo Elbląskie was not classified in this group despite its location (it is adjacent to the city of Elbląg). It may be presumed that the presence of the city has a positive impact on the socioeconomic development of the municipalities. Gronowo Elbląskie was placed in class 3 (though with the highest score in this group) together with other rural municipalities of the Elbląg district. All of these municipalities are located in the south-eastern and south-western part of the Elbląg district, away from the cities.

Based of the assessment of indicators (Bank..., n.d.; Statystyczne..., 2017) for each municipality, it can be concluded that only three municipalities (Elbląg, Milejewo, Tolkmicko) experienced net inward migration. In other municipalities, it was negative. Particularly, many people decided to leave the Pasłęk municipality. Milejewo was the only place where less than 10% of the population received social benefits. The largest group of beneficiaries lived in the Rychliki municipality. The largest number of registered unemployed per working-age population was recorded in Rychliki, while the smallest was in the Elbląg municipality. The smallest share of investment expenditure in total budget expenditures was observed in Markusy (0.3%) while the greatest was in Pasłęk (13.6%). The biggest number of foundations, associations and social organizations per 10,000 population was registered in Milejewo (62) and Tolkmicko (60)

municipalities, and the lowest in Gronowo Elbląskie (21). Generally, in each municipality, the residents had no problems in accessing water supply installations (over 90% of the residents had access to water supply installations). As regards access to wastewater treatment plants, the highest ratios were recorded in two urban-rural municipalities: Tolkmicko (96.8% of the population) and Pasłęk (72.1%). Conversely, in Markusy, only 4,3% of residents were served by these installations.

#### **ANALYSIS OF DEVELOPMENT STRATEGIES FOR THE ELBLĄG DISTRICT AND ITS MUNICIPALITIES**

The study of widely available development strategies for the municipalities and for the Elbląg district was conducted as well. Two strategies were in place in the Elbląg district: the 2007–2016 district development strategy, and the development strategy of the Elbląg Functional Area (EFA) developed in 2016 (available for a further period). The areas covered are the city of Elbląg, city of Braniewo, some municipalities located in the Braniewo district and a part of the Elbląg district (the Godkowo municipality is excluded).

The main problems facing the municipalities located in the Elbląg district (according to their development strategies) are: the absence of external investors; low level

of entrepreneurial activity; and all the consequences of the above, i.e.: high unemployment rates; low average income of the population; high share of people provided with social welfare assistance; lack of prospects for, and migration of, the young generation. Another important problem is a poor transport network: roads in a bad condition, lack of pavements and parking places, deficiency of public transport links to some destinations. Local authorities of municipalities adjacent to cities believe their location to be an advantage; they are also satisfied with the location of national roads and operating railway lines (with train stations being located inside the municipality). On the other hand, the authorities of Tolkmicko point out that the withdrawal of connecting trains poses a problem. Another issue is the insufficient offer of cultural events in municipalities (including cultural centers and services) and, sometimes, the inadequate supply of medical services. Authors of most development strategies recognize the problem of lack or insufficient access to the gas network, sewerage network, wastewater treatment plants, and the poor condition of surface waters (including the Vistula Lagoon). In a few strategies, the problem of illegal dumping sites was also mentioned.

The high natural values of the area are emphasized in almost all development strategies at municipality level, and so is the presence of protected areas like natural reserves, Natura 2000 sites or landscape parks. Focus is also placed on unique cultural values affecting the municipalities' attractiveness to tourists. Nevertheless, the authors of strategies note that the natural and cultural values are not tapped into to promote tourism and leisure activities. In particular, accommodation is scarce. Most SWOT analyses point out the insufficient promotion and bad condition of cultural assets. Rural municipalities believe favorable agri-natural conditions (including fertile soil) to be their strength. Some other ones emphasize the strong activity of associations and social organizations.

Similar strengths and weaknesses were mentioned in strategies developed for the Elbląg district and the EFA. The strategy for the Elbląg District sets out the following priorities: agricultural and rural development; and the efficient use of human capital, economic potential, tourist resources and values, technical and social infrastructure and information society. In turn, priorities set in the EFA development strategy include a high-quality transport and communication system; improvements in environmental infrastructure and knowledge; welfare

enhancement; increase in social activity and integration; and promoting the image of EFA. These objectives were also mentioned in development strategies at municipality level.

## CONCLUSIONS

The Elbląg district consists of agricultural (rural or urban-rural) municipalities characterized by various environmental conditions. The main socioeconomic problems include high unemployment rates (including structural unemployment), the ageing society and low standards of living. Also, the insufficient quantity of childcare and pre-primary places adversely affects female participation in the labor market. In most municipalities, the net outward migration reflects the region's poor attractiveness as place of residence. Despite their high environmental values, the access to sewerage networks (resulting in water pollution) and the growing volume of waste remain urgent issues, which evidences low levels of environmental awareness. In the heating season, air pollutant emission increases, although the Elbląg district and the adjacent Elbląg city are home to a very limited number of industrial sites posing a threat to the environment. Some municipalities demonstrate insufficient social activity (level of social participation). As mentioned earlier, the location of cities or towns (Tolkmicko, Pasłęk and Młynary as well as the neighboring city of Elbląg) is an important driver of socioeconomic development.

The results of the analysis confirm the diagnosis of conditions set out in development strategies at district and municipality level. Their authors also emphasize the poor condition of roads which has an adverse effect on transport and (in some communes) causes problems in accessing medical services. The outcomes of this study reveal the difficulties in meeting the objectives of sustainable development (in municipalities and in the whole district), especially as regards the socioeconomic dimension. The conclusion is that functions not related to agricultural production are less developed in rural areas. Therefore, their tourism and leisure potential is underexploited (this problem includes insufficient enhancement of historical and natural values).

Taking all of the above considerations into account, the level of sustainable development of the Elbląg district requires further actions, not only at a local but also at regional (voivodeship) and national levels.

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## ROZWÓJ ZRÓWNOWAŻONY W SKALI LOKALNEJ NA PRZYKŁADZIE POWIATU ELBLĄSKIEGO

**Abstrakt.** Rozwój zrównoważony na poziomie lokalnym i regionalnym zależy od wielu czynników. Istotną rolę pełnią w nim władze gmin i powiatu. Prowadzona przez nie polityka lokalna, uchwalane regulacje, budowa i utrzymywanie infrastruktury, wspieranie inicjatyw oddolnych, współpraca między gminami oraz z innymi powiatami, a także odpowiedzialność za politykę gospodarczą, społeczną i środowiskową wpływają na poprawę poziomu życia społeczności lokalnych. Powiat elbląski jest częścią województwa warmińsko-mazurskiego i składa się z 9 gmin (6 wiejskich i 3 miejsko-wiejskich). Powiat elbląski ściśle współpracuje z powiatem miejskim Elbląg i powiatem braniewskim. Jest to region o wysokich walorach przyrodniczych i kulturowych, ale dotknięty wieloma problemami społeczno-gospodarczymi (relatywnie wysokie bezrobocie, niskie przeciętne dochody mieszkańców, niewystarczająca infrastruktura podstawowa itp.). Celem artykułu jest analiza wybranych wskaźników dotyczących rozwoju zrównoważonego w skali lokalnej na przykładzie powiatu elbląskiego (na podstawie danych GUS) oraz porównanie rezultatów badania z celami przedstawionymi w strategii rozwoju dla powiatu elbląskiego oraz poszczególnych gmin. Analiza zawiera również klasyfikację poziomu rozwoju na poziomie gmin na podstawie wybranych mierników rozwoju zrównoważonego, przeprowadzoną zgodnie z metodą Perkala.

**Słowa kluczowe:** rozwój zrównoważony, powiat elbląski, strategie rozwoju