

THE ROLE OF ECOLOGICAL SUBSIDIES IN THE SUSTAINABLE DEVELOPMENT OF MUNICIPALITIES IN MAZOVIA

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Purpose: The aim of this study was to analyze the ecological needs of municipalities in Mazovia, taking into account selected indicators corresponding to the goals of sustainable development (social, economic, and environmental).

Design/methodology/approach: The study uses a descriptive and research method, primarily based on the analysis of statistical data and selected legal acts, as well as a literature review. The study consisted of two stages. The first stage involved a literature review, which provided the basis for selecting indicators corresponding to the goals of sustainable development. The next stage included analyzing selected indicators and planned amounts of ecological subsidies based on the Act on the Revenues of Local Government Units and the annex to the Regulatory Impact Assessment.

Findings: Municipalities that contain protected areas will receive financial support in the form of ecological needs (so-called ecological subsidies) starting in 2025. The research results indicate that the amounts of ecological subsidies are related to the type, weight, and area of the protected area.

Research limitations/implications: Due to the introduction of ecological subsidies in 2025, assessing their significance for local development in municipalities will only be possible in the coming years. Future research will focus on the experiences of municipalities benefiting from this form of support. Nevertheless, this study may represent an initial attempt to verify the availability of funds that support municipalities with legally protected areas.

Practical implications: This article presents original research on ecological subsidies for municipalities with protected areas. It may also serve to assess the level of acceptance of protected areas by local communities.

Originality/value: This paper has implications for both researchers and municipalities with protected areas and may serve as a starting point for developing analytical frameworks to assess the level of local development and the financing of other needs of local government units.

Keywords: protected areas, ecological subsidy, sustainable development.

Category of the paper: Research paper.

1. Introduction

Legally protected areas are areas of particular natural value, designated based on the provisions of the Act of 6 April 2004 on Nature Conservation (consolidated text Dz.U. 2024, item 1478, as amended). In 2023, there were 2,380 legally protected areas in Poland, including 23 national parks, 1,523 nature reserves, 126 landscape parks, 126 protected landscape areas, and 319 nature-landscape complexes. Additionally, there were 1,139 terrestrial Natura 2000 areas, including 190 Special Protection Areas for Birds and 949 Special Areas of Conservation (Ochrona środowiska, 2024). In 2023, the highest number of legally protected areas was in the following voivodeships: Mazowieckie (343), Pomorskie (337), Zachodniopomorskie (290), and Warmińsko-Mazurskie (270) – Figure 1.

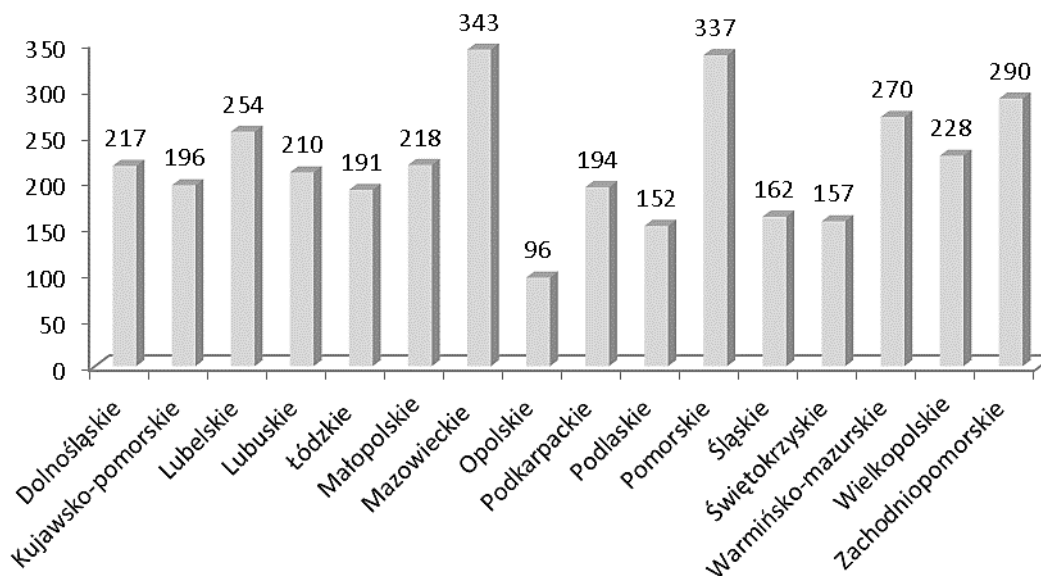


Figure 1. Number of legally protected areas in the voivodeships in 2023.

Source: Own research based on: Ochrona środowiska, GUS (2024).

2. Theoretical approach

The purpose of creating protected areas is, among other things, to preserve biodiversity and protect landscape values (Act of 6 April 2004 on Nature Conservation, consolidated text Dz.U. 2024, item 1478, as amended, art. 2.2). These areas are often perceived by local authorities as "problematic" areas, associated with restrictions on economic activity, local development, and a decrease in the income levels of local government units (hereinafter: JST). The fundamental issue is the acceptance of existing (and new) protected areas by local communities. These views have been reflected in proposals for establishing financial

compensation in the form of ecological subsidies for municipalities with protected areas. The discussion that began several years ago about the need to introduce this solution (in draft laws on JST revenues in 2012 and 2013) culminated in the JST revenue law of 2024 (Act of 1 October 2024 on the Revenues of Local Government Units, Dz. U. 2024, item 1572).

According to the Act of 1 October 2024 on the Revenues of Local Government Units (2024), ecological needs (also referred to as ecological subsidies) will be granted starting in 2025 to local government units (voivodeships, counties, cities with county rights, and municipalities) located in areas with protected zones (including national parks, nature reserves, landscape parks, and Natura 2000 areas). The planned amount for ecological needs in 2025 is approximately 1.5 billion PLN in total, of which about 1.1 billion PLN is designated for municipalities. The legislator's intention is to reduce barriers to the creation and development of protected areas and to promote sustainable development in the country.

Sustainable development is often equated with socio-economic development. The literature indicates that the level of this development is influenced by both national and local factors, including, among others, "geographical factors, demographic potential, wealth in capital, technical infrastructure, research and development activity, innovations, technical progress, an efficiently functioning healthcare system, universal access to education and high-level science, well-functioning state institutions, and a developed financial system" (Pawlas, 2017, p. 18). The goals of sustainable development are outlined in the document "Transforming Our World: The 2030 Agenda for Sustainable Development" (2015, hereinafter: Agenda 2030). The model of sustainable development for Poland is included in the National Regional Development Strategy until 2030 "Socially Sensitive and Territorial Sustainable Development" (2019, hereinafter: KSRR), and for Mazovia in the "Mazowieckie Voivodeship Development Strategy 2030+ Innovative Mazovia" (2022, hereinafter: SRWM).

The idea behind the actions in the National Regional Development Strategy (KSRR) is to support areas of strategic intervention (OSI), i.e., areas where local development is threatened due to the loss of significant socio-economic functions (e.g., negative demographic phenomena) and to reduce disparities in their socio-economic development (KSRR, 2019, p. 49). This model is significant for the Mazowieckie Voivodeship (hereinafter also referred to as Mazovia), which exemplifies the diversity in the level of development among municipalities in peripheral areas and those neighboring Warsaw (Łysoń, 2017).

3. Materials and Methods

The aim of this article is to analyze the planned amounts of ecological subsidies for municipalities in Mazovia with protected areas in 2025 and to attempt to answer the question of to what extent this form of support may impact local development. The subject of the research

consists of the municipalities of Mazovia that are eligible for ecological subsidies in 2025. Selected indicators corresponding to the goals of sustainable development (in social, economic, and environmental dimensions) were taken into account, namely: migration balances per 1000 residents, revenues and expenditures from municipal budgets, the area of protected areas, and the amounts of ecological subsidies for 2025.

The choice of the Mazowieckie Voivodeship as the area of study is motivated by its largest area in the country (11.4%), population (14.6%), and number of municipalities (314) (Statistical Yearbook of the Mazowieckie Voivodeship, 2024), as well as the highest amount of ecological subsidies for voivodeships, amounting to 15.1 million PLN (Szalast-Piwińska, 2024, p. 74).

The analysis of the planned amounts of ecological subsidies was conducted based on the Act of 1 October 2024 on the Revenues of Local Government Units (2024) and the annex to the Regulatory Impact Assessment (OSR) dated July 15, 2024. The types of protected areas, base rates per hectare of protected area, and their actual and calculated areas were taken into account. The desk research method was applied. The sources of information included reports from the Central Statistical Office (hereinafter: GUS), data from the Local Data Bank of GUS (hereinafter: BDL), Polish legal regulations, and relevant literature.

4. Research

In 2018, the Mazowieckie Voivodeship was divided into two statistical units: the Warsaw Metropolitan Region (hereinafter: RWS) and the Mazowieckie Regional Region (hereinafter: RMR). RWS includes 3 subregions, 9 counties, and the capital city of Warsaw, while RMR includes 6 subregions, 28 counties, and 4 cities with county rights (Radom, Płock, Ostrołęka, and Siedlce).

The analyses in the dimensions of sustainable development goals were based on data concerning selected municipalities in Mazovia for which the highest and lowest amounts of ecological needs are planned for 2025. Out of 258 municipalities eligible for ecological subsidies, a group of 24 municipalities was selected for further research, where the planned amounts of ecological subsidies will exceed 1 million PLN (Table 1), and 13 municipalities whose ecological subsidies will not exceed 1000 PLN (Table 2).

Table 1.
Studied municipalities in Mazovia - highest ecological subsidies in 2025

No.	Municipality	Region	OCH* area (%)	Ecological subsidy (thousand PLN)	Migration balance per 1000 residents	Total income (thousand PLN)	Total expenditure (thousand PLN)	Difference between total income and expenditure (thousand PLN)
1	Leoncin	RWS	72,5	6 205,50	4,3	41 821,65	51 986,89	-10 165,24
2	Leszno	RWS	67,5	4 463,00	11,1	92 057,32	103 833,99	-11 776,67
3	Czosnów	RWS	99,9	4 396,10	6,7	100 468,16	111 146,69	-10 678,53
4	Brochów	RMR	91,2	3 873,30	4,1	30 986,24	33 253,93	-2 267,69
5	Izabelin	RWS	85,9	3 458,90	7,1	85 963,16	113 716,16	-27 753,00
6	Kampinos	RWS	59,5	2 191,10	3,8	33 632,79	36 379,73	-2 746,94
7	Strzegowo	RMR	95,1	1 894,10	-7,9	49 639,43	63 092,14	-13 452,71
8	Pionki	RMR	99,9	1 852,40	-0,8	50 584,12	55 801,88	-5 217,76
9	Lubowidz	RMR	94	1 665,30	-6,1	45 383,18	46 977,71	-1 594,53
10	Maciejowice	RMR	99,9	1 629,60	-4,4	52 506,09	56 420,70	-3 914,61
11	Sadowne	RMR	100	1 369,30	1,6	45 324,10	45 399,15	-75,05
12	Gostynin	RMR	49	1 276,10	1,8	67 120,14	83 023,75	-15 903,61
13	Mrozy	RWS	84	1 274,60	7,6	52 923,18	55 069,52	-2 146,34
14	Głinojeck	RMR	87	1 251,20	-7,2	54 003,44	57 294,95	-3 291,51
15	Solec nad Wisłą	RMR	100	1 206,60	-0,7	32 850,83	33 912,40	-1 061,57
16	Nowy Duninów	RMR	78	1 195,60	-3,8	21 109,62	22 863,23	-1 753,61
17	Lutocin	RMR	100	1 174,00	-3,8	25 170,56	24 892,37	278,19
18	Wilga	RMR	100	1 104,60	4,7	39 737,78	42 285,35	-2 547,57
19	Kozienice	RMR	73	1 083,40	-2,7	237 906,33	253 640,21	-15 733,88
20	Lipowiec Kościelny	RMR	95	1 077,40	-1,6	30 570,51	32 335,95	-1 765,44
21	Jabłonna Lacka	RMR	76	1 075,00	-4,9	25 429,91	28 925,13	-3 495,22
22	Siemiatkowo	RMR	100	1 053,20	-11,9	23 781,38	29 431,36	-5 649,98
23	Sarnaki	RMR	56	1 052,50	-7	47 177,41	50 728,80	-3 551,39
24	Wyśmierzyce	RMR	97	1 027,50	-6	21 650,77	23 121,07	-1 470,30
					Total	1 307 798,10	1 455 533,06	-147 734,96

*PROTECTED AREAS (OCH)

Source: Own research based on: BDL (as of December 31, 2023); Annex to the Regulatory Impact Assessment (OSR) dated July 15, 2024.

Table 2.
Studied municipalities in Mazovia - lowest ecological subsidies in 2025

No.	Municipality	Region	OCH* area (%)	Ecological subsidy (PLN)	Migration balance per 1000 residents	Total income (thousand PLN)	Total expenditure (thousand PLN)	Difference between total income and expenditure (thousand PLN)
1	Sochaczew	RMR	0,01	0,93	-3,8	208 036,98	215 356,57	-7 319,59
2	Teresin	RMR	0,02	1,86	-2,8	95 232,60	101 680,53	-6 447,93
3	Chynów	RMR	0,05	4,65	4	59 807,92	64 180,14	-4 372,22
4	Sochaczew	RMR	0,05	4,65	8,4	72 631,84	75 364,70	-2 732,86
5	Potworów	RMR	0,08	7,44	-1	25 812,72	25 451,04	361,68
6	Sierpc	RMR	0,1	9,3	-4,1	96 062,99	95 553,91	509,08
7	Ciechanów	RMR	0,11	10,23	-0,7	308 338,38	302 698,83	5 639,55
8	Legionowo	RWS	0,28	26,04	1,2	289 223,07	309 921,24	-20 698,17
9	Poświętne	RWS	0,46	42,78	3,2	54 879,20	55 807,23	-928,03
10	Tczów	RMR	2,16	102,77	-0,4	30 087,93	31 234,67	-1 146,74
11	Lipsko	RMR	3,21	298,53	-4,7	56 816,45	62 680,20	-5 863,75
12	Błędów	RMR	6,49	603,57	-6,1	39 527,03	43 059,76	-3 532,73
13	Paprotnia	RMR	7,16	665,88	-6,7	32 370,11	32 634,73	-264,62
					Total	1 368 827,22	1 415 623,55	-46 796,33

*PROTECTED AREAS (OCH)

Source: Own research based on: BDL (as of December 31, 2023); Annex to the Regulatory Impact Assessment (OSR) dated July 15, 2024.

Social Dimension

According to the 2030 Agenda (2015), people are one of the most important aspects of the sustainable development goals. The KSRR (2019, p. 10) indicates that the quality of human capital is a key factor determining the level and potential for socio-economic development in the region. The SRWM (2022, p. 15) emphasizes that the attractiveness of the Mazovia region is determined by its demographic situation, including migration balances. In the municipalities of RMR, a negative migration balance indicates a loss of human capital, and thus a lower attractiveness of this region compared to RWS. This is confirmed by the data on migration balances in the studied municipalities (Table 1 and Table 2). A positive migration balance was recorded in all 8 municipalities of RWS in both tables (in 4 municipalities of RMR with the highest and 2 municipalities with the lowest amount of ecological subsidies). In the remaining municipalities of RMR with the highest amount of ecological subsidies, the negative migration balance ranged from -11.9 (rural municipality of Siemiątkowo) to -0.7 (urban-rural municipality of Solec nad Wisłą), while in the municipalities with the lowest amounts: from -6.7 (rural municipality of Paprotnia) to -0.4 (rural municipality of Tczów).

Economic Dimension

The main source of income for JST consists of own revenues, grants, and general subsidies from the state budget. In 2023, the total revenues of JST in the Mazowieckie Voivodeship amounted to 59,783.5 million PLN, of which 37.4% were revenues from municipalities. Meanwhile, the total expenditures of JST amounted to 64,556.1 million PLN, with 37.1% being municipal expenditures. In 2023, the average expenditure per capita in the municipalities of Mazovia was 7,458 PLN. The highest expenditures were recorded in the municipality of Ceranów (16,511 PLN), Wierzbno (14,846 PLN), and Paprotnia (13,712 PLN), while the lowest were in the municipality of Pionki (urban municipality; 5,163 PLN), Małkinia Górna (5,393 PLN), and Żuromin (5,395 PLN) (Budżety..., 2024).

The analysis of total revenues and expenditures of the studied municipalities indicates that in 2023, the budget deficit for these JST amounted to 147.7 million PLN in the group of municipalities with the highest amounts of ecological subsidies and 46.7 million PLN in the group with the lowest amounts of ecological subsidies (Table 1 and Table 2). The ratio of the deficit to total revenues for municipalities with the highest amounts of ecological subsidies was 11.3%, while for those with the lowest amounts, it was 3.4%.

A budget deficit occurred in 23 municipalities with the highest amounts of ecological subsidies (95.8% of the total). The ratio of the deficit to revenues for 4 municipalities in this group did not exceed 5%, while in 5 municipalities, this ratio was higher than 20%, with the highest being in the rural municipality of Izabelin, RWS (32%). A surplus was recorded only in the rural municipality of Lutocin (RMR), which did not exceed 2% of revenues. In the group of municipalities with the lowest amounts of ecological subsidies, a budget deficit occurred in 10 JST (out of 13 studied), which is 77% of the total. The ratio of the deficit to revenues for

these municipalities did not exceed 10%, and in 5 municipalities, this ratio was lower than 5%, with the lowest being in the rural municipality of Paprotnia, RMR (1%). A surplus was recorded in 3 municipalities (2 rural: Potworów and Sierpc, and 1 urban municipality: Ciechanów), but it did not exceed 3% of revenues.

Environmental Dimension

In 2023, protected areas in Mazovia accounted for 29.7% of the area of the voivodeship (Ochrona środowiska, 2024). The largest areas were protected landscape areas (23.5%) and landscape parks (4.6%). In 97 municipalities (out of 258 studied), protected areas occupied more than 50% of their area, including 100% in 13 municipalities (2 in RWS and 11 in RMR).

The base rate for calculating ecological needs for 2025 in the Act on the Revenues of Local Government Units (2024) is 310.00 PLN/ha of protected area for municipalities and cities with county rights, 70.00 PLN/ha for counties, and 35.00 PLN/ha for voivodeships (Act on the Revenues of Local Government Units, 2024, art. 84.2, letters a-c). The amount of the base rate will be determined annually, taking into account the indexation based on the price index of goods and services for the first half of the year preceding the budget year (Act on the Revenues of Local Government Units, 2024, art. 29.3). For calculations, data on the area of protected areas as of December 31, 2023, were used (Act on the Revenues of Local Government Units, 2024, art. 84.1). The amount of ecological needs is calculated according to the formula (Szalast-Piwińska, 2024, p. 72):

$$\text{Ecological Needs} = S_b \times P_p \quad (1)$$

where:

S_b - base rate per 1 ha of legally protected area (PLN),

P_p - calculated area of legally protected areas appropriate for a given category of JST (ha).

The calculated area of legally protected areas is determined using the formula:

$$P_p = (\text{Poch} \times W_1) + (\text{Poch} \times W_2) + (\dots) + (\text{Poch} \times W_n) \quad (2)$$

where:

P_p - calculated area of legally protected areas appropriate for a given category of JST (ha),

Poch - area of legally protected areas (ha),

W - weight of protection for legally protected areas: W_1 - national park: 2; W_2 - nature reserve: 1; W_3 - landscape protection zones established within the boundaries of landscape parks or protected landscape areas: 0.6; W_4 - landscape parks and protected landscape areas where at least five prohibitions have been established from among the prohibitions mentioned in art. 17, §1, points 1 and 4-9, and art. 24, §1, points 2 and 4-9 of the Nature Conservation Act: 0.3; W_5 - landscape parks and protected landscape areas where at least one prohibition has been established from among the prohibitions mentioned in art. 17, §1, points 1 and 4-9, and art. 24, §1, points 2 and 4-9 of the Nature Conservation Act: 0.1; W_6 - Natura 2000 area: 0.15.

If the area is covered by different types of protected areas, the area with the highest weight is used for calculating ecological needs (Act on the Revenues of Local Government Units,

2024, art. 29.6). For municipalities where the area of the national park is greater than 20% of their area or greater than 2,000 ha, an additional 40 million PLN has been allocated (Act on the Revenues of Local Government Units, 2024, art. 91.1).

In the group of studied municipalities, the highest ecological subsidies (over 1 million PLN) will be received by 24 municipalities, including 6.2 million PLN for the rural municipality of Leoncin (Table 1). The lowest (below 1000 PLN) will be received by 13 municipalities, including 0.93 PLN for the urban municipality of Sochaczew (Table 2). Among the municipalities with the highest amounts of ecological subsidies, the area of protected areas in 5 municipalities of RMR is 100% (rural municipalities: Sadowne, Lutocin, Wilga, and Siemiątkowo, as well as the urban-rural municipality of Solec nad Wisłą). However, the planned amounts of ecological subsidies for these municipalities do not exceed 1.5 million PLN. This is due to the actual area of protected areas and the weight of protection of the area. For example, the highest amount will be received by the municipality of Leoncin, where the area of protected areas is 72.5%, but approximately 9.7 thousand ha of national park has been designated (weight 2), about 335 ha of nature reserves (weight 1), 880 ha of landscape parks and protected landscape areas (weight 0.3), and about 568 ha of Natura 2000 areas (weight 0.15).

5. Results and conclusions

The ecological subsidy is a significant mechanism for financial support for municipalities with protected areas. It represents an opportunity for the development of municipalities and compensates for developmental limitations.

A key indicator of the situation in municipalities in the social dimension is, among other things, the migration balance. In all municipalities of RWS, a positive migration balance was recorded, regardless of the amount of ecological subsidy. In contrast, the majority of municipalities in RMR experienced a negative migration balance. This indicates a disparity in the situations of municipalities in RWS and RMR.

Economic analyses indicated that most of the budgets of the studied municipalities recorded a deficit. This affects, among other things, the limitation of local development and the financing of other needs of JST.

The results of the research in the environmental dimension indicate that the amounts of ecological needs are related to the area, rate, and weight of the protected area. The legislator did not restrict the ways in which municipalities can use the ecological subsidy. The assessment of its role in local development will only be possible after the experiences of municipalities benefiting from this form of support. To verify the anticipated acceptance of protected areas among local communities, systematic evaluation of the effectiveness of this support system will be necessary.

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