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The Agriculture and Forestry Lands Level of Changes in Planning Process as a Sustainable Development Measure of Municipalities Located within National Parks Impact Areas

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ABSTRACT

The change in the use of agricultural and forestry land for other purposes is the natural process of rural areas urbanisation. In the municipalities located nearby large cities, this transformation is inevitable and indeed desirable, while in the municipalities located close to the protected areas, it is a symptom of negative processes, especially from an environmental perspective. Moreover, such transformations have many other economic and social consequences which are worth paying special attention to. This paper is an attempt to determine the level of negative changes introduced in the planning documents in municipalities located within the borders of National Parks. The indicator analysis based on the statistical data of local date bank [BDL] in the fields of local government and spatial planning was conducted. The analysis enabled to present the differences between municipalities with very high natural values in terms of decreasing the area of agricultural and forestry landscape. Furthermore, to elaborate the typology of the studied administrative units the obtained results were verified by comparing them with recommended percentage share of forest and agricultural lands which potentially guarantee good conditions for the development of tourism in rural municipalities.

Keywords: changing the status of agricultural and forest land, municipality, sustainable development, spatial planning

INTRODUCTION

By 2016, the interest in purchasing the agricultural and forestry lands for construction purposes increased. It was driven both by economical and sociological aspects. An important factor was a lower price of the agricultural and forestry lands, in comparison to the construction plots. This kind of purchase was often treated as an investment or a good place to live, due to the pollution-free environment and distance from the issues of large cities (Kostańska, 2018). The common practice of purchasing agricultural lands was restricted by the Act of 14 April 2016 on suspension of the sale of real property from the Agricultural Property Stock (Journal of Laws of 2018 Item. 869). The Act introduced a number of regulations, in order to protect the agricultural lands from speculative redemption and to ensure that such lands will be used for the agricultural purpose. Under these circumstances, the role of planning procedures increased, as well as the enactment of local spatial development plans in which the agricultural and forest lands might have been changed for other purposes. These documents reduced the restrictions imposed on the buyer of the agricultural lands (Suchoń, 2016). Additionally, in March 2019, the Government adopted the draft Amending the Act on Shaping of the Agricultural System, which assumes alleviating the limitations in trading the agricultural real estates. However, this may lead to repeated increase purchases of agricultural lands which would be subsequently converted into non-agricultural purposes.

Sustainable development should be a priority taken into account on every stage of the

planning process in a municipality (Chmielewski, 2001). The processes related to changing the status of agricultural and forestry lands are important factors that will affect the spatial structure of the area, and consequently, such impact factors as: biodiversity, landscape, pollution and touristic values. According to many authors and experts, there is a correlation between changing the agricultural and forestry land use for other purposes, chaos in rural space and fragmentation of agricultural landscape (Kołodziejczak and Kaczmarek, 2018). Therefore, the issues of proper spatial management of rural areas, remain valid and relevant today This kind of discussions have taken place for several years not only among the experts on spatial planning, local authorities and communities but also at the higher political level. For instance, in June 2016, in the Ministry of Agriculture and Rural Development a seminar was held on the need for amending spatial planning of rural areas. Additionally, in March 2019, the Supreme Chamber of Control organized a conference on social, economic and environmental dimension of Polish space management crisis (Wilkin, 2018; Kołodziejczak and al., 2018). The conclusions drawn from the discussions mentioned above, mainly pointed out the lack of effectiveness of planning structures and challenges that the public institutions face in terms of effective rural area development (Kwartnik-Pruc and Parzych and Bydłosz, 2011; Krzysztofik 2016). In theory, the objective of the current rural development policy is to preserve and develop the natural, cultural and landscape values of rural areas (Heffner and Klemens, 2016). Studies were conducted to evaluate the implementation of such priorities, mainly in the aspect of planning process in the municipalities, whose common feature is that they are located within the large-scale areas of nature protection.

GOAL AND SCOPE OF THE STUDY

The cognitive goal of the study is to show the differentiation from the municipalities located within impact area of National Parks, in terms of the intensity of changes in the use of agricultural and forestry land for other purposes in the spatial planning process. The research covered 113 municipalities, including 75 rural, 27 urban-rural and 11 urban ones. The municipality of Nowinka was eliminated from the research due to incorrect data in BDL.

The authors put forward the hypothesis that intensification of the planning decisions related to the change in the use of agricultural and forest lands for non-agricultural and non-forest purposes in the municipalities located within the impact area of National Parks is low. This assumption is in line with protecting agricultural and forest landscape on the examined areas, coming from high environmental values.

The selected municipalities were already the subject of studies conducted both by the authors (Pawłat-Zawrzykraj and Podawca, 2011; Podawca, 2014; Podawca, 2015; Podawca and Karsznia, 2017; Podawca and Pawłat-Zawrzykraj, 2017a; Podawca and Pawłat-Zawrzykraj, 2017b; Podawca and Pawłat-Zawrzykraj, 2018) as well as other researchers (Giordano, 2006; Liszewski 2009; Zawilińska and Mika, 2013). The studies concerned all national parks or particular municipalities. mainly natural values, various aspects of tourism development, technical infrastructure, quality of life and broadly understood environment protection issues. The impact of planning decisions on the transformation of the spatial structure, including those concerning the changes of agricultural and forestry land for other purposes, was analyzed rather in the local dimension, usually for the communities located nearby large cities (Tanaś, 2014; Grochowska, 2016; Sawicka and Fogel, 2016; Kołodziejczak and Kacprzak, 2016; Markuszewska and Marchewka, 2016; Kołodziejczak, 2017; Podawca and Mrozik, 2019). Therefore, taking up this issue for the specific aggregation of municipalities associated with National Parks appears reasonable.

Showing the quantitative aspects of changes in land-use for other than agricultural and forest functions and primarily the standardization of the obtained data owing to the proposed indicators will help to create the typology of the administrative units. Such typology, is also the empirical goal of the research that seeks to extract the municipalities, where the process of land use changes concerning the agricultural and forestry areas may bring about adverse changes of spatial structure that affect tourist development, nature conservation, as well as sustainable and ecological development in general.

METHODS

The method of the study involves comparative analysis using specific indicators that are unable to describe intensity of the phenomena in absolute or relative values (Zielińska, 2013). This type of analysis is a commonly used tool for the interpretation of the spatial information, including the aspects of eco-development (Borys, 1999). The evaluation of municipalities according to the sustainable development indicators is not a new issue. The literature concerns both the methodology as well as research aspect (Rosner, 1999; Giordano, 2006; Śleszyński, 2013). However, the proposed set of indicators and the idea of using them to expend the evaluation the municipalities spatially and functionally linked to National Parks is the authors' contribution.

The methods adopted in the paper can be divided into two groups:

- the analysis of statistical data collected in local data bank in the fields of local government and spatial planning,
- data processing of negative variables which means that low values indicate better sustainable development of the analyzed municipalities.

It was recognized that the quantity of land-use changes for non-agricultural and non-forestry purposes in the planning process would be described by total area of agricultural land, changed for non-agricultural (P_{cha}) and by total area of forest lands for which the use in the plans was changed for non-forest (P_{chf}).

The selected features, depending on their character, were related to the total area of agricultural (P_a) or forest lands (P_f) and the total area of the municipality covered with local spatial development plans. This kind of approach should eliminate the size issue of a municipality and enable comparison between the administration units.

The measurement of changes in the agricultural and forestry lands use for the other purposes includes:

- the absolute degree of changes of agricultural (forestry) lands for non-agricultural (non-forest) purposes described as:

$$W_{cha(chf)} = \left(\frac{P_{cha(chf)}}{P_{a(f)}} \right) x100 \qquad (1)$$

where: $W_{cha(chf)}$ – indicator of changes in the area of agricultural (forest) lands in 2014 [%];
$P_{cha(chf)}$ – the total area of agricultural (forest) lands covered with changes for non-agricultural (non-forest) purposes by local spatial development plans [ha];
$P_{a(f)}$ – area of agricultural (forest) lands in the municipality as of 2014 [ha];

- the relative changes degree of an area of agricultural (forestry) lands described as:

$$W_{pa(pf)} = \left(\frac{P_{cha(chf)}}{P_{lsdp}} \right) x100 \qquad (2)$$

where: $W_{pa(pf)}$ – the indicator of spatial planning changes in destination of agricultural (forest) lands in 2014 [%];
$P_{cha(chf)}$ – the total area of agricultural (forest) lands covered with changes for non-agricultural (non-forest) purposes by local spatial development plans [ha];
P_{lsdp} – the total area of a municipality covered with local spatial development plans [ha].

The limit values that characterize agricultural and forest lands were used for the assessment of the sustainability and conditions for tourism development of the municipalities in terms of the decreasing area of rural and forest landscape.

According to the fundamental assessment methods of the areas with valuable natural assets for sustainable tourism development (mainly agri-tourism) it was recognized that:

- the share of agricultural lands in total municipality area should be in the range of 25–30%,
- forestry shares totalized municipality area should be in the range of 30–60% (Drzewiecki, 1992; Drzewiecki, 2005).
- Therefore, it was decided to present the relation between reduction of agricultural and forest lands and sustainable development of the municipalities by using the following coefficients:
- Spatial coefficient of agricultural landscape W_{la} [%]

$$W_{la} = \left[\left(\frac{P_a - P_{cha}}{P_m} \right) - 0.25 \right] x100 \qquad (3)$$

where: *0.25* – minimal agricultural land shares in a rural municipality with high natural values;

P_a – agricultural land shares in the municipality as at 2014 [ha];
P_{cha} – the total agricultural land areas covered with changes for non-agricultural purposes by local spatial development plans [ha];
P_m – municipality total area [ha].

- Forestry landscape Spatial coefficient W_{lf}

$$W_{lf} = \left[\left(\frac{P_f - P_{chf}}{P_m} \right) - 0.30 \right] x100 \qquad (4)$$

where: 0.30 – minimal forestry land shares in rural municipality with high natural values;
P_f – forestry lands area in a municipality as at 2014 [ha];
P_{chf} –forestry land total area covered with changes for non-forest purposes by local spatial development plans [ha];
P_m –municipality total area [ha].

The variables presented above are universal, measurable, have good data availability and will enable to compare indicators and present an objective interpretation of the obtained results. They are correct from theoretical perspective and are applicable not only for planning research procedure but also in evaluation of other administration units.

Particular spatial determination of parameters and data analysis was done using the data from the local data bank (BDL) and ArcGis software.

RESULTS AND DISCUSSION

According to the presented method, the relative degree changes of the area in forestry lands is supposed to show to what extent the local spatial development plans are designed to amend the role of forests. In the analyzed set of municipalities, the indicator value levels are extremely low, which proves the good planning protection of the forests in the examined cases. In 71 units (62.8%) there was no change in forest function. In 32 municipalities (28.3%) less than 2 ha of forest out of the 100 ha of total area covered with local spatial development plans were designated for the non-forest purposes. Between 2 and 5 ha were designated in 6 municipalities (5.3%) and between 5 and 10 ha in 3 cases. Highly negative values of the indicator were observed in the Białowieża municipality where 28.5% of the total area covered with the plans concerning forestry land transformations. However, it should be mentioned that the total area covered with spatial development plans in this administrative unit is small. A similar situation is observed for the absolute degree of forestry land changes. The calculated values are low. This is a very good situation regarding sustainable development and tourist attractiveness. In 71 units (62.8%) there were no changes concerning the forestry land. In 35 municipalities (31%) the indicator was below 1, which means that the planning documents were less than 1 ha for every 100 ha of forest that was changed for the non-forestry purposes. 5 municipalities (4.4%) changed up to 2 ha on every 100 ha for forest lands and in one case the area was slightly above 2 ha (0.9%). A special case is the Łapy municipality where 8 out of 100 ha was changed for non-forestry purposes (Table 1).

The planning decisions, from the agricultural lands protection perspective, look different. Taking into consideration both relative and absolute degree of the analyzed land-use changes only in 38 municipalities (33.6%) there were no provisions in local spatial development plans on the use of agricultural land. Regarding the changes in the absolute degrees of agricultural land, in large number of the units up to 10% of the total area covered with local spatial development plans constituted changes in use of agricultural land. From 10 to 20 ha of agricultural land per 100 ha covered with plans was changed for non-agricultural purposes in 11 municipalities (9.7%), from 20 ha to 30 ha in 8 cases (7.1%), more than 30 ha in 16 (14.2%) municipalities, whereas in 11 cases more than 80 ha, which means that the local spatial developments plans were mainly aimed at changing the use of agricultural lands. Taking into consideration the absolute degree of changes of agricultural land for non-agricultural purposes, up to 2 ha per 100 ha of agricultural land was changed in 43 municipalities (38.1%), the area between 2 ha and 5 ha in 10 administrative units (8.85%), between 5 ha and 10 ha in 8 units, whereas the range between 10 ha 20 ha – in the case of 10 municipalities.

The agricultural land changes for other purposes in relation to the total agricultural areas of more than 20% were investigated in 4 municipalities (3.5%). Highly negative results were obtained for Zakopane and Karpacz. However, these are the cases of urban municipalities where regulations related to agricultural lands are less

Table 1. Input data and obtained indicators concerning changes of agricultural and forestry land for other purposes in the analyzed municipalities (own elaboration)

No.	Municipality	PN	P_m [km^2]	P_a [ha]	P_f [ha]	P_{cha} [ha]	P_{chf} [ha]	P_{lsdp} [ha]	Indicators of land-use changes [%]					
									W_{cha}	W_{chf}	W_{pa}	W_{pf}	W_{la}	W_{lf}
1	Górzyca	I	145.42	9 641	3 447	380	0	1 810	3.941	0	20.994	0	41.30	-6.30
2	Kostrzyn n.Odrą*		46.14	1 055	1 838	0	35	1 040	0	1.904	0	3.365	-2.13	9.84
3	Witnica		278.68	12 245	12 548	44	1	214	0.359	0.008	20.561	0.467	18.94	15.03
4	Słońsk		158.64	10 502	3 633	0	0	20	0	0	0	0	41.20	-7.10
5	Lipnica Wielka	II	67.36	3 218	3 030	340	0	6 747	10.566	0	5.039	0	22.77	14.98
6	Zawoja		128.78	4 020	8 405	254	36	12 866	6.318	0.428	1.974	0.280	6.22	35.27
7	Narewka	III	338.98	8 506	23 121	222	32	724	2.610	0.138	30.663	4.420	0.09	38.21
8	Białowieża		203.14	1 514	18 041	0	6	21	0	0.033	0	28.571	-17.55	58.81
9	Wizna	IV	133.38	11 031	1 379	12	0	37	0.109	0	32.432	0	57.70	-19.66
10	Nowy Dwór		121.14	9 718	1 730	318	0	356	3.272	0	89.326	0	55.22	-15.72
11	Bargłów Kościelny		187.81	14 161	2 552	63	0	318	0.445	0	19.811	0	50.40	-16.41
12	Jedwabne		159.21	12 380	2 831	15	1	22	0.121	0.035	68.182	4.545	52.76	-12.22
13	Grajewo		308.23	18 753	9 845	362	10	2 951	1.930	0.102	12.267	0.339	35.84	1.94
14	Jaświły		175.49	15 477	1 268	55	2	17 549	0.355	0.158	0.313	0.011	63.19	-22.77
15	Rajgród		207.26	12 459	5 873	186	8	1 893	1.493	0.136	9.826	0.423	35.11	-1.66
16	Lipsk		184.21	12 068	4 199	31	0	31	0.257	0	100	0	40.51	-7.21
17	Dąbrowa Białostocka		263.84	20 404	4 101	4	0	2 265	0.020	0	0.177	0	52.33	-14.46
18	Suchowola		256.7	20 059	2 720	0	0	0	0	0	0*	0*	53.45	-19.36
19	Radziłów		199.54	15 082	1 884	46	0	2 083	0.305	0	2.208	0	50.58	-20.56
20	Sztabin		363.11	18 380	15 424	85	9	441	0.462	0.058	19.274	2.041	25.62	12.48
21	Trzcianne		331.87	14 843	6 854	1	0	1	0.007	0	100	0	19.73	-9.35
22	Goniądz		376.58	13 969	11 986	137	0	37 668	0.981	0	0.364	0	12.09	1.83
23	Czarna	V	184.77	4 511	11 542	18	0	112	0.399	0	16.071	0	-0.59	32.47
24	Cisna		287.26	1 586	25 519	0	0	789	0	0	0	0	-19.48	58.84
25	Lutowiska		475.63	4 565	39 327	80	0	722	1.752	0	11.080	0	-15.40	52.68
26	Chojnice	VI	458.21	22 232	17 799	1	0	3 430	0.004	0	0.029	0	23.52	8.84
27	Bierzwnik	VII	239.06	8 630	12 916	29	0	67	0.336	0	43.284	0	11.10	24.03
28	Krzyż Wielkopolski		174.28	5 987	10 190	34	3	1 497	0.568	0.029	2.271	0.200	9.35	28.47
29	Tuczno		249.5	9 841	12 474	0	0	326	0	0	0	0	14.44	20.00
30	Drawno		320.19	7 180	22 350	0	0	235	0	0	0	0	-2.63	39.65
31	Człopa		349.05	7 146	25 539	45	0	45	0.630	0	100	0	-4.53	43.17
32	Dobiegniew		351.27	9 278	21 684	10	5	843	0.108	0.023	1.186	0.593	1.41	31.73
33	Nowy Targ	VIII	207.68	11 838	7 578	0	0	3 355	0	0	0	0	32.00	6.49
34	Ochotnica Dolna		141.2	5 505	8 177	0	0	14 100	0	0	0	0	13.99	27.91
35	Mszana Dolna		170.02	8 686	7 218	0	1	17 002	0	0.014	0	0.006	26.09	12.45
36	Kamienica		95.18	3 116	5 924	448	2	4 863	14.377	0.034	9.212	0.041	7.74	32.24
37	Niedźwiedź		74.22	2 928	4 054	50	0	7 444	1.708	0	0.672	0	14.45	24.62
38	Lewin Kłodzki	IX	52.14	2 413	2 463	0	0	157	0	0	0	0	21.28	17.24
39	Kudowa Zdrój*		33.9	1 315	1 621	8	0	3 387	0.608	0	0.236	0	13.79	17.82
40	Szczytna		132.37	4 075	8 548	128	0	13 202	3.141	0	0.970	0	5.78	34.58
41	Radków		139.95	7 998	5 094	518	17	13 962	6.477	0.334	3.710	0.122	32.15	6.40

Table 1 cont.

No.	Municipality	PN	P_m [km^2]	P_a [ha]	P_f [ha]	P_{cha} [ha]	P_{chf} [ha]	P_{lsdp} [ha]	Indicators of land-use changes [%]					
									W_{cha}	W_{chf}	W_{pa}	W_{pf}	W_{la}	W_{lf}
42	Tomaszów Mazowiecki	X	149.81	6 669	6 732	0	105	1 224	0	1.560	0	8.578	19.51	14.93
43	Łomianki		38.83	1 721	595	184	12	709	10.691	2.017	25.952	1.693	19.32	-14.68
44	Stare Babice		63.42	4 443	1 227	1 731	5	6 342	38.960	0.407	27.294	0.079	45.06	-10.65
45	Kampinos		84.6	6 110	1 748	762	0	762	12.471	0	100	0	47.22	-9.34
46	Brochów		119.81	6 335	4 019	67	0	67	1.058	0	100	0	27.88	3.54
47	Izabelin		65.01	578	5 036	95	55	880	16.436	1.092	10.795	6.250	-16.11	47.47
48	Czosnów		128.45	7 123	3 593	1 240	11	12 845	17.408	0.306	9.654	0.086	30.45	-2.03
49	Leszno		125.08	6 424	5 214	352	15	3 160	5.479	0.288	11.139	0.475	26.36	11.69
50	Leoncin		157.98	6 121	8 063	769	3	2 755	12.563	0.037	27.913	0.109	13.75	21.04
51	Kowary*	XI	37.39	837	2 438	45	24	3 738	5.376	0.984	1.204	0.642	-2.61	35.20
52	Piechowice*		43.22	963	2 748	0	0	2 100	0	0	0	0	-2.72	33.58
53	Podgórzyn		82.51	3 079	4 165	0	0	4 320	0	0	0	0	12.32	20.48
54	Szklarska Poręba*		75.44	433	6 191	0	7	995	0	0.113	0	0.704	-19.26	52.07
55	Jelenia Góra*		109.22	4 331	3 628	0	0	9 717	0	0	0	0	14.65	3.22
56	Karpacz*		37.99	392	2 487	392	13	2 016	100	0.523	19.444	0.645	-14.68	35.46
57	Osiek Jasielski	XII	60.4	3 746	1 876	55	0	966	1.468	0	5.694	0	37.02	1.06
58	Sękowa		194.8	5 252	13 611	0	0	19 480	0	0	0	0	1.96	39.87
59	Lipinki		66.46	4 265	2 076	35	1	6 616	0.821	0.048	0.529	0.015	39.17	1.24
60	Nowy Żmigród		103.59	6 731	3 031	0	0	10 290	0	0	0	0	39.98	-0.74
61	Dębowiec		86.47	4 983	2 975	10	0	7 734	0.201	0	0.129	0	32.63	4.40
62	Krempna		203.86	4 042	15 361	0	0	2	0	0	0	0	-5.17	45.35
63	Tykocin	XIII	207.37	13 464	5 509	68	0	68	0.505	0	100	0	39.93	-3.43
64	Kobylin-Borzymy		119.42	9 068	2 176	20	0	577	0.221	0	3.466	0	50.93	-11.78
65	Suraż		76.61	6 102	1 043	0	0	61	0	0	0	0	54.65	-16.39
66	Sokoły		155.6	11 129	3 040	94	4	106	0.845	0.132	88.679	3.774	46.52	-10.46
67	Turośń Kościelna		139.9	8 995	3 270	0	0	257	0	0	0	0	39.30	-6.63
68	Choroszcz		163.79	10 138	2 715	0	0	16 370	0	0	0	0	36.90	-13.42
69	Łapy		127.65	8 121	1 737	60	137	12 757	0.739	7.887	0.470	1.074	38.62	-16.39
70	Wielka Wieś	XIV	48.27	3 947	363	0	0	4 690	0	0	0	0	56.77	-22.48
71	Jerzmanowice-Przeginia		68.14	5 930	610	1	0	6 839	0.017	0	0.015	0	62.03	-21.05
72	Sułoszowa		53.38	4 837	371	128	0	5 146	2.646	0	2.487	0	65.61	-23.05
73	Skała		74.83	5 577	1 570	0	0	3 529	0	0	0	0	49.53	-9.02
74	Łapsze Niżne	XV	125.79	6 852	4 681	75	0	12 500	1.095	0	0.600	0	29.47	7.21
75	Szczawnica		87.9	2 132	6 030	0	0	1 040	0	0	0	0	-0.75	38.60
76	Krościenko nad Dunajcem		57.12	2 561	2 847	91	0	1 839	3.553	0	4.948	0	19.84	19.84
77	Czorsztyn		62.16	2 347	2 836	171	0	5 018	7.286	0	3.408	0	12.76	15.62
78	Ludwin	XVI	122.17	8 508	1 669	315	4	12 122	3.702	0.240	2.599	0.033	44.64	-16.34
79	Stary Brus		131.67	6 167	6 111	0	0	0	0	0	0*	0*	21.84	16.41
80	Hańsk		176.27	8 742	6 936	7	0	302	0.080	0	2.318	0	24.59	9.35
81	Wierzbica		145.79	11 992	1 326	0	0	14 636	0	0	0	0	57.26	-20.90
82	Sosnowica		171.62	7 341	7 711	91	0	91	1.240	0	100	0	17.77	14.93
83	Urszulin		172.14	9 319	4 622	23	0	150	0.247	0	15.333	0	29.14	-3.15
84	Zamość	XVII	196.11	16 496	1 754	522	0	1 888	3.164	0	27.648	0	59.12	-21.06
85	Józefów		126.46	4 903	7 307	0	0	12 452	0	0	0	0	13.77	27.78
86	Adamów		110.66	6 117	4 710	923	0	11 055	15.089	0	8.349	0	30.28	12.56
87	Zwierzyniec		153.55	3 727	11 000	11	3	1 280	0.295	0.027	0.859	0.234	-0.73	41.64

Table 1 cont.

No.	Municipality	PN	P_m [km^2]	P_a [ha]	P_f [ha]	P_{cha} [ha]	P_{chf} [ha]	P_{lsdp} [ha]	Indicators of land-use changes [%]					
									W_{cha}	W_{chf}	W_{pa}	W_{pf}	W_{la}	W_{lf}
88	Ustka	XVIII	217.46	12 183	6 732	1 102	74	4 745	9.045	1.099	23.224	1.560	31.02	0.96
89	Łeba*		14.81	248	701	2	8	193	0.806	1.141	1.036	4.145	-8.25	17.33
90	Główczyce		321.97	18 762	9 850	92	0	4 004	0.490	0	2.298	0	33.27	0.59
91	Wicko		215.29	10 681	7 246	178	0	2 944	1.667	0	6.046	0	24.61	3.66
92	Smołdzino		260.29	7 956	6 737	131	1	159	1.647	0.015	82.390	0.629	5.57	-4.12
93	Górno	XIX	83.16	6 786	977	201	1	3 925	2.962	0.102	5.121	0.025	56.60	-18.25
94	Masłów		85.55	4 503	3 260	432	0	8 548	9.594	0	5.054	0	27.64	8.11
95	Łączna		61.65	2 240	3 521	374	2	6 178	16.696	0.057	6.054	0.032	11.33	27.11
96	Bieliny		88.22	5 840	2 682	0	0	8 809	0	0	0	0	41.20	0.40
97	Nowa Słupia		85.76	5 768	2 426	14	0	14	0.243	0	100	0	42.26	-1.71
98	Bodzentyn		159.75	8 185	7 381	0	0	64	0	0	0	0	26.24	16.20
99	Poronin	XX	83.62	3 331	4 676	0	3	4 954	0	0.064	0	0.061	14.83	25.92
100	Bukowina Tatrzańska		131.86	6 372	5 648	295	11	2 225	4.630	0.195	13.258	0.494	23.32	12.83
101	Zakopane*		84.26	1 927	4 469	1 120	5	3 455	58.121	0.112	32.417	0.145	-2.13	23.04
102	Kościelisko		136.68	3 646	7 263	0	0	4 578	0	0	0	0	1.68	23.14
103	Dopiewo	XXI	108.02	7 665	1 742	0	0	1 177	0	0	0	0	45.96	-13.87
104	Puszczykowo*		16.39	211	804	43	6	574	20.379	0.746	7.491	1.045	-12.13	19.05
105	Mosina		171.43	8 203	6 621	1 005	33	4 085	12.252	0.498	24.602	0.808	22.85	8.62
106	Komorniki		66.41	4 389	1 109	0	0	2 921	0	0	0	0	41.09	-13.30
107	Stęszew		175.02	12 386	3 213	0	0	1 057	0	0	0	0	45.77	-11.64
108	Krasnopol	XXII	171.49	11 240	3 890	0	0	137	0	0	0	0	40.54	-7.32
109	Nowinka		204.08	5 691	12 919	incorrect data in BDL			-	-	-	-	-	-
110	Giby		323.2	5 302	25 089	0	0	0	0	0	0*	0*	-8.60	47.63
111	Suwałki		264.61	13 987	7 886	1 030	9	5 544	7.364	0.114	18.579	0.162	27.86	-0.20
112	Wolin	XXIII	327.46	15 991	7 496	23	0	1 344	0.144	0	1.711	0	23.83	-7.11
113	Świnoujście*		197.23	1 753	4 363	0	0	9 729	0	0	0	0	-16.11	-7.88
114	Międzyzdroje		114.38	373	4 986	1	12	238	0.268	0.241	0.420	5.042	-21.74	13.59

I – Ujście Warty NP, II – Babia Góra NP, III – Białowieża NP, IV – Biebrza NP, V – Bieszczady NP VI – Bory Tucholskie NP, VII – Drawa NP, VIII – Gorce NP, IX – Góry Stołowe NP, X – Kampinos NP, XI – Karkonosze NP, XII – Magura NP, XIII – Narew NP, XIV – Ojców NP, XV-Pieniny NP, XVI – Polesie NP, XVII – Roztocze NP, XVIII – Słowiński NP, XIX – Świętokrzyski NP, XX – Tatra NP, XXI – Wielkopolska NP, XXII – Wigry NP, XXIII – Wolin NP.

*– cities which are part of a national park

restricted[1]. Among the analyzed rural municipalities, the largest area of changes of agricultural land for other purposes is planned in Stare Babice (39%), which may result from urbanization around Warsaw.

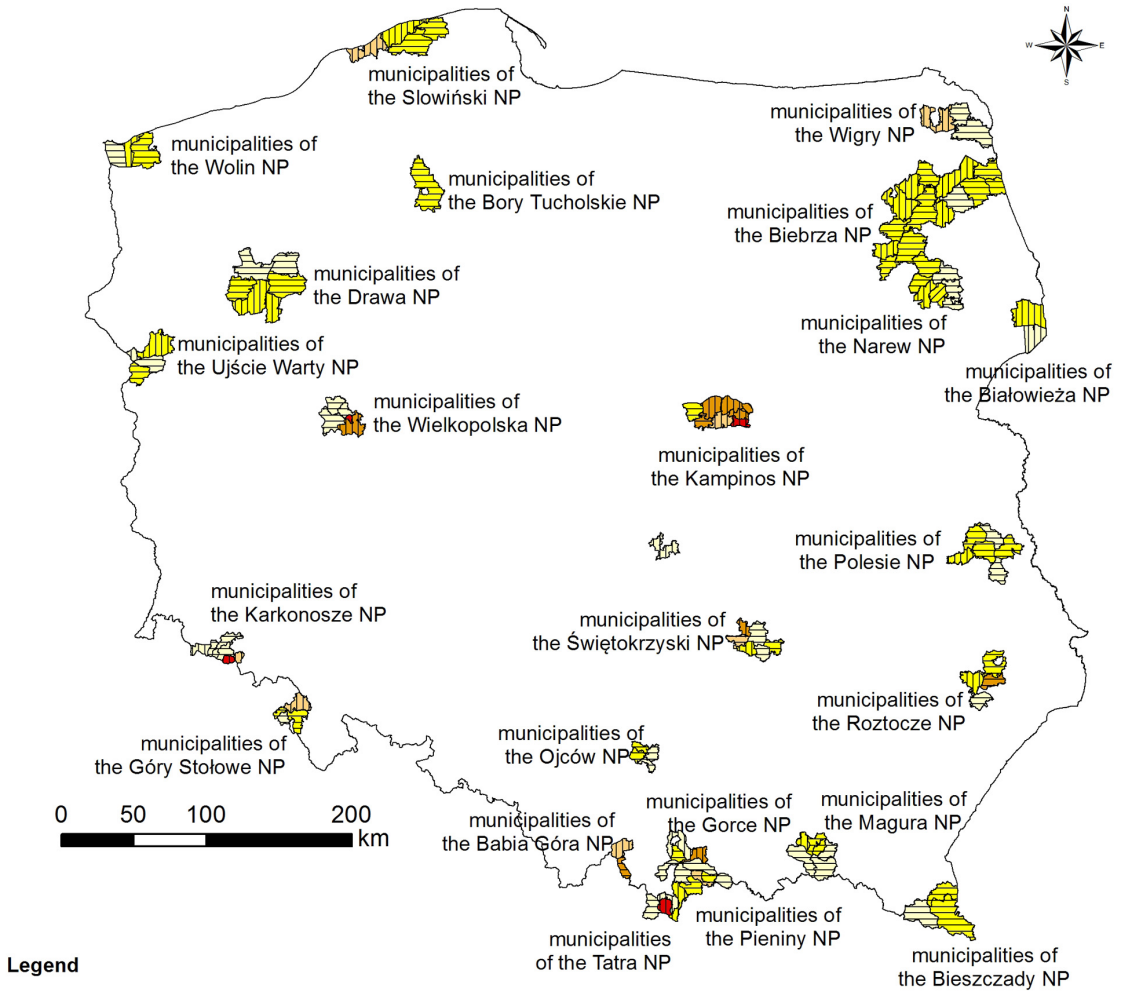
In order to create a typology of the municipalities studied, they were divided into the following groups presented in Figure 1.

In terms of processes related to changes of agricultural land:

- the municipalities, where none of agricultural lands were changed for non-agricultural purposes – Group I –38 studied administrative units;
- the municipalities with absolute degree of changes of agricultural lands below 5% – Group II (53 units);
- the municipalities with absolute degree of changes of agricultural lands in range between 5% and 10% – Group III (8 units);
- the municipalities with absolute degree of changes of agricultural lands in range between 10% and 20% – Group IV (10 units);
- the municipalities with absolute degree of changes of agricultural land above 20% – Group V (4 units).

[1] In accordance with Article 10a. of the Act on the protection of agricultural land and forestry land (consolidated text: Journal of Laws, 2017, Item 1161) restrictions on land changes for non-agricultural and non-forestry purposes shall not apply to agricultural land within the administrative boundaries of cities.

- In terms of processes related to changes of forestry lands
- the municipalities, where none of forest lands were changed for non-forest purposes – Group 1 (71 administrative units);
- the municipalities with absolute degree of changes of forest lands below 2% – Group 2 (40 units);
- the municipalities with absolute degree of changes of forest lands in range between 2% and 5% – Group 3 (1 unit);



Legend

Groups of the municipalities by type of the processes related to changes of forest lands for non-forest purposes

Wchf

Group 1 —the municipalities, where none of forest area was changed

Group 2 —the municipalities with the absolute degree of the land-use changes below 2%

Group 3 —the municipalities with the absolute degree of land-use changes between 2% and 5%

Group 4 —the municipalities with the absolute degree of land-use changes between 5% and 10%

Group 5 —the municipalities with the absolute degree of land-use changes above 10%

Groups of the municipalities by type of the processes related to changes of agricultural lands for non-agricultural purposes

Wcha

Group I —the municipalities, where none of agriculturalland was changed

Group II —the municipalities with the absolute degree of the land-use changes below 5%

Group III —the municipalities with the absolute degree of land-use changes between 5% and 10%

Group IV —the municipalities with the absolute degree of land-use changes between 10% and 20%

Group V —the municipalities with the absolute degree of land-use changes above 20%

Fig. 1. Groups of the municipalities according to the absolute degree of changes of agricultural and forest lands for non-agricultural or non-forestry purposes (own elaboration)

- the municipalities with absolute degree of changes of forest lands in range between 5% and 10% –Group 4 (1 unit);
- the municipalities with absolute degree of changes of forest land above 20% – Group 5 (lack of units).

The analysis presents primarily the percentage share of agricultural and forestry landscape. It is considered to be important in terms of natural values and tourism development of the analyzed municipalities. In this case, the studied administrative units were assigned to one of four types, with respect to the minimal share of forestry and agricultural lands required for tourism (especially agritourism) development (Fig 2):

- type A – large surplus of agricultural or forest lands – W_{la} (W_{lf}) >10%;
- type B – small surplus of agricultural or forest lands – $0 \leq W_{la}$ (W_{lf}) $\leq 10\%$;
- type C – small deficit of agricultural or forest lands – $0 < W_{la}$ (W_{lf}) $\leq -10\%$;
- type D – large deficit of agricultural or forest lands –W_{la} (W_{lf}) < -10%.

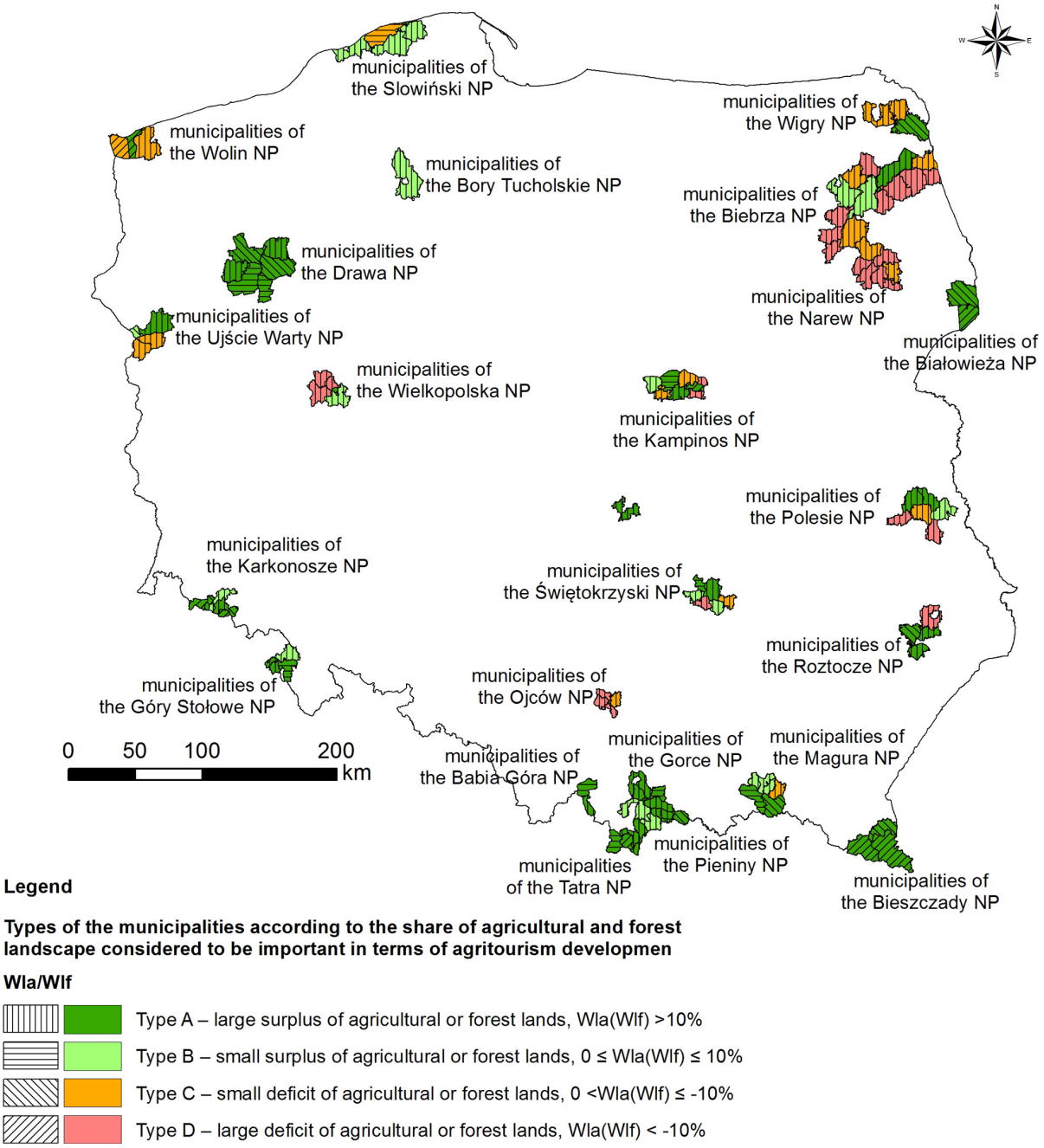


Fig. 2. Types of the municipalities according to the spatial coefficient of agricultural and forestry landscape (own elaboration)

According to the types presented above, in relation to the share of forestry areas, 25 municipalities are assigned to the type A (22.1%), 18 units (16%) to the type B, 19 units (16.8%) to the type C and 51 units to the type D (45.1%).

CONCLUSIONS

Spatial diversification of the municipalities in terms of quantitative changes in the agricultural and forest land use is small but their location diversity in relation to the analyzed share of forest and agricultural landscape is high (Fig.1, Fig. 2). The spatial distribution can be observed in the case of regions and individual national parks.

In order to obtain a synthetic diversity picture of the municipalities in terms of their spatial policy related to agricultural and forest land a typology of the administrative units was developed. Tables 2 and 3 show the quantitative distribution of the designated types.

The most numerous set of the municipalities are the units that did not change the forest land for other purposes or did so to a minimal extent. Moreover, the share of forests in their area is a significant value in the context of tourism development. These are the municipalities assigned to the A.1 and A.2 categories.

A similar situation can be observed in the case of the municipalities classified into the B.1 and B.2 categories, in which forest areas are not the subject of changes introduced in spatial policy and moreover the share of forest land is slightly above the assumed minimum share of forests in the municipality.

On the basis of the obtained categorization, it can be observed that despite the lack of planning activities towards changes of forests for other purposes, in large number of the municipalities the share of forests is too low for the requirements of agritourism development (C.1, C.2, D. 1, D.2 categories).

The extremely unfavorable situation in terms of planning decisions applied in local spatial development plans as well as in relation to the share of forests occurs in two municipalities: Łomianki (D.3) in the Kampinos National Park and Łapy (D.4) in the Narew National Park.

There is a considerably higher variation in the planning decision-making process in the case of the agricultural land. One can notice a significant advantage of the municipalities classified to the A.I and A.II categories in which the use of agricultural land for other purposes has not been changed or it has been done to a very small extent. In the municipalities classified to A.III, A.IV, A.V, B.III, B.IV categories, the share of agricultural landscape, despite planning decisions to reduce these area, is large enough to create favorable conditions for agritourism development. An extreme example is the municipality of Stare Babice, where there were very intensive changes of agricultural land for other purposes. However, the share of this kind of land-use is still high; therefore, the existing urban pressure has not changed either the agricultural character of the municipality or limited chances for agritourism development. In the case of the units classified to the CI, C.II, DI and D.II categories it should be noted that despite the protection of agricultural land in the planning process, the share of this kind of land-use in the land-use structure of the municipalities is below the requirements to be considered a positive factor determining the agritourism development.

A few but extremely negative cases are the following municipalities:

- Zakopane located in Tatra National Park, Karpacz in Karkonosze NP and Puszczykowo in Wielkopolska NP, in which there is a very dynamic process of changing agricultural land

Table 2. Quantitative distribution of the municipalities regarding of the forestry land changes for other purposes in the context of tourism development

Group	Type				Σ
	A	B	C	D	
1	27	13	14	17	71
2	24	6	4	6	40
3	0	0	0	1	1
4	0	0	0	1	1
5	0	0	0	0	0
Σ	**51**	**19**	**18**	**25**	113

Table 3. Quantitative distribution of the municipalities regarding changes of the agricultural land for other purposes in the context of tourism development

Group	Type				Σ
	A	B	C	D	
I	26	2	6	4	38
II	42	4	5	2	53
III	6	1	1	0	8
IV	6	3	0	1	10
V	1	0	0	3	4
Σ	**81**	**10**	**12**	**10**	113

for other purposes together with a very small overall area of the agricultural landscape;
- Izabelin in Kampinos National Park with a significant decrease in agricultural land use for other functions.

In the first case, the existing trends are clearly associated with the municipal status of the administrative unit and lighter procedures concerning the changes of agricultural land for other purposes, regardless of the class of agricultural land. The second example shows the municipality with forest character affected by strong urban pressure. In this case, the forest protection takes place and at the same time all possible agricultural lands are undergoing urbanization.

CONCLUSION

1. The analyzed municipalities are a specific set of areas where natural conditions are one of the most important bases to be considered in the local spatial policy. The municipalities located within national parks are complex objects, which face complex socio-economic phenomena that in turn have the causal link on the sustainable development of these units. It should be emphasized that in most of the municipalities located within impact area of national parks, the provisions of the existing spatial development plans do not adversely affect the forest and agricultural landscapes resources. Some small area reduction may result from the implementation of public purpose investments, e.g. roads. The studied objects, where the adverse trends occur, are mostly located in the impact of large cities, such as Warsaw in the case of municipalities of the Kampinos National Park and Poznań in relation to the municipalities of the Wielkopolska National Park.
2. In conclusion, it should be stated that most of the analyzed municipalities implement the principles of sustainable development, among others, by protecting agricultural and forest resources against intensive land-use changes for other purposes.
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