

# AREAS OF COMPROMISES BETWEEN PRODUCTION AND ECOLOGICAL INTERESTS – EXAMPLE OF THE KONECKO-ŁOPUSZNIAŃSKI NATURE PARK

**Kamila Musiał**

Institute of Animal Production, National Research Institute, Department of Systems and Production Environment, 32-083 Balice near Krakow

## **Abstract**

*The study presents the results of research on the progress of selected aspects of the deagrarianization and deanimalization process in 13 municipalities within which the Konecko-Łopuszniański Protected Landscape Area is located. In the analysed neighbouring communes, the average share of grassland in agricultural land is 34%, but its diversity between individual communes is significant and ranges from 47.7 to 28.3%. Deanimalization is far advanced in almost the entire study area. Considering the area and share of TUZ in these communes, their incomplete fodder use and management can be considered with high probability. The abandonment of agricultural land use and the lack of grazing of ruminants are factors leading to imbalances in the agroecosystems concerned, which are of a negative nature. The compromise that both farmers and nature conservation regulators should strive for in this protected landscape area is to slow down the process of abandoning agricultural management and maintaining farms involved in ruminant farming.*

*Keywords: deagrarianization, abandonment of livestock farming, protected area, Świętokrzyskie Voivodeship*

## **Introduction**

Rural areas in areas of natural and landscape value, covered by various forms of area-based nature protection, are increasingly struggling with contradictions between economic aspirations and biodiversity conservation objectives, which are sources of conflict. Simplifying the structure of crops has for years been a threat to the maintenance of the biodiversity of various agroecosystems, among others,

traditionally associated with extensive uses (Wnuk and Piasek, 1998; Pajewski, 2017). Another aspect is the partial or total abandonment of agricultural production in a given protected area. This can also result in a reduction in species diversity and is felt all the more painfully when the natural or landscape values are more significant. This is especially true for semi-natural communities, where it is necessary to maintain mowing or grazing of ruminants. Thus, the progress of the process of deagrarianization, but also deanimalization in such areas, may favor the natural degradation of culture landscapes (Berkes et al., 1994; Musiał and Musiał, 2019). A protected landscape area includes areas protected for a distinctive landscape with diverse ecosystems, acting as ecological corridors and valuable in terms of their ability to meet leisure needs. Like a landscape park, such a form of nature protection is designated by a resolution of the voivodship self-government in accordance with the Act of 16 April 2004 on Nature Protection (Journal of Laws 2020, item 55). For protected landscape areas in relation to agriculture and agricultural production, a regulation clarifying the prohibition of projects likely to have a significant impact on the environment may be important. However, there are no restrictions on the choice of animal rearing and breeding technology, including the bedding-free method and the use of slurry for fertiliser purposes. However, these restrictions can be applied to the location of farms, as it is easy to violate the sustainable use of agricultural land (Musiał and Musiał, 2019). According to the CSO (2019), there are a total of 21 protected landscape areas in the Świętokrzyskie Voivodeship, which together cover an area of 625,471.37 ha. The largest area of this type in the Świętokrzyskie Land is the Konecko-Łopuszniański Area of Protected Landscape.

Programming and supporting positive changes in agriculture, including the search for best solutions, must take into account complex external and internal conditions. Although the creation of optimal solutions is currently supported in many ways, including, for example, by IT systems, consultancy or access to factual databases, it is always important to seek a balance for the various interests involved and therefore to make compromises. With regard to agricultural management in areas with legally defined nature conservation regimes, these can cover many different aspects. But then it is always necessary to look for an answer to the question of what such a compromise is actually intended to serve (Feng et al., 2022). Here the spectrum of possible answers can be substantial, and the arguments formulated by farmers regarding the development or reduction of existing agricultural production, or the acceptance of constraints that exist in protected areas requiring various adaptation measures, are considered as such. This can also include the expectation of farmers to receive adequate compensation for the various constraints, impediments and costs caused institutionally. The compromise also concerns the next stages of implementation of new solutions for nature protection, i.e. what should be implemented by farmers owning agricultural land in protected areas (Musiał, 2022). The aim of the study was to demonstrate whether the presence of area-based forms of nature conservation in a given area influences the progress of the process of productive deagrarianisation, including deanimalisation, and what the trade-offs between typically economic objectives and those aimed at nature and landscape conservation might be.

## Material and methods

Konecko-Łopuszniański Protected Landscape Area is located in the north-north-western part of the Świętokrzyskie Voivodeship and covers an area of 982.87 km<sup>2</sup>. To the west, it adjoins the buffer zone of the Przedbork Landscape Park and the Pilichany Protected Landscape Area. To the east, it borders the Suchedniowsko-Oblęgorzki Protected Landscape Area, which serves as a buffer zone for the landscape park of the same name. To the south, it borders the buffer zone of the Chęcińsko-Kielecki Landscape Park. This is important because the largest share of protected areas in total in relation to the area of all voivodships was established for the Świętokrzyskie Voivodeship, where they constitute as much as 65.0% of the area of this region (CSO, 2019). As a result, in a significant part of the voivodship, protected areas of various types are adjacent to each other or even overlap, which may affect the type of plant and animal production carried out there. The area of the park includes land belonging to 13 municipalities, these are: Radoszyce, Ruda Ma- leniecka, Smyków, Bliżyn, Końskie, Krasocin, Małogoszcz, Mniów, Łopuszno, Słupia Konecka, Piekoszów, Strawczyn and Stąporków (Fig. 1). Nearly half of the area is occupied by natural forest complexes. Nearly half of the area is covered by natural forest complexes. The analysis carried out refers to all municipalities, which are multifaceted; this also applies to economic development, which can be measured variously. Data on the area of municipalities, total population or degree of forestation are given after the Statistical Vademecum of Local Government (2019). The quality and agricultural suitability of soils and the overall valorisation index of agricultural productive space, i.e. synthetically measured predestination for agricultural production, measured in points according to the IUNiG scale in Puławy, are given following Witek (1993).

In addition, municipalities located in the park were analyzed in relation to the condition and threats resulting from deagrarianization, especially de-animalization. The database was obtained through surveys carried out in the system of municipalities. They included all municipalities located in its area. These examinations in the form of expert assessments were carried out by field employees of the Świętokrzyskie Agricultural Advisory Centre in Modliszewice and field assets (mainly municipal delegates) of the Świętokrzyskie Chamber of Agriculture. The research was carried out in a repeated system, 2 surveys in each municipality. On this basis m.in, the share of individual categories of farms in terms of the state and prospects of their development in individual communes was determined. There are 4 categories of farms:

A – development, these are agricultural entities with significant production potential and a significant scale of production, investing in land or other fixed assets, benefiting from structural funds, expansive, leading and developing;

B – holdings showing signs of development and therefore having a rather small or medium production potential, but showing market-oriented production,

investing little in technical equipment, they are not active on the land market;

C – stagnant farms are those that do not invest in buildings and machinery, carry out production partly intended for the market, using low inputs, but still using all or almost all of the land area;

D – declining farms, they are entities that have not invested in buildings, agricultural land and machinery for several years, but still carry out extensive production on at least part of their land, willingly lease land or set aside a larger area of land.



Source: Own elaboration based on: Musiał and Musiał (2020)

Figure 1. Location of the Konecko-Lopuszniański Nature Park

## Results

The territorially largest municipalities are: Końskie (250 km<sup>2</sup>), Stąporków (232 km<sup>2</sup>) and Krasocin (192 km<sup>2</sup>). Relatively small municipalities are Smyków (62 km<sup>2</sup>) and Strawczyn (86 km<sup>2</sup>). The highest forest cover is found in the municipality of Bliżyn, where it amounts to 71.2% of the total area (Table 1). In total, the three analysed municipalities have a high forest cover, which dominates the spatial development structure of the municipality and its landscape.

Forest cover of over 50% is found in the municipalities of: Stąporków (61.6%), Ruda Maleniecka (55%) and Smyków (50.3%). The question can be asked whether this statistic also includes spontaneously forested land located in open areas of fields, but also in the vicinity of forests and coppices, and whether the agricultural-forest boundary is also subject to spontaneous change. Even cursory observations indicate that afforestation is a progressive process, and its vibrancy escapes official statistics and often also from periodic geodetic corrections of changes in the structure of land use. However, agriculture still has a significant influence on the assessed functional type of the municipalities analysed (Table 1). The average population density for municipalities in this protected area is 81.2 inhabitants per 1 km<sup>2</sup>, which is highest in urban-rural communes. For the municipality of Końskie the demographic load is 142 per 1 km<sup>2</sup>, and for the rural-urban municipalities of Stąporków and Małogoszcz respectively 104 and 80 inhabitants per 1 km<sup>2</sup>. The municipalities of Łopuszno and Krasocin have a population significantly negative from the average of the analyzed subregion, amounting to 51 and 55 people per 1 km<sup>2</sup>, respectively. The number of economic entities in the analyzed communes is usually correlated with the number of population and the area that this population inhabits. Therefore, the differences in this respect between individual communes are very large. The least business entities are registered in the municipality of Ruda Maleniecka – 175, and the most in the communes of Piekoszów – 1278 and Stąporków – 1244. On the other hand, entrepreneurship assessed by the ratio of the number of entities per 10,000 indicates that the leaders in this area are the municipalities of Końskie (1029 entities) and Krasocin (1006). In turn, the lowest rate is shown by the commune of Ruda Maleniecka, but it is not low compared to the regional or national average in rural areas in Poland (Zuzek, 2018).

The municipalities surveyed can be classified into several functional types, which is due to both their location, including proximity to urban areas, and their natural conditions in terms of the state and development of agriculture and forestry. Respondents indicated 4 typically agricultural municipalities in this area, such as Bliżyn and Słupia Konecka. Some municipalities, such as Krasocin, combine different roles, which means that they have agricultural, tourist, service and commercial functions. In the communes of Radoszyce, Ruda Maleniecka and Smyków, respondents indicated a duality of agricultural and tourist functions. The highest number of farms with an area exceeding 30 ha was found in the municipality of Łopuszno (100), where agricultural functions dominate. On the other hand, in the communes of Mniów, Ruda Maleniecka and Smyków there are only 2 such holdings each, and these municipalities are described as agricultural-tourist, where the impact of protected areas on agriculture is neutral (Table 2). The largest number of spatial forms of nature protection is located in the municipality of Bliżyn, where there are 18 of them in total and they include, m.in nature reserves, landscape park, Natura 2000 areas and ecological sites. However, the negative impact of protected areas on agriculture was found in the communes of Krasocin and Słupia Konecka, where their number was smaller and amounted to 8 and 5 such areas, respectively. The number of farms keeping more than 30 cattle is the highest in the municipality of Łopuszno, while the lack of such farms was found in the communes of Ruda Maleniecka and Smyków.

The spatial diversity of agriculture in individual communes was usually small, and only for the municipalities of Bliżyn and Ruda Maleniecka it was assessed as significant.

Turning to the analyses of the natural conditions determining to a large or even decisive extent the development of agriculture, the low quality and agricultural suitability of the production space was found. This applies both to the soil conditions considered separately and to the overall agricultural valorisation index (WWRPP). Among the surveyed communes it is the lowest, and therefore has a value below 50 points. in municipalities: Krasocin (45.7 points) and Stąporków (45.8 points). In other communes it is not much higher and in the municipality with the highest indexation rate, which is Strawczyn, this indicator is 55.7 points (Table 3). The lowest value for soil quality and agricultural suitability was recorded for the commune of Bliżyn (29.2 points), very similar for the commune of Stąporków (29.4 points). In the communes within which the Konecko-Łopuszniański Protected Landscape Area is located, there are definitely large differences in the structure of agricultural land development. The communes such as: Małogoszcz, Piekoszów and Krasocin are dominated by arable land, whose share is 73.7, 66.4 and 64.7% respectively. In other communes, this share oscillates around 50%, while in the municipality of Bliżyn it is the lowest and amounts to 45.6%. The share of permanent pasture in agricultural land is also highly diversified and at the same time quite high. It ranges from 20.6% in the commune of Małogoszcz to 47.7% in the commune of Bliżyn, where it is the highest among the analyzed communes. The deagrarianization of the surveyed communes is a significant problem there in relation to landscape protection. Expert assessments in this area indicate a very high increase in the abandonment of agricultural land use in two communes bordering the municipality (and the city) of Końskie. The share of abandoned agricultural land is particularly high within the commune of Ruda Maleniecka, where it was valued by respondents at 60% for agricultural land and 70% for permanent grassland. These values are also high for the area of the Bliżyn commune, amounting to 50% and 55% (Table 4). The situation is similar in the so-called "Kielce" communes with unfavorable conditions for agricultural production, such as Piekoszów and Strawczyn, where expert valuations showed the intensity of the deagrarianization process at 30% for agricultural land and 40% and 30% for grassland.

Table 1. Selected characteristics of communes located within the Konecko-Łopuszniański Protected Landscape Area

Commune	Area (km <sup>2</sup> )	Forest cover (%)	Total population	Average population density (km <sup>2</sup> )	Entities of the national economy	
					In total	per 10,000 inhabitants
1. Bliżyn	141	71,2	8 135	58	618	760
2. Końskie	250	50,3	35 422	142	3 645	1 029
3. Krasocin	192	45,2	10 652	55	1 072	1 006
4. Łopuszno	177	41,2	9 021	51	721	799
5. Małogoszcz	146	28,0	11 621	80	877	755
6. Mniów	95	26,6	9 372	98	626	668
7. Piekoszów	103	15,1	16 476	160	1 278	776
8. Radoszyce	147	39,7	8 952	61	645	721
9. Ruda Maleniecka	110	55,0	3 108	28	175	563
10. Słupia Konecka	106	35,2	3 340	32	195	584
11. Smyków	62	50,3	3 791	61	320	844
12. Stąporków	232	61,6	16 935	104	1 244	735
13. Strawczyn	86	20,4	10 735	125	860	801

Source: Own elaboration based on: Musiał i Musiał (2020) and Statistical Vademecum of Local Government (2019)/ Source: own study, based on: Musiał and Musiał (2020) and Statistical Vademecum of Local Government (2019).

Table 2. Conservation areas and selected characteristics of agriculture in individual communes

Commune	Functional type of commune	Number of all types of conservation areas <sup>1</sup>	The impact of conservation areas on agriculture <sup>2</sup>	Number of farms over 30 ha	Number of farms keeping more than 30 head of cattle	Spatial differentiation of agriculture <sup>3</sup>
1. Bliżyn	a	18	c	10	1	c
2. Końskie	c	5	c	50	40	b
3. Krasocin	a, b, c	8	b, c, d	40	40	a, b
4. Łopuszno	a	9	c	100	150	a
5. Małogoszcz	a	6	c	30	45	a
6. Mniów	b	7	c	2	3	a
7. Piekoszów	c	8	c	7	6	a
8. Radoszyce	b	4	c	20	27	b
9. Ruda Maleniecka	b	6	c	2	-	c
10. Słupia Konecka	a	5	b, d	30	30	a
11. Smyków	b	2	c	2	-	a
12. Stąporków	b, c	11	b, c	10	5	a
13. Strawczyn	b, c	8	c	15	5	a

Source: own study, based on: Musiał i Musiał (2020)

Explanations to the table:

<sup>1</sup>) type of individual commune:

a) typically agricultural, b) agri-tourist, c) with a predominance of the service and commercial functions.

<sup>2</sup>) The impact of conservation areas on agriculture: a) very positive, b) positive, c) neutral, d) negative.

<sup>3</sup>) Spatial differentiation of agriculture in individual communes: a) not significant, b) average, c) significant.



Table 3. Using of agricultural land in individual communes

Commune	Agricultural quality and suitability of soils	General indicator of WWRPP	<sup>1</sup> Area of AL (ha)	Share of arable lands	<sup>2</sup> Area of PG (ha)	Share of PG in AL (%)
1. Bliżyn	29,2	47,0	3728	45,6	1 779	47,7
2. Końskie	33,1	50,7	9847	64,0	2 933	29,8
3. Krasocin	30,4	45,7	9409	64,7	2704	28,7
4. Łopuszno	33,5	50,3	9333	59,5	3217	34,5
5. Małogoszcz	38,3	53,2	9630	73,7	1986	20,6
6. Mniów	33,6	48,6	6 377	58,3	2 270	35,6
7. Piekoszów	33,3	49,1	7205	66,4	2038	28,3
8. Radoszyce	33,5	51,1	8008	58,6	2938	36,7
9. Ruda Maleniecka	32,4	49,7	4168	48,8	1453	34,9
10. Słupia Konecka	33,5	50,3	6385	58,3	2353	36,9
11. Smyków	33,6	48,6	2773	59,0	967	34,9
12. Stąporków	29,4	45,8	6922	49,6	3 121	45,1
13. Strawczyn	40,1	55,7	6328	63,4	1794	28,4

Source: own study, based on: Witek (1993) and Musiał and Musiał (2020).

Explanations to the table:

<sup>1</sup>) AL – agricultural land, <sup>2</sup>) PG – permanent grassland.

Table 4. Selected assessments of agriculture and farms in individual communes

Commune	Share of abandoned agricultural land		The way of managing the abandoned land	The share of extensive agricultural land (%)	Share of farms with fallows (%)	Share of non-livestock farms (%)
	AL	PG				
1. Bliżyn	50	55	a, b	28	55	75
2. Końskie	10	10	b	50	20	90
3. Krasocin	10	20	b	40	30	60
4. Łopuszno	20	30	a	60	5	40
5. Małogoszcz	5	5	b, c	20	5	50
6. Mniów	40	30	a, b	40	30	40
7. Piekoszów	30	40	a, b	60	60	80
8. Radoszyce	40	30	b	10	60	50
9. Ruda Maleniecka	60	70	a	70	60	95
10. Słupia Konecka	15	15	a, b	25	15	60
11. Smyków	15	10	b	40	10	70
12. Stąporków	25	30	b	25	20	25
13. Strawczyn	30	30	b	10	30	60

Source: own study, based on: Musiał i Musiał (2020) Explanations to the table:

AL – agricultural land; PG – permanent grassland;

The way of managing the abandoned land: a) self-forested, b) bushy, c) maintained in agricultural culture.

The phenomenon of extensification and abandonment, at least part of the land used, concerned mainly the commune of Ruda Maleniecka, where it covered 70% of agricultural land, and in the second place it was Łopuszno and Piekoszów (60% each). According to expert assessments, the usable part of the land owned was abandoned by 60% of farms in communes: Radoszyce, Ruda Maleniecka and Piekoszów. The relatively smallest extent of multi-faceted de-agrarianisation concerns the communes: Małogoszcz, Łopuszno and Smyków. It was also pointed out that the abandonment of agricultural use of land is generally not linked to its maintenance in agricultural culture (if only because of the possibility of taking advantage of EU subsidies), but such land is subject to spontaneous afforestation or bushification.

A sort of derivative of the above-mentioned processes is the deanimalisation in agriculture of the communes within which the analysed protected landscape area extends. Respondents in the communes of Ruda Maleniecka, Końskie and Piekoszów indicated that 95, 90 and 80% of farms do not raise the so-called large livestock, respectively. These indicators although significantly lower in the communes: Smyków, Strawczyn, Słupia Konecka and Krasocin, they are nevertheless within 60-70%. Most households still breed animals in relatively good agricultural communes, such as Stąporków, Mniów and Łopuszno. There, the share of non-livestock farms is 25 and 40 % respectively. Deagrarianization and deanimalization also have their origin, and at the same time are a consequence of structural changes, including divestment taking place in the agriculture and farms.

These processes can also be assessed by estimating the share of recessive farms, i.e. firstly declining farms and secondly farms that only sustain their agricultural production extensively or produce only on part of their land. Surveys have shown that the largest share of declining farms at various stages of production and economic decline was recorded in the communes of Ruda Maleniecka (57%) and Smyków (55%). In the communes of Piekoszów and Radoszyce, respondents indicated that there are about 30% of such households, which constitutes almost every third household in the commune (Table 5). In this respect, the Krasocin commune was assessed the best, where only about 5% of declining farms were shown, and in the municipalities of Łopuszno and Małogoszcz about 10% each. The summary assessment of declining farms in various stages of production and economic decline and non-development farms collectively called recessive, indicates the progressive processes of structural transformations that are already taking place or will take place soon. As many as 95% of farms located in the Smyków commune were classified as non-developing and declining. In neighbouring communes these shares are lower, in the commune of Radoszyce they are 77%, Słupia Konecka (70%) and Piekoszów (70%). According to the respondents, the least recessive farms are in the commune of Łopuszno (30%). On the other extreme of these assessments there are developing farms, the share of which was estimated to range from 2-3% in the communes of Smyków and Ruda Maleniecka to 30% in the commune of Łopuszno. In the remaining communes, the share of these farms is in the range of 10-20%. The predominance of the share of progressive farms over recessive ones was recorded in the communes of Krasocin and Łopuszno (60% each), and the balance (parity) in the communes of Małogoszcz and Strawczyn.

Table 5. The share of particular categories of farms, in terms of state of and prospects for development, according to the districts (%)

		Categories of farms (%)			
Commune		A – developing	B – with some features of development	C – in recession	D – declining
1.	Bliżyn	17	18	35	30
2.	Końskie	5	25	30	40
3.	Krasocin	15	45	35	5
4.	Łopuszno	30	30	20	10
5.	Małogoszcz	20	30	40	10
6.	Mniów	10	20	50	20
7.	Piekoszów	10	20	40	30
8.	Radoszyce	15	25	30	30
9.	Ruda Maleniecka	3	20	20	57
10.	Słupia Konecka	10	20	45	25
11.	Smyków	2	3	40	55
12.	Stąporków	5	30	30	35
13.	Strawczyn	10	40	30	20

Source: own study, based on: Musiał i Musiał (2020) Explanations to the table:

(A) With considerable production potential and significant scale of production, investing in land and/or other fixed assets, receiving structural funds, expansive, leading, developing.

(B) With small or average production potential, with market-oriented production, investing little in technical devices, not very active on the land market.

(C) Not investing in buildings and machines, producing partly for the market, with low inputs on production, using all or almost all land area.

(D) Not investing in buildings and machines for several years, producing extensively on all or part of the land, willingly leasing land or setting aside large areas of land from production.

## Discussion

When analysing the natural conditions determining to a large or even decisive extent the development of agriculture, attention should be drawn to the predominantly low quality and agricultural suitability of the production space in the studied communes. This applies both to separately considered soil conditions and to the general index of valorisation of agricultural production space (Witek, 1993). The quality and agricultural suitability of soils measured in points is generally low. The lowest value was recorded for the commune of Bliżyn (29.2 points), but very similar also in the commune of Stąporków (29.4 points). From an agricultural point of view, the sizes of the different land uses are important, and because of the environmental assessments carried out, the shares of permanent grassland in agricultural land, but also forests. In the analysed area, the highest forest cover was found in the Bliżyn commune, where the share of forests exceeds 70% of the total area. Other communes are also characterized by a significant share of forests in the total area, with the exception of Piekoszów and Strawczyn. The forest cover rate in the commune of Stąporków is 61.6%, which, given the poor quality of soils and the low overall WWRPP index, has a positive effect on the natural functions of the commune's areas.

Areas of particular importance from the point of view of nature, including the preservation of biodiversity, are permanent grassland (Wolański and Trąba, 2007). In the 13 neighbouring communes analysed, their average share in agricultural land is 34%. However, the diversity in this area between individual communes is significant and ranges from 47.7% in the commune of Bliżyn, where it is the highest, to 28.3% in the commune of Piekoszów. The location of the communes in the natural space, including water conditions, proximity to rivers, soil conditions, forest cover, as well as various economic, m.in. historical and cultural conditions, determined the size of the area and the structure of agricultural land use. When assessing the structure of agriculture of the surveyed communes through the selected measures and indicators concerning farms, land use and relating to animal production, it should be noted that the territories of the communities and the agricultural production space show significant heterogeneity in some of them. This applies to such municipalities as Ruda Maleniecka and Krasocin, but also in the previously analysed municipalities of Końskie and Bliżyn. In other communes, respondents pointed to their small structural and spatial diversity. The process of regression of the number of ruminants in given subregions, including those highly predestined to carry out animal production, prompts a more precise definition of the aspect of production deagrarianisation, which should be categorized separately and called deanimalisation. Like deagrarianisation, it also describes the macroeconomic level, i.e. the decrease in the number of farm animals taken together and in the share of animals in the added output obtained from agriculture. It also consists in a decrease in the share of animals in the final production of a given region, or a decrease or even physical disappearance of livestock in individual farms (Musiał and Musiał, 2019).

Almost throughout the analysed area, the process of deanimalisation is far advanced. Taking into account the area and share of the TUZ in these municipalities, one can point to their incomplete management and feed use (Musiał and Musiał, 2020). Although almost the entire studied protected landscape area is located in structurally fragmented and largely problematic areas, due to the low agricultural and production values of the natural environment, the individual communes nevertheless differ strongly with regard to the number of farms with a significant production potential. When the share of farms over 30 ha and keeping more than 30 head of cattle is taken as such a measure, then the highest rated communes in this respect are: Łopuszno, Końskie and Krasocin. The commune of Łopuszno recorded the highest number of farms with an area of more than 30 ha and the highest number of farms keeping more than 30 heads of cattle. The weakest in relation to the assessed criteria are the communes of Mniów, Ruda Maleniecka and Smyków, to a slightly lesser extent also Piekoszków and Stąporków. Taking into account the area and the share of grassland in the analysed communes, it can be pointed out that in the communes of Ruda Maleniecka and Piekoszków there are already and may still be problems in the development of permanent grassland.

According to Wieliczko (2016), the importance of agriculture in generating ecological services and the impact of this sector on people's well-being can be both positive and negative. Land use abandonment and lack of ruminant grazing fall into the latter category as they lead to imbalances in the agroecosystems concerned (February et al., 2021). This is because the main user of geographical and productive space in Poland is still the agriculture, which sustains the semi-natural ecosystems that have been formed for hundreds of years and form the cultural landscape. Their traditionally mosaic arrangement provided a habitat for many species of wild plants (Kaluga, 2009). The need to work out compromises between economic and environmental goals is evidenced by constantly increasing ecological regimes, which are already significant obstacles to the development of infrastructure, m.in roads, but also some forms of entrepreneurial activity. Although satisfactory solutions for economic development that take into account respect for natural resources and nature protection have not yet been reached, such attempts have been made for years. An example of such a positive pro-ecological policy in the economic sphere is the Common Agricultural Policy. It emphasizes the sustainable development of societies and the economy, as well as differentiated and regulated restrictions in agricultural production, which meets precisely ecological goals. This policy has been systematically adapted to changing conditions, and since the 80s. The principle of treating environmental protection as an integral part of it is being implemented (Adamowicz, 2000). The compromise to be concluded between farmers and nature conservation institutions is therefore broadly referenced and takes place at the stage of programming changes, designing appropriate nature protection instruments and creating adequate implementing legislation (Musiał, 2022).

In order for there to be such a consensus between the need to implement various conservation measures and farmers engaged in agricultural production, while avoiding an increase in deagrarianisation or deanimalisation, radicalisation of the regulations on the agricultural use of protected areas should be avoided in areas where area-based forms of nature conservation have been identified. To this end, clear and unambiguous legal provisions must be created. In addition, it should be borne in mind that production restrictions also have negative consequences for local nature, which can be compensated, for example, by specially introduced appropriate payments. Institutions implementing nature conservation measures should be focused on providing assistance and advice to farmers and people living in rural areas (Dacko et al., 2021; Sutcliffe et al., 2015). Starting from the above assumptions, the first problem that should be solved, precisely on the basis of compromise in protected landscape areas, is the broadly understood protection of the cultural landscape. This entails the need to maintain agricultural use, especially on grassland, and for this purpose it is also necessary to maintain livestock production. Rural areas at a regional level continue to be important centres of biodiversity. This also applies successfully to agricultural areas where plant and animal species of high nature value can be found (Schmitz et al., 2021). This is all the more important because currently biodiversity found in various types of agrocenoses has the same value as that of natural communities (Tschardt et al., 2005; Fischer et al., 2012). Hence, it is important to identify and mutually understand the fields of compromise between production-economic interests and typically natural or ecological ones.

## Summary

The Konecko-Łopuszno Protected Landscape Area is located in structurally fragmented and to some extent problematic areas. They are valuable natural areas, and therefore with increased ecological regimes, in which there is a visible need to maintain the economic base created by agriculture and forestry, as well as economic fields directly related to them. According to respondents, the share of farms that do not cultivate part of the land is not always correlated with the share of livestock-free farms there. The presence of a large protected area may promote deagrarianisation and deanimalisation processes. Such abandoned land is most often spontaneously forested or bushy, which disturbs the structure of existing plant communities. The compromise that both farmers and conservation regulators should strive for here is to slow down the course of agricultural abandonment. However, for this to happen, certain conditions must be met, such as the absence of radicalisation of nature protection legislation. Institutions implementing conservation measures should also focus on providing assistance and advice. Maintaining ruminant farming and the use of agricultural land may also require additional special financial support for some economic entities. In order for development to proceed towards its balance and sustainability, it is also necessary to seek to diversify the sources of income acquisition for sub-regional residents.

## References

- Adamowicz M. (2000). Integracja polityki ekologicznej i polityki rolnej jako droga do zrównoważonego rozwoju wsi i rolnictwa (Integration of environmental policy and agricultural policy as a path to sustainable development of rural areas and agriculture). *Zeszyty Naukowe SGGW Ekonomika i Organizacja Gospodarki Żywnościowej*, 40.
- Berkes F., Folke C., Gadgil M. (1994). Traditional Ecological Knowledge, Biodiversity, Resilience and Sustainability. *Biodiversity Conservation: Ecology, Economy & Environment*, Perrings C.A., Mäler K.G., Folke C., Holling C.S., Jansson B.O. (eds.), Springer: Dordrecht, The Netherlands, 4: 269–287.
- Dacko M., Płonka A., Satoła Ł., Dacko A. (2021). Sustainable development according to the opinions of Polish experts. *Energies*, 14 (17): 5325.
- Feng J., Chen F., Tang F., Wang F., Liang K., He L., Huang C. (2022). The trade-offs and synergies of ecosystem services in Jiulianshan National Nature Reserve in Jiangxi Province, China. *Forests*, 13: 416.
- Fischer J., Hartel T., Kuemmerle T. (2012). Conservation policy in traditional farming landscapes. *Conserv. Lett.*, 5: 167–175.
- Central Statistical Office. (2019). Environmental protection. Chapter 5: Protection of nature and biodiversity.
- Kaluża I. (2009). Korzyści dla rolnictwa wynikające z gospodarowania na obszarach Natura 2000 (Agricultural benefits of farming in Natura 2000 areas). Ministry of the Environment, Warsaw, pp. 6–48.
- Luty L., Musiał K., Ziolo M. (2021). The role of selected ecosystem services in different farming systems in Poland regarding the differentiation of agricultural land structure. *Sustainability*, 13, 6673.
- Musiał K. (2022). The trade-offs of the deagrarianisation processes in a conservation area – a case study of the Nida Landscape Park, Poland. Conference Proceedings of the 39th IBIMA Conference (International Business Information Management Association), on 30-31 May 2022 Granada, Spain.]
- Musiał K., Musiał W. (2020). Deagrarianisation and deanimalisation in protected areas of the Świętokrzyskie voivodeship – natural, economic and institutional aspects. Publishing House of the Agricultural University.
- Musiał W., Musiał K. (2019). Deanimalisation processes in the Polish Carpathians – production, economic and ecological aspects. *Annals of the Polish Association of Agricultural and Agrobusiness Economists*, 21 (4): 331–340; doi 10.5604/01.3001.0013.5912.
- Pajewski T. (2017). Struktura użytków rolnych jako rolniczy element bioróżnorodności (Agricultural land structure as an agricultural element of biodiversity). *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 19 (2): 182–186.
- Schmitz M.F., Arnaiz-Schmitz C., Sarmiento-Mateos P. (2021). High nature value farming systems and protected areas: conservation opportunities or land abandonment? A study case in the Madrid Region (Spain). *Land*, 10: 721.
- Statistical Vademecum of Local Government. (2019). Portraits of the territory – Świętokrzyskie Voivodeship. GUS.
- Sutcliffe F.L.M., Batáry P., Kormann U., Báldi A., Dicks L.V., Herzon I., Kleijn D., Tryjanowski P., Apostolova I., Arlettaz R. (2015). Harnessing the biodiversity value of Central and Eastern European farmland. *Divers. Distrib.*, 21: 722–730.
- Tschamtko T., Klein A.M., Kruess A., Steffan-Dewenter I., Thies C. (2005). Landscape perspectives on agricultural intensification and biodiversity – ecosystem service management. *Ecology Letters*, 8: 857–874. Act of 16 April 2004 on nature conservation, *Journal of Laws* 2020, item 55.
- Wielico B (2016). Applying ecosystem services in natural resource management in agriculture. *Studia i Prace WNEiZ*, 46 (2): 135–144.
- Witec T. (1993). Waloryzacja rolniczej przestrzeni produkcyjnej Polski według gmin (Valorisation of agricultural production space Polish by communes). Institute of Soil Science and Plant Cultivation, Puławy.
- Wnuk Z., Piasek M. (1998). Zagrożone wyginieciem gatunki flory segetalnej woj. rzeszowskiego (Endangered species of segetal flora of the Rzeszów province). *Acta Universitatis Lodziensis, Folia Botanica*, 13: 257–264.



- Wolanski P., Traba C. (2007). Flora łąk i pastwisk Pogórza Dynowskiego (Flora of meadows and pastures of the Dynowski Foothills). *Woda–Środowiska–Obszary Wiejskie*, t. 7 z. 2b (21): 195–204.
- Zuzek D.K. (2018). Wyzwania wobec rozwoju małych i średnich przedsiębiorstw w gminach na obszarach Natura 2000 (Challenges to the development of small and medium-sized enterprises in municipalities in the Natura 2000 area). Difin SA. Warsaw.

Approved for printing: 26 VII 2022

**Kamila Musiał**

**AREAS OF COMPROMISES BETWEEN PRODUCTION AND ECOLOGICAL INTERESTS – EXAMPLE OF THE KONECKO-ŁOPUSZANIAŃSKI NATURE PARK**

SUMMARY

The study presents results of research on the advancement of selected aspects of deagrarianization and deanimalization processes in 13 communes within the Konecko-Łopuszniański Nature Park. In the analyzed neighboring communes, the average share of permanent grasslands (PG) in agricultural land (AL) is 34%, however, its differentiation between individual communes is significant and ranges from 47.7% to 28.3%. The deanimalization process is well advanced in almost the entire analyzed area. Taking into account the area and the share of PG in these communes,

it is possible to express their incomplete use for forage, as well as management. The abandonment of agricultural land use and the lack of grazing are factors that lead to imbalance in given agroecosystems, which is negative for the habitats and the bio-diversity. A compromise that both farmers, and institutions that deal with regulating nature conservation should strive for, is to slow down the process of abandoning agricultural management, and maintenance of farms engaged in the ruminants production in this nature park.

Key words: deagrarianization processes, abandoning livestock production, conservation area, Świętokrzyskie Voivodeship