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Sheep Farming in Poland as a Socio-Economic Phenomenon: A Multifunctional Agriculture Perspective

Abstract

Aim of the work: The authors addressed the issue of the importance of sheep farming as a socio-economic phenomenon in the context of multifunctional agriculture and rural development. The aim of the study was to present sheep farming as a productive activity and an element of culture, local identity and a source of public goods and ecosystem services.

Research method: The study uses a conceptual and analytical approach, with a critical analysis of the literature on the subject and available source materials.

Key results: The analysis concluded that sheep farming activity fits into the model of sustainable development due to its relatively low intensity, ability to maintain the cultural landscape, and social and environmental functions. In Poland in particular, sheep farming has regional and symbolic significance, and its development depends on agricultural policy instruments and changing social expectations.

Main conclusions: The results obtained indicate the need to interpret sheep farming in terms of public goods and the multifunctionality of agriculture, rather than solely in terms of economic efficiency.

Keywords: sheep farming, multifunctionality of agriculture, public goods, rural development, rural culture, Poland.

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1. Introduction

Sheep farming in Europe has undergone major structural changes in recent decades under the influence of market globalisation, socio-cultural transformation in rural areas, and the evolution of the Common Agricultural Policy (CAP). As a result, agriculture is increasingly perceived not only through the prism of production efficiency, but also through its environmental, landscape, and social functions (Baum, 2007; Zegar, 2012). In this context, sheep farming is a particularly relevant example, as it combines traditional pastoral practices with contemporary concepts of sustainable rural development (Shi et al., 2019; Uğurlu, 2019).

Because of its relatively low production intensity and strong connection with permanent grasslands and rural landscapes, sheep farming can generate effects that go beyond market output. It contributes to biodiversity conservation, the maintenance of cultural landscapes, and the continuation of pastoral traditions that remain important in many European regions (Knapik, Musiał, 2017; Molik et al., 2017; Musiał, 2018; Niżnikowski, 2005). In Poland, these functions are especially visible in mountainous and foothill areas, where sheep farming is linked not only to agricultural production, but also to local identity and cultural heritage (Gąsienica-Chmiel, 2001).

At the same time, ongoing demographic and economic changes in rural areas, including depopulation, ageing, and diversification of income sources, justify renewed interest in niche livestock sectors. Although sheep farming has a limited share in total agricultural production, it may still support tourism, regional food systems, and traditional land-use practices (Duer, 2000; Kapusta, 2007; Wilkin, 2010). Recent research also emphasises that the significance of sheep farming should be assessed not only through production or economic efficiency, but also through ecosystem services, cultural values, and the role of local breeds in extensive farming systems (Heindorf et al., 2025; Leroy et al., 2024; Primi et al., 2025; Sucholas et al., 2025; Varela et al., 2025).

The aim of this article is to present sheep farming as a socio-economic phenomenon that fits in with the idea of multifunctional agriculture and sustainable rural development. A socioeconomic phenomenon is a concept that describes the processes and changes occurring at the intersection of the social and economic spheres. In the context of multifunctional agriculture and rural development, it is considered through the prism of the interplay of social and economic factors, considering their combined impact on the lasting and sustainable transformation of rural areas. The subject of the analysis is Poland, where sheep play a role that goes beyond their productive function – they are part of the cultural heritage, landscape and regional identity. Sheep farming generates environmental, social

and cultural public goods, which justifies its interpretation in terms of multifunctional agriculture. The novelty of this article lies in its integrated approach to sheep production, combining economic, environmental, social, and cultural perspectives in relation to Polish conditions. Unlike analyses focusing primarily on production efficiency or the scale of production, the article emphasises the importance of ecosystem services and cultural values as elements that contribute to the actual social utility of sheep farming. This approach allows for a broader assessment of the importance of this sector and strengthens the arguments for the use of appropriate public support instruments.

2. Literature Review

2.1. Multifunctionality of Agriculture and Public Goods

The concept of multifunctionality in agriculture is one of the key approaches in contemporary thinking about the role of the agricultural sector in the economy and society. In this perspective, agriculture is understood not only as a source of food and raw materials, but also as a system generating environmental, social, and cultural effects. This distinguishes it from industrial activity and justifies a broader analytical framework for assessing its performance (Wilkin, 2010; Zegar, 2012).

The development of this concept is linked to growing recognition that agriculture provides a wide range of public goods whose value is not fully reflected in market prices. Among the most frequently indicated are biodiversity, cultural landscapes, and the preservation of traditional forms of land use. In this context, sustainable agriculture is increasingly seen as a target model for the development of the agricultural sector (Baum, 2007; Borys et al., 2019; Uğurlu, 2019).

Recent literature has further developed multifunctionality not only as a theoretical concept, but also as a framework for assessing the social value of agriculture and designing public policy. Particular attention is paid to the relationship between the social demand for public goods and the actual capacity of agricultural systems to provide them. At the same time, the debate on multifunctionality remains closely linked to tensions between production, environmental, and social objectives in agricultural policy (Aizaki, Akahori, Yamamoto, 2025; Farokhi, Harmanny, Schulp, 2024; Rac, Erjavec, Erjavec, 2024).

Multifunctionality is especially important in peripheral regions and areas with limited opportunities for production intensification. In such conditions, agriculture can stabilise local social and economic systems by maintaining employment, supporting tourism, and preventing the degradation of rural areas. Since public goods are produced alongside private goods, but are difficult to value through market

mechanisms, this creates a strong justification for public intervention (Duer, 2000; Kapusta, 2007; Poczta, 2010; Samuelson, 1954).

2.2. Sheep Farming in Scientific Literature

Earlier studies on sheep farming focused mainly on technological and production-related issues, but over time the scope of research has broadened towards more systemic analyses. Increasing attention has been paid to the fact that sheep farming performs functions that go beyond food production, including landscape maintenance, the preservation of native breeds, and the continuation of pastoral traditions (Musiał, 2018; Niżnikowski, 2005; Rokicki, 2010).

Recent literature has shifted even more clearly from productivity-based analysis toward the assessment of ecosystem services and agricultural multifunctionality. Extensive sheep and goat farming is increasingly presented as a source not only of food, but also of environmental, landscape, and social benefits, particularly in mountainous and peripheral regions. At the same time, the role of local breeds is emphasised not only in genetic terms, but also in relation to traditional products, cultural landscapes, and the resilience of farming systems (Leroy et al., 2024; Primi et al., 2025; Santillo, della Malva, Albenzio, 2025).

Sheep farming is also discussed in the context of sustainable agriculture because of its relatively low environmental pressure and its compatibility with extensive land-use systems. Research highlights its contribution to the maintenance of permanent grasslands and its possible integration with other forms of agricultural production, such as orchards or vineyards, which may improve ecological and economic efficiency at farm level (Niles, Garrett, Walsh, 2018; Toro-Mujica et al., 2015; Uğurlu, 2019).

Another important strand of the literature concerns the future development of sheep farming under changing market and environmental conditions. Authors increasingly point to the need for diversification, quality-based strategies, and the protection of locally adapted breeds. In the context of climate change and growing pressure on natural resources, such systems are regarded as potentially important elements of agricultural resilience (Boettcher et al., 2015; Dýrmundsson, 2006; Morgan-Davies et al., 2021; Skordos et al., 2025).

2.3. The Social Dimension of Agriculture

Publications on rural transformation increasingly emphasise that agriculture should be analysed not only as an economic activity, but also as an element of the social system shaping local structures, social relations, and the quality of life in rural areas. In this perspective, agricultural practices are treated as carriers of

cultural values and regional identity, which gives them significance beyond their purely productive role (Wilkin, 2010; Zegar, 2012).

Sheep farming fits well within this perspective because of its strong links with the traditions and folklore of many rural regions. The literature indicates that the presence of sheep in the rural landscape has a symbolic dimension and may enhance the tourist and educational attractiveness of rural areas. It also supports the transmission of traditions and intergenerational ties, which is particularly important in the context of depopulation and ageing in rural communities (Gaśienica-Chmiel, 2001; Krajewski, 2014; Molik et al., 2017; Musiał, 2018; Rokicki, 2010).

At the same time, sheep farming may contribute to the integration of local communities by linking production activity with education, cultural events, and regional promotion. In this way, it becomes an example of an agricultural practice that combines economic value with social and cultural capital (Duer, 2000; Kapusta, 2007; Wilkin, 2010).

Recent studies increasingly approach livestock systems from a biocultural perspective, underlining their importance for landscape sustainability, local identity, and socio-ecological resilience. At the same time, empirical research points out that small-scale sheep and goat systems often face deficits in social capital, institutional support, and local governance, which may limit their long-term sustainability (Heindorf et al., 2025; Pérez-Barbería, Brewer, Gordon, 2025; Sucholas et al., 2025; Timpanaro, Foti, 2024).

3. Research Materials and Methods

This article has a conceptual and analytical character and is based on a critical review of the literature and an interpretation of scientific sources concerning the multifunctionality of agriculture, public goods, and the socio-economic importance of sheep farming. The adopted research approach is consistent with qualitative studies in agricultural economics and rural development, where the aim is to synthesise and reinterpret existing knowledge rather than to conduct empirical statistical analysis.

The material base consisted of scientific publications in the fields of agricultural economics, agricultural policy, public goods theory, and sustainable development, with particular emphasis on studies related to sheep farming. Both Polish and international sources were included in order to capture the broader theoretical context as well as the specific relevance of the issue to Poland. The analysed literature covers the period from the beginning of the twenty-first century to the present, which made it possible to identify the main directions in the interpretation of sheep farming in economic, environmental, and social terms.

The study applied content analysis and conceptual synthesis. The first step involved identifying the main analytical categories present in the literature, especially those related to multifunctionality, public goods, externalities, ecosystem services, and the social and cultural functions of agriculture. The second step consisted in comparing and integrating these perspectives into a coherent interpretative framework for assessing sheep farming as a socio-economic phenomenon.

A systemic approach was also used in order to interpret sheep farming not only at the farm level, but also in relation to regional development and agricultural policy. The study does not employ statistical or econometric methods; instead, it relies on qualitative and comparative analysis, which is appropriate for research focused on long-term processes and the broader institutional and cultural context of rural development.

4. Sheep Farming in Poland – Selected Statistical Trends

A more complete assessment of sheep farming in Poland requires reference to official statistical data. According to the data used in this study, the national sheep population decreased from 317,669 head in 2005 to 269,538 head in 2024, which

Table 1. Sheep Population in Poland in Selected Voivodeships in the years 2005 and 2024 (head)

Tabela 1. Pogłowie owiec w Polsce w wybranych województwach w latach 2005 i 2024 (szt.)

Area	Sheep population in years		Changes in sheep population in 2005–2024 (%)
	2005	2024	
Poland	317,669	269,538	–15.2
Małopolskie	91,846	63,893	–30.4
Wielkopolskie	38,430	28,351	–26.2
Podlaskie	25,944	22,340	–13.9
Łódzkie	20,180	20,538	+1.8
Lubelskie	22,995	18,315	–20.4
Podkarpackie	15,063	12,160	–19.3

Source: own elaboration based on the Local Data Bank (LDB) of Statistics Poland, stock of sheep as of 31 December (2005–2024).

Źródło: opracowanie własne na podstawie Banku Danych Lokalnych (BDL) Głównego Urzędu Statystycznego, pogłowie owiec na dzień 31 grudnia (2005–2024).

means a decline of about 15.2% over the analysed period. This confirms that sheep farming remains a relatively small livestock sector in Poland in strictly production terms, although the decline was not linear and several periods of temporary recovery can be observed. As shown in Figure 1, the strongest decrease occurred in the first part of the analysed period, while in later years the national flock size remained relatively more stable.

The statistical picture also reveals a strong regional concentration of sheep farming. As shown in Table 1, in 2024, the highest sheep population was recorded in Małopolskie Voivodeship (63,893 head), followed by Wielkopolskie (28,351 head), Podlaskie (22,340 head), Łódzkie (20,538 head), and Lubelskie (18,315 head). This indicates that sheep farming in Poland is not evenly distributed across the country, but concentrated in a limited number of regions with different production, environmental, and cultural characteristics.

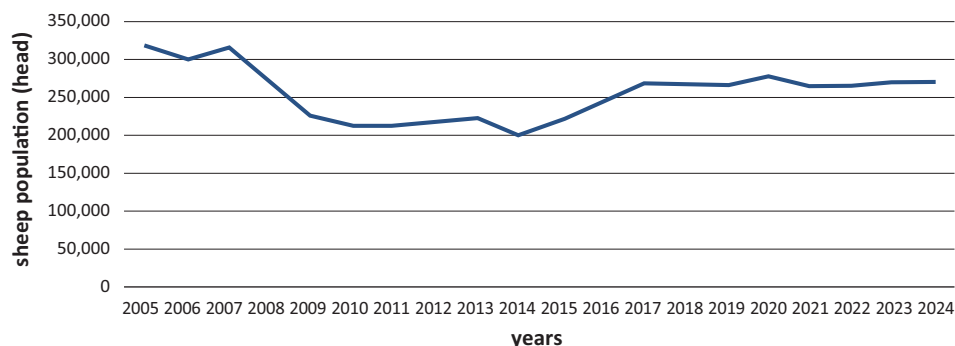


Figure 1. Sheep Population in Poland in 2005–2024 (head)

Rysunek 1. Pogłowie owiec w Polsce w latach 2005–2024 (szt.)

Source: own elaboration based on the LDB, stock of sheep as of 31 December (2005–2024).

Źródło: opracowanie własne na podstawie BDL, pogłowie owiec na dzień 31 grudnia (2005–2024).

Małopolskie is of particular importance, as it remains the leading sheep-farming region throughout the analysed period. Table 1 also shows that the number of sheep there decreased from 91,846 head in 2005 to 63,893 head in 2024, which reflects a reduction of about 30.4%. Despite this decline, the region still retains a dominant position in the national flock and may be treated as the key territorial centre of sheep farming in Poland, especially in relation to pastoral traditions, grassland use, and regional identity.

The long-term trends also differ substantially across voivodeships. As indicated in Table 1, while some regions recorded declines, others remained relatively stable

or even noted partial growth in comparison with the beginning of the analysed period. For example, the sheep population in Wielkopolskie decreased from 38,430 head in 2005 to 28,351 head in 2024. Despite this decline, the region remained one of the most important sheep-producing areas in the country. In contrast, regions such as Lubelskie and Podkarpackie recorded moderate decreases, while the national pattern as a whole confirms both structural contraction and spatial concentration of the sector.

From the perspective of this article, these data are important for two reasons. First, they confirm the relatively limited national scale of sheep farming compared with other livestock sectors. Second, they show that the significance of sheep farming should not be assessed solely by aggregate production volume, because in selected regions it still has a clear territorial and structural importance. This supports the interpretation of sheep farming in terms of multifunctionality, regional specialisation, and broader socio-economic relevance.

5. Sheep Farming Activity as a Multifunctional System

Sheep farming is well suited to regions with limited opportunities for intensive agricultural production, which makes it important from the perspective of multifunctional agriculture. Its significance lies not only in the production of meat, milk, or wool, but also in the environmental and social services that accompany grazing-based systems (Leroy et al., 2024; Primi et al., 2025). In this sense, sheep farming should be understood as a multifunctional system in which market outputs coexist with non-market effects, including landscape maintenance, biodiversity protection, and support for rural cohesion (Heindorf et al., 2025; Varela et al., 2025).

From an economic perspective, sheep farming may diversify farm income and strengthen the resilience of holdings operating in less-favoured areas. In many cases, it complements other agricultural or non-agricultural activities, including tourism, direct sales, and regional food production. This is particularly important in peripheral regions, where opportunities for alternative employment remain limited and where extensive forms of agriculture may stabilise local economic activity (Duer, 2000; Kapusta, 2007; Primi et al., 2025; Wilkin, 2010).

An important dimension of sheep farming is its role in shaping and maintaining the rural landscape. Grazing helps prevent vegetation succession, supports habitat diversity, and contributes to the preservation of permanent grasslands. In areas of high natural or cultural value, this function is especially important, as the landscape itself becomes an economic and social resource linked to settlement attractiveness, tourism, and regional identity (Heindorf et al., 2025; Krajewski, 2014; Shi et al., 2019; Uğurlu, 2019; Varela et al., 2025).

The multifunctionality of sheep farming is also visible in alternative forms of use, where sheep are employed for landscape management and environmental protection in places difficult to maintain mechanically, such as protected areas, slopes, recreational zones, and water structures. In such cases, sheep farming becomes part of a broader service model in which the value of grazing lies less in commodity production and more in the maintenance of public goods (Niżnikowski, 2005; Primi et al., 2025; Rokicki, 2010; Uğurlu, 2019; Varela et al., 2025).

At the same time, sheep farming should be assessed in a balanced way. Although grazing systems generate environmental benefits, they are not free from negative effects, including methane emissions. However, the literature indicates that extensive systems may compare favourably with intensive systems when ecosystem services are taken into account (Conrad et al., 2020; Leroy et al., 2024; Primi et al., 2025; Ripoll-Bosch et al., 2013; Roques et al., 2024; Schoof et al., 2021; Varela et al., 2025). This suggests that the evaluation of sheep farming should be based on its overall multifunctional contribution rather than on product output alone.

6. The Social and Cultural Dimension of Sheep Farming Activity

Sheep farming has an important social and cultural dimension, particularly in regions where pastoral traditions remain part of local identity. In Poland, sheep are associated not only with agricultural production, but also with customs, rituals, regional products, and forms of land use that shape the symbolic character of rural areas (Gąsienica-Chmiel, 2001; Heindorf et al., 2025; Molik et al., 2017; Musiał, 2018). In this sense, sheep farming contributes to the preservation of cultural continuity and strengthens the distinctiveness of particular regions.

Pastoral culture is closely connected with the transmission of knowledge, practices, and values between generations. Grazing traditions, seasonal sheep drives, and shepherd-related events play a role in sustaining local communities and reinforcing their cultural cohesion. This is particularly relevant in rural areas affected by depopulation and demographic ageing, where traditional agricultural practices may still serve as mechanisms of social integration (Heindorf et al., 2025; Kuźnicka, Rant, Radzik-Rant, 2008; Mirek, 2004; Musiał, 2018).

Sheep farming also contributes to tourism and the experience economy. Events linked to pastoral traditions, regional food, and cultural heritage can support local development by generating demand for accommodation, gastronomy, handicrafts, and related services. In this way, sheep farming creates not only agricultural value, but also narrative and symbolic value that can enhance the attractiveness and competitiveness of a region (Kaltenborn, Lindhjem, Stålhammar, 2017; Kawęcka et al., 2017; Mroczkowski, 2005; Musiał, Szumiec, 2019).

For these reasons, sheep farming should be regarded as part of the intangible heritage of rural areas. Its significance extends beyond the farm level, because it preserves visible and invisible elements of regional culture, including landscapes, practices, and social meanings that would be difficult to reconstruct once lost (Heindorf et al., 2025; Krajewski, 2014; Molik et al., 2005; Sendyka, Makovicky, 2018).

7. Sheep as Providers of Public Goods

One of the strongest arguments for supporting sheep farming is its capacity to generate public goods that are not fully rewarded by the market. These include biodiversity conservation, landscape maintenance, the preservation of local breeds, educational and tourist functions, and the strengthening of the socio-economic cohesion of peripheral rural regions (Leroy et al., 2024; Primi et al., 2025; Varela et al., 2025). Because the benefits of these effects are widely shared, while the costs are borne largely by individual farmers, there is a risk of their underprovision without public intervention (Freshwater, 2006; Samuelson, 1954).

Sheep grazing contributes to the maintenance of agroecosystems and protected areas by preventing succession, supporting habitat diversity, and preserving cultural landscapes. These outcomes are socially desirable but difficult to value through market mechanisms. For this reason, sheep farming fits well within the framework of multifunctional agriculture and provides a clear justification for agricultural policy instruments that reward environmental and cultural services (Freshwater, 2006; Primi et al., 2025; Samuelson, 1954; Varela et al., 2025).

Public support is also important in relation to the protection of local breeds. The market often favours more productive breeds, which may lead to the decline of locally adapted genetic resources. Yet the preservation of native breeds has value that extends beyond current production, as it contributes to biodiversity, resilience, and intergenerational heritage (Boettcher et al., 2015; Gandini, Villa, 2003; Leroy et al., 2024; Librado et al., 2016; Taberlet et al., 2008). This makes breed conservation a classic example of a public good requiring collective support.

At the same time, sheep farming should not be idealised. Like other livestock systems, it generates environmental costs, including methane emissions. Nevertheless, when assessed holistically and in connection with ecosystem services, extensive grazing systems may compare more favourably than intensive non-grazing models (Batalla et al., 2015; Leroy et al., 2024; Macháč, Trantinová, Zaňková, 2021; Ripoll-Bosch et al., 2013; Roques et al., 2024). This underlines the need for

a broader evaluation framework that includes both environmental burdens and non-market benefits.

8. Discussion

The analysis shows that sheep farming in Poland should not be treated as a marginal agricultural activity assessed solely by production output. Its significance is greater in regions where extensive grazing supports land use, maintains landscapes of high natural and cultural value, and contributes to local development. In such contexts, sheep farming performs functions that are both economic and socio-environmental, which makes it relevant to contemporary debates on the future of rural areas (Heindorf et al., 2025; Varela et al., 2025).

This perspective is especially important in Poland, where some rural regions face unfavourable natural conditions, demographic decline, and limited opportunities for agricultural intensification. In these areas, sheep farming may help sustain economic activity, preserve traditional management practices, and support local value chains connected with tourism, food production, and regional heritage (Kapusta, 2007; Musiał, 2008; Primi et al., 2025; Varela et al., 2025). At the same time, recent Polish research suggests that agri-environmental measures do not always effectively protect extensive pastoral practices if they are poorly designed (Sucholas et al., 2025).

From a policy perspective, the article supports the view that payments directed at sheep farming should not be seen merely as income support, but as compensation for environmental, cultural, and social services that are not adequately remunerated by the market. This is particularly relevant in the case of native breed conservation, landscape management, and grazing in environmentally valuable areas (Leroy et al., 2024; Primi et al., 2025; Wilkin, 2010; Wiśniewska, 2009). At the same time, the literature suggests that support instruments must be properly designed, because poorly targeted measures may fail to preserve extensive pastoral practices in the long term (Freshwater, 2006; Weimer, Vining, 2017; Wunder et al., 2025).

The discussion also points to the need to move beyond narrow measures of efficiency. When sheep farming is evaluated only in terms of productivity, its significance appears limited. However, when public goods, ecosystem services, and cultural functions are taken into account, the sector gains a much stronger systemic justification (Musiał, 2018; Niżnikowski, 2005; Varela et al., 2025). In this sense, sheep farming illustrates a broader shift from productivist agriculture toward a multifunctional and sustainability-oriented model of rural development (Baum, 2007; Leroy et al., 2024; Rokicki, 2010; Uğurlu, 2019; Wunder et al., 2025; Zegar, 2012).

9. Conclusions

The analysis indicates that sheep farming in Poland should be interpreted as part of a broader socio-economic and cultural system rather than solely as a productive livestock sector. Its importance lies in the combination of market production with environmental, social, and cultural functions, including landscape maintenance, biodiversity protection, and support for regional identity. This multifunctional role is particularly visible in peripheral and environmentally valuable areas, where sheep farming contributes to the sustainability of rural development.

Based on the research conducted, the following conclusions can be drawn.

1. Sheep farming activity generates effects that go beyond food production, including landscape, social and cultural functions. Including these elements in the analysis allows sheep farming to be treated as an activity of strategic importance for rural development, despite its relatively small share in agricultural production. Assessing the sector solely in terms of economic efficiency would lead to an underestimation of its real role.
2. The production of public goods by sheep farming justifies the use of agricultural policy instruments such as native breed conservation programmes and agri-environmental payments. These mechanisms should not be seen merely as income transfers, but as a form of remuneration for the ecosystem and cultural services provided to society. Properly designed support can increase the sustainability of extensive systems.
3. Pastoral culture and sheep grazing events strengthen regional identity and are a resource for the development of tourism and the experience economy. Sheep farming helps to maintain intergenerational relationships and the transmission of traditional knowledge, which is particularly important in the context of rural depopulation. These functions can form the basis of a local development strategy based on cultural heritage.
4. Extensive sheep grazing contributes to the maintenance of permanent grasslands, limits vegetation succession and supports biodiversity. In many regions, this activity stabilises land use and counteracts the marginalisation of areas with difficult production conditions. In the context of climate change, low-intensity systems may gain importance as part of adaptation strategies.
5. Traditional economic indicators do not reflect the full value of multifunctional systems. Taking into account ecosystem services, cultural values and social effects leads to a different interpretation of the importance of sheep farming in the rural economy. Future research and public policies should develop assessment tools that integrate economic, environmental and social dimensions.

Bibliography

- Aizaki, H., Akahori, H., Yamamoto, Y. (2025). Measuring public relative importance for agricultural and rural multifunctionality: An application of case 1 best–worst scaling. *Paddy and Water Environment*, 23(1), 49–60. <https://doi.org/10.1007/s10333-024-00998-2>
- Batalla, I., Knudsen, M.T., Mogensen, L., del Hierro, Ó., Pinto, M., Hermansen, J.E. (2015). Carbon footprint of milk from sheep farming systems in Northern Spain including soil carbon sequestration in grasslands. *Journal of Cleaner Production*, 104, 121–129. <https://doi.org/10.1016/j.jclepro.2015.05.043>
- Baum, R. (2007). Podstawowe założenia oceny zrównoważonego rozwoju w rolnictwie. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 9(1), 28–33.
- Boettcher, P.J., Hoffmann, I., Baumung, R., Drucker, A.G., McManus, C., Berg, P., Thompson, M.C. (2015). Genetic resources and genomics for adaptation of livestock to climate change. *Frontiers in Genetics*, 5, 461. <https://doi.org/10.3389/fgene.2014.00461>
- Borys, B., Knapik, J., Włodarczyk, A., Jarzynowska, A. (2019). Charakterystyka odchowu i tuczu jagniąt wybranych ras rodzimych owiec. In: B. Borys, J. Knapik (eds.). *Potencjał ras rodzimych owiec w produkcji naturalnej żywności – tradycja, regionalność, jakość* (s. 50–69). Instytut Zootechniki PIB.
- Conrad, L., Henke, M., Hörl, J., Luick, R., Schoof, N. (2020). Schafe im Weinbau – Eignung unterschiedlicher Rassen und mögliche Zuchtziele. *Berichte über Landwirtschaft-Zeitschrift für Agrarpolitik und Landwirtschaft*, 98(3), <https://doi.org/10.12767/buel.v98i3.337>
- Duer, I. (2000). Agenda 2000 – podstawą rozwoju polskiego rolnictwa. *Pamiętnik Puławski*, 120, 65–71.
- Dýrmondsson, Ó.R. (2006). Sustainability of sheep and goat production in North European countries – from the Arctic to the Alps. *Small Ruminant Research*, 62(3), 151–157. <https://doi.org/10.1016/j.smallrumres.2005.08.003>
- Farokhi, A.S., Harmanny, K.S., Schulp, C.J. (2024). Aligning agri-environmental-climate public good supply and desire in a sustainable Dutch agricultural sector. *Ambio*, 53(6), 916–932. <https://doi.org/10.1007/s13280-024-01983-z>
- Freshwater, D. (2006). *A Conceptual Overview: Financing Agricultural Policies with Particular Reference to Public Good Provision and Multifunctionality: Which Level of Government?* Working Party of Agricultural Policies and Markets. OECD.
- Gandini, G.C., Villa, E. (2003). Analysis of the cultural value of local livestock breeds: A methodology. *Journal of Animal Breeding and Genetics*, 120(1), 1–11. <https://doi.org/10.1046/j.1439-0388.2003.00365.x>
- Gąsienica-Chmiel, M. (2001). Tradycje pasterskie w Tatrach i na Podhalu. *Pamiętnik Polskiego Towarzystwa Tatrzańskiego*, 10, 5–28.
- Heindorf, C., Altmann, B., Varela, E., Zafra-Calvo, N., Capano, G.C., Kmoch, L.M., Flinzberger, L., Camporese, M.C., Polas, A.B., Guo, T., Plieninger, T. (2025). Animal board invited review: A biocultural perspective of animal farming systems in Europe. *animal*, 19(6), 101515. <https://doi.org/10.1016/j.animal.2025.101515>

- Kaltenborn, B.P., Lindhjem, H., Stålhammar, S. (2017). Ecosystem services and cultural heritage: A review of current research. *Journal of Outdoor Recreation and Tourism*, 17, 1–10.
- Kapusta, F. (2007). Wybrane determinanty strategii zrównoważonego rozwoju wsi i rolnictwa w Polsce. In: A. Graczyk (ed.). *Teoria i praktyka zrównoważonego rozwoju* (pp. 120–127). EkoPress.
- Kawęcka, A., Radkowska, I., Szewczyk, M., Radkowski, A. (2017). Cultural sheep grazing in conservation of valuable plant communities using the example of the Hala Majerz. *Wiadomości Zootechniczne*, 55(5), 189–197.
- Knapik, J., Musiał, K. (2017). Multifunkcjonalność chowu owiec – próba nowego ujęcia problemu. *Roczniki Naukowe Zootechniki*, 44(2), 161–175.
- Krajewski, K. (2014). Zarządzanie kategorią żywnościowych produktów tradycyjnych – perspektywa strategiczna. *Marketing i Rynek*, 6, 429–445.
- Kuźnicka, E., Rant, W., Radzik-Rant, A. (2008). Adversities and opportunities in the production of Oscypek cheese and in the traditional grazing system of Polish mountain sheep. In: A. Olaizola, J.P. Boutonnet, A. Bernués A. (eds.). *Mediterranean Livestock Production: Uncertainties and Opportunities* (pp. 405–407). Options Méditerranéennes: Série A. Séminaires Méditerranéens, n. 78. CIHEAM; CITA.
- Leroy, G., Boettcher, P., Joly, F., Looft, C., Baumung, R. (2024). Multifunctionality and provision of ecosystem services by livestock species and breeds at global level. *animal*, 18(1), 101048. <https://doi.org/10.1016/j.animal.2023.101048>
- Librado, P., Fages, A., Gaunitz, C., Leonardi, M., Wagner, S., Khan, N., Hanghøj K., Alquraishi S.A., Alfarhan A.H., Al-Rasheid K.A., Der Sarkissian C., Schubert M., Orlando L. (2016). The evolutionary origin and genetic makeup of domestic horses. *Genetics*, 204(2), 423–434. <https://doi.org/10.1534/genetics.116.194860>
- Macháč, J., Trantinová, M., Zaňková, L. (2021). Externalities in agriculture: How to include their monetary value in decision-making? *International Journal of Environmental Science and Technology*, 18(1), 3–20. <https://doi.org/10.1007/s13762-020-02752-7>
- Mirek, Z. (2004). Problemy ochrony różnorodności biologicznej obszarów pasterskich Polski w kontekście rozwoju zrównoważonego. In: Z. Mirek, M. Nowak (eds.). *Miejsce wypasu i gospodarki owczarskiej w koncepcji rozwoju zrównoważonego* (pp. 7–11). Instytut Botaniki PAN.
- Molik, E., Dobosz, J., Kordeczka, K., Pęksa, M. (2017). Wypas kulturowy owiec na terenie Tatrzańskiego Parku Narodowego jako przykład gospodarowania zgodnego z zasadami ekorozwoju. *Problemy Drobnych Gospodarstw Rolnych*, 1, 61–70.
- Molik, E., Wierzchoś, E., Musiał, W., Tyran, E. (2005). Rola wypasu wspólnotowego w gospodarce owczarskiej Karpat. *Przegląd Hodowlany*, 8, 19–20.
- Morgan-Davies, C., Kyle, J., Boman, I.A., Wishart, H., McLaren, A., Fair, S., Creighton, P. (2021). A comparison of farm labour, profitability, and carbon footprint of different management strategies in Northern European grassland sheep systems. *Agricultural Systems*, 191, 103155. <https://doi.org/10.1016/j.agsy.2021.103155>
- Mroczkowski, S. (2005). Rola owczarstwa w zachowaniu dziedzictwa kulturowego i przyrodniczego. In: Z. Mirek, A. Nikel (eds.), *Biologiczne i kulturowe aspekty gospodarki owczarskiej* (s. 129–135). Instytut Botaniki PAN.

- Musiał, K. (2018). Wypas kulturowy owiec na terenie dwóch karpackich parków narodowych. *Wiadomości Zootechniczne*, 56(2), 30–37.
- Musiał, K., Szumiec, A. (2019). Rozpoznawalność i postrzeganie produktów tradycyjnych i regionalnych pochodzenia zwierzęcego jako konkurencyjnej oferty na polskim rynku żywnościowym. *Wiadomości Zootechniczne*, 57(4), 48–62.
- Niles, M.T., Garrett, R.D., Walsh, D. (2018). Ecological and economic benefits of integrating sheep into viticulture production. *Agronomy for Sustainable Development*, 38(1), 1–10. <https://doi.org/10.1007/s13593-017-0478-y>
- Niżnikowski, R. (2005). Ochrona środowiska i pielęgnacja krajobrazu. In: R. Niżnikowski (ed.). *Poradnik dla producentów jagniąt rzeźnych* (s. 54–58). Twigger.
- Pérez-Barbería, F.J., Brewer, M.J., Gordon, I.J. (2025). Traditional herders' perception of job satisfaction and integration into society: Another obstacle to the survival of pastoralism? *Ambio*, 54(2), 325–337. <https://doi.org/10.1007/s13280-024-02084-7>
- Pocza, W. (2010). Wspólna polityka rolna UE po 2013 – uzasadnienie, funkcje, kierunki rozwoju w kontekście interesu polskiego rolnictwa. *Więś i Rolnictwo*, 3(148), 38–55. <https://doi.org/10.53098/wir.2010.3.148/03>
- Primi, R., Bernabucci, G., Evangelista, C., Viola, P., Girotti, P., Spina, R., Compagnucci, S., Ronchi, B. (2025). Ecosystem services linked to extensive sheep and goat farming in mountain areas: A global literature analysis using text mining and topic analysis. *animals*, 15(3), 350. <https://doi.org/10.3390/ani15030350>
- Rac, I., Erjavec, K., Erjavec, E. (2024). Agriculture and environment: Friends or foes? Conceptualising agri-environmental discourses under the European Union's Common Agricultural Policy. *Agriculture and Human Values*, 41(1), 147–166. <https://doi.org/10.1007/s10460-023-10474-y>
- Ripoll-Bosch, R., De Boer, I.J.M., Bernués, A., Vellinga, T.V. (2013). Accounting for multi-functionality of sheep farming in the carbon footprint of lamb: A comparison of three contrasting Mediterranean systems. *Agricultural Systems*, 116, 60–68. <https://doi.org/10.1016/j.agsy.2012.11.002>
- Rokicki, T. (2010). Zrównoważony rozwój obszarów wiejskich przy wykorzystaniu produkcji owczarskiej. In: B. Kryk, M. Malicki (eds.). *Rolnictwo w kontekście zrównoważonego rozwoju obszarów wiejskich* (pp. 195–208). Economicus.
- Roques, S., Martinez-Fernandez, G., Ramayo-Caldas, Y., Popova, M., Denman, S., Meale, S.J., Morgavi, D.P. (2024). Recent advances in enteric methane mitigation and the long road to sustainable ruminant production. *Annual Review of Animal Biosciences*, 12(1), 321–343. <https://doi.org/10.1146/annurev-animal-021022-024931>
- Samuelson, P.A. (1954). The pure theory of public expenditure. *Review of Economics and Statistics*, 36(4), 387–389. <https://doi.org/10.2307/1925895>
- Santillo, A., della Malva, A., Albenzio, M. (2025). Preserving biodiversity of sheep and goat farming in the Apulia Region. *animals*, 15(11), 1610. <https://doi.org/10.3390/ani15111610>
- Schoof, N., Kirmer, A., Hörl, J., Luick, R., Tischew, S., Breuer, M., von Königslöw, V. (2021). Sheep in the vineyard: First insights into a new integrated crop-livestock system in Central Europe. *Sustainability*, 13(22), 12340. <https://doi.org/10.3390/su132212340>

- Sendyka, P., Makovicky, N. (2018). Transhumant pastoralism in Poland: Contemporary challenges. *Pastoralism*, 8(1), 1–14. <https://doi.org/10.1186/s13570-017-0112-2>
- Shi, L., Han, L., Yang, F., Gao, L. (2019). The evolution of sustainable development theory: Types, goals, and research prospects. *Sustainability*, 11(24), 7158. <https://doi.org/10.3390/su11247158>
- Skordos, D., Ragkos, A., Karanikolas, P., Vlahos, G. (2025). Sustainability indicators of different production systems of a Greek local sheep breed. *Sustainability*, 17(2), 604. <https://doi.org/10.3390/su17020604>
- Sucholas, J., Molnár, Z., Łuczaj, Ł., Luick, R., Poschlod, P. (2025). Are agri-environmental schemes doing their job? Evidence from Biebrza National Park, Poland. *Land Use Policy*, 148, 107390. <https://doi.org/10.1016/j.landusepol.2024.107390>
- Taberlet, P., Valentini, A., Rezaei, H.R., Naderi, S., Pompanon, F., Negrini, R., Ajmone-Marsan, P. (2008). Are cattle, sheep, and goats endangered species? *Molecular Ecology*, 17(1), 275–284. <https://doi.org/10.1111/j.1365-294X.2007.03475.x>
- Timpanaro, G., Foti, V.T. (2024). The sustainability of small-scale sheep and goat farming in a semi-arid Mediterranean environment. *Journal of Sustainable Agriculture and Environment*, 3(3), e12111. <https://doi.org/10.1002/sae2.12111>
- Toro-Mujica, P., Aguilar, C., Vera, R., Rivas, J., García, A. (2015). Sheep production systems in transition: Analysis of structural changes. *Small Ruminant Research*, 132, 52–60.
- Uğurlu, E. (2019). Renewable energy strategies for sustainable development in the European Union. In: D. Kurochkin, E. Shabliy, E. Shittu (eds.). *Renewable Energy* (pp. 63–87). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-14207-0_3
- Varela, E., Jay, M., Flinzberger, L., Mobarak, C., Plieninger, T. (2025). A review of high nature value farming systems in Europe: Biodiversity, ecosystem services, drivers, innovations and future prospects. *People and Nature*. Early View. <https://doi.org/10.1002/pan3.70048>
- Weimer, D., Vining, A. (2017). *Policy Analysis: Concepts and Practice*. Routledge.
- Wilkin, J. (2010). Dobra dostarczane przez rolnictwo w świetle teorii dóbr publicznych. W: J. Wilkin (red.). *Wielofunkcyjność rolnictwa. Kierunki badań, podstawy metodologiczne i implikacje praktyczne* (s. 42–52). Instytut Rozwoju Wsi i Rolnictwa PAN.
- Wiśniewska, J. (2009). Zrównoważone rolnictwo w świetle teorii dóbr publicznych i nowej ekonomii instytucjonalnej. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, 11(2), 274–279.
- Wunder, S., Fraccaroli, C., Varela, E., Bruzzese, S., Termansen, M. (2025). Examining innovative designs of agri-environmental schemes in Europe: A case comparison of impact pathways. *Ecosystem Services*, 73, 101728. <https://doi.org/10.1016/j.ecoser.2025.101728>
- Zegar, J.S. (2012). *Współczesne wyzwania rolnictwa*. Wydawnictwo Naukowe PWN.

Chów owiec w Polsce jako zjawisko społeczno-ekonomiczne – perspektywa rolnictwa wielofunkcyjnego

Abstrakt

Cel pracy: Autorzy podjęli zagadnienie znaczenia owczarstwa jako zjawiska społeczno-ekonomicznego w kontekście wielofunkcyjności rolnictwa oraz rozwoju obszarów wiejskich. Celem pracy była prezentacja owczarstwa jako działalności produkcyjnej i elementu kultury, tożsamości lokalnej oraz źródła dóbr publicznych i usług ekosystemowych.

Metoda badawcza: W opracowaniu zastosowano podejście koncepcyjno-analityczne, z krytyczną analizą literatury przedmiotu oraz dostępnych materiałów źródłowych.

Kluczowe wyniki: W wyniku analizy stwierdzono, że działalność owczarska wpisuje się w model zrównoważonego rozwoju dzięki relatywnie niskiej intensywności, zdolności do utrzymywania krajobrazu kulturowego oraz funkcjom społecznym i środowiskowym. Szczególnie w Polsce owczarstwo ma znaczenie regionalne i symboliczne, a jego rozwój zależy od instrumentów polityki rolnej oraz zmieniających się oczekiwań społecznych.

Główne wnioski: Uzyskane wyniki wskazują na potrzebę interpretowania owczarstwa w kategoriach dóbr wspólnych i wielofunkcyjności rolnictwa, a nie wyłącznie efektywności ekonomicznej.

Słowa kluczowe: owczarstwo, wielofunkcyjność rolnictwa, dobra publiczne, rozwój obszarów wiejskich, kultura wsi, Polska.