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Identification and power relations of stakeholders in the private forest sector in Poland

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Abstract: This article analyses the private forest sector in Poland, which encompasses over 1.78 million ha (19.3% of the country's forest area) and belongs to approximately 1.7 million owners. The research aimed to identify key stakeholders, examine the dynamics of power relations, and recognise structural, legal, and social barriers to effective forest management. The research methodology combined a narrative literature review with empirical field studies utilising the snowball sampling technique to map informal actor networks, followed by a quantitative survey among 139 key stakeholders and a 100-point constant-sum allocation method to evaluate ecosystem service priorities. In the results, an asymmetry of priorities was diagnosed: public administration focuses on supervisory functions, while owners prioritise pest protection and forest tending. An association paradox was demonstrated – despite a high declarative readiness for cooperation (approx. 89%), the actual level of organisation within associations remains marginal. The main barriers include an outdated legal framework, a lack of systemic compensation for restrictions on property rights, and specialist knowledge deficits – awareness of Natura 2000 protection goals is exhibited by only about 40% of owners. A comparative perspective with Slovakia highlights the impact of contrasting post-socialist transition paths, demonstrating the potential benefits of statutory anti-fragmentation measures and updated land community legislation. The conclusions indicate the necessity of activating latent social capital through legal amendments, the simplification of administrative procedures (Simplified Forest Management Plans – UPUL), and the construction of dialogue platforms. Stakeholder integration is an essential condition for reconciling the production function with growing social expectations regarding ecosystem services.

Keywords: forest governance; forest owner associations; private forestry; social capital; stakeholder engagement

The significance of private forests in the ownership structure of Europe and specifically Poland is systematically increasing, which is the result of deep structural, legal, and social transformations. This evolution necessitates a new approach to stakeholder identification and classification, as the sector is no longer viewed solely through the prism of timber production. Today, private forests are becoming a key link in providing ecosystem services and achieving the goals of modern bioeconomy (Wysocka-Fijorek 2013; Nichiforel, Schanz 2011; Juutinen et al. 2022; Haeler et al. 2023).

On a European scale, according to data from 28 countries covered by the FACESMAP study, private forests account for approximately 56% of the total forest area, excluding Russia (where all for-

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ests are publicly owned), corresponding to around 200 milion ha (FAO 2025; UNECE, FAO 2020; Weiss et al. 2019). Almost half of all the continent's forests are in private hands, with this indicator exceeding 70% in countries such as Portugal or France (Nichiforel, Schanz 2011; Weiss et al. 2019). Although this share is relatively lower in Poland, at approximately 19.3% (over 1.78 million ha) and its institutional and social importance is growing due to the afforestation of agricultural land and the formal disclosure of natural succession in the cadastre (Wysocka-Fijorek et al. 2020, 2022; Klepacka et al. 2025). In Europe, the growing importance of private forests is determined by property restitution in post-socialist countries (including Romania, Lithuania, and Slovakia) and lifestyle changes, through which urban heirs are taking over the management of forest (Weiss 2004; Lawrence 2009; Dobšinská et al. 2020).

The process of stakeholder groups classification allows for the identification of new challenges and interactions occurring in the sector. A critical challenge is the conflict of interests between the growing demand for wood and social expectations regarding biodiversity conservation (Aurenhammer 2020; Näyhä, Wallius 2024; Zafra-Calvo et al. 2024). Identifying these tensions enables the design of individualised forest policy instruments instead of universal, often ineffective solutions. In the Polish context, an additional barrier is extreme ownership fragmentation (average area per farm is 1.73 ha) and the lack of organised forms of cooperation. For institutional actors, the priority is to activate social capital and support Forest Owner Associations (FOAs).

A final important aspect is the joint management of biotic and abiotic risks (e.g. gales, pest outbreaks) (Sołtykiewicz et al. 2024). These threats operate on a landscape scale, completely ignoring ownership boundaries, which necessitates close cooperation between owners, insurers, and administration. In the face of these transformations, the private forest owner becomes a 'transformational agent,' and the effectiveness of modern state policy depends on a deep understanding of the diversity of goals and motivations of all participants in this complex socio-economic network.

The process of identifying stakeholders in the private forest sector is most often based on the snowball sampling method, which allows for the discovery of connection networks extending beyond official administrative structures (Bach 2018; Zhao et al. 2022; Zafra-Calvo et al. 2024).

The aim of the research was to identify and classify the key actors (stakeholders) of the private forest sector in Poland, as well as to determine their influence, interests, and mutual relations in the management system of dispersed forest resources.

The main research problem focuses on how specific structural (extreme ownership fragmentation), legal (unregulated ownership status), and social (low trust) conditions determine the effectiveness of private forest management in Poland and influence the dynamics of power relations between the state and private sector.

MATERIAL AND METHODS

The process of identification of private forest sector stakeholders was based on the assumption that these forests constitute complex socio-ecological systems, where management decisions result from dynamic interactions between biological, institutional, and social factors (Rogelja et al. 2025). The study was conducted as part of the project 'Activation of social capital of private forest owners (farmers),' funded by the state budget under the 'Nauka dla Społeczeństwa II' program (NdS-II/SN/0274/2024/01). The objective of the applied methodology was not only to identify key actors but also to determine the dynamics of power relations and the structural, legal, and social barriers that dictate the effectiveness of managing dispersed forest resources (Burns, Giessen 2014; Zafra-Calvo et al. 2024).

Narrative literature review. A narrative synthesis of publications from 2004 to 2025 was conducted to establish the institutional and historical context. The review focused on management barriers, stakeholder interactions and ownership transformation in Poland after UE accession.

Stakeholder identification and snowball sampling. In accordance with the paradigm of modern forest policy, the identification of actor networks was based on a purposive selection method and the snowball sampling technique. This method is recognised in the literature as the most effective tool for discovering informal connection networks and information flows that extend beyond official, rigid administrative structures (Bach 2018; Zhao et al. 2022; Zafra-Calvo et al. 2024). The research process was divided into the following stages:

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– Preliminary phase (seeds) – leaders of local forest owner associations, representatives of forest administration (State Forests, county offices), and individuals supervising forest management were selected as 'seeds' (starting points).
– Direct meetings phase – two rounds of stakeholder meetings were conducted in six selected gminas characterised by diverse ownership structures. During these sessions, participants identified partners with whom they cooperate or from whom they receive information. This process continued from May 2024 to May 2026 until network saturation was achieved, meaning no new entities appeared in subsequent interviews. This approach allowed for the capture of actual, rather than merely formal, actor interests (Zhao et al. 2022).

Empirical data collection – questionnaire survey. A key element of the methodology was a questionnaire survey conducted among a group of 139 respondents closely linked to the private forest sector. The research sample included powiats and gminas local government employees, State Forests employees, village heads (sołtys), councillors, and forest owners.

The questionnaire consisted of 22 thematic sections, enabling the collection of detailed demographic and economic data. The analysis accounted for the specific characteristics of Polish private forests, which exhibit extreme fragmentation.

Particular emphasis was placed on examining ecological awareness regarding Natura 2000 protection. To establish a hierarchy of importance for ecosystem services, a 100-point allocation method was used, in which respondents were provided with a total pool of 100 points to distribute across the evaluated categories. This approach allowed owners to define their own priorities between production functions (timber harvesting) and non-productive functions (protection of soil and water, recreation).

Validation and theoretical classification. To validate the obtained stakeholder maps and diagnosed structural barriers, a final conference was organised for a wide range of selected actors. Identified entities were classified according to a theoretical model into four spheres:
(*i*) Science (universities, institutes);
(*ii*) Industry (wood and forest service companies);
(*iii*) Administration (ministries, local offices);
(*iv*) Civil society (NGOs, local communities) (Rogelja et al. 2025).

This structured approach, combining literature analysis with extensive empirical research, allowed for the reliable mapping of relationships within the sector (Näyhä, Wallius 2024) and serves as a direct response to the requirements for methodological precision in the study.

RESULTS

Demographic characteristics and forest ownership structure. The empirical research involved a group of 139 stakeholders directly linked to the private forest sector. Analysis of respondent metrics indicates that the dominant group of forest owners consists of men, with their share in the sample of 69%. The average age of the surveyed forest owners is approximately 53 years, indicating the demographic maturity of this group. In terms of occupational and economic status, the ownership structure comprises two main subgroups: farmers, who regard forests as an integral part of their agricultural holdings and as a source of timber for their own needs, and a rapidly growing group of 'non-farming' forest owners, often urban residents.

Ecological awareness and hierarchy of ecosystem services. Analysis of specialised knowledge among forest owners revealed significant deficits in ecological awareness, particularly regarding the Natura 2000 network. Based on the responses, participants were classified into three groups:
(*i*) 'Experts' (39.6%) – individuals with correct definitional knowledge of protection goals;
(*ii*) 'Amateurs' (22.4%) – owners declaring knowledge but unable to specify it;
(*iii*) 'Laity' (38.0%) – admitting to a lack of knowledge.

Nevertheless, an increasing awareness of the non-productive functions of forests was observed. The next highest-ranked functions were nature conservation services for future generations and recreational functions, with the latter being valued more highly by civil society than by the owners themselves, thereby generating noticeable tensions between private and public interests.

Cooperation potential and preferred organisational models. The study allowed for the identification of the so-called 'association paradox'. While the vast majority of respondents (approx. 89%) declare a high readiness for cooperation within organised associations, the actual degree of formalised organisation remains marginal. Owners identify the possibility of collective timber sales to achieve

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better prices, access to specialised training and advisory services and the reduction of management costs as the primary motivators for joining associations. The preferred structural model for forest owners is local associations at the gmina level, cooperating with each other at the powiat level or the establishment of Forestry Chambers modelled on the existing Agricultural Chambers.

Forest management, supervision, and educational needs. In the area of current forest management, owners identify forest protection against pests (insects, fungi) and the tending of plantations and young stands as tasks requiring the most support, including financial assistance from the Rural Development Programme (RDP). The quality of supervision exercised by county offices (starostwa) or forest districts (based on agreements) was rated at an average of 3.94 on a 1–6 scale. However, a decrease in the percentage of good ratings was recorded, from 54% in 2004 to 38% in 2019, which respondents attribute to the lack of up-to-date management documentation [UPUL or Inwentaryzacja Stanu Lasu (ISL) – Forest Condition Inventory] and limited county budget resources for its preparation (Gołos et al. 2021).

Regarding timber sales, owners seek systemic facilitations. The highest-rated forms of support include sales through associations and the use of national internet portals. Furthermore, respondents exhibit interest in insuring forests against abiotic risks (fires, winds), provided that the premium is commensurate with potential compensation covering the costs of clearing and area regeneration.

Training needs analysis revealed that owners primarily require practical knowledge regarding:
- the implementation of silvicultural and protective treatments (pest control);
- opportunities for obtaining external funding and compensation for forest use restrictions (e.g. in Natura 2000 areas);
- understanding complex forest law regulations and supervision principles.

The research results indicate a high fragmentation of the sector and a low level of specialist knowledge, alongside a significant, yet untapped, potential of social capital for collective action.

DISCUSSION

Legal and institutional barriers in private forest management. The management of private forests in Poland constitutes a space of intense tension between individual property rights and the growing public interest. Research results confirm that these forests are complex socio-ecological systems where decisions depend on the interactions between biological, social, and power factors (Rogelja et al. 2025). A key structural barrier diagnosed in the study is not a lack of willingness to cooperate among owners, but the fact that the sector operates within an outdated legal framework, epitomised by the Act of 29 June 1963 on Management of Land (Gołos 2008a). This regulation is described in the literature as a 'double relic' of the enfranchisement era in its subject matter and the socialist period in terms of ownership restrictions (Gołos 2008a). Contemporary issues, such as insufficient regulation of legal status in land registers or the inability to freely dispose of shares, render these communities' assets with limited market potential in practice. Furthermore, the dualism of supervision – where the municipal mayor controls the activities of the community's management company while the district governor oversees forest management leads to decision-making paralysis and jurisdictional disputes (Wysocka-Fijorek et al. 2025).

The spatial structure of private forests in Poland. The spatial structure of the private forests is characterised by extreme fragmentation. The mean forest area per owner is 1.41 ha (Gołos 2011). A typical forest holding consists of 3 small individual parcels, averaging 0.35 ha in area, which are generally spatially dispersed and located at an average distance of 2.4 km from the owner's place of residence (Gołos 2008b). An important piece of information is a cadastral data gap existing in Poland: the actual area of private forests may be underestimated by approximately 1.2 million ha due to processes of natural succession on agricultural land that have not yet been incorporated into the cadastre and approx. 80% of that area is located on private parcels (Bureau for Forest Management and Geodesy State Enterprise 2025). Taken together, these data point to two interrelated problems. On the one hand, the extreme fragmentation of holdings, with small and dispersed parcels located at a considerable distance from the owner's residence, makes rational forest management difficult and economically unviable. On the other hand, the cadastral data gap indicates that a considerable share of private forest owners show no interest in their forests whatsoever. A substantial part of these stands has emerged

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through spontaneous natural succession following the abandonment of agricultural land, rather than as a result of conscious forest management.

Power structure of private forestry in Poland. Power structure analysis revealed a lasting hegemony of public administration acting as a 'meta-governor' (Bach 2018). Although formal supervision is exercised by 380 county districts (Powiat), in practice, approximately 2/3 of the private forest area is under the supervision of State Forest district foresters based on agreements (Geszprych 2011; Gołos et al. 2021). This 'command-and-control' model, characteristic of post-socialist countries, shifts priorities from owner needs (e.g. pest protection) to supervisory and legislative functions (Lawrence et al. 2020).

Association paradox among private forest owners. The study revealed a profound gap between the declarative readiness to cooperate at 89% and the actual degree of organisation – only about 4% of forest area in Poland is under ownership of cooperatives or common lands (Statistics Poland 2025). The cause of this paradox lies partly in legal restrictions that prevent Forest Owner Associations (FOAs) from freely distributing profits from economic activities among their members (Wysocka-Fijorek 2013). Given the extreme parcel fragmentation, averaging 1.41 ha, the transaction costs of organising collective timber harvesting under the current legal status outweigh the potential economic benefits.

Public access and competing interests in private forests. Beside owners, other forest users are an important group. Local communities use private forests under the right of general access (collecting forest floor products), which is valued similarly by owners and outsiders (Wysocka-Fijorek et al. 2022). In turn, tourists represent interests that are often confrontational toward owners-producers, emphasising landscape functions, which creates tensions over the lack of compensation for restrictions on ownership use (Wysocka-Fijorek et al. 2022).

Comparison with Slovakian private forestry characteristics. A comparative analysis between the private forest sectors in Poland and Slovakia highlights crucial differences resulting from divergent post-socialist transformation pathways and evolving legal-institutional arrangements. In contrast to Slovakia, where comprehensive land restitution and reprivatisation to former owners, land communities, municipalities and churches were executed under the Act no. 229/1991 of the Official Gazette, on modification of land and other agricultural property ownership (Land Act) (Dobšinská et al. 2020). Poland abstained from forest reprivatisation, leaving its private forest share relatively stable at approximately 19.3%. This historical divergence directly shaped the organisational capacity of landowners: in Slovakia, the restoration of property rights fostered a structured and formalised interest representation system – forest owner associations, encompassing up to 67% of the non-state forest area (UNECE, FAO 2020) in an umbrella organisation created by four owners associations. Conversely, Poland's private forest sector remains grounded in outdated legal frameworks, such as the 1963 Act on Management of Land Communities, and suffers from an 'association paradox', when in Slovakia modern law on such communities exists in the form of Act No. 97/2013 Coll. on Land Communities. Slovakia introduced strict statutory controls against ownership subdivision such as ban for subdivision of forest parcel into areas below 0.5 ha [§23(1) of Act No. 180/1995 Coll. On Certain Measures to Regulate Ownership of Land], when in Poland there are no such restrictions. This leads to the fact that in Poland, many forests feature very high ownership fragmentation.

CONCLUSION

(*i*) The state sector dominates the management system, yet its priorities (supervision, legislation) diverge from the needs of owners, who focus on forest tending, pest control, and production functions.

(*ii*) The owners' high social capital remains 'dormant' due to an inadequate legal framework. Amendment of the Act on Land Community Management – new, up to date land communities law, such as that in Slovakia, should be introduced.

(*iii*) The level of specialised forestry knowledge (e.g. about Natura 2000 areas) is low – only approx. 40% of owners possess definitional knowledge.

(*iv*) Improving forest management in private forests and ensuring the sustainability of ecosystem services requires simplifying administrative procedures, updating documentation (UPUL), and introducing systemic

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compensation for ownership rights restrictions in protected areas.

(*v*) Resolving conflicts between the production function and growing social expectations (recreation, protection) requires implementing models that include dispersed owners in decision-making processes.

(*vi*) Banning subdivision of forest holdings into parcels too small to permit rational forest management without obtaining prior permit, following the example of Slovakia, should be considered by lawmakers.

The study's limitations. The results should be interpreted with caution due to several limitations. First, the study relied on non-probability sampling: respondents were recruited using snowball sampling, and the final sample comprised 139 individuals. The percentage values obtained are therefore descriptive in nature and cannot be generalised to the entire population of private forest owners, estimated at approximately 1.7 million people. They should be treated as an illustration of phenomena occurring within the studied group rather than as an estimate of population parameters. Second, the study had a limited geographical scope, as it covered only six municipalities, which does not allow for conclusions about regional variation or about the situation in other parts of the country. The findings should therefore be regarded as exploratory and as a starting point for further research based on a random sample covering a larger number of regions. Future studies could also replicate this research in other countries, such as Slovakia, in order to examine how respondents' attitudes and approaches to private forestry differ across national contexts. Such a cross-country comparison would help to determine which of the observed patterns are specific to Poland and which reflect broader regional trends.

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