



Territorial boundaries of the Yangambi Biosphere Reserve: land tenure issues, environmental governance and safeguarding local communities

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PREFIX :

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IJSRIS JOURNAL



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ABSTRACT

The Yangambi Biosphere Reserve (YBR), situated in Tshopo Province in the Democratic Republic of the Congo, is a key area for biodiversity conservation, scientific research and the regulation of forest ecosystems in the Congo Basin. However, its governance continues to face challenges linked in particular to territorial demarcation, the overlap of land tenure and customary laws, and restrictions on access to natural resources. This study analyses the relationships between

territorial demarcation, environmental governance and the safeguarding of local communities' rights.

The study draws on legal theory and the sociology of law. It involves a literature review of academic work on Yangambi, Congolese legal instruments relating to nature conservation, and theories of natural resource governance.

The study's findings show that historical uncertainty regarding the reserve's boundaries, insufficient consideration of social and customary dynamics, and low community

participation in the demarcation processes have contributed to the persistence of tensions between managers and local communities. The study argues that securing community rights should not be seen as at odds with conservation, but rather as a prerequisite for its sustainability. It recommends participatory demarcation, clarification of areas for community use, recognition of customary rights compatible with conservation, and the strengthening of local governance mechanisms.

Keywords: Yangambi Biosphere Reserve, territorial demarcation, land tenure, environmental governance, local communities, natural resources, conflicts.

1. Introduction

Biodiversity conservation is now a major challenge for environmental governance. In the states of the Congo Basin, this issue is particularly acute due to the ecological, economic and social importance of forested areas. The forest is not merely a reservoir of biodiversity. It also serves as a space for agricultural production, hunting, fishing, the collection of non-timber forest products, the transmission of knowledge and the organisation of social relations.

In the Democratic Republic of the Congo (DRC), this situation poses a particular challenge for conservation policies. The establishment and management of protected areas must, in fact, balance two imperatives: the protection of ecosystems and the consideration of the needs and rights of communities that depend directly on natural resources¹.

The Yangambi Biosphere Reserve is a prime example of this challenge. Located in Tshopo Province, it is an area of ecological and scientific importance. UNESCO currently estimates its area at approximately 225,000 hectares, or around 2,350 km². The reserve has been part of UNESCO's World Network of Biosphere Reserves since 1977 and is an area where conservation, research and local development are intended to be reconciled. Recent programmes carried out in Yangambi place greater emphasis on community participation, income-generating activities and the sustainable management of natural resources².

However, the history of Yangambi's governance reveals a fundamental difficulty: the administrative or institutional demarcation of a conservation area does not necessarily

correspond to the social, customary and economic boundaries recognised by the communities that use it. This is precisely what Kipute and his co-authors highlight. Their study on the complexity of zoning in the Yangambi Biosphere Reserve notes successive changes to the reserve's boundaries, as well as a lack of clarity regarding these boundaries on the ground. According to these authors, this situation has contributed to confusion between areas designated for conservation and those intended for village activities³.

This issue is also linked to the question of governance. A study on community participation in Yangambi concludes that participation has largely been 'top-down', as communities have historically been insufficiently involved in decisions concerning the governance of the reserve⁴.

From a legal perspective, however, the situation has changed. Law No. 14/003 of 11 February 2014 on nature conservation specifically affirms the need for public information and participation and provides for the involvement of local communities in the process of establishing protected areas.

This raises the following question: How can clarifying the territorial boundaries of the Yangambi Biosphere Reserve and securing the rights of local communities help to improve environmental governance and reduce conflicts over access to natural resources?

The hypothesis put forward is that uncertainty over territorial boundaries, combined with weak land rights security and insufficient community participation, constitutes a major source of tension between the reserve's managers and local communities. Conversely, participatory governance based on clear and negotiated boundaries could help to simultaneously improve conservation and land security for communities.

The aim of this article is therefore to analyse the link between territorial demarcation, land governance, access to natural resources and the security of community rights in the Yangambi Biosphere Reserve.

¹ UNESCO. (2026). The Yangambi Project: conserving the tropical forest, empowering communities and showcasing its hidden treasures.

² UNESCO. (2026). Yangambi: communities commit to strengthening local governance of natural resources. MAB Programme.

³ *Ibid.*

⁴ *Ibid*

2. Methodological framework

a) Method

This study drew primarily on legal dogmatics and the sociology of law. Legal dogmatics enabled the analysis and comparison of texts relating to demarcation, conservation and access to natural resources, whilst the sociology of law enabled an assessment of how these norms are understood, applied and experienced by local communities and institutional actors. Legal dogmatics is based on a parodic analysis of the text and aims to remain as faithful as possible to its content. However, it should not be confused with a purely literal interpretation, as it does not merely follow the grammatical text, but also seeks to reveal its intention⁵.

This method has enabled this research to compare different established norms concerning the right of access to natural resources, whilst demonstrating how the imprecision of the boundaries of the Yangambi Biosphere Reserve constitutes a factor contributing to legal uncertainty and conflicts relating to access, use and control of natural resources between management authorities and local communities.

Conversely, the sociology of law has enabled an analysis of the effectiveness of standards relating to the creation and management of protected areas, as well as to rights of access to natural resources. It has also allowed for the consideration of social and cultural factors that may explain the discrepancies between statutory law and the practices observed in the Yangambi Biosphere Reserve.

Indeed, development also depends on both social and cultural factors. Using this method, this study will also assess the consistency between legal provisions concerning the establishment of a protected area and the right of access to natural resources in relation to current sociological dynamics. Because it is not limited to the positive interpretation of the law, it also takes into account society's understanding of the law.

b) Methodology

This study adopts a qualitative approach, with a strong emphasis on documentary research. It draws on three main categories of sources: scientific studies on the Yangambi

Biosphere Reserve; Congolese legal texts relating to nature conservation, environmental governance and community rights; and institutional publications, notably those of UNESCO and the IUCN. This is therefore a secondary analysis of available data rather than a new statistical survey of the communities in Yangambi.

To analyse the data collected, we employed qualitative content analysis. This is defined by B. BERELSON as 'a technique aimed at the objective, systematic and usually qualitative description of communication, with the aim of interpreting it'⁶.

3. Results

3.1. Historically evolving territorial boundaries

The first finding of the analysis concerns the evolution of the territorial boundaries of the Yangambi Biosphere Reserve. Research by Kipute et al.⁷ shows that several spatial configurations of the reserve have existed over time. The authors emphasise in particular that the boundaries used by different institutions did not always correspond with one another. This situation has created uncertainty regarding the precise location of conservation areas and areas designated for village activities. The problem is therefore not merely cartographic; it has a social and land-tenure dimension.

Thus, when the boundaries of a protected area are not sufficiently marked out and understood by local communities, a single plot of land may be regarded simultaneously as:

- Customary land by the community;
- A conservation area by the authorities;
- Agricultural land by the farmer;
- A restricted area by the officials responsible for monitoring.

This overlap of perceptions creates fertile ground for conflict.

⁵ ISA GERMAIN, **Les procédés et méthodes d'interprétation des règles**, Paris, Dalloz series, 2019, p. 6.

⁶ BERELSON B., **Content Analysis in Communication Research**, Free Press, New York, 1952, cited by M-L GAVART-PERRET *et al.*, 'Epistemological Foundations of Research', in THIETART, R-A., **Research Methods in Management**, 3rd ed., Dunod, Paris, 2007, pp. 21–23.

⁷ Kipute, D.D., Mampeta, S.W., Kahindo, J-M.M., Lelo, U.D.M., Kankeu, R. Sufo, Sonwa, D.J., Joiris, V.D., & Mate, J-P.M. (2021). "Complexity of Zoning Management in Biosphere Reserves: The Case of the Yangambi Biosphere Reserve in the DRC." *Nature Conservation*.

3.2. Insufficient consideration of customary dynamics

The second finding concerns the disconnect between the official management system and customary mechanisms for access to land. Studies on Yangambi show that local communities have historically developed their own mechanisms for accessing land and forest resources. A study on local survival practices in Yangambi highlights, in particular, the importance of inheritance mechanisms, local territorial references and the role of customary authorities in managing land disputes. This reality reveals the existence of two land-use rationalities:

- An administrative and environmental rationale based on institutional demarcation;
- A customary rationale based on history, inheritance, occupation and use.

Difficulties arise when these two rationalities are not coordinated.

3.3. Access restrictions that may shift pressure on resources

The third conclusion concerns the effects of zoning. Kipute et al⁸, observe that access restrictions imposed by the reserve's zoning may prompt certain neighbouring communities to intensify their exploitation of available village lands. They also highlight that the lack of clarity regarding boundaries and areas of community use has fuelled tensions.

This situation helps to explain a significant paradox:

- A conservation policy that is poorly aligned with communities' land-use needs can shift environmental pressure rather than reduce it.
- Conservation cannot therefore be assessed solely on the basis of the extent to which human activities are prohibited. It must also be evaluated in terms of the governance system's capacity to organise land use in a sustainable manner.

3.4. Historically insufficient community participation

The study by Kipute et al.⁹ on participatory governance in Yangambi reveals that community participation has largely been top-down. Local people have historically been

marginalised in the design of certain projects and governance processes. This observation is important because participation does not simply mean informing local people after a decision has been taken. Genuine participation requires, in particular:

- Access to information;
- Prior consultation;
- Representation of different social groups;
- The opportunity to discuss limitations;
- Participation in decision-making;
- Opportunity to challenge or negotiate certain rules;
- Involvement in monitoring their implementation.

3.5. A recent shift towards more community-based governance

However, the current situation should not be presented as identical to that described in previous studies. Recent UNESCO initiatives demonstrate a shift towards greater community involvement. In July 2026, more than 120 community members, including traditional chiefs, community leaders, representatives of indigenous peoples, young people and women leaders from eight villages, took part in activities relating to the sustainable management of natural resources.

Village committees for the management of non-timber forest products have also been set up in several villages. This indicates a gradual shift from a predominantly administrative approach towards a more participatory one, although this development alone does not mean that land tenure issues can be considered definitively resolved.

4. Discussion of the results

The results highlight a key point: the problem in Yangambi is not solely one of forest protection; it is also one of territorial governance. A conservation policy may be legally legitimate yet encounter practical difficulties when it does not correspond to local social and land tenure realities.

⁸ Kipute, D.D., Mampeta, S.W., op. cit.,

⁹ Kipute, D.D. et al. (2019). "Moving beyond the illusion of participation in the governance of the Yangambi Biosphere Reserve (Tshopo Province,

Democratic Republic of the Congo)." *Nature Conservation*, 33, 33–54. DOI: 10.3897/natureconservation.33.30781.

4.1. Comparison with Kipute et al.: demarcation as a factor in conflict

The findings of this analysis are directly consistent with the work of Kipute et al.¹⁰ on the complexity of zoning in Yangambi. These authors identify shifting boundaries, a lack of clarity on the ground and insufficient community participation as factors contributing to tensions between local communities and managers.

Our analysis confirms this interpretation whilst broadening it: the issue of boundary demarcation should not be understood solely as a technical mapping challenge. It is also a matter of territorial legitimacy. A boundary that is technically correct but not socially recognised may remain difficult to enforce.

4.2. Comparison with the study on participation in Yangambi

The study published in **Nature Conservation** on governance in Yangambi concludes that participation is predominantly top-down and highlights the historical marginalisation of communities in certain decision-making processes. This conclusion reinforces our hypothesis that conflicts do not result solely from the individual behaviour of local people or managers. They can also be caused by the institutional arrangements for decision-making.

In other words, when local people have little say in defining the rules they are required to follow, their sense of ownership of those rules may be weaker.

4.3. A comparison with Ribot and Peluso: the law alone is not sufficient to explain access

The findings can also be interpreted in the light of Ribot and Peluso¹¹. For these authors, access corresponds to the actual ability to derive benefits from a resource and is not limited to the possession of a formal right. This theory helps to explain the situation in Yangambi: even when a community claims a customary right over a territory, its access may be restricted by regulatory, administrative or coercive measures.

Conversely, managers may possess legal authority without having all the social means necessary for the effective

enforcement of the rules. Thus, the conflict surrounding Yangambi can be interpreted as a conflict over access rights, and not merely as a conflict over ownership.

4.4. A comparison with Ostrom: the need for legitimate local institutions

The work of Elinor Ostrom¹² sheds further light on the matter. Ostrom demonstrates that common-pool resources can be governed effectively when users have clear rules and institutional mechanisms enabling their collective enforcement. This perspective is particularly relevant to Yangambi. It implies that the choice is not limited to:

- The state versus communities.
- A third possibility exists: the state + managers + customary authorities + communities + scientific and technical partners.

Polycentric governance could thus enable responsibilities to be shared across different levels.

4.5. A comparison with Borrini-Feyerabend et al.: towards shared governance

The work of Borrini-Feyerabend et al.¹³ on the governance of protected areas supports the idea that there are several models of governance and that shared governance can be an appropriate response in certain contexts.

This approach is particularly relevant to Yangambi, as the reserve is not a socially vacuumed space. It is shaped by institutional, scientific, economic, customary and community interests. Sustainable conservation therefore requires that the various stakeholders be able to participate in defining and implementing the rules.

4.6. A comparison with Larson and Dahal: securing rights to improve forest governance

The work of Larson and Dahal¹⁴ on the reform of forest land tenure regimes highlights the importance of community rights in forest governance. Their analysis emphasises that tenure reforms can help to strengthen the recognition of forest-

¹⁰ Kipute, D.D. et al., *op. cit.*,

¹¹ Ribot, J.C. & Peluso, N.L. (2003). "A Theory of Access." *Rural Sociology*, 68(2), 153–181. DOI: 10.1111/j.1549-0831.2003.tb00133.x.

¹² Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

¹³ Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Pathak, N., Phillips, A., & Sandwith, T. (2013). *Governance of Protected Areas: From Understanding to Action*. Gland: IUCN.

¹⁴ Larson, A.M. & Dahal, G.R. (2012). "Introduction: Forest Tenure Reform: New Resource Rights for Forest-Based Communities?" *Conservation & Society*, 10(2), 77–90.

dependent communities, although their effects depend heavily on local institutions and conditions.

In the case of Yangambi, this perspective suggests that conservation should not be built on permanent land tenure insecurity. Securing rights that are compatible with conservation objectives could, on the contrary, help to empower local communities.

In light of the above, three distinct dimensions emerge. Firstly: the territorial dimension. It is essential that the boundaries of the reserve be:

- Legally established;
- Mapped;
- Marked out on the ground;
- Known to the communities;
- Consistent across the various institutions.

Secondly: the land tenure dimension. Customary rights and rights of use must be identified and documented in order to prevent any community claim from being automatically equated with illegal occupation.

Thirdly: the institutional dimension. Communities must move from being mere recipients of conservation policies to becoming active participants in environmental governance. This approach is, in fact, in line with recent developments in Yangambi, where UNESCO is placing greater emphasis on community participation, income-generating activities and the local management of non-timber forest products.

Conclusion

All in all, it should be noted that the aim of this study was to analyse the relationships between territorial demarcation, land tenure issues, environmental governance and the securing of local communities' rights within the Yangambi Biosphere Reserve.

The literature review shows that the historical uncertainty surrounding certain boundaries of the reserve, the insufficient alignment between institutional norms and customary practices, and the limited participation of communities in certain governance processes have contributed to creating tensions over access to natural resources. The work of Kipute

et al. is particularly explicit regarding the role played by variations in boundaries and the lack of spatial clarification in the emergence of tensions between communities and managers.

Furthermore, it should be noted that this situation must not be interpreted as an irreconcilable conflict between conservation and community interests. The work of Ostrom, Ribot and Peluso, as well as that of Borrini-Feyerabend and Larson, demonstrates, on the contrary, the importance of local institutions, access rights, participation and shared governance in the sustainable management of natural resources. The main lesson of this study is therefore that securing community rights and conserving biodiversity should not be viewed as two conflicting objectives. A clear, socially negotiated and legally secure demarcation can serve as a means of reducing conflicts.

From this perspective, the future of the Yangambi Biosphere Reserve will depend less on the mere ability to impose access restrictions than on the capacity of institutions to build inclusive territorial governance, in which communities become partners in conservation. Recent initiatives, moreover, point to a shift in this direction, notably through the creation of village committees for the management of non-timber forest products and the capacity-building of communities in several villages within the reserve.

Finally, the effective protection of Yangambi should therefore be based on three pillars: clear territorial demarcation + safeguarding of legitimate rights and uses + participatory governance.

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