Environmental Governance of Community Forests Among Indigenous Communities in Petapahan

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Abstract. This study explores the environmental governance and institutional dynamics of the Imbo Putui community forest managed by indigenous peoples in Petapahan, Kampar Regency, Indonesia. Using a qualitative approach grounded in Miles and Huberman's analytical model and informed by Ostrom's institutional analysis and Durkheim's social solidarity theory, the research investigates how customary values and collective norms evolve into effective forest management systems. The findings reveal that post-recognition by the state, the Indigenous Forest Management Institution (LPHA) has successfully transformed traditional norms into participatory governance mechanisms characterized by deliberation, ecological awareness, and community accountability. Traditional sanctions and consensus-based decision-making serve as key instruments ensuring forest sustainability and compliance. Despite these achievements, the community faces challenges related to limited funding, ecotourism infrastructure, and human resource capacity. Strategic partnerships with universities, NGOs, and private stakeholders have been established to enhance institutional strength and financial sustainability. Imbo Putui has emerged as a model for community-based forest governance in Kampar, demonstrating that cooperation among government institutions, indigenous groups, and external partners is essential for maintaining ecological balance and empowering local stewardship. **Keywords** : Environmental governance, Indigenous forest management, Community-based conservation, Sustainable development

1 Introduction

Forests play a fundamental biophysical role as the lungs of the earth, absorbing carbon dioxide and providing oxygen, thereby contributing directly to climate change mitigation. For indigenous peoples, their relationship with the forest extends beyond material exchange [1]. Forests are intrinsically integrated into their social, cultural, and spiritual structures, forming a rich network of meaning. Unfortunately, the dominant understanding is often

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trapped in a narrow approach, treating forests as passive objects isolated from human dynamics.

Research shows that forests are active agents with a significant impact on the order of human life [2]. When forests are constructed as an integral part of collective identity, as ancestral lands, sources of cultural value, or centers of cosmology, their destruction or loss not only has ecological impacts, but also shakes the socio-cultural realm, collective memory, social cohesion, and local knowledge systems. In this context, customary forests emerge as a tangible manifestation of the mutualistic symbiotic relationship between humans and nature. Their management is not based on private ownership or exclusive state control, but on the principle of Common Pool Resources.

The concept of common-pool resources is closely linked to the lives of indigenous peoples, which are built on a foundation of mechanical solidarity —social cohesion that arises from uniform values, beliefs, and strong collective practices [3]. Indigenous forests are not merely providers of timber or carbon sinks; they are living spaces that are collectively managed based on customary rules, binding social norms, and shared responsibility for intergenerational sustainability [4]. Therefore, understanding customary forests as Common Pool Resources managed within a framework of mechanical solidarity is key to formulating a more equitable, sustainable forest management paradigm that respects the rights and local wisdom of the communities that protect them. This approach presents an important alternative to management models that frequently overlook the complexity of human-forest relationships.

To test this concept empirically, the study focused on the 251-hectare Imbo Putui Customary Forest in Petapahan Village, Kampar Regency, Riau, which has received official recognition from the government of the Republic of Indonesia through the Ministry of Environment and Forestry's Decree Number: SK.7503/MENLHK-PSKL/PKTHA/KUM. September 17, 2019. Imbo Putui is the largest customary forest among those that have received state recognition through the Social Forestry scheme in Kampar Regency. An interesting phenomenon observed is that the local community's perception of the forest as a shared resource managed collectively through customary institutions and openness to establishing partnerships has resulted in relatively better management effectiveness compared to other forests in Kampar.

This type of forest management model is the most widely adopted approach by indigenous communities in many regions of Indonesia and Southeast Asia. In Kalimantan, the Dayak Katab Kebahan community integrates institutional principles, openness, and local wisdom into forest management, which has proven to provide them with the support they need to maintain forests in a more focused and progressive manner [5]. In line with this, forest management in principle requires a great deal of cooperation and collaboration with external parties outside the community. In the Philippines, this kind of pattern is widely practiced by communities in rural areas that have community-based forests [6].

Referring to the research background described above, the problems to be solved consist of (1) What are the main problems they face; (2) How does the Imbo Putui Customary Forest management mechanism work as a shared resource; and (3) What are the strategies of the indigenous community to overcome various existing problems.

The novelty of this research lies in its contextual approach, which integrates Elinor Ostrom's theory of Common Pool Resources with Emile Durkheim's concept of mechanical solidarity in the specific context of Imbo Putui. First, it explores in depth how mechanical solidarity, based on the uniformity of values, transforms customary norms into effective management institutions. Second, it focuses on contemporary challenges after recognition (such as land use change, youth dynamics, and external policy intervention), filling a gap in the literature on the sustainability of management after legal status. Third, it provides empirical evidence-based contributions from Imbo Putui, serving as a relatively successful

example of combining traditional collective management with state recognition, and thereby acting as a natural laboratory for testing Ostrom's principles in the socio-cultural context of the indigenous communities of Riau. A deep understanding of the Imbo Putui case is expected to contribute to the development of a sustainable and equitable community-based forest management model.

2 Method

This research employs a descriptive, qualitative approach with a case study design. Data was obtained through interviews, observation, and documentation. This research adopted a subject selection strategy that combined *purposive* and *snowball* approaches with a total of 11 informants, with the following details:

Table 1. Research Informant Identities.

Number	Initials Name	Role
1	Informant 1 Bn	Head of Customary Forest Management
2	Informant 2 Is	Members of the Customary Forest Management Unit
3	Informant 3 Sd	Village Government Elements
4	Informant 4 KE	Village Government Elements
5	Informant 5 Ji	Village Government Elements
5	Informant 6 KM	Traditional Leader
6	Informant 7 Ej	Members of the Customary Forest Management Unit
8	Informant 8 Fn	Members of the Customary Forest Management Unit
9	Informant 9 AJ	Members of the Customary Forest Management Unit
10	Informant 10 Y	Members of the Customary Forest Management Unit
11	Informant 11 Zi	Members of the Customary Forest Management Unit

Names have been changed to protect the identities of the informants.

The data analysis used in this study is a model developed by Matthew B. Miles and A. Michael Huberman. This model provides a comprehensive approach through three interrelated streams of activity: Data Reduction, Data Display, and conclusion drawing and verification.

3 Results and Discussion

3.1 Challenges Faced by Indigenous Peoples in Managing the Imbo Putui Forest

Although the state has acknowledged the existence of customary forests, challenges remain in implementing sustainable management. From a regulatory perspective, recognizing the existence of customary forests through the Social Forestry scheme is an effective way to empower communities. However, after this recognition, indigenous communities face even greater challenges, both internally and externally [7]. This study identifies several points that pose internal and external challenges for indigenous communities in managing Imbo Putui.

Table 2. Challenges in Forest Management.

Internal (Originating from within the community)	
Financial Capacity Limitations	The lack of capital hinders forest maintenance, technology procurement, processing of non-timber forest products (NTFPs), and product marketing, preventing the optimal development of forest potential.
Low Active Participation (Especially Among the Younger Generation)	The lack of direct economic incentives discourages young people from getting involved. This threatens regeneration, sustainability, and the preservation of local knowledge.
Quality of Human Resources (HR)	The capacity of Customary Forest Management Institutions (LPHA) is still limited, covering technical aspects of forest management, administration, business development, and marketing, thereby hindering independence.
Regulatory and Implementation Gaps	Although regulations at the central level are supportive, implementation in the field is often hampered by complicated procedures, the capacity of local governments, and resistance from other parties.
External (Originating outside the community)	
Multi-Stakeholder Collaboration Deficit	Tangible support from local governments, universities, and civil society organizations (CSOs) remains insufficient, fragmented, and unsustainable.
The Suboptimal Role of Local Governments	Technical, administrative, and policy support from local governments has been insufficient to address the specific needs of customary forest management, often due to limited resources or a lack of commitment.
Untapped Potential of Higher Education Institutions	Contributions through the three pillars (education, research, and community service) in the form of technical assistance and applied research have yet to be implemented in the field.
The Underutilized Role of Civil Society	NGOs and supporting organizations have not been consistent in bridging the gap between indigenous peoples and other external parties due to weak coordination mechanisms.

Internally, the root of the problem lies in the limited capacity of the community, which includes financial, human resource, and regeneration aspects. Externally, the core of the problem lies in the lack of synergistic and sustainable support and collaboration from local governments, universities, NGOs, and various other related parties. The combination of these two challenges creates a mutually reinforcing cycle, whereby limited internal capacity makes it difficult for communities to attract quality external support [8]. In contrast, the absence of adequate external support further slows down the strengthening of internal capacity itself [9].

3.2 Indigenous Peoples' Efforts to Manage the Imbo Putui Forest

Over the past two decades, the challenges and problems of Imbo Putui forest governance have indeed become increasingly complex. However, because the forest is understood as a collective identity that serves as a symbol of the existence of the Indigenous People, its preservation and wise management are essential. Indigenous communities, with a collective consciousness that arose naturally without intervention from any particular group, formed a consensus to develop a customary management mechanism. This joint consensus gave birth to a collective and inclusive forest management mechanism, in which every element of the indigenous community shares the responsibility for protecting and preserving Imbo Putui.

Table 3. Local Efforts in Imbo Putui Management.

Management Aspects	Description & Principles	Implementation & Concrete Rules
Philosophy & Worldview	The forest (Imbo Putui) is the subject of life and identity for the community, which is integrated economically, socially, and culturally. The basic philosophy is "Custom is based on law, law is based on the Book of Allah," where custom and religion merge to become a moral compass.	1.Forests are a source of life (food, medicine, materials) and a spiritual space (interaction with ancestors, rituals). 2.Threats to forests are existential threats to the identity of indigenous peoples.
Managing Agency	The establishment of the Imbo Putui Customary Forest Management Institution (LPHA) as an institutional forum born out of internal community consensus and a prerequisite for state recognition.	1.The management consists of representatives from each of the tribes in Petapahan Village. 2.Everyone who enters the forest must obtain permission from the management.
Spatial Planning & Zoning	Forests are divided into distinct categories based on their specific functions, ensuring sustainability and social harmony. This division reflects local wisdom and community norms.	1.Imbo Ghano: Traditional forest, only accessible in emergencies with permission. 2.Imbo Pitaliong: Area for wildlife. 3.Settlement & Farm Zone: For daily use. 4.River Zone: Separated by gender (e.g., *Tepian Mudiok* for men, *Tepian Sughau* for women) to maintain norms of decency.
Rules & Restrictions	Establish explicit and binding customary norms to regulate behavior and ensure compliance with shared conservation commitments.	1.Prohibition of Exploitation: Logging, hunting, and taking resources from the forest are strictly prohibited. 2.Exceptions: Only for collective interests (e.g., mosque construction) with permission from traditional leaders. 3.Ecotourism: Visitors must be accompanied by managers; trails are left as footpaths to prevent vehicle access and illegal logging.
Penalty System	Sanctions are firm but educational, prioritize deliberation, and are adapted to the current context (flexible).	1.For timber harvesting violations: The penalty is to replace the timber with an equivalent volume of cement, which is used for community infrastructure development. 2.Conflict resolution prioritizes deliberation. If this fails, the offender is handed over to the authorities, demonstrating the synergy between customary and state law.
Primary Objective	Preserving the ecological sustainability of the forest as mandated by ancestors and religious teachings, while maintaining social harmony and the cultural identity of the Petapahan indigenous community.	1.Preventing immoral behavior and exploitation. 2.Maintaining a balance between utilization and conservation for collective welfare.

3.3 Ostrom and Durkheim's Perspectives on Forest Management *Imbo Putui*

The integration of Elinor Ostrom's eight CPR frameworks with Emile Durkheim's concept of social solidarity provides a comprehensive theoretical framework for analyzing this case. The following table outlines the explicit relationship between theory and practice in the field.

Table 4. Ostrom's Principles and Durkheim's Review of Imbo Putui Management.

Ostrom's Principle	Manifestations in Imbo Putui Management	Durkheim's Review of Solidarity
Clearly Defined Boundaries	Strict forest zoning (Imbo Ghano, Imbo Pitaliong, settlement zones, river zones based on gender) and mandatory entry permits.	Strong mechanical solidarity, rooted in shared values, beliefs, and a collective identity as the indigenous community of Petapahan, fosters a consensus about 'us versus them' and mutually recognized moral boundaries.
Congruence with Local Conditions	Customary rules such as prohibitions on exploitation, compensation sanctions, and zoning based on gender and spiritual needs.	These rules are not rigid, written rules, but rather living collective values (Collective Conscience). They arise from and are reinforced by mechanical solidarity, so they are perceived as natural, fair, and binding on all members of the community.
Collective-Choice Arrangement	The establishment of Indigenous Forest Management Institutions (LPHA) involves representatives of all indigenous tribes and decision-making through deliberation.	The deliberative mechanism is a tangible manifestation of organic solidarity that is reinforced by mechanical solidarity. A strong sense of belonging and shared responsibility (mechanical) facilitates the creation of an inclusive and effective deliberative process (organic).
Monitoring	Joint supervision by the community and visitor obligations accompanied by LPHA management.	In societies with high mechanical solidarity, supervision is horizontal and diffuse. Each member of the community feels a moral obligation to be the guardian of customary rules because violations are considered a betrayal of the group, not just of the rules.
Graduated Sanctions	Sanctions range from warnings and deliberations to material compensation (such as cement) and are ultimately handed over to the state.	Graduated sanctions reflect the restitutive nature of societies with organic solidarity, which aim to restore social order. However, their basis of legitimacy remains repressive law from mechanical solidarity, where sanctions aim to reaffirm collective values that have been violated.
Conflict-Resolution Mechanisms	Problem-solving prioritizes deliberation and consensus involving traditional leaders and community representatives.	This mechanism can only work effectively if there is a legitimately recognized authority (ninik mamak, LPHA). This authority derives its legitimacy from mechanical solidarity; they are considered guardians and embodiments of collective values.
Minimal Recognition of Rights to Organize	State recognition through a Decree of the Minister of Environment and Forestry legitimizing indigenous peoples.	This external recognition strengthens internal solidarity. The state recognizes the unity of indigenous peoples, which essentially acknowledges entities united by their shared cultural identity. This increases the bargaining power and confidence of the community.
For CPRs that are part of a larger system: Nested Enterprises	Openness Strategy by building partnerships with the government, universities, NGOs, companies, and so on.	Here, mechanical solidarity gives way to expanded organic solidarity. Communities are no longer closed. They build Durkheim's network of interdependence with outside parties. This openness is a logical extension of our philosophy, which holds that the forest belongs to all of us, an idea that expands collective ownership (mechanical solidarity) to a broader scope.

In comparison, the Tengger indigenous community in Ngadas Village, Malang, as studied by Handayani et al. (2023), exhibits a robust model of self-governance, even rejecting village cash assistance (BLT Desa) due to their belief in their ability to effectively utilize their shared resource base. This self-governance is driven by well-preserved natural, human, and social resources, as well as collective policies that arise from joint action [10]. Meanwhile, a study by Kasoki et al. in the Okapi Wildlife Reserve, Democratic Republic of Congo, reveals how the traditional knowledge of the Mbuti and Efe communities regulates hunting, fishing, and forest product gathering through a system of taboos and customary prohibitions that function as ecological regulations. Despite facing socio-cultural pressures and the loss of intergenerational knowledge transmission, the communities there still maintain several traditional conservation practices [11].

What makes Imbo Putui unique is the transformation of homogeneous customary norms into effective and adaptive management institutions following state recognition. Unlike the Tengger community, which tends to be closed and fully self-managed, or the Kongo community, which faces challenges of knowledge erosion and massive external pressure, Imbo Putui has adopted a strategy of openness and active collaboration with external parties. They not only rely on traditional mechanical solidarity, but also develop it into expanded organic solidarity by building strategic partnerships with universities, NGOs, companies, and many other partiesClick or tap here to enter text.. This approach allows them to overcome internal limitations, such as funding and human resource capacity, while strengthening institutional legitimacy at a broader level [12].

Another unique feature is the highly structured integration of Elinor Ostrom's CPR principles with Emile Durkheim's socio-cultural framework [13]. The Imbo Putui Customary Forest Management Institution (LPHA) not only sets clear boundaries and rules, but also enforces an educational and restorative sanction system, such as replacing felled wood with cement for community infrastructure development. This demonstrates an approach that is not only repressive but also aims to restore social balance. Furthermore, despite being open to partnerships, the Imbo Putui community maintains control and sovereignty over decision-making through an inclusive deliberative mechanism that involves representatives from all tribes. Imbo Putui is not only a successful example of community-based forest management, but also a living laboratory that demonstrates how local wisdom can adapt, transform, and synergize with state recognition and external dynamics to create sustainable and resilient forest governance [15].

4 Conclusion

The success of Imbo Putui Customary Forest management rests on two main pillars, namely internal solidarity based on customary values and an open strategy of building external partnerships. The transformation of customary norms into an inclusive Customary Forest Management Institution (CFMI) is key, combining local wisdom, such as the zoning system, with the principles of Common-Pool Resources. This model not only strengthens dual legitimacy (customary and state) but also fosters organic solidarity through a network of partnerships with universities, NGOs, companies, and various other parties, thereby overcoming capacity and funding challenges. This success offers replicable strategic lessons. The main lesson is that legal recognition must be followed by the strengthening of participatory customary institutions as a foundation. Communities also need to shift from traditional solidarity to mutually beneficial external partnerships. The critical challenge of regeneration must be overcome by encouraging youth participation through economic incentives and the integration of modern knowledge. Replicating this model requires resilient hybrid collaboration, combining the resilience of local culture with external innovation to create ecologically and socio-economically sustainable forest management.

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