



Managing Community Forest Resources: Dynamics of Property Rights and Institutional Effectiveness in Nambo District

Manajemen Sumber Daya Hutan Masyarakat: Dinamika Hak Milik dan Efektivitas Kelembagaan di Kecamatan Nambo

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ABSTRACT

Institutions typically needed to create guidelines aligned with community norms and supported organizational incentives and sanctions to achieve local collective action objectives effectively. Therefore, this research aimed to examine the dynamics of property rights over forest resources and the effectiveness of local institutions in managing Nambo Community Forest (HKm) in the Toili Baturube Model Production Forest Management Unit (KPH) using a qualitative case study approach. Data collection included relevant document collection, in-depth interviews, and observations. This research showed that forest status in Nambo District shifted to state ownership after the implementation of the HKm policy and Law 23 of 2014, which led to changes in community access rights to the HKm. In addition, the government facilitated the HKm management by developing collaborative policies and agreements, which were evaluated using the Ostrom principle design. These results showed the importance of comprehensive collaboration strategies involving regional authorities, local communities, and stakeholders to manage shared resources effectively, such as HKm. Strengthening institutional capacity, empowering local communities, and fostering collective action could enhance the sustainability and success of shared resources management initiatives.

INTISARI

Untuk mencapai tujuan aksi kolektif lokal secara efektif, lembaga harus menetapkan pedoman yang sejalan dengan norma-norma masyarakat dan didukung oleh insentif serta sanksi organisasional. Penelitian ini bertujuan untuk mengkaji dinamika hak kepemilikan atas sumber daya hutan dan efektivitas lembaga lokal dalam mengelola Hutan Kemasyarakatan (HKm) Nambo di dalam Unit Pengelolaan Hutan Produksi Model Toili Baturube dengan menggunakan pendekatan studi kasus kualitatif. Metode pengumpulan data meliputi analisis dokumen, wawancara mendalam, dan observasi. Hasil penelitian menunjukkan bahwa status hutan di Distrik Nambo beralih menjadi kepemilikan negara setelah implementasi kebijakan HKm dan diberlakukannya Undang-Undang Nomor 23 Tahun 2014, yang mengakibatkan perubahan dalam hak akses masyarakat terhadap hutan kemasyarakatan. Selain itu, manajemen hutan kemasyarakatan difasilitasi melalui kebijakan dan perjanjian yang dikembangkan secara kolaboratif yang dievaluasi menggunakan desain prinsip Ostrom. Studi ini menekankan pentingnya strategi komprehensif yang melibatkan kerja sama antara otoritas regional, masyarakat lokal, dan pemangku kepentingan lainnya untuk mengelola sumber daya bersama, seperti hutan kemasyarakatan, secara efektif. Penguatan kapasitas lembaga, pemberdayaan masyarakat lokal, dan pembinaan aksi kolektif dapat meningkatkan keberlanjutan dan kesuksesan inisiatif pengelolaan sumber daya bersama.

Introduction

The Community Forest (HKm) program is a significant policy implemented by Indonesia's Ministry of Environment and Forestry (MoEF). This policy encourages community participation in reducing deforestation, empowering local communities, and alleviating poverty by providing access to and control over forest areas. HKm policy functions by granting local communities legal rights to manage and utilize forest resources, thereby fostering a sense of ownership and responsibility towards the conservation and sustainable use of these resources. The aim is not only to reduce deforestation but also to improve the socio-economic conditions of rural communities by integrating forest management with livelihood opportunities.

HKm, in this context, refers to initiatives where local communities actively govern and manage the forest surrounding their settlements (Lawasi 2024). These initiatives often include crafting policies autonomously at the village level, indicating that communities develop regulations and management strategies tailored to their specific needs and environmental conditions. The autonomously crafted policies typically cover aspects such as the allocation of forest resources, enforcement of sustainable practices, and the distribution of benefits derived from forest management. Consequently, local communities can address the unique challenges and ensure forest management aligns with environmental sustainability and community welfare.

The concept of "collective identity" in the HKm framework refers to the shared sense of belonging and common purpose among community members involved in forest management. This collective identity is crucial as it fosters a unified method of managing forest resources and enhances the effectiveness of collective actions and coordinated efforts by community members to achieve shared goals in forest management. Therefore, collective action is the manifestation of this identity, comprising all actions taken by the community to manage and protect forest resources sustainably.

In recent decades, Community Forestry (CF) has gained attention as an effective strategy for revitalizing rural areas through community-based

natural resource management. Previous research has shown that forests managed by indigenous and local communities tend to have lower deforestation rates compared to those managed by external entities (Ding et al. 2016; Pearce 2016; Walker et al. 2020; Defere 2022) showing the importance of local collective action in ensuring sustainable forest management.

Research has shown that forest governance plays an essential role in the success of CF initiatives. At both the local (e.g., community regulations and social norms) and national level (e.g., policies affecting profitability and ownership rights), effective forest governance is essential for balancing the utilization of forest resources with conservation efforts. Forest governance comprises the collaboration of various groups to produce collective goods and services, making it a critical factor in the success of initiatives aimed at reducing deforestation and forest degradation (Nansikombi et al. 2020). However, the effectiveness of institutional arrangements in addressing sustainability and forest degradation remains a topic of debate, with scholars such as Muthee et al. (2022) questioning their global applicability.

The HKm management in Toili Baturube Model Production Forest Management Unit (KPH) Nambo is an example of successful community-led initiatives where local communities have developed policies autonomously. In such cases, the success of forest management heavily depends on institutional support for internal monitoring and enforcement, locally tailored sanction mechanisms, and equal access to decision-making processes. As seen in forest management programs in countries such as Sri Lanka and Nepal, participatory methods have proven effective in engaging all stakeholders and ensuring the sustainability of CF (Ekanayake et al. 2021; Dhungana et al. 2024).

Given the complexities of managing common pool resources, such as HKm, it is essential to understand how local institutions and collective identity contribute to the success of these initiatives. Common pool resources are characterized by their economic value, the difficulty of excluding other potential users, and the challenges associated with preventing overuse and degradation. The sustainability of managing these resources is closely

tied to the effectiveness of local institutions and the collective actions of the community members. Therefore, this research aimed to explore the dynamics of forest management regulations in the HKm program, assess perceptions of land ownership and its impact on HKm management, and evaluate the effectiveness of local institutions in managing HKm as a common pool resource. The research also analyzed the relationship between collective identity and collective action in sustainable resource management. It investigated how biophysical factors and institutional effectiveness contribute to the sustainability of Community Forest management.

Methods

This research used a qualitative descriptive design with a suitable method for exploring complex phenomena in real-life contexts to allow for an in-depth examination of the dynamics of forest management regulations, the perceptions of land ownership, and the effectiveness of local institutions in managing HKm as a common pool resource. Therefore, this research aimed to provide a detailed understanding of the institutional factors influencing the sustainability of HKm by taking an example from Toili Baturube Model Production KPH in Banggai Regency, Central Sulawesi. The data collection and processing occurred in October 2022 in the Nambo HKm, the KPH area, the Ministry of Environment and Forestry office in Banggai Regency, and the Environmental and Forestry Agency of Central Sulawesi Province. In addition, the research gathered both primary and secondary data to achieve its objectives.

Data Collection

Primary data were collected through structured questionnaires, in-depth interviews, and field observations. The questionnaires and interview guides were designed to explore key themes related to property rights, institutional effectiveness, and community involvement in forest management. The questionnaires included closed and open-ended questions, covering topics such as the perception of land ownership, community participation in decision-making processes, and the impact of local

regulations on forest management. The interview guides were tailored to different respondent groups, including community leaders, representatives from institutions/agencies, and Community-Based Organizations (LSM) members, to ensure comprehensive coverage of the research themes. The questionnaires and interview guides were pre-tested with a small group of respondents to refine the tools, ensure clarity and relevance to the research objectives, and enhance the validity and reliability of the data collection tools.

The structured questionnaires comprised 120 respondents, with 30 farmers selected from each of the four villages: Nambo Lempek Village, Padang Village, Koyoan Village, and Lontio Village. Respondents were purposively sampled based on their involvement in the HKm program, role in local decision-making processes, and knowledge of forest management practices. This purposive sampling method ensured that the research included respondents who were directly involved in or affected by the management of Nambo HKm. The in-depth interviews were conducted with community leaders, institutional representatives, and members of Community-Based Organizations. Using questionnaires and interviews allowed data triangulation, providing a richer and more nuanced understanding of the research issues.

Secondary data were obtained through an extensive literature review of documents, such as maps, planning documents, activity reports, archives, and other materials related to KPH and HKm. These documents provided additional context and background information, complementing the primary data collected through fieldwork.

Data Analysis

Data analysis was guided by the Institutional Analysis and Development (IAD) framework proposed by Ostrom (1990) and supported by the concept of property rights (Ostrom & Schlager 1996). This framework was particularly relevant for research on collective action and common pool resource management, as it provided a comprehensive tool for analyzing how institutions, defined as the rules, norms, and strategies adopted by individuals in a community, affected the outcomes of resource

management efforts. The IAD framework comprised several key components, including the action arena (where interactions among individuals took place), the rules-in-use (formal and informal rules governing interactions), and the outcomes (the results of interactions within the action arena). This research employed the IAD framework to examine the institutional arrangements in the HKm program, focusing on how property rights to forest resources had changed and how effectively local institutions functioned in managing these resources.

The evaluation of institution effectiveness used Ostrom design principles for collective resource management, which included clearly defined boundaries, congruence between appropriation and provision rules, collective-choice arrangements, monitoring, graduated sanctions, conflict-resolution mechanisms, minimal recognition of rights to organize, and nested enterprises. Each of these principles was assessed in the context of the HKm program to determine how much it contributed to sustainable forest management. The analysis involved coding the qualitative data according to these principles and identifying patterns and themes that emerged from the data. This method allowed for a detailed examination of the institutional factors that influenced the success of Community Forest management in the research area.

Result and Discussion

The Dynamics of Nambo Community Forest Management Regulations

The historical framework of forest management in Nambo District was divided into three key periods, reflecting shifts in governance and local practices related to forest resource use.

Pre-HKm Period (1980–2009)

Forest management in Nambo District was primarily based on traditional community practices before the formal implementation. The local community relied heavily on shifting cultivation and selective harvesting of forest products. Timber and non-timber forest products, such as sago and bamboo, were key resources, but community members followed informal rules that restricted activities such as logging in certain forest areas. Without formal sanctions, these rules were enforced through community trust and mutual respect, demonstrating strong social cohesion in maintaining sustainable forest use. However, the forest was considered *de facto* community-managed property despite *de jure* state ownership, which was characterized by strong local engagement in resource conservation, as indicated in Table 1.

HKm Policies Period (2009–2014)

The introduction of the HKm policy in 2009 was a significant shift in forest management practices, formalizing community access rights through Regulation of the Minister of Forestry Number 18/Menhut-II/2009, which amended Regulation of the Minister of Forestry Number P.37/Menhut-II/2007 regarding Community Forests. In addition, it aimed to curb deforestation by providing legal access to communities while aligning their activities with broader environmental goals. During this period, local groups had to conform to government-established Forest Management Plans (RPHK) and new regulations. Local management activities were governed through formal licensing procedures, with communities receiving long-term forest management rights for up to 35 years (Table 2).

Table 1. Forest Resource Management in Nambo District from 1980 to 2009 (before HKm policy)

Governing Body	Management Institution		
	Pattern and Purpose of Utilization	Form and Rules	Type of Ownership Rights
Forest resource management is regulated by community elders.	The harvesting of timber and non-timber forest products (such as sago and bamboo).	1 ha for 1 to 2 households.	Access rights for utilization and management.

Table 2. Forest Resource Management in Nambo District from 2009 to 2014 (after HKm policy)

Management Institution			
Governing Body	Pattern and Purpose of Utilization	Form and Rules	Type of Ownership Rights
Central Ministry, Provincial Forestry Department, and District Forestry Department.	HKm for community empowerment purposes.	Legislation related to HKm (procedures for applying for HKm permits, technical guidelines, HKm development).	IUPHKm holders have access rights for utilization and management.

Table 3. Forest Resource Management in Nambo District from 2014 to Present (after the enactment of Law No. 23 of 2014 and the establishment of KPH)

Management Institution			
Governing Body	Pattern and Purpose of Utilization	Form and Rules	Type of Ownership Rights
Forest resource management is regulated by the Central Ministry, Provincial Forestry Department, and Toili Baturube Model Production KPH.	HKm for community empowerment purposes.	Legislation related to HKm (procedures for applying for HKm permits, technical guidelines, HKm development).	IUPHKm holders have access rights for utilization and management.

Post-Law 23/2014 Period (2014–Present)

The enactment of Law 23 of 2014 further institutionalized forest management under KPH, which imposed stricter regulations on forest use. In Nambo District, Toili Baturube Model Production KPH assumed responsibility for forest management, supporting six HKm farmer groups. This period marked increased formal control, stricter enforcement, and expanded activities, such as planting teak, sengon, and candlenut (Table 3).

Utilization Patterns of Forest Resources in Nambo District

Shifting Cultivation and Resource Harvesting

Before the HKm policy introduction, community members relied on shifting cultivation as their primary agricultural practice. Shifting cultivation involved periodic clearing of forest areas for farming, followed by periods of fallow, which provided critical resources such as timber, sago, and bamboo. Local leaders and elders provided guidance through informal social norms, embedding these practices into the community without formal enforcement mechanisms.

Informal Rules and Community Trust Mechanisms

A strong sense of community trust was crucial in maintaining sustainable forest use. The community established informal guidelines for timber harvesting and preserving forest areas, which were respected voluntarily. This informal governance system lacked formal penalties for non-compliance but relied heavily on social approval and disapproval to ensure

adherence to these rules. Social ostracism was an effective deterrent for violators, reinforcing the collective responsibility toward forest stewardship. The dynamics between traditional practices and state intervention demonstrated how forest management in Nambo District transitioned from informal, community-driven systems to formal, regulated ones under HKm policy and subsequent laws. In addition, there was a significant shift in property rights, where the community's previous owner rights were reduced to proprietor rights after the implementation of the HKm policy, as shown in Table 4. This evolution of forest governance showcased how traditional HKm management practices were gradually formalized, with both positive and challenging outcomes for local resource users. Despite these changes, community trust and social cohesion remained crucial aspects of forest resource management in Nambo District, even as formal regulations took precedence in shaping the future of the region's forest.

Community Forest Management Institutions

Traditional and Informal Management Systems (Before 2009)

Before 2009, local communities predominantly governed forest management in the Toili Baturube area through traditional and informal systems. Local communities relied on customary laws and practices passed down through generations to manage and utilize forest resources. The primary use of the forest during this time was for subsistence agriculture, with villagers practicing rotational farming and small-scale agroforestry. Customary tenure played a significant

Table 4. Rights Related to Access, Utilization, and Control of Forest Resources.

Rights Collection	Status				
	Owner	Proprietor	Claimant	Authorized User	Authorized Entrance
Access	√	√	√	√	√
Gathering of products	√	√	√	√	
Management	√	√	√		
Determining participation/Exclusion of others	√	√			
Transfer	√				

role in regulating land use, as families claimed temporary rights to specific parcels of land based on community recognition and family lineage. This system, though informal, allowed for a fair distribution of land and resources among community members.

However, the lack of formal recognition of the customary laws and practices created conflicts between the community and government authorities, particularly when external interests, such as logging companies, encroached on the forest. The community's informal management lacked legal backing, making it challenging to protect their rights or enforce regulations. Despite the effectiveness of these traditional practices in maintaining the forest's ecological balance, the absence of a structured governance framework limited the community's ability to defend its claims against external threats.

Centralized Management after HKm Policy Implementation

The introduction of the HKm policy in 2009 marked a pivotal shift in forest governance in Toili Baturube. It transitioned from a decentralized, community-driven approach to a more centralized model under state control. The MoEF assumed a central role in regulating forest use, requiring communities to align their practices with government policies. This policy formalized community property rights, granting collective rights to manage forest resources under specific conditions.

This centralization also introduced new challenges for local communities, while HKm policy recognized community rights. However, the policy had restrictions and obligations, such as submitting formal forest management plans. The KPH oversaw the implementation of these plans and ensured that communities followed sustainable practices. The shift to centralized management led to stricter regulations

on forest use, limiting the flexibility that communities once had under traditional systems. Although the policy aimed to empower communities through legal recognition, the bureaucratic processes involved in maintaining HKm licenses often became a source of frustration.

The Role of HKm Farmer Groups and KPH Institutions (Post-2014)

After 2014, the role of local farmer groups and KPH institutions became crucial in implementing the HKm policy. Farmer groups were officially recognized as the primary actors responsible for managing HKm, although KPH institutions provided technical and administrative support. These two entities collaborated to enhance the community's ability to manage forest resources sustainably while complying with government regulations. The HKm farmer groups should implement sustainable land-use practices and enforce conservation measures. They also served as intermediaries between local communities and government agencies, advocating for the community's interests while ensuring compliance with HKm policy. KPH institutions played a supporting role by offering technical assistance, providing capacity-building programs, and monitoring the implementation of forest management plans. This system encouraged greater collaboration, but limited resources, unequal power dynamics, and bureaucratic delays often hampered its effectiveness.

Changes in Property Rights and Community Access

Property Rights Before HKm Policy

Property rights in the Toili Baturube area were informal and primarily based on customary land tenure systems before the implementation of the HKm policy. These rights were recognized in the community but lacked legal protection from the state.

Families or individuals could claim temporary rights to specific areas of forest land, primarily for agricultural purposes. This system functioned well in the community but was vulnerable to external pressures, such as illegal logging or government land acquisition. Without formal legal recognition, communities had limited means to defend their claims when outside actors sought to exploit the forest, especially for commercial purposes.

Changes in Rights After HKm Policy

The implementation of the HKm policy brought about substantial changes in the property rights associated with forest resources in the Toili Baturube area. Before the HKm policy, forest resources communities held de facto rights to access, gather, and manage forest resources through informal, traditional systems. These rights were based on customary practices and local agreements, giving the community autonomy and control over the resources.

With the advent of this HKm policy, significant transformations occurred. The policy formalized the community's rights by issuing HKm licenses, which conferred collective ownership rights and legal recognition to the communities. This formal recognition allowed communities to engage in activities such as agroforestry and eco-tourism, thereby benefiting from the forest resources sustainably. The licenses granted communities the authority to manage these resources for up to 35 years, with the possibility of renewal based on compliance with government regulations.

This formalization came with certain conditions, meaning the HKm policy required communities to develop and submit detailed forest management plans subject to government approval. Additionally, communities had to adhere to national forest utilization regulations, which introduced a layer of centralized control. The necessity to comply with

these regulations posed challenges, as failure to meet the requirements could lead to the revocation of HKm licenses. This condition imposed additional bureaucratic hurdles and impacted the community's autonomy and ability to leverage forest resources fully.

As illustrated in Table 5, the changes in property rights due to HKm policy were substantial yet nuanced. The table showed that while communities retained their rights to access, gather products, and manage the forest, the right to transfer ownership was eliminated. This shift reflected the policy's emphasis on maintaining communal control over the forest while restricting the ability to transfer or privatize these resources. The HKm policy introduced formal regulations and licensing that protected and constrained the community's rights and highlighted the complex interplay between formalization and autonomy in resource management.

Table 5 highlighted the continuity and changes in property rights pre- and post-HKm. However, the community retained several key rights, such as access and management. The removal of the transfer right underscored the policy's intent to prevent the privatization and fragmentation of communal forest resources. This formalization of rights under this policy, while beneficial in terms of legal recognition and potential support for sustainable practices, also introduced complexities and challenges that affected the community's management of their forest resources.

Fulfillment of Ostrom Design Principles for the Effectiveness of Local Institutions

Institutions were pivotal for addressing environmental and social challenges by creating and enforcing rules that facilitated coordinated actions and mitigated free-riding issues (Ostrom 1990). Their effectiveness, particularly in environmental management, was influenced by their complexity,

Table 5. Property Right Status of Forest Resources in Nambo District Before and After the Implementation of HKm Policy

Types of Rights	Status and Period	
	Owner (Before the implementation of HKm Policy)	Proprietor (After the implementation of HKm Policy)
Access	√	√
Gathering of products	√	√
Management	√	√
Determining participation/Exclusion of others	√	√
Transfer	√	

adaptability, and capacity to reduce transaction costs (Dietz et al. 2003). Research indicated that robust institutional designs, external assistance, and legal support, enhanced institutional performance in managing common-pool resources (Rout 2018). The HKm Nambo provided a compelling case for evaluating Ostrom design principles, which offered a framework for assessing the effectiveness of local institutions in managing HKm.

Clear Boundaries

Clear boundaries were fundamental for preventing conflicts and ensuring effective management of common-pool resources. In Nambo District, forest boundaries were distinctly defined before and after the implementation of the HKm policy. These boundaries were established through traditional practices, marking a clear distinction between private agricultural land and communal forest areas before the policy. With the advent of HKm, these boundaries received formal legal recognition, which bolstered community control and reduced the potential for disputes with external parties such as logging companies or settlers. The boundary formalization under the HKm framework enhanced the security of community rights and played a crucial role in preventing encroachment. This clear demarcation of boundaries protected community rights and minimized disputes (Putraditama et al. 2021).

Rules Congruence with Local Conditions

The alignment of resource management rules with local conditions was essential for effective governance. Before the HKm policy, the Nambo community's rules were shaped by long-standing local knowledge and practices, such as rotational farming and selective harvesting, which were well-suited to the ecological conditions of the area. These rules helped prevent over-exploitation and supported sustainable forest use. After the policy was implemented, the community had to adapt to more formalized rules set by national regulations. In addition, while these rules aligned with broader environmental policies, some new regulations, such as those governing agroforestry practices and harvesting quotas, were perceived as restrictive by the community. The efforts to incorporate local

knowledge into the management plans helped maintain a reasonable congruence between the formal regulations and local conditions. While rules were generally clear, their congruence with local conditions was sometimes strained under the new policy framework (Grashuis & Dary 2021).

Agreements for User Participation

User participation was critical for fostering ownership and accountability in resource management. The Nambo community engaged in decision-making through traditional mechanisms, including village meetings, which allowed for broad participation and inclusion of marginalized groups. The introduction of HKm policy formalized community participation through structured institutions like farmer groups and management committees, often supported by external entities like KPH. Although these new structures provided a platform for organized decision-making, the bureaucratic nature of the HKm framework sometimes constrained community members' ability to influence decisions, specifically when these conflicted with state-imposed regulations.

Monitoring Mechanisms

Monitoring was essential for preventing resource over-exploitation and ensuring compliance with management rules. Before HKm policy, monitoring was managed informally by community members who observed and reported violations through traditional channels. While effective within the community, these mechanisms lacked formal oversight, particularly regarding external threats. The policy introduced formal monitoring mechanisms, with KPH institutions responsible for overseeing forest activities and ensuring compliance with management plans. Despite these efforts, limited resources and capacity challenges affected the effectiveness of formal monitoring. Community members continued to play a crucial role in informal monitoring, highlighting the need for improved coordination between local and government actors.

Sanctions and Conflict Resolution

Sanctions and conflict resolution mechanisms were vital for enforcing rules and addressing disputes.

In the pre-HKm period, sanctions were informally applied based on community consensus, with violators facing social penalties such as exclusion from events or loss of access to resources. These informal sanctions were effective in the community but less against external actors. The HKm policy introduced formal sanctions for rule violations, but enforcement was inconsistent. Government authorities often struggled with capacity issues, and local enforcement faced challenges due to the complexity of new regulations. The transition from informal to more bureaucratic conflict resolution mechanisms under the HKm framework also revealed limitations, particularly in addressing conflicts between the community and external entities. The management of Nambo HKm demonstrated the effectiveness of these design principles, as summarized in Table 6, which evaluated the presence of each principle both before and after the implementation of HKm policy, providing a clear view of how institutional changes had impacted forest management practices. The HKm management effectively implemented the Ostrom principles. While many principles, such as clearly defined boundaries and user participation, were consistently applied, others, particularly sanctions and conflict resolution mechanisms, faced challenges, reflecting the complexities introduced by formalizing and centralizing forest management under HKm policy.

Implications of Traditional vs. Formalized Management

Impact of Shifting Cultivation on Resource Sustainability

Historically, shifting cultivation in Nambo District was integral to local agriculture and forest management. This traditional method allowed

communities to rotate their fields, giving forest areas time to regenerate. The practice maintained a balance between agricultural productivity and forest conservation, supporting the sustainable use of forest resources. However, this system's sustainability was contingent upon adherence to traditional norms and the ability to manage forest areas effectively. The shift to formalized management under the HKm policy introduced new constraints and regulations that altered traditional practices. The policy aimed to enhance sustainability by enforcing more structured management practices, and it inadvertently disrupted the established system. The imposition of rigid agroforestry and harvesting quotas conflicted with the better-suited to local ecological conditions community's traditional methods. This conflict reduced the effectiveness of shifting cultivation as a sustainability practice, as the community had to adapt to new, often less adaptable rules that did not always align with local environmental needs.

Role of Informal Norms in Maintaining Social Cohesion

Informal norms and traditional management practices were crucial in maintaining social cohesion in the Nambo community. These norms facilitated collective decision-making, conflict resolution, and rule enforcement based on shared values and local knowledge. Before the HKm policy, informal mechanisms such as community meetings and consensus-building effectively ensured sustainable forest resources management and equitable access. The introduction of HKm policy, with its formal structures and regulations, challenged these informal systems. While formal mechanisms aimed to improve management and compliance, they often failed to incorporate the flexibility and community-based

Table 6. Fulfillment of Ostrom Design Principles in Local Institutions for the Management of HKm in Nambo District

Design Principle	Presence	
	Period before HKm	Period after HKm
Clearly defined boundaries	Clear	Clear
Relevance of rules and local situation	Clear	Clear
Agreements enabling user participation	Clear	Clear
Monitoring	Clear	Clear
Sanctions for rule violators	Unclear	Unclear, regulations not optimal yet
Conflict resolution mechanisms	Clear	Unclear
Recognition of the right to organize	Clear	Clear
Institutional connectivity	Clear	Unclear

understanding that informal norms offered. This transition led to some degree of erosion in social cohesion, as the new bureaucratic processes sometimes overshadowed traditional practices that had fostered a strong sense of community and mutual responsibility. The effectiveness in maintaining social cohesion diminished, impacting the overall success of the new management framework.

Effectiveness of HKm Policy

Altered HKm Management

HKm policy represented a significant shift from traditional to formalized forest management in Nambo District. In addition, local practices and norms governed forest management, enabling flexible and context-specific approaches to resource use. The introduction of HKm brought a standardized framework intended to promote sustainability and legalize community rights to forest resources. Under HKm, the management framework became more structured, with formalized roles for farmer groups and KPH institutions and the establishment of legal boundaries and management plans. This shift aimed to enhance resource sustainability through regulated use and government oversight. However, the policy provided a legal foundation for community management and facilitated access to government support, which also imposed constraints that sometimes clashed with local practices. The formalization of rules and regulations, while intended to improve resource management, often introduced new complexities and bureaucratic hurdles that the community had to navigate.

Challenges in Implementing HKm in Nambo District

Implementing the HKm policy in Nambo District encountered several challenges. One significant issue was the complexity of the bureaucratic processes required to comply with the new regulations. Communities faced difficulties adapting to the formalized rules that often conflicted with traditional practices and local knowledge. The need to submit detailed management plans and adhere to strict government regulations posed a burden, particularly for communities accustomed to more flexible management approaches. The capacity of KPH institutions to effectively monitor and enforce the new

regulations was limited. Resource constraints and a lack of coordination between local and government entities affected the implementation of monitoring and enforcement mechanisms. These challenges led to inconsistencies in rule enforcement and difficulties in addressing violations, impacting the overall effectiveness of HKm policy in achieving its goals.

Changes in Property Rights and Community Perception

Transition from Community-Owned to State-Owned Property

The transition from community-owned to state-recognized property under HKm policy marked a significant shift in property rights. Before the policy, forest resources were managed communally, with informal recognition of community rights and responsibilities. The policy formalized these rights, granting the community legal ownership and management authority through licenses. While this transition provided legal protection and opportunities for sustainable management, it also introduced new complexities. The shift to state-recognized property meant communities had to navigate a formalized system with stringent regulations and compliance requirements. This change often led to a perception that the community's autonomy was reduced, as it had to operate in a more rigid framework imposed by external authorities.

Impact of Changes in Access Rights on Local Livelihoods

The changes in access rights resulting from the HKm policy had a notable impact on local livelihoods. Communities had relatively unrestricted access to forest resources, which supported their subsistence and economic activities. The HKm policy formalized access rights and introduced new restrictions and requirements to promote sustainable resource use and provide economic opportunities through agroforestry and eco-tourism. However, the restrictions imposed by the policy sometimes constrained traditional practices and limited the community's ability to utilize forest resources fully. This shift affected local livelihoods by altering traditional resource use patterns and introducing bureaucratic barriers that complicated access to resources. However, the policy

offered potential benefits through formalized management and government support, in which the transitional challenges impacted the community's ability to adapt and maintain their traditional livelihoods.

Fulfillment of Ostrom Design Principles

Evaluation of Boundaries and User Rights

Ostrom's first design principle emphasized the importance of clearly defined boundaries for effectively managing common-pool resources. In Nambo District, this principle was fulfilled before and after the implementation of the HKm policy. The boundaries of the community-managed forest areas were delineated, with traditional practices establishing informal boundaries that were formally recognized and reinforced. The formalization provided legal recognition and protection against encroachment by external parties and safeguarding the community's management areas. The process introduced new complexities, while legal boundaries were well-defined. The shift from informal to formalized property rights under HKm required communities to navigate a more intricate system of rights and responsibilities. The transition highlighted the need for clear and consistent application of user rights, ensuring that communities could effectively exercise their newly formalized rights without undue bureaucratic obstacles.

Effectiveness of Rule Congruence with Local Conditions

The second design principle focused on the congruence of rules with local conditions. In Nambo, pre-HKm rules were well-aligned with local environmental and social contexts, leveraging traditional knowledge to manage forest resources sustainably. However, the introduction of HKm regulations, while adhering to national policies, sometimes clashed with local practices. For example, imposing strict quotas and agroforestry guidelines did not always align with the community's traditional methods of rotational farming and selective harvesting. Efforts were made to integrate local knowledge into HKm management plans, but the effectiveness of these efforts varied. While some local practices were accommodated, others were

constrained by the new regulations. This misalignment between formal rules and local conditions occasionally led to tensions and challenges in implementing HKm policy effectively.

Participation and Ownership Among Forest Farmer Groups

Ostrom's principle of user participation emphasized the importance of involving local users in decision-making processes. Before the HKm policy, community participation in forest management was robust and facilitated through traditional mechanisms like village meetings and consensus-building. This participatory approach fostered a strong sense of ownership and accountability. The HKm policy introduced formal structures for participation, including farmer groups and management committees. These institutions provided platforms for structured decision-making and enhanced community involvement. However, the bureaucratic nature of the HKm framework limited the ability of community members to influence decisions, particularly when these decisions conflicted with state-imposed regulations. Despite this, the formalized participation mechanisms helped maintain a degree of community engagement and ownership over forest management.

Monitoring and the Challenges of Enforcement

Effective monitoring was crucial for ensuring compliance with resource management rules. The monitoring mechanisms evolved from informal community-based systems to more formalized approaches under HKm in Nambo. Before the policy, community members monitored forest resources daily and reported violations to village leaders. This system was effective locally but lacked formal oversight, particularly concerning external actors. Post-HKm, formal monitoring mechanisms were established, with KPH institutions responsible for overseeing compliance and reporting violations. While these mechanisms introduced a structured approach to monitoring, they faced challenges such as limited resources, capacity constraints, and coordination issues. These challenges undermined the effectiveness of formal monitoring, although the community members continued to play a role in

informal monitoring. Improved coordination between local and government actors, along with increased resources for monitoring enhanced the effectiveness of enforcement.

Gaps in Sanctions and Conflict Resolution Mechanisms

Sanctions and conflict resolution mechanisms were critical for maintaining rule compliance and addressing disputes. Before HKm, sanctions were enforced informally through community consensus, with violators facing social penalties such as exclusion from community events or loss of access to resources. These informal mechanisms were effective in the community but less so in addressing conflicts involving external actors. HKm policy introduced formal sanctions and conflict resolution mechanisms, but their effectiveness was inconsistent. Capacity limitations and the complexity of the regulatory framework hindered the enforcement of sanctions. Despite the introduction of formal conflict resolution mechanisms, they often failed to resolve disputes, especially those involving external parties. The gaps in these mechanisms indicated a need for a more integrated method of sanctions and conflict resolution, combining formal regulations with community-based practices.

Policy Recommendations for Improving HKm Implementation

Strengthening Local Community Involvement

The effectiveness of the HKm policy was essential to strengthening local community involvement in forest management. Increasing the flexibility of management rules to better align with local practices and knowledge could contribute to its effectiveness. Encouraging community input in decision-making processes and providing platforms for local voices to be heard fostered greater ownership and commitment to sustainable management practices. In addition, capacity-building initiatives for local institutions could empower communities to navigate the formal management framework more effectively.

Enhancing Monitoring and Sanctions

Improving monitoring and enforcement mechanisms, which involved increasing resources and

training for KPH institutions to enhance their capacity for monitoring and enforcing regulations, was crucial for successfully implementing the HKm policy. Developing more robust coordination between local and government actors could also improve the effectiveness of monitoring efforts. Strengthening sanctions for rule violations and ensuring consistent enforcement helped address compliance issues and protect forest resources.

Aligning Central and Local Government Objectives

Effective implementation of HKm policy required better alignment between central and local government objectives to ensure that national regulations were adaptable to local conditions and aligned support with community needs. Facilitating better communication and collaboration between central and local authorities could help address regulatory conflicts and enhance the overall effectiveness of HKm policy. By integrating local knowledge and priorities into the policy framework, more sustainable and equitable forest management outcomes could be achieved.

Conclusion

In conclusion, the management of forest areas in Nambo District had undergone significant changes over three key periods, namely before the state's presence, after the implementation of the HKm reservation policy in 2009, and the ongoing adaptation process by the local community. Previously, the community perceived the cultivated forest areas as private property, which motivated society to manage and conserve the environment responsibly. This perception fostered a strong sense of ownership and stewardship, leading to sustainable practices. The implementation of the HKm policy transformed the forest's status to state property, altering the community's access rights. The transition from ownership to mere proprietorship shifted community behavior and attitudes. Some members clung to the belief that the land and resources were privately owned, while others gradually accepted the new regulations imposed by the state. Ostrom's design principles, which emphasized clear boundaries, collective decision-making, and effective

monitoring, revealed that the effectiveness of forest management institutions had varied over time. Before HKM policy, local practices aligned more closely with these principles, fostering sustainable management. After the policy's introduction, the effectiveness of these institutions depended on the community's adaptation to the new regulations and the support provided by extension workers from Toili Baturube Model Production KPH. The HKM policy reshaped forest management in Nambo District with mixed results. Although some community members had adapted to the new framework, others remained resistant, reflecting the ongoing challenge of aligning local perceptions with state policies. Future efforts should focus on enhancing the understanding and acceptance of these changes, ensuring that forest management practices remain sustainable and effectively integrating the community's role into the governance framework.

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