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AGROFORESTRY MANAGEMENT INSTITUTIONS IN ENGKANGIN VILLAGE, AIR BESAR DISTRICT, LANDAK REGENCY

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ABSTRACT

Agroforestry is an effective system for sustainable land use and provides significant benefits to community life. The success of agroforestry is highly dependent on strong institutional support. This study aims to explain the institutional management of agroforestry in Engkangin Village, focusing on organizational aspects and applicable rules. The approach used is descriptive qualitative, with data collected through observation, interviews, and documentation of agroforestry managers in Engkangin Village. The respondent sampling technique was purposive sampling. The results of the study indicate that in Engkangin Village, an organization is involved in managing agroforestry activities: the Conservation Community Business Service (*Pelayanan Usaha Masyarakat Konservasi*/PUMK) M'Banyu Bersatu. This organization has a special subprogram, namely the Sustainable Agriculture and Agroforestry Working Group, which supports the implementation of agroforestry activities in the community. There are rules in the field, such as the obligation to plant local crops (djenkol bean, stink bean, durian, cocoa) and plant spacing regulations. Social norms are evolving, including the culture of mutual cooperation (bepengari). The agreement between the organization and the community, as stated in the conservation banner, serves as a social contract binding both parties. Land ownership is private property, passed down through generations, although it has not yet been legally certified by the state. The PUMK provides incentives to members in the form of plant seeds, polybags, and training. Therefore, institutional strengthening is needed for sustainable agroforestry by optimizing the role of working groups and expanding partnership networks.

INTRODUCTION

Agroforestry is a sustainable land management approach aimed at optimizing land productivity while maintaining environmental sustainability (Roslinda et al. 2023). This system employs a land-use strategy that integrates forestry crops with agricultural crops on the same plot. The implementation of agroforestry management patterns specifically involves community participation, particularly among farmers cultivating land within forest areas. Its success depends heavily on the active involvement of local communities, particularly farmers cultivating land within and around forest areas, since the extent to which an agroforestry design is actually adopted and maintained in the field is shaped as much by community participation as by technical planning (Roslinda et al. 2023; Lin et al. 2021). Agroforestry models offer communities the opportunity to manage their land optimally (Mufidah et al. 2024). Agroforestry holds significant development potential, offering benefits such as improving community welfare, ensuring food security, providing ecosystem services, and helping stabilize rural communities' incomes (Castle et al. 2021; Roslinda et al. 2026). Selecting the right composition of plant species and employing proper management practices are expected to determine the success of the agroforestry system (Sahureka et al. 2024).

According to Ocasio (2023), an institution is a system of arrangements and binding interaction patterns among members of a community or organization. This system defines the nature of these relationships, houses them within a structure or network, and governs them through limiting and binding factors such as norms, codes of ethics, and rules (both formal and informal) (Ostrom 2005; North 1990). Its purpose is to regulate social behavior and provide incentives that foster cooperation toward achieving shared goals (Scott 2014). An institution consists of the "rules of the game" agreed upon by a group of people or an organization to manage specific resources; these rules determine who may manage which resources, as well as where, when, and how that management occurs (Ostrom 1990; North 1990; Nunan 2024; Itao & Kaneko 2025). According to Roy et al. (2025), land utilization through agroforestry systems represents a crucial agricultural business model, particularly for farmers with limited land. Agroforestry itself is a form of land management in which forestry crops are grown simultaneously with agricultural crops or livestock forage on the same area of land (Oberc and Schnell 2020). The aim is to increase production yields, generate economic benefits, and improve the well-being of rural communities (Nair 1997; Roy et al. 2025).

The people of Engkangin village are mostly farmers and small-scale entrepreneurs who use the agroforestry system for forest management. The success of agroforestry management with the community in Engkangin Village is also determined by institutional aspects, such as institutions that are dominated by rules, behavior, codes of ethics, norms, laws, and other binding factors. Institutions can play an important role in developing this economic sector by facilitating training, marketing, product development, and local community involvement (Muchtar et al. 2024). Institutions here refer to the rules and organizations that govern human interactions. The existence and implementation of local institutions are determining factors in agroforestry management in Engkangin Village. Therefore, this research aims to explain the institutional management of agroforestry in Engkangin Village from organizational and regulatory perspectives.

METHOD

This study was conducted in February 2025 in Engkangin Village, Air Besar District, Landak Regency. Located in Air Besar District, Landak Regency, Engkangin Village is situated within a protected forest area characterized by a montane rainforest ecosystem. Inhabited by the Dayak Belangin people, the village community steadfastly upholds traditional customs in their daily lives. Covering an area of 6,200 km^2, Engkangin Village possesses land potential suitable for

development into agroforestry areas. The tools utilized during this research included questionnaires for gathering data and information relevant to the research topic; a camera for documenting interviews and the current state of the research site; and writing materials and audio recording devices to record the information provided by the informants. The object of this study is the agroforestry management institution in Engkangin Village, Air Besar District, Landak Regency. The subjects of the study are the organizations involved in agroforestry management in Engkangin Village. A location map of Engkangin Village, the research site, is presented in Figure 1.

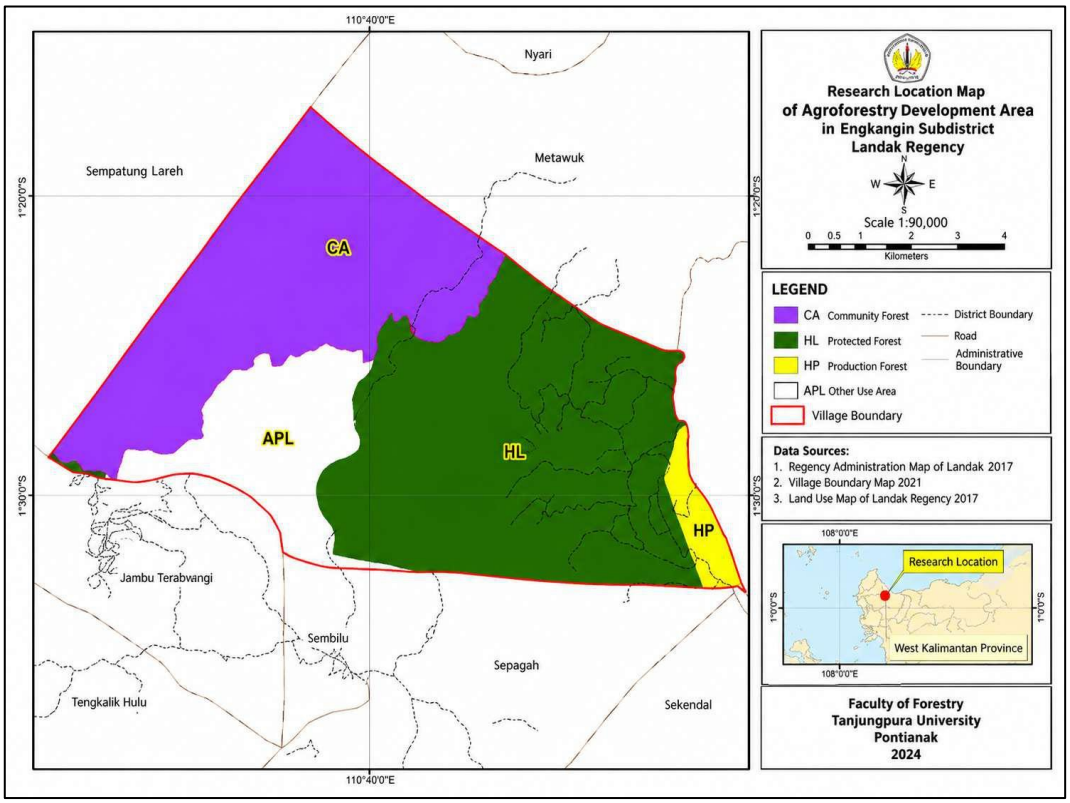


Figure 1. Map of Engkangin village

The research focuses on the institutional aspects of community agroforestry management activities in Engkangin Village, Air Besar District, Landak Regency. The parameters examined encompass institutions viewed both as organizations and as "rules of the game," covering norms, regulations, codes of ethics, contracts, markets, property rights, organizational structures, and incentives. The independent variable in this study is the institutional framework for agroforestry management in Engkangin Village, while the dependent variable is the agroforestry management itself, as influenced by these institutions.

Data collection was guided by a semi-structured interview protocol (Sugiyono 2013): informants were asked a common set of core questions covering each institutional parameter (organization, norms, regulations, contracts, property rights, and incentives), while follow-up questions were left open-ended so that informants could elaborate on issues specific to their role. This design was chosen because the institutional parameters required comparable information across informant types while still allowing role-specific elaboration; it therefore combines features of a standardized guide with the open-ended follow-up characteristic of in-depth interviewing, rather than corresponding purely to either method.

Informants were selected using purposive sampling, a non-random sampling technique, distinct from methods based on geographic areas or strata, that relies on specific considerations aligned with the research objectives (Patton 2002). Informants were selected based on their direct

involvement in, or authority over, agroforestry management in Engkangin Village: the Village Secretary of Engkangin, as the government representative with administrative knowledge of land status; the Customary Leader, as the holder of customary authority over land and social norms; the administrators of the Community Conservation Business Service Organization (PUMK), the entity directly managing agroforestry in the village; and representatives of the Planet Indonesia Foundation (*Yayasan Planet Indonesia*/YPI), which serves as PUMK's facilitator. The overall research procedure is summarized in Figure 2.

Data analysis employed a descriptive-qualitative approach. According to Nazir (2002), descriptive research aims to examine the conditions of human groups, objects, systems of thought, or ongoing events, with the intent of providing a systematic, factual, and accurate portrayal of the facts under study. Furthermore, descriptive-qualitative research is directed toward describing and illustrating existing phenomena, whether occurring naturally or resulting from human activity, an orientation consistent with the broader qualitative research tradition in which findings are grounded in participants' own accounts rather than in predetermined hypotheses (Creswell & Poth, 2018). This approach places greater emphasis on characteristics, qualities, and relationships among activities, thereby aiding problem formulation and providing a comprehensive, broad, and in-depth explanation of the social situation studied (Creswell & Poth 2018). The data analysis elucidates institutional parameters, viewing institutions both as organizations and as "rules of the game" encompassing institutions, norms, regulations, rules, codes of ethics, contracts, markets, property rights, organizations, and incentives.

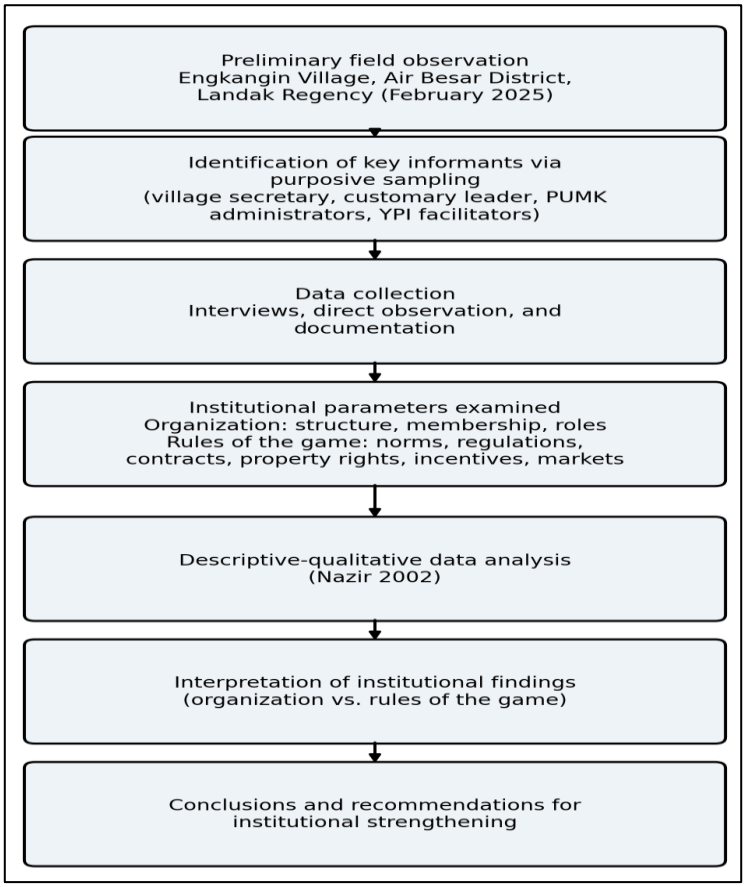


Figure 2. Research flowchart

RESULT AND DISCUSSION

Agroforestry Systems of the Engkangin Village Community

Initially, the community in Engkangin Village, Air Besar District, Landak Regency did not practice agroforestry; instead, they managed their land using simple, traditional methods, such as mixed swidden cultivation without formal plant spacing and rotational fallowing between planting seasons. Interviews with the Engkangin community revealed that their lands are located within both Protected Forest Areas and Areas for Other Uses (*Area Penggunaan Lain*/APL). A Protected Forest is a forest area primarily serving as a life-support system to regulate water systems, prevent flooding, control erosion, prevent seawater intrusion, and maintain soil fertility (Law No. 41 of 1999). The protected forest in Engkangin Village, known as the Andu Lestari Protected Forest, is located within the West Sanggau Forest Management Unit (*Kesatuan Pengelolaan Hutan*/KPH) [field/administrative data from the West Sanggau KPH office — primary data, no external citation applicable]. The name "Andu Lestari" was inspired by a local tourist attraction in Engkangin Village: the Andu Cave. The classification of agroforestry systems used by the Engkangin community, following Nair's (1993) framework, is presented in Table 1.

Table 1. Classification of the agroforestry system practiced in Engkangin Village

No	Based on	Type of Agroforestry
1	Agroforestry systems	Simple
2	Development stage	Traditional
3	Production system	Forest-Based Agroforestry
4	Component	Agrisilviculture and Agrosilvofishery
5	Planting pattern	Trees Along Border and Random Mixture

Source: Data Analysis, 2025

The community in Engkangin Village employs two agroforestry cropping patterns based on their constituent components, agrisilviculture and agrosilvofishery (Nair, 1993). These systems, practiced on community-owned land, are situated within a Protected Forest Area. The agrisilviculture pattern combines forestry species with agricultural crops (non-timber) on the same plot of land, either in rotation or simultaneously (Nair, 1993). The agrosilvofishery pattern integrates forestry, agriculture, and fisheries; components of this system include djenkol bean, stink bean, and oil palm alongside fish ponds located within the community's agroforestry plots. In practice, the agrisilviculture pattern is more prevalent than the agrosilvofishery pattern. This is because agrisilviculture is easier to implement and requires no specialized infrastructure such as ponds or water channels, whereas agrosilvofishery systems are more restricted to areas with access to water resources. Figure 3 shows agrosilvofishery and agrisilviculture in Engkangin village.



(a) (b)

Figure 3. Agrosilvofishery (a) and Agrisilviculture (b)

The forestry components found in the community's agroforestry plots include durian (*Durio zibethinus*), rubber (*Hevea brasiliensis*), djenkol bean (*Archidendron pauciflorum*), mentawa (*Artocarpus anisophyllus*), and stink bean (*Parkia speciosa*). Based on plant type, the agricultural components in the community's agroforestry plot in Engkangin Village fall into three categories: food crops, horticultural crops, and plantation crops. Food crops include rice (*Oryza sativa*), maize (*Zea mays*), and cassava (*Manihot utilissima*). Horticultural crops include banana (*Musa paradisiaca*), chili (*Capsicum frutescens*), and timun suri (*Cucumis melo*). Plantation crops include cacao (*Theobroma cacao L.*), pepper (*Piper nigrum*), and oil palm (*Elaeis guineensis*). Table 2 describes the types of agroforestry plants in Engkangin village.

Table 1. Types of Agroforestry Plants in Engkangin Village

Plant Classification	Plant Type	Plants Found
Agricultural Plant	Food Crops	Rice, Corn, Cassava
	Horticultural Crops	Banana, Chili, Cucumber
	Plantation Crops	Oil Palm, Cacao, Pepper
Forestry Plant		Durian, Rubber, Djenkol bean, *Mentawa*, Stink bean

Source: Field survey, 2025

Agroforestry Institution

Agroforestry management in Engkangin Village involves one organization: *Pelayanan Usaha Masyarakat Konservasi* (PUMK, Conservation-Based Community Business Service) M'Banyu Bersatu, established on 28 November 2018. PUMK operates as a community self-help group dedicated to encouraging environmentally based prosperity. It unites community members in socio-economic endeavors that focus on conservation) protection, preservation, and sustainable utilization) to enhance members' welfare, following the principle of being by, from, and for the members. The PUMK model was developed by the Planet Indonesia Foundation (YPI) to drive positive change within socio-ecological systems, mitigating threats to biodiversity while expanding economic opportunities and access to basic services for communities living in or near areas of high biodiversity value (Nadiroh et al. 2020; Ritonga, 2022). PUMK M'Banyu Bersatu was founded on the spirit of *gotong royong* (mutual cooperation) and active community participation, grounded in the principles of Pancasila (Pinasang 2020) and the 1945 Constitution, with Law No. 17 of 2013 concerning Civil Society Organizations as its legal basis. It represents a community-based institution established by, from, and for the community in the forest buffer zone of Engkangin Village.

To manage its activities with greater focus and structure, PUMK established a specialized sub-program: the Sustainable Agriculture and Agroforestry Working Group (POKJA). This POKJA functions as a technical implementation unit responsible for planning, training, executing, supervising, and evaluating all agroforestry activities carried out by community members, a division-of-labor role consistent with evidence that dedicated farmer working groups are central to disseminating agroforestry knowledge and sustaining member participation (Lin et al. 2021). PUMK M'Banyu Bersatu has 165 active members, of whom 64 (approximately 38.78%) directly manage land using agroforestry systems, indicating that agroforestry has been adopted by a little over one-third of the membership so far. PUMK also works to improve community well-being through productive enterprises, such as the Resilience Fund and Marketing working groups shown in Figure 4, and by facilitating better access to education, healthcare, and livelihood opportunities. Institutionally, PUMK is equipped with a management structure, established mechanisms for meetings and deliberations, and a financial system funded by internal resources and supported by partner organizations such as YPI. Although it does not yet hold national legal-entity status, PUMK operates legally at the local level, adhering to village regulations and local customary norms.

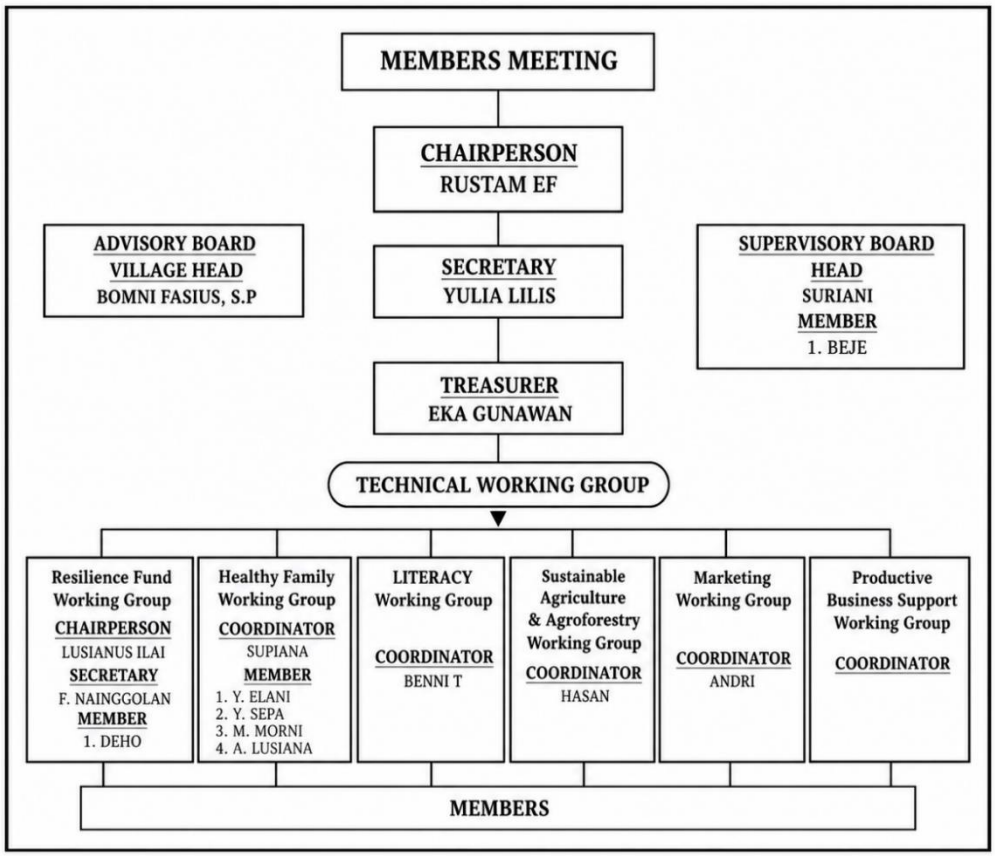


Figure 4. Organizational structure of PUMK M'Banyu Bersatu

The Role of the Organization in Agroforestry Management in Engkangin Village

The PUMK M'Banyu Bersatu conducted an open outreach session for all members to introduce the basic concepts and benefits of agroforestry, aimed at building a shared understanding and building community participation from the outset. The Sustainable Agriculture and Agroforestry Working Group is responsible for designing and drafting work plans, coordinating field implementation, and managing the monitoring and reporting system; it subsequently held joint meetings with landowning members and YPI facilitators to develop detailed agroforestry plans for each plot, specifying the plant species to be cultivated as well as the layout and quantity of plants. Mr. Hassan chairs this working group. Following these meetings, a formal agreement was drafted and approved by PUMK and each landowning member, including provisions for conservation measures throughout the program's duration.

Planting activities are carried out by the individual members who own the land. The community of Engkangin Village maintains the "Bepengari" tradition—a form of mutual cooperation (*gotong royong*) in dry-field farming based on the principle of reciprocity. Plant maintenance is performed by the landowners, supported by periodic technical guidance from the Agriculture Working Group. The working group provides assistance through regular site visits, focusing on fertilization, natural pest control, and recording plant growth progress. The PUMK organization also conducts various training sessions. These are delivered in two ways: either directly to working group members or to lead farmers, who then relay the training material to the rest of the group. Several types of training provided to members include:

1. Training on liquid and solid fertilizers
2. Training on establishing demonstration plots
3. Training on jengkol seedling production
4. Training on plant propagation via cuttings

The organization plays a crucial role at all stages of agroforestry monitoring, as shown in Table 3. Its involvement guarantees a more structured and comprehensive approach to evaluating the effectiveness and sustainability of agroforestry practices. The organization utilizes monitoring data to report on progress and outcomes. This monitoring phase is carried out by the lead farmer, and the resulting data is subsequently submitted to and evaluated by YPI facilitators.

Table 3. Monitoring of Agroforestry Management

Monitoring Stage	Main Activity
Implementation	Seeing the progress of agroforestry activities, the number of trees planted, and the training carried out.
Performance	Assess the level of growth and survival of agroforestry components after 6 months of planting the agroforestry
Evaluation	Measures the productivity of rice crops

Source: PUMK M'Banyu Bersatu monitoring research, 2024

Organizational Challenges in Agroforestry Management

Agroforestry management in Engkangin Village faces various challenges that the PUMK M'Banyu Bersatu organization must address. A major obstacle is the limited access and transportation facilities available to the Lead Farmer for conducting field visits. Most agroforestry plots are located in remote or hard-to-reach areas, particularly during the rainy season. This leads to delays in providing guidance, collecting data, and addressing on-site technical issues, resulting in reduced monitoring effectiveness and delayed responses to plant diseases. Another challenge is the lack of legal certainty regarding the land tenure of plots used for agroforestry; some farmers manage inherited family land or use land under informal loan-use agreements without official documentation. This creates reluctance to invest the time and effort required for long-term crop maintenance, a pattern consistent with evidence that perceived tenure insecurity weakens smallholders' long term-investment in tree planting (Asaga et al. 2020; Dinh et al. 2023). The Ghana study also shows that this relationship is not uniform, because legal, de facto, and perceiv

Pest and disease infestations affecting both forestry and intercropped species are recurring issues on several plots, posing a significant organizational challenge. The situation is exacerbated by farmers' limited knowledge of pest control and limited access to organic control agents, leading to suboptimal plant growth, potential crop failure, and member disappointment with yields. Finally, although agroforestry activities are underway, the volume and quality of the harvest are insufficient for broad market distribution, preventing the Marketing Working Group from operating at full capacity. The consequences include lost potential revenue, diminished member morale due to the lack of tangible economic returns, and a failure to establish community-based market connections.

Institutions as the "Rules of the Game"

The PUMK M'Banyu Bersatu organization operates based on a legal framework that includes Law No. 17 of 2013 concerning Civil Society Organizations; Law No. 32 of 2024 concerning the Conservation of Living Natural Resources and Their Ecosystems; Law No. 5 of 1994 concerning the Ratification of the Convention on Biological Diversity; Law No. 41 of 1999 concerning Forestry; Law No. 6 of 2014 concerning Villages; as well as village regulations, customary law, and local customary norms related to conservation efforts. The summary of the rules in agroforestry management in Engkangin village can be seen in Table 4.

Table 2. The Rules in Agroforestry Management in Engkangin Village

Institutional Parameter	Description	Application in Agroforestry in Engkangin Village	Data Source

Regulation	Formal legal documents established by the organization, outlined in the Articles of Association/Bylaws (AD/ART).	Legal basis: 1. Law No. 32 of 2024 concerning the Conservation of Living Natural Resources and Their Ecosystems; 2. Law No. 5 of 1994 concerning the Ratification of the Convention on Biological Diversity; 3. Law No. 41 of 1999 concerning Forestry; 4. Customary law or local customary norms related to conservation efforts.	Secondary Data
Rules	Provisions governing the implementation of agroforestry activities in the field.	1. Selection of agroforestry plant species in Engkangin Village must involve local plants, such as djenkol bean, stink bean, durian, and cocoa. 2. Adherence to planting distance rules established by the Sustainable Agriculture and Agroforestry Working Group (POKJA)	Primary Data
Norms	Social values developed within the community as guidelines for behavior.	1. The existence of a culture of mutual cooperation (*Bepengari*) in managing agroforestry. 2. Customary prohibitions against stealing others' property within agroforestry lands.	Primary Data
Contracts	Formal, binding agreements between parties involved in agroforestry management.	An agreement between the organization and the community managing the agroforestry is displayed on a conservation agreement banner.	Secondary Data
Property Right	Clear and legitimate ownership of natural resources.	The agroforestry land is privately owned. However, official state land certificates are lacking because the land rights are inherited from ancestors and recognized through social custom.	Primary Data
Incentive	Rewards to encourage the community to manage agroforestry.	Members willing to manage their land using the agroforestry system receive rewards, including a plant valued at IDR 10,000, 50 polybags, training in agroforestry practices, and plant seedlings.	Primary and Secondary Data
Market	Distribution and trade channels for agroforestry products.	There is no established market for agroforestry produce; community members sell their harvest to collectors or within the village itself.	Primary Data

Source: Field interviews and PUMK documentation, 2024

Regulations, Rules, and Norms for Agroforestry Management

Agroforestry management in this Working Group is carried out not only technically but also in accordance with organizational rules. One form of this is the existence of technical regulations regarding planting distances and plant types, mutually agreed upon by the M'Banyu Bersatu PUMK management, driving farmers, and members, and included in the organization's internal policies. The success of tree-based agroforestry largely depends on the use of local ecological knowledge in decision-making, especially in selecting plant types that are appropriate to land conditions (Bukhari & Febryano, 2010; Salampessy et al., 2017; Weni et al., 2020). Setting plant spacing that accounts for the land's carrying capacity and the region's ecological conditions aims

to improve plant growth efficiency, reduce resource competition among plants, and maximize crop yields. Apart from that, selecting local plant types also helps maintain ecosystem balance because they are responsive to local climate and soil conditions. This is in line with the opinion of Sahureka et al. (2024), which states that planting distance rules and plant selection must be adjusted to land conditions and the plant's ability to adapt to local conditions. So, choosing the right type of plant to be planted will provide maximum results and can be used sustainably (Mulu et al. 2020). The selection of plants and land conditions is based on the farmer's experience and directions from the agroforestry activity facilitator. Table 5 describes the planting distance rules for each agroforestry plant.

Table 1. Planting distance

No	Plant	Planting distance (m)
1.	*Petai*	4,4 × 4,4
2.	Durian	4,6 × 4,6
3.	*Jengkol*	4,4 × 4,4
4.	Cocoa	3,3 × 3,3
5.	Pepper	2 × 2
6.	*Pinang*	2,5 × 2,5
7.	Paddy	0,3 × 0,3
8.	Oil Palm	9 × 9

Source: POKJA field guidelines, 2024

Agroforestry management in Engkangin Village is not merely driven by formal organizational regulations; rather, it is grounded in local social and cultural values that remain vibrant and are practiced by the community across generations. According to Pinasang (2020), norms are essentially a component of culture, developed and shared by a community and passed down from one generation to the next. A key cultural value embedded in the community's agroforestry activities in Engkangin Village is the spirit of mutual cooperation known as *bepengari*.

Bepengari represents a form of community collaboration in agricultural and agroforestry endeavors, encompassing planting, harvesting, and land clearing. They carried out on a rotational basis. This system not only strengthens social solidarity but also enhances labor efficiency without reliance on formal wages. In the context of agroforestry, the *bepengari* tradition plays a vital role by facilitating the systematic and sustainable execution of planting and land maintenance activities. This tradition also fosters a shared sense of responsibility regarding the produce and the long-term sustainability of the managed land (Roslinda et al., 2023).

Beyond the value of cooperation, customary norms play a significant role in upholding ethical standards for agroforestry land management. One strictly observed customary norm is the prohibition against stealing produce or property belonging to others from agricultural or agroforestry plots. Violating this norm is viewed not only as a criminal act but also as a transgression against the community's social values and customs. Customary law serves as a mechanism of social oversight that complements the formal rules of the PUMK institution, fostering land governance characterized by fairness, security, and mutual respect among community members. Thus, the success of agroforestry management is determined not only by orderly organizational structures or standardized technical rules but is also profoundly influenced by the local values thriving within the community. The tradition of mutual cooperation through the *bepengari* system, alongside customary sanctions for violations, constitutes part of the unwritten norms that reinforce the sustainability and stability of the agroforestry system in Engkangin Village. It is this relationship between institutional norms and customary norms that constitutes a distinctive strength in community-based natural resource management practices.

Agroforestry Ownership and Management Contracts

Agroforestry management in Engkangin Village is generally carried out by community members on privately held land that lacks formal certification. However, the community widely recognizes that the land they manage is an inheritance passed down from their parents or ancestors, a claim that carries social legitimacy. This situation is common in rural areas, where social recognition predates state certification yet still fosters stability regarding land tenure and management at the local level. A similar scenario was observed in Ghana in a study by Alhola & Gwaindepi (2024), which noted that residents had held the land for decades, with tenure passing from ancestors down to their relatives. Furthermore, the magico-religious significance attached to this ancestral land is deeply ingrained and inseparable from their identity.

Land ownership established through inheritance also secures rights to the harvests yielded by agroforestry activities. These rights are automatically recognized by the surrounding community without the need for legal documentation, as the community has long recognized the land's established ownership. Nevertheless, residents are becoming increasingly aware of the importance of legal certainty regarding land ownership, particularly for accessing government programs and ensuring long-term security. In response, the government has facilitated the issuance of ownership documents through the Land Objects for Agrarian Reform (*Tanah Objek Reforma Agraria*/TORA) program. This initiative aims to provide legal certainty and formal recognition to landowners in Engkangin Village, enabling them to manage and utilize their land securely and sustainably.

Regarding the implementation of agroforestry in Engkangin Village, the community engages in a formal institutional relationship with the PUMK M'Banyu Bersatu organization. This relationship is established through a socially binding agreement, reflecting a mutual understanding between the landowners and the organization implementing the community-based conservation program.

Community participation in the agroforestry program is not merely voluntary; it is also underpinned by a formal commitment set out in the conservation agreement. This document outlines the points of agreement reached among farmers, PUMK, and the West Kalimantan Natural Resources Conservation Agency (*Balai Konservasi Sumber Daya Alam*/BKSDA) regarding agroforestry-based land management, forest preservation, and the avoidance of environmentally damaging practices (Suwarno et al. 2022). The agreement has been signed by 64 members, who also serve as representatives of the community managing agroforestry in Engkangin Village.

Incentives and Markets in Agroforestry Management

Providing these incentives represents tangible organizational support to boost member participation and encourage the implementation of agroforestry in a planned, participatory, and sustainable manner (Mayr 2026). One form of recognition offered by the organization is a plant-based incentive. Members willing to manage their land using an agroforestry system receive a reward of one plant, valued at IDR 10,000, up to a maximum of 50 plants per member. Consequently, each member can receive financial or material support of up to IDR 500,000, depending on their commitment to planting and tending the agreed-upon agroforestry crops (Tamrin & Kamaludin, 2020). Furthermore, to ensure successful planting, the organization provides agricultural production supplies, specifically, 50 polybags per member, to facilitate seedling propagation and early-stage plant care. This assistance is crucial, particularly for farmers with limited access to farming inputs, and serves as a strategic step to ensure agroforestry activities begin with a solid technical foundation (Wardi, 2021).

In addition to material incentives, non-material support is provided through training and capacity-building initiatives designed to strengthen farmers' technical knowledge of agroforestry management. Training organized by PUMK covers topics such as the production of organic pesticides and the establishment of demonstration plots to showcase best practices. These

training sessions serve as a vital space for collective learning; they not only enhance farmers' technical skills but also foster a spirit of *gotong royong* and knowledge exchange among members. The organization also receives support from the West Sanggau Forest Management Unit (KPH), which distributes 500 local plant seedlings to members. These include various species with both economic and ecological value, such as durian, stink bean, and longan. The seedlings are sourced from adaptive local varieties, offering the potential for optimal yields while simultaneously maintaining environmental sustainability. The combination of economic incentives, infrastructure support, capacity building, and the provision of seedlings demonstrates that PUMK M'Banyu Bersatu is implementing a comprehensive strategy to foster participatory agroforestry management, in which incentives function less as simple aid than as recognition of members' commitment and direct contribution to environmental sustainability and the village's economic resilience (Syahputra et al, 2021; Isra et al. 2024). Although agroforestry management in Engkangin Village has made strides in technical cultivation and institutional strengthening, issues regarding the distribution and marketing of produce remain unresolved. To date, PUMK M'Banyu Bersatu has not been able to fully assist members in marketing their agroforestry products to broader, more organized markets.

CONCLUSION AND RECOMMENDATION

The agroforestry management institution in Engkangin Village, Air Besar District, Landak Regency, has emerged through two complementary dimensions: institutions as organizations and institutions as "rules of the game." Regarding the organizational dimension, the PUMK M'Banyu Bersatu serves as the primary platform for agroforestry management, with the Sustainable Agriculture and Agroforestry Working Group (POKJA) serving as the technical implementation unit responsible for planning, training, monitoring, and evaluation of field activities. Regarding the "rules of the game" dimension, management is governed by a combination of formal rules (the organization's legal basis, obligations to plant local species, and planting-distance regulations) and informal norms rooted in local socio-cultural values, specifically, the bepengari tradition of mutual cooperation and prohibitions against crop theft. Land ownership based on hereditary succession, despite lacking state certification, remains socially recognized and serves as the basis for management legitimacy, while conservation agreements between farmers, PUMK, and the West Kalimantan BKSDA function as a binding social contract. Incentives such as seedlings, polybags, and training have further encouraged active participation by members. Nevertheless, the system's sustainability faces real challenges, notably limited access to land transportation, legal uncertainty regarding land status, pest and disease outbreaks, and the suboptimal performance of the Marketing Working Group, which restricts agroforestry produce sales to middlemen or local village markets. Comprehensive institutional strengthening of PUMK M'Banyu Bersatu is required to ensure the sustainability of agroforestry management in Engkangin Village. This includes optimizing the Marketing Working Group, accelerating land certification through the TORA program, improving access and field support facilities, and enhancing pest control training. Besides that, expanding partnership networks with KPH Sanggau Barat, the West Kalimantan BKSDA, and YPI, and formalizing the bepengari customary norms into village regulations.

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