

Study Livelihoods Development of Forest Management Units: Review KPH Model in Indonesia

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Abstract: *Indonesia has been promoting development programs for sustainable forest management and improving social welfare. Mandated by Article 17 of Law 41 and Government Regulation number 44 of 2004 and government regulation number 6 of 2007 with changes to government regulation number 3 of 2008. FMU in all forest areas in Indonesia in 2020, and 120 FMUs at the end of 2014. The livelihoods model review study is intended to collect data and information about the practices of partnership patterns in forest management initiated by the 10 Forest Management Units as KPH Models. The study was carried out using a desk study review of long-term forest management plan documents from 10 KPH Models, an evaluation of the results public consultations of the Forest Investments Program's and field verification. The results of the study concluded in general that the 10 KPH Models were ready to apply the partnership pattern to facilitate the implementation of the livelihoods model. The livelihoods model recommendations on-farm and off-farm are as follows: (1) The partnership based on the nontimber forest (NTF), environment services, and eco-tourism; and (2) The timber-based partnerships, land, and timber processing industries be prepared with a supporting system needed.*

Keywords: livelihoods, FMU, partnership, on farm, off farm

1. Introduction

Forest resources contribute to the sustainability of livelihoods in several developing countries, including Indonesia [1]. In the last decade research on forest resources with the sustainability of many livelihoods was carried out: mangroves forest and livelihood [1]; forest contribution to livelihoods [2]; sustainability of alternative livelihoods [3]; environmental income and rural livelihoods [4]; resilience and rural livelihoods [5].

The definition of livelihoods as assets (resources, property, and access), capabilities and activities are required for a means of living [6]. Sustainable livelihoods and shocks, enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes to the benefits of livelihoods in the short and long-term [7][8]. The primary alternative livelihood activities identified into three main categories, namely forest-based livelihoods, forest-related livelihoods and other "Footloose" activities that may not be related to the forest at all [9].

Failing to meet the above description suggests that there must be alternative livelihoods that would either supplement or entirely replace primary livelihoods depending on situational dynamics. These logically new alternatives are also required to be sustainable [10]. Governments, donor agencies, non-government organizations, and individuals have promoted alternative livelihood schemes, especially in forest fringe communities to reduce poverty and unsustainable dependence on forests [11]. Alternative livelihoods activities have a role to play in sustainable forest

management, direct or indirect management. Governments and some NGOs have embarked on alternative livelihood activities to reduce people's dependence on forests and also to alleviate rural poverty [12].

In recent decades, Indonesia has been promoting development programs for sustainable forest management and improving social welfare. Mandated by Article 17 of Law 41 and Government Regulation number 44 of 2004 and government regulation number 6 of 2007 with changes to government regulation number 3 of 2008. FMU units in all forest areas in Indonesia in 2020, and 120 FMUs at the end of 2014. FMU models including forest management, institutions, human resources, infrastructure, and management plans [13].

Regulation no. P.47 / 2013 new products for direct use, direct use, and management of natural resources and natural resources. KPH is also possible to engage in business development, which is specific, as a form of business. Business agreements with third parties make it possible to collaborate with community groups, cooperatives, local companies to develop non-timber forest products and environmental services [14]. There are KPH reasons for managing business with third parties in "certain areas", including the elimination of KPH Mandiri which has financial independence and can finance their operations; help ease the burden of the budget that comes from national and sub-national budgets; optimize the use of forest areas; and promoting the empowerment of forest communities through sustainable livelihoods [15].

An objective of review FMU regarded revenue generation

and local livelihood development models for assisting a small number of KPH pilots to become operational and engage with local communities and other stakeholders in improving livelihoods and economic activities from sustainable forestry management. Research activity is looking for and confirmation about: the document of business community based than can be found in the FMU Model, the conduct of support systems available to support of business community based (FMU, donors, NGOs) and resource for the support system (grants, market access, benefits sharing mechanism).

2. Methods of Data Collection

The study conducted in 10 KPH Models and field verification by conducting FGDs in 2 KPHs, namely Sijunjung FMU, West Sumatra and Dampelas Tinombo FMU, Central Sulawesi. This study uses qualitative approaches and field practice research. Data collection was carried out with a desk study of long-term forest management plan documents (RPHJP) of KPH, the results of public consultations, interviews and field verification. The method of analysis is carried out by expert consultation meetings and analysis of the situation in the context and scope of the study. Qualitative primary data obtained in a participatory manner with FGDs in the FMU area about: (a) the situation and condition of community income sources before and after the existence of the FMU by identifying examples of community-based businesses and their operations; (b) identification of the support that the FMU will provide for sustainable and on-farm community livelihood development (forest resource management, NTF) that is in line with RPHJP; (c) identification of the support that the FMU will provide for the development of off-farm sustainable community livelihoods (regulatory basis, access to capital, market access, capacity building, profit sharing mechanisms); (d) identification of the role of stakeholders in supporting livelihoods of local communities (KPHs, Regional Governments, Donors, NGOs, etc.); (e) identification of FMU support to encourage activities related to REDD⁺ that support community income sources.

3. Results and Discussion

3.1 Role of KPH

The strategic position of the FMU in forest development includes optimizing access and the role of communities in forest management to address livelihoods problems. This role is inseparable from the condition and function of forest resources which differentiated into FMUs of production forests and FMUs of protected forests. The processes for identifying community rights to secure livelihoods can be dealt with together at the site level in the forest governance process and management of FMUs that are regulated in the policies of the Ministry of Forestry and the Ministry of Home Affairs [16]. FMU is required to develop in-coming generating to support the organization's operations in forest management, monitoring, and supervision of management permit holders [13]. The involvement of third parties in the income generating business carried out by FMU has the

potential to create a conflict of interest. In this context, it is necessary to analyze how the roles that can be managed by the FMU and what can be done to minimize potential conflicts of interest. The involvement of the FMU role in business activities that guarantees income generating can be viewed from two aspects, namely [14]:

- 1) The management of certain areas by the FMU for activities that support incoming generating in the form of cooperation with third parties.
- 2) The role and obligations of FMU in promoting livelihoods development models for people who depend on access to forest resources.

Until now, there has been no official guideline for developing management plan a business strategic of certain areas for the FMU. The development of the FMU as a revenue-generating management unit requires the existence of business options that will be identified. The exploration of the best sustainable forest management model is needed to determine the choice of economic empowerment strategies for forest-dependent people [16]. FMU support will strengthen the livelihoods and economic activities of local communities and stakeholders. It's related to a new regulation from the Ministry of Forestry in No. P.39/2013 about Forestry Partnership and No. P.47/2014 is an opportunity to develop partnerships between FMU and local communities in managing certain areas to support livelihood improvement activities.

3.2 Identify a subset of FMU

The biggest challenge facing the FMU in developing sustainable livelihoods is the realization of forest resource management from the granting of permits for management and partnerships. This process constrained by regulatory issues and the authority of the FMU in the management of "certain areas." It takes the initiation of the idea of a partnership pattern by KPH Model without having to exceed the limits of its authority. The FMU must play a role in establishing the right form of access for the community and the solution to the conflict by exploring the potential as well as the socio-economic mapping of the community around the forest. Interaction and intensive communication with the community is needed to find alternative solutions according to the needs of the community.

Identifying the subset of the role of the FMU related to livelihood development has not reflected the potential problems faced by local communities. Based on the desk study and field verification, the potential issues that hinder livelihood development through the Partnership pattern are the management of forest area boundaries, tenure conflicts, forest destruction, and permits to utilize forest areas. The dominant factor causing the problem, are:

- 1) Issued with forest area boundaries and tenure conflicts. Unclear status of forest areas, including borders and maps that can use as joint guidelines and their condition of confirmation (Gularaya FMU, Kapuas FMU, Batulanteh FMU, West Rinjani FMU);
- 2) Issued with forest destruction and utilization permits — the issuance of licenses that overlap with the rights of other subjects; both in one sector and with other areas

(examples of cases in Dampelas Tinombo FMU, Lakitan FMU, West Rinjani FMU, Sijunjung FMU).

The approach to solving the problem is by offering one option for forest management through Social Forestry schemes such as Community Forestry (HKm), Village Forests (HD) and Community Plantation Forests (HTR). This pattern placed as part of efforts to resolve conflicts, by providing greater access to communities in forest management. Models of Community Forestry (HKm), Village Forests (HD) and Community Plantation Forests (HTR) with Empowerment and or Partnership patterns with the Agreement scheme. Livelihoods development at the FMU model considered by potential problems faced by each FMU to resolve potential issues faced.

For example, FMU, which faces problems with regional boundaries, tenure conflicts, and utilization permit issues, needs a strategy to ensure livelihoods development. The policy is in the form of certainty in determining non-conflict areas and preparing on-farm and off-farm business plans through participatory approaches with the community and related parties. The FMU that faces forest destruction problems needs criteria for reforestation plans and on-farm business plans. Thus, each KPH model will see as having readiness and level of needs in facilitating livelihoods development for local communities in on-farm and off-farm activities. This subset identification strategy is to encourage the growth of income generating FMU and at the same time as an effort to guarantee the maintenance of livelihoods

resources for local communities.

3.3 Identify pre livelihoods conditions

The source of income of the community originating from forest resources is not affected by the presence of FMU. Except for areas that still burdened with boundary problems and tenure conflicts. There is the great hope for the community that the presence of the FMU is more able to increase the source of income through facilitating the activities that will be carried out by the FMU. This expectation is not difficult to realize, given the many potentials that can be developed by the FMU, both the use of timber products and non-timber forest products.

The potential of NTF in each KPH Model has been used by the community traditionally as a "side-come" for fulfilling livelihoods. The business utilizes several commodities originating from Protected Forest areas. Likewise, the potential for environmental services and new springs is limited to being used for daily needs and has not utilized optimally. Although not too varied, the possibility of NTFPs is the primary choice for the community despite its subsistence nature. The community is only a supplier of raw materials accommodated by the middleman to taken out of the area. The results in a small economic value that can be obtained by the community as a source of sustainable income. Supporting conditions are needed for the sustainable development of community livelihoods based on on-farm and off-farm in the construction of the FMU, as follows:

Table 1: Supporting conditions for sustainable livelihoods

No.	Supporting Conditions	Preconditions needed
1	Policy	a. The development substance of FMU included in the middle-term forest management plan documents (RPJMD). b. Support from the forestry service. c. Opportunities for using Empowerment and Partnership patterns must be utilized optimally.
2	Source of funds	a. Funding sources identification from third parties (investors, banks, donor agencies) outside the state budget. b. Prepare of business feasibility proposals and investment guarantees.
3	Market access	a. Identify marketing chain actors on-farm and off-farm production. b. Identify the superior value chain on-farm and off-farm products.
4	Capacity development	a. Strengthen group institutions through counseling and training on on-farm and off-farm business groups. b. Assistance in preparing HKm, HTR, and HD. c. Prepare of management plans and production plans.
5	Profit sharing mechanism	a. Prepare of options for proportional profit-sharing arrangements. b. Build an understanding of the rights and obligations of each party in the partnership pattern.

In the long-term forest management plan documents (RPJHP) prepared by the KPH Model, the development of the Partnership pattern is not limited to mandatory ones. However, it is a guarantee for achieving sustainable forest management as an indicator of attaining the title of KPH Mandiri. This challenge is not easy, because the assumption that the Partnership Pattern is carried out with the community is an active project that is "loss." From the total area managed by each KPH Model, the opportunity is very open to encourage the pattern of Partnership with the community, both in Protected Forests, Production Forests and in Certain Areas. The enabling conditions for the occurrence of the Partnership pattern that need to anticipate from the start are the potential for conflict of tenure claims, due to the unresolved issues of regional boundary management. If the space for battle is more open, it will affect the interest in

efforts to empower the community through the pattern of the Partnership.

3.4 Identify potential livelihoods development

Based on the desk study and field verification, opportunities for livelihood development through partnership patterns in the KPH Model can be carried out with two main strategies, namely: (a) identification of potential livelihoods models; and (b) types of support to facilitate the implementation of the model. The model used for livelihoods development is the partnership pattern. Partnerships must be designed to create a system of collaboration between FMU and mutually supportive communities to fulfill the realization of prosperous communities and sustainable forests. The implementation of the Partnership pattern must be flexible by

following changes in the surrounding socio-economic and political conditions.

At least, there are two benefits that FMU can achieve in developing livelihoods through the Partnership. First, to reduce the potential for conflict that can result in a decrease

in the possibility of forest resources and infrastructure to be built by FMUs. Second, to support the development of FMUs towards KPH Mandiri based on community activities. The results of identifying potential livelihood model development grouped into likely off-farm and on-farm based potentials in table 2, as follows:

Table 2: Identifying potential livelihood of-farm and on-farm based

No	Location	Basis off-farm			Basis on-farm
		NTF	Environment Service	REDD+	
1	Batulanteh FMU Production Forest	Bee Pollen, Bee Bread, Propolis, Eucalyptus Oil, Tonkawa Oil	Environmental Education		Eucalyptus, Teak
2	Biak FMU Protected Forest	Sandalwood, Bamboo, Rattan.	Environmental Service		Merbau, Matoa, Nyatoh, Bitanggur
3	Boalemo FMU Production Forest	Masohi, Rattan, Jernang	Water sources, Nature tourism	Demonstration Plot	Jabon, Sengon, Nyatoh
4	Dampelas Tinombo FMU Production Forest	Rattan, Serei	Nature ourism		Rubber, Jabon
5	Gularaya FMU Production Forest	Ant house, Rattan, Honey, Bamboo	Wallacea Health Centre Ecotourism		
6	Kapuas Hulu FMU Production Forest	Jelutung, Ramin	Jasa Lingkungan		
7	Lakitan FMU Production Forest	NA	NA		Agroforestry, Rubber, Palm oil
8	Rinjani Barat FMU Protected Forest	NA	Ecotourism, Water source, Beach, Water fall	Pilot Project	Dadap
9	Sijunjung FMU Protected Forest	Rattan, Honey, Rubber, Wood pellet	Mineral water	Demonstration Plot	
10	Tanah Laut FMU Production Forest	NA	NA		

Supporting the system needed for livelihood development through a partnership pattern in the KPH Model requires facilitation in the form of (a) location certainty; (b) business plans to be partners; (c) capital investment; (d) agreement for profit sharing; (e) infrastructure readiness. The following

table 3 is an analysis of the types of support needed to facilitate the implementation of the livelihoods model in each KPH Model.

Table 3: Supporting system for livelihood development with Partnership

No	KPH Model	Basis on-farm	Basis off-farm NTF	The type of support needed for the year to			
				Y	Y+1	Y+2	Y+3
1	Batulanteh		Distillation of eucalyptus oil	Production infrastructure	Production capital	Marketing chain	Marketing chain
			Bee-polen, Bee-bread, Propolis	• Analysis of potential raw materials • Business and production plans	Production infrastructure	Production capital	Marketing chain
			Distillation of tengkawang oil	• Analysis of potential raw materials • Business and production plans	Production infrastructure	Production capital	Marketing chain
		Eucalyptus		Reforested agroforestry patterns plans and profit sharing	Planting costs	Maintenance plans	Plant monitoring and evaluation
			Tourist services	Analysis of the feasibility of a tourism business	Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
2	Biak		Sandalwood, Bamboo, Rattan.	• Analysis of potential raw materials • Training of design product	Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
			Tourist services	Analysis of the feasibility of a tourism business	Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
		Merbau, Matoa, Nyatoh, Bitanggur		A certainty of timber legality documents	Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
3	Boalemo		Masohi, Rattan, Jernang	• Analysis of potential raw materials	Business and production plans	• Production infrastructure.	Marketing chain

				• Training of design product		• Production capital.	
		Mineral water	Potential water discharge and water quality analysis.		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Tourist services	Analysis of the feasibility of a tourism business		Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
		Jabon, Sengon, Nyatoh	The certainty of HKm, HTR, HD or Partnership of Certain Area.		Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
4	Dampelas Tinombo	Rattan, Serei	• Analysis of potential raw materials • Training of design product		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Natural tourism	Analysis of the feasibility of a tourism business		Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
		Rubber, Jabon	The certainty of HKm, HTR, HD or Partnership of Certain Area.		Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
5	Gularaya	Ant house, Rattan, Honey, Bamboo	• Analysis of potential raw materials • Training of design product		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Wallacea Healt Centre Ecotourism	Analysis of the feasibility of a tourism business		Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
		HKm, HTR, dan HD	The certainty of HKm, HTR, HD.		Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
6	Kapuas Hulu	Jelutung, Ramin	• Analysis of potential raw materials • Training of design product		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Mineral water	Potential water discharge and water quality analysis.		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Ekotourism	Analysis of the feasibility of a tourism business		Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
7	Lakitan	Agroforestry, Rubber, Palm oil	The certainty of HKm, HTR, HD or Partnership of Certain Area.		Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
8	Rinjani Barat	Ekotourism	Analysis of the feasibility of a tourism business		Proposal for partnership with investors	Promotion network with travel agents	Strengthening tourism promotions
		Mineral water	Potential water discharge and water quality analysis.		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		HKm, HTR, HD	The certainty of HKm, HTR, HD.		Reforested agroforestry patterns plan and profit sharing	Planting costs	• Maintenance plans • Plant monitoring and evaluation
9	Sijunjung	Rattan, Honey, Rubber,	• Analysis of potential raw materials • Training of design product		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain
		Wood pellet	• Clear of permit partnership. • Cooperation agreement with investors		• Production plan • Raw materials plan.	• Production infrastructure. • Production capital.	Marketing chain
		Mineral water	Potential water discharge and water quality analysis.		Business and production plans	• Production infrastructure. • Production capital.	Marketing chain

		HKm, HTR, HD		The certainty of HKm, HTR, HD.	Reforested agroforestry patterns plan and profit sharing	Planting costs	•Maintenance plans •Plant monitoring and evaluation
10	Tanah Laut	NA	NA	NA	NA	NA	NA

In addition to the types of support needed as the matrix above, livelihoods development in KPH models must strengthen with strengthening strategies in 3 main aspects, namely: (a) institutional capacity; (b) market access and source of capital, and (c) human resources.

- [1] Institutions that support the implementation of the Partnership pattern have not prepared in a structured manner. The KPH Model and the forestry service internally are not yet institutions that correctly handle the Partnership, because it associated with considerations of the bureaucratic aspects. While institutions at the community level are still very fluid and have not been structurally organized, this occurs because the relationship between the Model KPH and the new community groups is in the level of recognition of the role and position of the KPH Model. Other parties, such as NGOs can take efforts to facilitate and empower the community related to the KPH Model. The need to organize community groups should not be done if there has been a conflict of interest between the KPH Model and the community relating to the forest area. But from the outset, the community needs to be organized through an "institution" as a means of communication and coordination to address the issue of conflict between the community and the KPH Model in the pattern of the partnership.
- [2] The classic problem that is always faced by people to start business is the constraint of market access and sources of capital. The issue of the benefits of forests as an economical source becomes important as a foundation for building a partnership pattern. Open market access will determine the type of commodity that can develop. For example, the development of rubber plants at Dampelas Tinombo FMU occurs because of market opportunities for rubber sap from other regions [17]. The market chain that has built like this will make it easier for the "acceptability" of the community to be involved in the partnership pattern. Challenges in the market chain - especially agricultural and forestry commodities - are the role of "middleman" who are strong enough to master market information and price information. In this context, it becomes a challenge for the KPH Model how to take the role of "middleman" in the commodity marketing chain resulting from the pattern of partnership with the community. The pattern of relationships as "plasma" will be more strategic for KPH Models in investing and reducing potential conflicts that could have an impact on the process of degradation and regional deforestation.

Problems faced in implementing partnership patterns in study locations are due to the problem of limited available human resources. Preparation of human resources in the KPH Model is an absolute requirement to ensure the successful implementation of the Partnership pattern. The human

resources orientation and mindset must be set-up that the KPH Model is a public service institution that guarantees community livelihood sustainability, but also as a "business entity" that must be able to guarantee the source of income for the operational needs of the KPH Model independently. Increasing the capacity of personnel managing the Partnership pattern on KPH Models becomes a severe problem, if not done up-grading human resources regularly.

4. Conclusions and Recommendations

The results of a review of livelihoods development at 10 KPH models and field verification at the Sijunjung FMU, West Sumatra and Dampelas Tinombo FMU, Central Sulawesi, concluded that 10 KPH Models are ready for the implementation of the Partnership, with several recommendations as follows:

- 1) The partnership pattern based on NTF potential, environmental services, and ecotourism must be supported in the form of:
 - a) NTF: analysis of potential raw materials, product design training, business and production plans, preparation of production infrastructure and production capital, strengthening of the marketing chain;
 - b) Environmental services (mineral water): analysis of potential water discharge and water quality, business and production plans, preparation of production infrastructure and production capital, strengthening of the marketing chain;
 - c) Ecotourism: feasibility analysis of ecotourism business, partnership proposals with investors, building promotional networks with travel agents, and strengthening tourism promotion.
- 2) Timber-based partnership patterns, land and wood processing industries, must be supported in the form of:
 - a) Timber: timber legality document, plan for reforestation of agroforestry patterns and profit sharing, planting/reforestation costs, maintenance plans, plant monitoring, and evaluation;
 - b) Timber processing industry as raw material: the certainty of partnership permits in certain areas, production plans, plans for fulfilling raw materials, production infrastructure and production capital, marketing chains;
 - c) HKm, HTR and HD: the certainty of HKm, HTR, and HD permits, plans reforestation of agroforestry patterns and profit sharing, planting/reforestation costs, maintenance plans, plant monitoring and evaluation.

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