

Certification model of Sustainable forest management in a Forest Management Unit (FMU) in Bangkalan East Java Indonesia

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Abstract-The objectives of this study are to describe implementation of sustainable forest management with certification program, to describe strategy of maintaining sustainable forest management and to reveal role of the patrons. Data collection was conducted through focus group discussions of farmer groups as well as forest owners, assessment of forest management documents, relevant secondary data collection from various related agencies, field observations and in-depth interviews with informants from both local formal and informal leaders. Forest Management Unit of Gerbang Lestari (FMUGL) in Bangkalan District passed the certification of Sustainable Community Sustainable Forest Management. Total of 30 indicators used in this assessment, 14 indicators were considered as Good, 13 indicators were considered as Fair and 3 indicators were considered as Bad. In order to overcome the weakness, the recommendation were suggested, those consisted of quickly establish a chain-of-custody system followed by training both at board and member level and cooperation with merchants; arrangement of logging permits and logging records starting at the village level, enhancing the joint purchase of timber with the company; involves organizational processes with multi-stakeholders; improved management information system; enable agencies or regulatory bodies. Community leaders, especially clerics, play an important role in transforming idea about environmental conservation. The clerics can play a role in conserving the environment and the forest by providing examples or role models to the students, the surrounding community and the environment in which they live.

Key words- cleric role, Indonesia, strategy, sustainable forest management, wood certification

I. INTRODUCTION

Tropical forests in Southeast Asia and Oceania are valuable for their high economic value and biodiversity. The high economic potential of forests along with global economic demand for tropical timber has sparked enormous environments problems, including deforestation, forest degradation and biodiversity loss [1]. Deforestation and forest degradation has occurred globally including in Indonesia. It is said that Indonesia lost approximately 1.5 million hectares of forest each year in the 80s and 90s [2]. The World Bank warns that the island of Sumatra will be

denuded of forest by 2005, and Kalimantan by 2010, if no countermeasures are taken.

During the last decade, forest certification has gained momentum as a market-based conservation strategy in tropical forest countries. Certification has been promoted to enhance forest management in countries where governance capacities are insufficient to adequately manage natural resources and enforce pertinent regulations, given that certification relies largely on non-governmental organizations and private businesses. However, at present there are few tropical countries with large areas of certified forests [3].

In 1990, the first ever developing country certification was carried out in Indonesia, when SmartWood certified Perum Perhutani's teak forest operation on the island of Java. In response to this and other NGO pressure, the Government of Indonesia established its own forest certification scheme – Lembaga Ekolabel Indonesia (LEI) – in 1993. In 1998, LEI was officially established as a foundation and since then has conducted several certification assessments. The LEI and FSC have also developed a Joint Certification Protocol (JCP) that obliges FSC to use both LEI and FSC criteria and indicators when conducting an assessment of a forest management operation [1].

In line with the multi-stakeholder initiative to encourage community-based forest management in Indonesia, a certification system for Sustainable Community Based Forest Management (SCBFM) has been developed since 2000 [4]. The SCBFM certification is an assessment and labeling activity aimed at stating that forest products derived from forests managed by a community forest have been through a sustainable management. The SCBFM itself is a management system by individuals or groups of a community, whether in state forests, communal land or customary land (individual / household) that aims to meet the needs of individuals / households and communities, either commercially or simply for subsistence.

This study places the issue of forest certification in forest conservation as the subject of discussion. Sustainable forest conservation is more focused on SCBFM in Forest Management Unit of Gerbang Lestari (FMUGL), Bangkalan District, East Java, Indonesia. The SCBFM Certification is a new phenomenon in Indonesia. The objectives of this study are to describe implementation of sustainable forest management with certification program, to reveal role of the

patrons, and to describe strategy of maintaining sustainable forest management.

II. MATERIAL AND METHOD

The study was conducted in Bangkalan District, East Java Province, covering 3 villages in Geger sub-district. Site selection is based on the condition of the location that has passed the certification of SCBFM as well as taking into account the development potential of the development area in the spatial area. The study was conducted 8 months from June 2017 to November 2017.

The selected villages include Kumbangan Village, Geger Village, and Togubang Village. In the area has been established Forest Management Unit (FMU) with the name of FMUGL, which is a combination of forest farmer groups from the 3 villages. The number of members of FMUGL Lestari is 7,473 households, with forest area managed by 3,427.11 Ha (consisted of yard of 349.91 Ha and Farm of 3,077.21 Ha). The dominant tree species are Acacia, Albizia, Teak, and Mahogany (Table 1). Understory plants are composed of medicinal and food herbs. The selection of these 3 villages for certification implementation is due to the closure condition of the timber canopy relatively tight compared to other villages, as well as the location of the adjoining village, and the water catchment area for Geger sub-district.

Table 1. Wide of forest area and number of householder in the study sites

Location	Wide of area (Ha)			Number of householder
	Farm	Yard	Total	
Geger	692.45	226.56	919.01	1,691
Kumbangan	899.72	24.82	924.54	2,421
Togubang	994.84	50.90	1,045.74	2,698
Miscellaneous	490.19	47.63	527.82	663.00
Total	3,077.21	349.91	3,427.11	7,473

The preparatory process of FMUGL started in 2006 and in 2010 the FMUGL passed the certification of SCBFM by Certification Agency. The graduation of FMUGL is a Certification Agency acknowledgment that the forest management has fulfilled the criteria and indicator requirements of production aspect, ecological aspect, and social aspect.

The analysis of the performance of community forest management used LEI-5003 [4] standard for C scheme, which is commercial forest in land owned by property rights. Data collection for each indicator was done in each village, where each village is considered as a unit of forest management. Data collection was conducted through focus group discussions of farmer groups as well as owners, assessment of forest management documents, relevant secondary data collection from various related agencies, field observations and in-depth interviews with informants from both local formal and informal leaders.

III. RESULT AND DISCUSSION

Typology of SCBFM of FMUGL is unit that utilizes or produces commercially timber in non-forestry cultivation area because the community forest area is managed by FMUGL based on Map of Forest and Water Area Appointment from Ministry of Forestry and Map of Province Spatial Plan of East Java. The site is located in

Non-Forestry Cultivation Area. The orientation of forest management conducted by the community has been commercial, and the land ownership status was controlled individually.

The results of the assessment of production aspect indicators on community forest management in the working area of FMUGL are presented in Table 2. The production sustainability function was met with 3 criteria specified in 17 indicators. From the assessment results there were 7 indicators considered as Good, 7 indicators considered as Fair and 3 indicators that need improvement. Good-sized production sustainability indicators were resource sustainability criteria with clear status indicators and boundaries of land, forest maintenance management, and silvicultural systems according to the carrying capacity of the land; sustainability criteria with indicators of forest management area management, forest utilization efficiency, and forest infrastructure; criteria of business sustainability with contributing indicators on improving local social and economic conditions. Indicators that get Fair value were the criterion of resource sustainability with indicator of change of land area which is overgrown with plants; sustainability criteria with indicators of certainty of potential production to be harvested sustainably, yield arrangements, and forest benefit arrangements; as well as sustainability criteria with business health indicators, available skilled labor, and investment and reinvestment for forest management. Meanwhile, the indicators that still need improvement due to Bad value are sustainability criteria were indicators of the legality of the chain of custody system in the forest; and sustainability criteria with indicators of market access ability, and management information systems (Table 2).

Table 2. Assessment of production aspect indicators

Indicators	Indicator achievement		
	Good	Fair	Bad
Status and boundaries of land	√		
Changes in forest land area		√	
Forest maintenance	√		
Silviculture system	√		
Arrangement of forest management area	√		
Sustainable harvest potential		√	
Result setting		√	
Efficiency of forest utilization	√		
Chain-of-custody system			√
Forest infrastructure	√		
Setting benefit		√	
Business health		√	
Market access capability			√
Management information system			√
Human resources		√	
Investment and reinvestment of forests		√	
Contributions to the local economy	√		

The sustainable logging system data is presented in Table 3. Result showed that acacia is the species with the highest amount and volume followed by the teak. Allotment for acacia was also highest compared to other species.

Table 3. Recapitulation of sustainable felling on several tree species

Tree species	Number of log	Volume (m ³)	Cycle/age of cut (year old)	Cut quota
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Teak	139.47	29,429.15	20	2,942.92
Mahogany	78.48	12,656.80	15	1,687.57
Acacia	780.08	143,661.68	12	23,943.61
Albizia	78.11	16,395.18	15	2,186.02
Total	1.076.14	202.142,81		30.760,13

The ecological sustainability principle has had a criterion: the stability of forest ecosystems that can be maintained from disruptions. This criterion was outlined in 3 indicators. Result of ecological aspect assessment was an indicator considered as Good and 2 indicators considered as Fair (Table 4). The Good indicator was the existence of effective environmental management activities. While the indicator with Fair is the availability of production management rules that minimize disruption to the integrity of the environment and the availability of information and documentation of the impact of production management activities on the environment.

Table 4. Result of assessment of ecological aspect indicators.

Indicators	Indicator achievement		
	Good	Fair	Bad
Production management rules		√	
Information and documentation		√	
Environmental Management	√		

The results of the assessment of indicators of the preservation of social function were presented in Table 5. The function of social sustainability principle was met with 4 criteria described in 10 indicators. The results of social aspect assessment were as follows: 6 indicators considered as Good and 4 indicators considered as Fair. The Good indicators were Community forest managers; forest managers are landowners; non-dispute land status; dispute resolution mechanism; community economic resources; and the pattern of established social relationships. Indicators that considered as Fair were clear area boundaries; production technology; the division of authority; and compensation for community losses.

Table 5. Assessment results of social aspects indicators

Indicators	Indicator achievement		
	Good	Fair	Bad
Community forest managers	√		
Forest managers are landowners	√		
Non-dispute land status	√		
Clear area boundaries		√	
Dispute resolution mechanism	√		
Community economic resources	√		
Production technology		√	
The pattern of established social relationships	√		
The division of authority		√	
Compensation for community losses		√	

Based on the overall indicator used, the calculation of graduation calculation was presented in Table 6.

Table 6. Calculation of certification passing indicators

	∑ Good value	∑ Fair value	∑ Bad value	Total (n)
Production Aspects	7	7	3	17
Ecological Aspects	1	2	0	3
Social Aspects	6	4	0	10
Total	14	13	3	30

Total indicators used in this assessment were 30 indicators consist of 14 Good indicators, 13 Fair indicators and 3 Bad indicators. In accordance with the justification of the Decision Making Panel Team of the FMUGL was stated "Passed with note" certification because the score of Good indicators was 46.67% while the Fair indicators were 43.33%. It was recommended to Certification Bodies to issue a SCBFM certificate for FMUGL. To overcome the indicator with Bad value, this study recommends several actions, presented in Table 7.

Table 7. Recommendations to overcome of bad indicators

Indicator	Improving area	Action
Chain-of-custody system	Marking on stumps and log	Quickly established system of chain of custody from tree stump, and log. Therefore, it is necessary to design a chain tracking system at individual level and FMU.
	Records of merchant collectors (basket)	To support the implementation of chain-of-custody in the field, training needs to be done at both the board and members level.
	Certificate of logging from the village	Quickly established cooperation with merchants to be actively involved in the implementation of chain-of-custody system.
Market access capability	The growth of the number of buyers.	Arrangement of logging permits and logging records starting at the village level.
Management information System	Decision-making process within the organization.	The government together with the FMU enhanced the joint purchase of timber with the company.
	Availability and feasibility of archive files and data on SCBFM activities	Documentation of decision-making processes undertaken by organizations involving multi-stakeholders processes.
	Structure of the internal controller of the activities of the SCBFM organization	Improvement of information system management and control of group documentation (member book, cash book, guest book, activity book or monthly or quarterly report)

The recommendation consisted of quickly establish a chain-of-custody system followed by training both at board and member level and cooperation with merchants; arrangement of logging permits and logging records starting at the village level, enhancing the joint purchase of timber with the company; involves organizational processes with multi-stakeholders; improved management information system; enable agencies or regulatory bodies.

Community leaders, especially cleric, play an important role in making environmental changes. According to Irham

Rofii, Head of Pondok Pesantren Darul Ittihad, Campor Village, Geger Sub-district, Bangkalan Regency, East Java, the clerics can play a role in conserving the environment and the forest by providing examples or role models to the students, the surrounding community and the environment in which they live. The clerics delivered suggestion or recommendation to the surrounding community when speaking. They lead the prayer in the celebration or commemoration of the big day of Islam and other activities; making seeds of plants in the program of making the Community Seed Garden, Village Seed Garden or Seed Voluntary Garden; delivering a religious message about love for the environment and forests is part of religion and faith.

IV. DISCUSSION

The main objective of eco-labeling is to assist achieve market transformation by communicating verifiable, accurate information, on environmental aspects of products [5]. Market transformation means increasing the market share of products with lesser environmental impacts, thereby stimulating the potential for market-driven continual environmental improvement [6]. The objective of eco-labels then is to provide guidance to consumers making purchasing decisions.

From a consumer standpoint, certification shows their concern in the use of green products. In this context, consumers require internal processes, production factors, packaging processes. Consumers need symbols or labels that indicate the product they choose has gone through an environmentally friendly production process. Indications or symbols are then known as ecolabel (ecolabelling). Ecolabel provides information on quality standards.

International markets do not apply the distinction to timber and non-timber consumed. This applies also to timber and non-timber forest products derived from community-based management forests (Community-Based Forest Management). In line with various parties to encourage community-based forest management in Indonesia, a certification system for Sustainable Community Based Forest Management has been developed since 2000 [4].

Sustainable forest management can be assessed based on ecological, social, economic and institutional aspects [7]. Certification is believed to have had many benefits to community and positive impacts to environment [8] and some of these impacts have already been identified to benefit biodiversity in managed forests [9]. In Indonesia a study reported that certification may reduce firewood dependence (by 33%), respiratory infections (by 32%) and malnutrition (by 1 person) on average [10].

This study reveals the important role of the clerics. The role of patrons in maintaining leadership in forest conservation efforts is a form of trust between leaders (clerics) and followers. The root of the certification word is "to make sure" [11]. In this context, the role of clerics as the agents to transform environmental conservation efforts is important. This is because they have gained trust from the community.

IV. CONCLUSION

Forest Management Unit of Gerbang Lestari (FMUGL) in Bangkalan District passed the certification of Sustainable Community Sustainable Forest Management. Total of 30 indicators used in this assessment, 14 indicators were considered as Good, 13 indicators were considered as Fair and 3 indicators were considered as Bad. In order to overcome the weakness, the recommendation were suggested, those consisted of quickly establish a chain-of-custody system followed by training both at board and member level and cooperation with merchants; arrangement of logging permits and logging records starting at the village level, enhancing the joint purchase of timber with the company; involves organizational processes with multi-stakeholders; improved management information system; enable agencies or regulatory bodies.

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