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Agroforestry Methods on Community Empowermentin theSesaot Community Forest Management and Conservation in West Lombok - Indonesia

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Abstract

In the pattern of community forest, community involvement in forest management is expected to improve the welfare of rural communities around the forests. The purpose of this research is the creation of land use patterns based on forest conservation by the local community, the creation of agroforestry model of entrepreneurship on forest land use by communities around the forest community, community empowerment using agroforestry model of entrepreneurship as an alternative effort management of community forest conservation at the same time. The research was conducted in the villages around the community forest Sesaot, District Narmada, Lombok Barat. The sample in this study is participating farmer households which is determined as many as 60 people in accidental sampling. Primary data that have been collected and tabulated then analyzed quantitatively and qualitatively. The results showed that agroforestry systems developed in forest land is by planting various kinds of wood plants (Sengon and Mahogany), fruits (durian, rambutan, jackfruit, mango, Duku, hazelnut, avocado) and seasonal crops (crops). The average income of farmers from farming agroforestry for Rp.1.985, 277, - / land / crops (2-3 harvests / year). Community contribution towards development and community forest management is high with a score of 165.34. With the maintenance of forest plants and agricultural crops in addition to forest ecosystem conservation, farmers can also gain from annual crops and fruit trees.

Keywords

Community Forest, Agroforestry, Entrepreneurship, Forest Management, Conservation

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1. Introduction

1.1. Background

Forests have multiple functions such as production functions, protection and regulation. Because of these functions, then the forest ecosystem has their important role as life support systems, sustainable development [1]. However, the economic contribution granted by the forestry sector, it leaves a big problem in the form of damage to forest resources and the environment very seriously, because it is still weak forest management and enforcement of forestry laws [4]. Besides that increasing population around the forests, poverty and employment as well as to the economic crisis and the low participation and public perception of the functions of the forest makes a lot of people carry out actions that violate laws and norms, such as the encroachment of land, illegal logging, forest encroachment, forest fires, illegal

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logging which accompanied the destruction of forests, grazing cattle and others that led to the destruction of forests in Indonesia [3].

Various conservation restoration efforts have been made, but have not given satisfactory results. One alternative for reducing threats and harassment from the area surrounding communities is to involve the community to participate in forest protection efforts [2]. In other words, the strategy needs to be sought in the form of concrete activities around the area of community development. To involve the local community, it is very important to know the characteristics of the community such as the socio-economic conditions of the people especially those interacting directly with the forest area [11].

Forest development as the implications of the paradigm shift in forestry development is the policy of addressing the people as the main actors and beneficiaries in sustainable and fair forest management. Within the framework of this policy has pursued a pattern of forestry development, known as the Community Forest (CF). Community Forest Management (CFM)based, which is conducted in a multi-party involving various elements and community groups, highlighting the role of the community as the main executor and main beneficiaries directly from the forest, while the government and non-governmental organizations more as a role of provider of access, guidance, coaching and control. The impact is the public's understanding of the functioning of forest resources will be increased, so willthe socio-economic levels of society around the forest. Therefore the contribution of communities in forest management is essential toimprove the socio-economic and community roles in community forestry [9].

The relatively small contribution of the forestry sector to the welfare of society can lead to conflict between communities around the forest with forest managers (Nature Resources Conservation Service of *NTB*). Therefore, rural communities around the forest involvement in the forest management are expected, so the society will give a positive response in the form of participation to the development of a sustainable forest. With such circumstances, it would require an assessment of community forest management, especially concerning the contribution in the forestpreservation and its impact on socio-economic aspects [5].

From the description above, posed a problem, namely: a) What is the community contribution in theSesaot community forest managementand forest conservation? b) What is the impact of the Sesaotcommunity forest management to the social and economic aspects of the society around the forests? And this research aims to create agroforestry methodsin forest land use by communities surrounding the Sesaot Forest, and to implement community empowerment using agroforestrymethods as an alternative effort management of forest conservation. The research benefitwould be: The establishment of an entrepreneurial attitude and behavior-based agroforestry on community forest areas Sesaot community; The establishment of community groups sharecropper forest land in accordance with the government program that encourages the establishment of a social community institutions in synergy with forestry development; The establishment of agroforestry on community development in forest areas Sesaot community; The establishment of an alternative pattern of community empowerment through land management in the area of community forests Sesaot well as play an active role in efforts to preserve it; It is also hoped this research can contribute ideas for the government to take on policies related to forest conservation and to increase the role of communities in conserving the forest resources.

1.2. Community Forest

The roles of the community in the development of community forests play an important role towards the realization of environmental sustainability. Society and community forestry have a reciprocal relationship of mutual benefit, so if communities around the forest carrying out management of forest conservation, it can be deemed to have contributed to the community forest [7]. The CFM is the approach by and for the community is a joint initiative by the public and continues to manage the forest. Community forest management include:Educating and developing public awareness that forests are a source of food production in the CF, a staple part of the global life support system and must be used in a sustainable manner; Promoting agriculture and use of natural resources is sustainable, assess and develop sustainable agriculture and the use of community forest in a sustainable manner, ensuring participation by the entire community around the forest in the area of farming; Preserve and protect the environment (ecosystem) are vulnerable; Improving the ability of natural resources to grow back, examining ways to halt the destruction and pollution of natural resources, developing the progress of natural resources to recover [7, 10, 11]; Develop gender equality and of participation'Ensure fulfilled the basic interests of indigenous and minority populations; Resolving issues across borders; Support networks and harmonious relationships with service agencies, government agencies, universities and non government organizations (NGOs).

1.3. Agroforestry Methods

John MacKinon, et al. (2013), revealed that the presence or welfare of the community around conservation area will

determine the successful management of protected areas. If the area is protected as a barrier, then the locals could thwart its preservation [6]. Conversely when the conservation area is regarded as something positive benefits, the residents themselves will cooperate with the management in protecting the area. Thus the typical approach is required for each conservation area in relationships as a form of participatory community development around the area [3]. There are several strategies that should be pursued in an effort to empower the community, namely: (1) Development of community aspirations and participation, (2) institutional development of society, (3) development of economic activities of the people, (4) cross-sectoral approach, (5) implementing environmentally friendly technologies (Forest Protection and Nature Conservation, 2004). The CF land in the surrounding area, is an area of considerable potential as a shield or buffer the sustainability of biodiversity and ecosystem conservation forests. Because of that development around the region are expected to have a reciprocal relationship that is mutually beneficial.

Agroforestry methods is the pattern of forest land management with intercropping systems, which is a mix between crop planting timber or fruit trees with annual crops. Planting with cropping system in the conservation area will obtain the advantage of: (1) species diversity as a source of germplasm to support the conservation area, (2) income security, (3) income frequency, (4) product sustainability. The biodiversity aims to prepare in the event of failure of one plant, it can be produced from other crops. Security is a guarantee of income or opportunity that yields obtained can be easily sold and has a high sales value. Frequency of income shows the revenue earned can be daily, weekly, monthly and yearly. Sustainability is the length of agroforestry continues and the fulfillment of food needs on an ongoing basis.

2. Research Method

The research was conducted on community forestry Sesaot, District Narmada, Lombok Barat. Determination of the study area is purposive sampling, with consideration of the distribution of location, diversity implementing and funding sources, and expected people in the forest area has contributed to forest management, and has had a socio-economic impact on the community forest region. This study used "descriptive", a method that focused on solving the problems that exist at the present time, by collecting data, compiling, explain, analyze and draw conclusions. The primary data collection using the survey technique, i.e. the data collected from respondents using the list of questions prepared in advance [5], [10], [11]. Primary data is data obtained from respondents with direct interview techniques based on a list of questions prepared in advance, and secondary data is data obtained from reports / publications of department or agency related with this research. The samples in this study are participating farmer households on the CF which is determined as many as 60 people in accidental sampling.

Primary data that have been collected tabulated and analyzed quantitatively the qualitative data by using a score. Of the 40 items of questions quantified using a scale score of 5 (strongly agree, agree, disagree and strongly disagree, undecided). From the scores obtained in grade into high contribution (score 151-200), moderate (score 100-150) and the lower contribution of the community in the management of conditional land (score 40-99). Quantitative data by using frequency tables and analyzed qualitatively, by explaining in narrative. And the research variables are:Contributions from the community is about the management of public donations, ie any matters that have been implemented by communities around the forest to conserve community forests, i.e. the qualitative analysis; To view the social aspect, namely the extent to which people in the forest area of social change, namely the qualitative analysis; The economic aspect, ie how much income received by people in the forest with their community forest, beside done qualitatively well with quantitative namely by reducing the value of revenues with expenses incurred during the year in rupiah unit.

3. Result and Discussion

Agroforestry system developed by farmers in land HKmSesaot is by planting various crops such as timber plants, MPTS (Multi Purpose Trees Species) and seasonal crops. CFM farmers commonly plant timber, among others *Sengon* (*Falcatariamoluccana*), mahogany (*Swieteniamacrophylla*); MPTS (fruits and plants banquet) such as *durian* (Duriozibethinus), *rambutan* (*Nepheliiumlappaceum*), avocado (*PerseaAmericana*), tan (*Lansiumdomesticum*), jackfruit (*Artocarpusheterophyllus*), mango (*Mangiferaindica*), *kedondong* (*Spondiasdulcis*), walnut (*Aleuritesmoluccana*), soursop (*Annonamuricata*) and gliciridia (*Gliricidiasepium*). Plantation crops are dominated by coffee and chocolate and seasonal crops include bananas, peppers, eggplant.

CFM commodities marketing model conducted so far is by selling direct to market either through merchants collector or to the final consumer in accordance with the volume of production. Until now, access to information and the market has not yet institutionalized well at the community level. This condition has become one of the causes of the weak bargaining position of farmers in marketing their community forest commodity of their non-timber forest land management.

3.1. RespondentDemographics

In this study population respondents are heads of households'farmers participating in Sesaotcommunity forestry which is determined as a sample of 60 people selected by accidental sampling.

Table 1. RespondentDemographics.

Asked Aspects	Answer	Total(people)	%
Responden Age	≤ 33	8	13,33
	34 - 41	25	41,67
	42 - 49	21	35,00
	50 – 59	4	6,67
	≥ 60	2	3,33
	Average40,6 years old		
Level of Education	Not Graduated Elementary School	17	28,33
	Graduated Elementary School	20	33,33
	Not Completed Junior School	12	20,00
	Graduated Junior High School	6	10,00
	Not Completed Senior High School	4	6,67
	Graduated Senior High School	1	1,67
Number of Family Members	2-3	11	18,33
	4-5	30	50,00
	>5	19	31,67
	Average 4,8 people/family		
Number of Productive Family Members	1	3	5,00
	2	18	30,00
	3	22	36,67
	4	9	15,00
	>4	8	13,33
	Average3,9 people/family		

Source: Data processed

The average age of respondents was 40.6, or 41 years, with a range of 33-62 years. In terms of the age of the respondent, all included in the productive age. This implies that both physically and mentally at that age supports the ability to earn an income. Judging from the respondent's educational level is low, so that in accepting the changes or conditional land management innovations relatively little slow. Most respondents, i.e. 49 respondents (61.66%) less educated, which is unfinishedelementary school up unfinished junior high school, while the remaining 11 (18, 44%) issecondary education, i.e. graduated from junior high school. The average number of family members of respondents is as much as 4.8 people or 5 people. This situation is less favorable because of the income to be relatively lower, so it can affect the welfare of the household. Household members that are either really contribute their labor in productive activities to earn a living. On average in one household there are four members who are productive, the husband and wife and two children. Although in one family havefour adult members. But not all of them can work for reveneue. It is caused by several factors such as limited business field.

3.2. Community Contribution to the Forest

According to the research community contributions in the development of the society in Sesaot forests can be categorized as high as the average achievement of a score of 180.13. Whereas most respondents (86.67%) with a high category, 176,46.

Table 2. Community Contribution Rate to the SesaotForest.

No	Contribution Rate	Total (people)	Total Scores	Percentage
1	High	41	*179,68*	68,33
2	Medium	19	*144,00*	31,67
3	Low	0	*0*	0,0
Total		60		100

Source:Primarydataprocessed

People in the Sesaot forest have a higher contribution is 179.68. It is caused by a large majority (90%) people around the forest stated that the forest needs to be preserved, so that it can provide added value or benefits including increased revenue. It is also their assistants field who continue to provide assistance or counseling is intensive and always bring awareness to the public that biological resources including forest resources and the environment should be maintained or managed by the priority-based approach meet basic human needs, increase revenue sources regions and communities in forested areas while maintaining sustainability.

3.3. Socio-Economic Impact

The impact of community forestry programs to changing socio-economic conditions of the respondents can be seen in Table 3 below:

Table 3. Program Impact IdentificationoftheSesaotCommunity Forest.

Socio-Economic Variables	Impact
Knowledge of forest functions	increased
Exploitation of forest resources	decreased
The social status of participants	increased
Employment	increasedincreased
Social conflict	increaseddecreased
Flow of information / technology	increased
Urbanization	
Activity in the forestry programsuch as counseling, etc	
Average area of cultivated land (acres)	0,38
Average income per cultivated area (Rp)	1.299.135
Average income per cultivated area (Rp)	3.418.776

Source:Primarydata processed

From the table above reflects that their community forest management / forest region farmers have experienced the impact of the changes. More detail can be described as follows:

Knowledge is one of the important factors in the formation of behavior change, whether it changes slowly (evolution) or fast (revolution). A change moves leave the factors that changed, and one of the changes made to modernize regarding sociodemographic aspects, namely changes in the level of public knowledge towards a better level of knowledge. This knowledge is the change factor and indicator of the readiness of human resources in accepting social change.

It also can not be separated from the guidance of a companion, both from government and private sectors. So with the guidance and mentoring the local wisdom regarding knowledge / perceptions of their forest management increased. With the knowledge that they get the people who participate in community forest management can develop an awareness of his mind, that kemasyarakan forests are a source of food production, a staple part of the global life support system and forests must be used in a sustainable manner.

With the increased knowledge / perceptions about the forest, the intensity of the attachment between the community and the forest became high, and they are more ready to accept the information, technology, social patterns arising from the implementation of community forest management, so that people consciously participate actively in the implementation of forestry development, Economically, the results showed that the respondents increased social status obtained from forest management. With the development of community forestry, it will open employment opportunities for the community. The level of employment in community forestry is largely determined by the intensity of community forestry activities, and is influenced by land area and the types of crops grown.

One of the goals of the development of community forestry is making the people in the forest area into a prosperous, self-sufficient and capable of functioning as a custodian of public order and preservation of the function and benefits of the surrounding forest resources optimally. Before their community forest villagers urbanization level around the forests to the cities looking for jobs is relatively high, but with the community forest, after the absorption of labor in the family is slowly diminishing. This means that their community forests have a positive impact for the community.

From Table 3 above it can be seen that the average income received by the community participants Sesaot community forest is Rp. 3,418,776 / ha / year. The size of the income received by farmers / communities in community forest management among others, the difference in intensity of land use, the diversity of plant species intercropping, and choice of commodities in accordance with the conditions of the land and the planting pattern of high economic value. In the community forest Sesaot earned income is relatively high; this is due to the diversity of types of secondary crops planted many, as many as eight species of plants with three leading commodities as chili, corn and bananas. In addition to their crops intercropping, some respondents also plant types of grass (medicinal) such as turmeric, ginger, gathering and utilizing plants forests as Tajar life (host) for other crops, such as betel nut, pepper and vanilla to impact on increased revenue.

From interviews with all respondents (100%) stated that their community forest managed by communities around the forest that is devoted to the residents who do not have agricultural land / plantation, all expressed a positive impact on revenue, meaning the presence of community forests can increase incomes / farmers around the forest. Community participation in community forestry program means people who do not have the natural resources in the form of field / garden can also obtain the right to work / manage the land, although extensive for each participant in each region varies, but it is very meaningful for the communities around the forest who formerly did not have arable land. With community participation in managing community forests, is certainly capable of sustaining life and welfare of the community.

4. Conclusion

The shape of the region conducted community empowerment through land use patterns by using a model of agroforestry. Agroforestry systems developed in the community forest land Sesaot is by planting various plant species of wood, MPTS (Multi Purpose Trees Species) and seasonal crops. Farmers commonly plant community forest timber, among others *Sengon* (*Falcatariamoluccana*), Mahogany (*Swieteniamacrophylla*); MPTS (fruits and plants banquet) such as *durians* (*Duriozibethinus*), *rambutans* (*Nepheliiumlappaceum*), avocado (*Persea Americana*), *Duku* (*Lansiumdomesticum*), jackfruit (*Artocarpusheterophyllus*),

mango (Mangiferaindica), kedondong (Spondiasdulcis), walnut (*Aleuritesmoluccana*), soursop (*Annonamuricata*) and gliciridia (*Gliricidiasepium*). Plantation crops are dominated by coffee and chocolate and seasonal crops include bananas, peppers, eggplant. The average income of farmers from farming agroforestry for Rp.1.299.135, - / land / crops (2-3 harvests / year).

Seen from the planning, implementation, preservation until the welfare of the people be realized, community / farmers in the surrounding area of Sesaot community forests contribute to the development and management of community forests with a high contribution (68.33%).

Impact of community forest management program toward social change on farmer respondents in the study outcome is positive changes, which means that the community forestry program has an impact on the social component in society, as well as economic impact that positive change, which provides income to management (forestry participants).

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