Social forestry for improving environmental quality and community welfare: a case study of Pantar Island, Alor, East Nusa Tenggara Province

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Abstract. Government has attempted to involve communities in state forest management to improve environment quality as well as generate the welfare of communities around the forest. However, local communities have low participation level in social forestry programs. This research aims to examine government’s implementation on social forestry programs in Pantar Island, East Nusa Tenggara Province using interview and focus group discussion methods. The result shows that two efforts are done to accelerate social forestry programs. Firstly, Government creates some groups to apply social forestry program. Secondly, Government hires Non-Government Organization (NGO) to assist community to propose state forest and to get forest management license. However, those efforts do not work properly. Consequently environmental quality and community welfare are not improved. Based our research, it is suggested for the government to supervise communities in state forest management and increase participation of communities in social forestry program through giving benefits from social forestry programs.

1. Introduction
Nusa Tenggara Timur Province have 1,485,917 ha of forested area and 4,793,154 ha of land area. Fifty eight percent of the forest area has been degraded [1] because of forest conversion to plantation area by local community. Province government could not prevent community to occupy the forest because of their lack of capacity such as lack of staff and funds to secure the forest.

Government attempt to improve forest by involving local community to manage state forest. The main aim of social forestry are to generate people income and to improve environmental quality. Social forestry is a program which involves the community in state forest management. This program changes degraded forest into forest which has more plants and benefits. The forest gives log and fruits as well as other products so the forest gives local people income. Social forestry program is also designed to improve environmental quality. Environmental effects of social forestry and its technology are largely positive [2]. Social forestry has led to conservation of natural forest and associated biodiversity through planting trees and fruit. This activity can help soil conservation and improve water regulation. However environmental effect depends on the success of social forestry programs. Reforestation occurs if government involves local people in social forestry programs.

Social forestry has been a movement in international forestry development since the mid 1970 [3–5] which is aimed to empower local people by involving them in management decision [3,6] and...
distribution of forest resources [4]. However, there are obstacles in involving local people in social forestry programs. Social forestry program faces low level of community participation so social forestry program and make the program does not work properly. People are not interested in social forestry programs in certain locations. The community participation depends on incentive structure and social capital that exist on community [7].

This research aims to examine government’s implementation on social forestry programs in Pantar Island, East Nusa Tenggara Province. The research aims also to provide a recommendation for government in implementing social forestry programs and getting strategies to solve problems which are faced by government. Moreover, the research gives lesson learnt for implementing social forestry program in other places. This research question focuses on efforts of government in implementing social forestry programs. Social forestry program work and what effort to implement social forestry programs are investigated.

2. Methods

This research is conducted in Pantar Island, Alor District as a case study (Figure 1), which faces problems in implementing social forestry programs. There are five sub districts in Pantar Island and have forests area which are potential to improve people’s welfare and increase environmental quality.

This study uses primary and secondary data. Primary data are collected through key informants interviews using semi-structured questionnaires. Purposive sampling technique is implemented to choose the respondents. They are people who are related to social forestry programs. Five members of each social forestry groups are interviewed. This aims to get information about the implementation of social forestry programs. Total respondents are 40 people. In addition, interviews with forestry employees and Non Government Organization to get information relating to social forestry programs are also implemented.

Data are analysed using qualitative technique [8]. Whether or not Social forestry programs work is also investigated, and then it also explores the cause of failure of social forestry program. Moreover this research also examines the effects of government’s efforts on the success of social forestry programs. This research compares the condition of forest before and after the government’s implementation of social forestry programs.

![Figure 1. Map of the research location](image-url)
3. Result

3.1. Government efforts

3.1.1. Creating groups

The government launches a social forestry programs but community do not try to get right for state forest management. It because the community is not interested in social forestry programs. Community prefers to manage forests illegally rather than manage forests legally through social forestry programs. They prefer also to plant plantation rather than to plant trees. To solve this problem, government creates groups of social forestry programs. Government hopes that social forestry programs work if the community have groups of social forestry programs. Government argues that community has to manage state forest through groups of social forestry programs. Therefore, the government is easy to supervise the community if they are incorporated into social forestry groups.

Government involves Non Government Organization (NGO) to help local community creates groups of social forestry programs. The government succeeds in creating some groups of social forestry programs but the groups of social forestry programs are passive groups. They work if the government give job or fund for planting forest.

Table 1 Shows the agencies who create groups of social forestry programs. Most of the groups of social forestry program are created by NGO. Local community have no initiative to create any groups of the social forestry programs. Community are accustomed to work alone. Moreover, the groups of the social forestry programs do not work well because they do not realise what they must do.

Table 1. Locations of social forestry programs and who made groups of social forestry programs

| No | Location  | Who created groups of social forestry programs |
|----|-----------|-----------------------------------------------|
| 1  | Boweli    | NGO                                           |
| 2  | Bukit Mas | NGO                                           |
| 3  | Bunga Bali| NGO                                           |
| 4  | Kaleb     | NGO                                           |
| 5  | Lekom     | NGO                                           |
| 6  | Madar     | NGO                                           |
| 7  | Mawar     | NGO                                           |
| 8  | Nule      | NGO                                           |

Government gives forest area for social forestry programs and local people manage the forest by planting trees and plantation crops. However community plant plantation crops and they do not plant trees. They manage state forest not according to the plan which has been made by NGO. This condition is not in line with the government's expectations.

Non Government Organization successfully creates some groups of social forestry programs but the social forestry programs do not work because a number of farmers that have received permits do not know what to do afterward, so they use their land to plantations after few years. They do not plant trees in the forest. People participation are low in making social forestry groups so social forestry programs does not work. Community is not interested in social forestry programs because it gives community less incentive. [7].

3.1.2. Government hired NGO

Government argues that legality of social forestry programs is important so social forestry programs should work. Community can manage state forest if they have forest management permits. However, local people are not interested to get forest management license. They do not try to get a forest management license. Therefore, government makes an effort to help the community obtaining a forest management permit. The government hires Non Government Organization (NGO) to assist
people managing the state forest, creating a group of social forestry programs and making a proposal for getting management state forest permit. Table 2 shows that NGO creates a proposal for getting a forest management license.

Ideally local people create a proposal for getting a forest management license and local community has to know how to manage the state forest. However, community do not have any desires to create the proposal for getting a forest management license. As a result of the research shows NGO makes proposal for getting a forest management license because the local community could not make any proposals.

Table 2 Social forestry program sites and stakeholders that help to get a forest management license

| No | Location/ Village | Who create a proposal for getting a forest management license |
|----|-------------------|-------------------------------------------------------------|
| 1  | Boweli            | NGO                                                         |
| 2  | Bukit Mas         | NGO                                                         |
| 3  | Bunga Bali        | NGO                                                         |
| 4  | Kaleb             | NGO                                                         |
| 5  | Lekom             | NGO                                                         |
| 6  | Madar             | NGO                                                         |
| 7  | Mawar             | NGO                                                         |
| 8  | Nule              | NGO                                                         |

Table 2 shows that NGO creates a proposal for obtaining a forest management license because the people do not know how to create a proposal and procedure of getting state forest management license. As a result, the social forestry program do not work because local people do not know how to implement the proposal.

Local people can have a license for managing state forest through social forestry program if they have a proposal to manage the state forest. The proposal includes plan of work, fund, who will manage the forest and time of work. People manage legally the state forest if they have a state forest management license. Social forestry program is a licensed for definitive community forest management and will remain for 35 years that the preparation of the program implemented in a participatory manner with the involvement of members [9].

Government gives community some forest management licenses which lead the community to legally manage the state forest. They have a forest management license and a plan to manage state forest but they manage forest not accordingly with the plan. They do not know how to manage state forest. Government must foster community so social forestry work. Government has to give community incentives so they are interested in social forestry programs [7].

Social forestry programs work if participation of community in social forestry program is high [10]. The community participation depends on incentive structure and social capital that exist on community [7]. Social forestry program in Pantar Island do not work because community has low knowledge to manage state forest, low of awareness, low of promotion, and cultural matter. Government is able to increase participation of community in social forestry program through handling socialization of the social forestry program, improving community’s understanding on the culture of people and giving community more incentives.

Table 3 shows that most of social forestry programs do not run properly. Community has had the license and a proposal for managing state forest but they could not implement the social forestry programs made by NGO because they do not know how to manage state forest. Government gives the community an obligation to plant trees and plantation crop in the forest but community is not willing to plant trees. They prefer growing plantation crops. They are not willing to plant trees because of cultural matter and they argue that forests are theirs so they can plant whatever they are willing to plant in the forest.
Table 3. Condition of Social forestry programs

| No | Location/Village | Social forestry programs condition |
|----|------------------|-----------------------------------|
| 1  | Boweli           | Not run                           |
| 2  | Bukit Mas        | Not run                           |
| 3  | Bunga Bali       | Not run                           |
| 4  | Kaleb            | Not run                           |
| 5  | Lekom            | Not run                           |
| 6  | Madar            | Not run                           |
| 7  | Mawar            | Not run                           |
| 8  | Nule             | No run                            |

3.2. Environmental quality effect of social forestry programs.

The research shows that social forestry programs could not improve environmental quality. Table 4 shows conditions of state forest used for social forestry programs. Most of the forests turn into a plantation so environmental quality fell down. The condition of the forest do not match the social forestry program objectives. This happens because the community do not follow the directions of the government.

Tabel 4. Condition of forest in social forestry programs

| No | Location | Conditions of forest |
|----|----------|----------------------|
| 1  | Boweli   | Plantation crops     |
| 2  | Bukit Mas| Plantation crops     |
| 3  | Bunga Bali| Plantation crops   |
| 4  | Kaleb    | Plantation crops     |
| 5  | Lekom    | Plantation crops     |
| 6  | Madar    | Plantation crops     |
| 7  | Mawar    | Plantation crops     |
| 8  | Nule     | Plantation crops     |

The forests used for the social forestry program are encroached forest and community claims that the forest belongs to them. Community penetrates into the forest and they use the forest for plantation. The forest are degraded because community encroaches the forest. Furthermore Government uses encroached forest for social forestry program. However, social forestry programs do not work so the government could not improve the environmental quality in the area of research site chosen in this study. The forest becomes plantation although the government launches social forestry programs.

Social forestry programs can improve air quality by reducing pollution of Carbon dioxide [11]. This happens if social forestry programs convert land into forest. However, social forestry programs are unsuccessful so the air quality seems not to increase. Before the government implements social forestry program, the forest area are converted into plantation which has a little environmental services such as carbon sequestration. After the government implements the social forestry program, the forest area are plantation crop which have a little environmental services. Social forestry programs do not change the environmental quality.

In the location of this research, forests are encroached by local people and they convert the forest into plantations. Furthermore the government launches social forestry programs. However, social forestry program can not run properly the so government do not change plantation into forest. Based on the results of the interview, the plantations have lower biodiversity than if it is a forest and the forest only has a very small role in regulating water. The carbon sinks of plantations are lower than forests.
People participation in social forestry programs is often very weak. Moreover, technical supports to communities is almost inexistent, leaving them without financial and technical skills required to run the schemes efficiently [12]. This causes social forestry program can not improve environment quality.

3.3 The other efforts
The government needs other efforts so as to make the social forestry programs work. Some factors affect the success of social forestry [13]. Government must generate community participation in social forestry programs and create community’s willingness to plant trees in the state forest.

Community needs long time to adopt social forestry programs because they consider the social forestry program is unfavourable [14]. Community converts forests into plantations because they argue that plantations are more profitable than forests [15]. Based on the results of the interview, community obtains income from plantation such as hazelnut, coffee and cashew. Community way of thinking must be altered so social forestry programs could work [16]. Government can implement the social forestry program if the community believe that social forestry program have more benefits than if it is a plantation area.

Other efforts to make social forestry work is that the government should generate community participation on social forestry program. Community participation depends on the incentive structure and social capital [7]. Due to low incentives of the social forestry programs, the community seem not to be interested in social forestry programs. Government should offer community more incentives so they are interested in planting trees in the state forest areas. The government is expected to provide fund for planting trees so the community are willing to plant trees.

Socio-economic factors affect people's participation at each level. Education and income effect people’s participation in forest management [17]. Most people have low education so community participation in social forestry program is also low. Moreover, most people have low income and fund for planting trees. This affects the low of the community in running the social forestry program.

Local knowledge and rationale for decisions are instrumental in the success of decentralized forest management. Level of participation in forest management depends on local knowledge [18]. Social forestry programs seems not to perform in Pantar Island because the local knowledge is low in state forest management. For example, they do not acknowledge who plant forest and how to plant trees in the state forest. The government is urgent to improve local knowledge so as to make the social forestry program run. The government is expected to provide community education to improve local knowledge in state forest management.

This research shows that social forestry programs could not perform in Pantar Island because of some factors. This research is in line with [19] who states that the success of the social forestry program depends on the perceptions, attitudes, behaviours, and other human factors. Local human behaviours affects the success of social forestry programs[20].

The government needs other efforts so as to make the social forestry programs work. They must be aware and acknowledge the social conditions and behaviour of local people. Moreover, they must foster community to manage the forest well and encourage the community to plant trees in the forest. Those efforts can improve forest conditions and increase environmental quality as well as generate income of local people as well.

4. Conclusion
Social forestry programs in Pantar Island have the objectives of improving environmental quality and generate income of local people. The government creates groups of social forestry program and hires NGO to assist community in obtaining some forest management licenses. However those efforts seems not to lead the social forestry programs work properly. The government needs other efforts to stimulate the social forestry program work well, such as generating participation in social forestry program and providing education for managing state forest through social forestry program.
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