The success strategy of forest community program in Pakpak Bharat District

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Abstract. Community Forest (CF) is a state forest where the main use is to empower local community. There were 11 farmer groups in District of Pakpak Bharat that had submitted applications for CF programs. The research aimed: (1) to obtain the participation degree of forest farmer group (FFG) of CF program; (2) to determine development strategies of CF program. Analysed data used descriptive analysis, participation degree and strengthens weakness opportunity threatening (SWOT) method. The research shows that the degree of participation for dissemination and formation of forest farmer groups, monitoring and evaluation was high, meanwhile the degree of group participation in work planning and implementation of the CF program is moderate. The chosen strategy for the success of the CF program were (1) increasing the government role of Pakpak Bharat district; (2) planning for management of community forest areas is harmonized with the utilization of community forest areas for the development of timber and non-timber species; (3) implementation of local plant development programs; (4) village guidance by assistants both Field Extension Officers Local governments and Self-Extension Field Officers continue to be carried out.

1. Introduction

1.1. Backgrounds

Indonesia is known as the country that has the second largest area of tropical rain forest (tropical rain forest) in the world after Brazil. However, over the last three decades forest areas in Indonesia have experienced very serious degradation in terms of both quantity and quality. It is also caused by the increasing number of people who rely on forests as a source of livelihood and the government has consciously exploited forest resources as the country's most reliable source of income and foreign exchange (state revenue) after natural resources of oil and gas [1].

According to the regulation of forestry and environment ministry number P.83 /menLHK-II / 2016 CF is state forest that its utilization intended to empower the community. In the implementation it aids to FFG who ready based on the readiness of the community both in terms of human resources and natural resources. In 2011, there were 11 villages that submitted proposals for the application of 10,000 ha of community forest development in Pakpak Bharat. In the application submission there are still 3 (three) villages that facilitated and assisted by non-government organization (NGO) to increase the capacity
and independence of local communities to obtain optimal and fair benefits of forest resources through capacity building and provision access in order to improve the welfare of the local community in community forest program for District of Pakpak Bharat [2]

The one of three villages have the potential as a community forestry program area, because the village is located in protected forest area. Sibongkaras village is one of the villages in Pakpak Bharat district proposed as the development of community forest program. The community must work on the forest area in order to meet their daily needs. Generally, this village community resources are still low in developing self-employed villages. Statistically, the labour potency of the village population reaches 40.77 percent related to the population of productive age as many as 151 people with a comparison of the number of available human resources as many as 357 people [3]

Proper management of human resources will determine the success of village development. But the basic skills and abilities of farming technique have been acquired by which farmers through work experience in the garden along the development of the plantation and agriculture sectors. Although the community's agricultural system still uses a shifting land system, it has an impact on the increasingly high rates of deforestation and forest degradation with the systems they applied in farming system. It cannot be avoided because Sibongkaras village community is not landowner except the land is included in the protected forest area. Low human resources and shifting farming systems above can be an impact on the Community Forest program held in Pakpak Bharat District, especially Sibongkaras Village. The success of forestry development is largely determined by the participation degree of all process community forest activity in contributing to forest management efforts and the quality of the human resources that support it [4].

1.2. Research purposes
The purpose of this study is (1) to obtain the participation degree of FFG for CF Program in Pakpak Bharat, and (2) to determine the development strategy of CF program in Pakpak Bharat

2. Research method

2.1. Research location
The research was conducted in January to March 2017 in Aornakan I Village, Kuta Tinggi Village and Sibongkaras Village, District of Pakpak Bharat, which are purposively selected as they have CF development program or in the process of proposing a CF management business license.

2.2. Material and tool
Research use quantitative and qualitative descriptive approached research. The research use materials are questioner sheet and respondents. Meanwhile, the tools that used are cameras, calculators and stationery, and data analysis tool is Microsoft excel to process data.

2.3. Population sample size
To obtain the participation degree, there were 45 members of FFG-CF Aornakan, 27 people of Dos Ukur and FFG-CF Njua Njerdi Sibongkaras Village about 25 people have interviewed as respondent. The number of samples was in line with [5, 6] state the sample is partially or representative of the population studied and if the subject is less than 100, it is better to take all of them so that the research is a population research. Furthermore, if the subject is large, samples are taken between 10-15% or 20-25% or more. Based on this statement, the number of respondents surveyed were 97 respondents. In the research development strategy carried out on several objects that were captured influential in the development of the CF forest farmer group strategy in Pakpak Bharat Regency with a total of 97 respondents.

2.4. Sampling technique
Respondent were taken using non probability sampling technique. This sampling method is purposive sampling which is a technique of determining samples with certain considerations and deliberately
chosen by researchers in accordance with considerations that are in harmony with the research. The samples should be distributed to represent the demography characteristics of tree villages that area age distribution, education background representation, private income and also gender.

2.5. Data analysis
Analysis of data use a qualitative descriptive approach that describes the characteristics of respondents in the farmer group in the field. Descriptive Quantitative Analysis, namely analysing by explaining the calculation results of the questionnaire that has been distributed and filled out by respondents. And proceed it with quantitative analysis using EFAS and IFAS analysis, each of which can be explained as follows [5]: (a) Internal Strategic Factors Analysis Summary (IFAS) is analysis tool to present internal conditions analysis into a matrix that has been given a specific weight and rating to determine the strengths and weaknesses of the internal environment, and (b) External Strategic Factors Analysis Summary (EFAS) is analytical tool to present systematically to the external environment.

2.5.1. Degree of Participation Analysis. According to [6] the percentage of participation is calculated using the formula (equation 1).

\[ P = \frac{N_i}{N} \times 100\% \]  

(1)

Notes:
P : Percentage of Participation
Ni : Number of samples in the category (high, medium or low)
N : The total number of samples

The value of P furthermore be categorized into 3 class that are (1) Low Participation degree, if the participation percentage is at an interval of 0-33.33%; (2) Medium Participation degree, if the participation percentage is at an interval of 33.34-66.67%; and (3) High participation degree, if the participation percentage is at intervals of 66.68-100% [7].

2.5.2. Observed parameters. Parameters observed were; 1) community participation in the dissemination and formation of FFG on CF program; 2) participation of making work plans (general plans and operational plans) and implementing the CF program; 3) participation of CF farmer groups in monitoring; 4) participation in evaluating the involvement of administrators or group members in the CF program.

2.5.3. SWOT analysis. SWOT data analysis are (1) classifying data by determining factors into strengths and weaknesses as an Internal Strategic Factors Analysis Summary (IFAS), opportunities and threaten as an External Strategic Factors Analysis Summary (EFAS) [5] which is then displayed in the IFAS (Table 1) and EFAS matrix (Table 2), (2) conduct a SWOT analysis that compares external factors: opportunities and threats with internal factors: strengths and weakness; and (3) calculate the total rating and weight of strength, weakness, threaten and opportunity giving weight values ranges from 0 (not important) to 1 (very important). Weighted and rating calculations can be done by the formula (equation 1, equation 2, equation 3, equation 4). Then to find out the position and development of the strategy in the SWOT quadrant, it is calculated by the formula (Figure 1).
Table 1. IFAS SWOT matrix

| Internal Strategy Factors | Weighted Rating | Score | Information |
|---------------------------|-----------------|-------|-------------|
| Factor 1                  |                 |       |             |
| Factor 2                  |                 |       |             |

Table 2. EFAS SWOT matrix

| External Strategy Factors | Weighted Rating | Score | Information |
|---------------------------|-----------------|-------|-------------|
| Factor 1                  |                 |       |             |
| Factor 2                  |                 |       |             |

\[ w_i = \frac{S_i}{\sum_{i=1}^{n} S_i} \]  \tag{2}  

\[ R_i = \frac{S_i}{\text{total of respondent}} \]  \tag{3}  

\[(x) = \text{total of strength weighted} - \text{total of weakness weighted} \]  \tag{4}  

\[(y) = \text{total of threatened weighted} - \text{total of opportunity weighted} \]  \tag{5}  

\( w_i \) = weighted of factor- \( i, i = 1, 2, 3, \ldots \)  
\( S_i \) = score of important factors - \( i, i=1,2,3,\ldots \)  
\( R_i \) = rating factor – \( i \)  
\( (x) \) = quadrant x position  
\( (y) \) = quadrant y position

Figure 1. SWOT quadrant
3. Result and discussion

3.1. Participation degree

3.1.1. Participation on the socialisation and developing of FFG. The distribution of processed data of FFG-CF in Pakpak Bharat district describe the participation degree in the socialization of the FFG-CF program (Table 3). Table 3 shown that the highest participation degree is the participation of FFG-CF Njuah Njeredi Sibongkaras village (84%). It is caused by the Sibongkaras villagers had a high curiosity about the CF program. The Sibongkaras villagers also learned in advance through a number of social interactions with a number of CF program facilitator provided access to community management to protected forest areas. The participation degree of Sibongkaras village CF is higher than other villages. It is triggered by hoping to increase their income. It is in line with [9, 10] state that the FFG would participate in landscape restoration to have more income and land for get new alternative income source by cultivate forest land.

| No. | Village         | Category       | Frequency | Proportion (%) | Frequency | Proportion (%) | Frequency | Proportion (%) |
|-----|-----------------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
|     |                 | High (66.68 -100) |           |                | Medium (33.34 -66.67) |           | Low (0 -33.33) |           |                |
| 1   | Aornakan I      | 32             | 71.11     | 12             | 26.67     | 1              | 2.22      |                |
| 2   | Kuta Tinggi     | 21             | 77.78     | 5              | 18.52     | 1              | 3.70      |                |
| 3   | Sibongkaras     | 21             | 84.00     | 4              | 16.00     | 0              | 0.00      |                |

3.1.2. Participation on arranging work plans (general plans and operational plans) and CF program implementation. Table 4 data show that the participation degree of making work plans and the implementing of CF program, Aornakan I villagers had the highest percentage of 82.22% while Kuta Tinggi villagers was 74.07% and the lowest was Sibongkaras villagers at 72%. This occurred because preparation of operational work plan and public work plan was held in the location having better accessibility. Sibongkaras village is the farthest village with very difficult accessibility to pass, different with two other villages. Similar with the implementing of CF program regarding to launching of IUPCF proposal, it is known that the meeting attendance of FFG CF Aornakan villagers I was high because almost every member was attended at each meeting. This also be caused by CF program have conducted, the FFG had made an agreement in advance regarding the commitment and enthusiasm of the members of the CF group [4; 11].

| No. | Villages       | Category       | Frequency | Proportion (%) | Frequency | Proportion (%) | Frequency | Proportion (%) |
|-----|----------------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| 1   | Aornakan I     | 37             | 82.22     | 7              | 15.56     | 1              | 2.22      |                |
| 2   | Kuta Tinggi    | 20             | 74.07     | 5              | 18.52     | 2              | 7.41      |                |
| 3   | Sibongkaras    | 18             | 72.00     | 5              | 20.00     | 2              | 8.00      |                |

3.1.3. Participation in improving farmer outcomes of 3 (three) forest farmer groups. Based on the observations, it was known that generally the farming results of the Pakpak Bharat district community were rice, oranges and coffee plants fulfilled by gambier plants, pineapple, cocoa and styx benzoin. An effort to improve the community welfare is a training to increase crop yields [12]. The effort was a coffee field school which during the process was accompanied by a local NGO. Community participation degree of increasing coffee yields through coffee field schools and the implementation of the CF program in Pakpak Bharat district can be seen through the Table 5.
Based on Table 5, it can be known that the highest participation degree at FFG of Aornakan I village is 55.56% and the lowest is FFG of Sibongkaras village which is equal to 20%. This can be occurred because the level of education villagers is the lowest relatively. This is in line with PETAI's statement that the human resources of the Sibongkaras village community are still low for building self-based villages. The low availability of village human resources can be seen from the level of villager’s education comprised of elementary school or no educated.

Table 5. Participation degree in improving farmers' results

| No. | Village       | Category                  | Frequency | Proportion (%) | Frequency | Proportion (%) | Frequency | Proportion (%) |
|-----|---------------|---------------------------|-----------|----------------|-----------|----------------|-----------|----------------|
|     |               | High (66.68 - 100)        | 25        | 55.56          | 15        | 33.33          | 5         | 11.11          |
| 1   | Aornakan I    | High (66.68 - 100)        | 14        | 51.85          | 10        | 37.04          | 3         | 11.11          |
| 2   | Kuta Tinggi   | High (66.68 - 100)        | 5         | 20.00          | 18        | 72.00          | 2         | 8.00           |
| 3   | Sibongkaras   | High (66.68 - 100)        |           |                |           |                |           |                |

3.1.4. Participation in Community Forestry Program Evaluation. The participation degree of farmer groups CF in Kuta Tinggi Village was high about 81.48%. This group is very active to participate on organizational management training and organizational evaluation training. In addition, the village officer also played a role [13] in evaluating FFG CF Dos Ukur Mersada. It is in line with [10] that conclusion of his research whereby increasing farmer institutional capacity is carried out in line with agricultural extension activities by motivating farmers to participate in farmer institutions, by providing a loan on strengthening individual farmer capacities as well as farmer institutional capacity which in this context is the FFG.

3.2. Influencing factor for the success of the FC program in Pakpak Bharat district

As an internal strategic factor have been identified where based on each rating calculation. It results a strengthens factor has a value of 2.08 and weakness factor has a value of 1.25. The external factors that illustrate the opportunities and threaten that affect the CF program of the Pakpak Bharat district. The results of the score calculation for the external environmental factors result the Y axis value of the SWOT diagram is 1.13. The calculation results of IFAS and EFAS matrices producing X-axis values are the result of a reduction between the strength factor (2.29) and the weakness factor (1.25) of the internal environment that is equal to 1.04 and the Y axis value which is the result of a reduction between the opportunity factor (2.27) and the threat factor (1.14) from the external environment that is equal to 1.13.

Based on the SWOT matrix, the strategy of developing CF program is OS strategy. The OS Strategy is used by conducting operational activities including (1) increasing the role of the Pakpak Bharat district government (2) The CF area management plan is aligned with the use of the area for the development of timber and non-timber species, (3) implementation of local plant development program activities such as coffee, rattan, bamboo, and gambier, and (4) village coaching by assistants both field extension officer local government and non-governmental should be continued.

Research conducted by [14] found the development of private forest needs to pay attention to guarantees of the availability and security of forest areas, capability and readiness of the community. The research also found that farming capital support, financial benefits, land suitability, erosion control and land rehabilitation, agribusiness partnerships and the role of farmer institutions are criteria that have the highest importance [15]. CF development of three villages still have potential and opportunities to be developed. Variety of potential contained in the CF management area of three villages, it can be a source of opportunities that can continue to be developed to improve the standard of living of the community. This is in line with [12] that there is a belief that community forests hold significant potential in the management of national forests. The benefits of developing community forests can also be an alternative to improve the socio-economic standard of life of rural communities. Where the potential for community forest development in Java is 2.7 million ha with a production potential of up
to 16 million m$^3$ [16].

### Table 6. Participation in CF Forest Farmers Group evaluation

| No. | Village          | Category | Frequency | Proportion  | Frequency | Proportion  | Frequency | Proportion |
|-----|-----------------|----------|-----------|-------------|-----------|-------------|-----------|------------|
| 1   | Aornakan I      | High     | 32        | 71.11%      | 10        | 22.22%      | 3         | 6.67%      |
| 2   | Kuta Tinggi     | High     | 22        | 81.48%      | 5         | 18.52%      | 0         | 0.00%      |
| 3   | Sibongkaras     | High     | 14        | 68.00%      | 5         | 20.00%      | 0         | 0.00%      |
|     |                 | Low      |           |             |           |             |           |            |

### 4. Conclusion

The degree of farmer group participation of Pakpak Bharat district for the socialization and forming of forest farmer groups, monitoring and evaluation is high. Group participation degree of work planning and implementation for the CF program is moderate. The research also find that the strategy can be developed for community forestry programs of Pakpak Bharat district are the opportunity strategy (OS) or an aggressive development strategy. Its development of community forestry is carried out by utilizing the opportunities of natural resources available with management plans and increasing the role of relevant stakeholders as a basis for developing community forest management in Pakpak Bharat Regency.

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