Post-permit social forestry: An analysis of the economic impact of the forestry revolving fund facility to the community of forest farmers

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Abstract. Social forestry was expected to improve the welfare of local communities by supporting people who live near the forest and rely on its natural resources while preserving their forests. The social forestry business was focused on managing all potential resources (Non-Timber Forest Products and Timber Forest Products) over its area's development as well as environmental services. In this regard, providing only legal access is not quite sufficient. It should be followed by strengthening business capital for forest farmers as their most basic problem was limited capital for their business development. The government has answered this matter by providing a Revolving Fund Facility, also known as Fasilitas Dana Bergulir (FDB), to forest farmers. In accordance with those elaborations, this study aimed to analyze forest farmers' characteristics who received the FDB program benefits and to investigate the FDB impact on their Economic. This study was conducted on the selected community forest farmers group in Tebat Pulau Village as the largest beneficiaries of the fund in Rejang Lebong, Bengkulu Province. This study uses exploratory and descriptive-analytical methods. The economic impact of the FDB Program is increased production (76%), income, and employment (20%). Regression analysis proves that land area, number of workers, and partnerships positively affect income. The types of partnerships that have been carried out are bringing in Off Takers, capital support, education and training, equipment assistance, provide counselling. Furthermore, the determinants of income are the number of workers, the proportion of transportation costs, the proportion of input costs, the type of partnership, the appropriate use of funds, and their involvement in planning.

1 Introduction

Social forestry is a sustainable forest management system used in state forest areas or non-state forests whose permits are granted to local communities or indigenous people to improve

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their welfare [1]. Currently, social forestry schemes cover about 1.8 million hectares of forest area (around 2% of the state forest) in Indonesia (KLHK, 2021) [2].

Community Forest (HKm) is well-known as one of the social forestry schemes [2]. The community forest is one of social forestry scheme policy provided by the government to the community to manage and/or utilize forest areas to improve welfare by prioritizing environmental sustainability principle (KLHK). However, by only granting permits alone will not be enough for the community's welfare. Business capital is certainly required to accelerate the economic growth among social forestry farmers. Therefore, the government implements the Revolving Fund Facility (FDB) program granted by the Indonesian Environment Fund (IEF).

Previous studies on social forestry have looked at the economic aspects of social forestry [3–8] stated that social forestry has a positive impact on the economy under certain conditions in society, for example, heterogeneity, participation, community characteristics, education level, and investment [3–7,9]. However, it can be seen from the state of the art above that there have been no previous studies on social forestry that have analyzed the total economic impact of post-licensing and analysis of the impact of granting aid funds (IEF) to forest farmers, so this research takes up this gap.

One of the social forestry farmer groups that received FDB funds was the Gapoktan HKm Tri Setia, Tebat Pulau Village, Bermani Ulu District, Rejang Lebong Regency, Bengkulu Province. There were 51 (fifty-one) forest farmers received FDB funds for rejuvenating Robusta coffee. The total amount of funds they have received from BPDLH was Rp. 3,500,000,000 with a grace period of 4 years. Due to this great attention given by the government to the Gapoktan HKm Tri Setia, it was necessary to investigate and analyze the economic impact of this FDB program on forest farmer groups who received this fund.

2 RESEARCH METHODS

This study used exploratory and descriptive-analytical methods. This method could elaborate and simplify the process of extracting and deepening information in research [10]. HKm Tri Setia, Tebat Pulau Village, Bermani Ulu District, Rejang Lebong Regency, Bengkulu Province was chosen because it has been designated as a pilot location for FDB fund program for coffee commodity in social forestry areas over Indonesia. There were 51 people participated as the respondents for this study which meant all of FDB recipients in HKm Tri Setia were involved. Other supporting informants were also interviewed in order to sharpen the analysis, such as Association of Farmers Groups (GAPOKTAN) committee member, farmer groups member, Social Forestry Business Group (KUPS), as well as several related stakeholders like local government, BPDLH, and NGOs. The scope of the research was to measure economic impact brought by FDB funds distribution in order to obtain a comprehensive picture of the economic dynamics of targeted HKm.

2.1 Data collection technique

Primary data in this study was obtained through direct observation on economic activities carried out by coffee farmers and several economic actors on coffee sector other than HKm farmers. Furthermore, secondary data was also utilized to support the study results. In-depth interview was conducted to 51 respondents from forest farmers and other relevant stakeholders. Focus Group Discussion (FGD) method was carried out by presenting relevant stakeholders (Forest Service, Bukit Daun KPHL Extension, Village Government) and NGOs, and BPDLH field assistants, as well as coffee farmers *off-takers*. This FGD was conducted to collect responses from respondents-based survey results.

2.2 Data analysis technique

Both primary data and secondary data were utilized in this study. Primary data was an economic impact data derived from the following economic indicators: coffee production, respondents' income from their coffee sales before and after the FDB program, employment that emerged as a result of FDB funding, poverty reduction, business partnerships that can be potentially developed, and determinants of income. Secondary data was obtained from KPHL Forestry Service and other related institutions. Descriptive analysis, case studies, and statistical methods were used for data analysis. *Chi-Square* Cross Tabulation, Linear Regression, and Logistics Regression were employed for data processing [11].

3 DISCUSSION

3.1 Economic impact analysis of FDB program

The discussion on the economic impact before and after FDB programs includes: (1) increased in production; (2) income dynamics; (3) changes in income, mainly from staple crops; (4) employment opportunities for HKm farmers; (5) the level of poverty as seen from the ownership of houses, cars, and motorbikes; (6) business partnership established between institutions and HKm Tri Setia farmers as FDB funds recipients; (7) the main obstacles faced during managing FDB Fund; (8) income determinants of HKm Tri Setia members who received FDB fund.
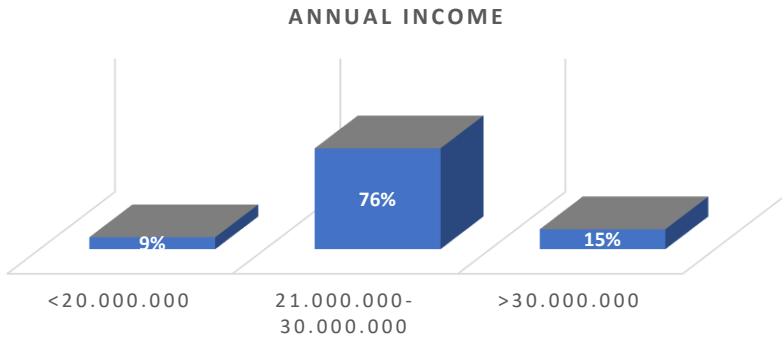
3.2 Production

Fig. 1 showed that FDB fund has impact on increasing coffee production around 76% where farmers had sufficient funds to carry out grafting, fertilization, maintaining their coffee plants and labor wages sourced from FDB fund. The average coffee production has increased from 1 ton/ha to 1.5 – 3 tons/ha, before and after FDB fund. However, 24% of respondents did not experience the increase in coffee production due to the misuse/mismanagement of FDB fund, e.g., building houses, buying electronic equipment, even paying their children's tuition fees. The increase in production was significant due to the routine monitoring and evaluation carried out by BPDLH Field Officers, in line with Ding et al., which stated that forestry programs must be routinely monitored and evaluated to control the success of their program [12]. Monitoring and evaluation were carried out to prevent the occurrence of misappropriate use of FDB fund. The relevant Gapoktan HKm was also involved.

Coffee production does not increase 24%

Coffee Production Increase 76%
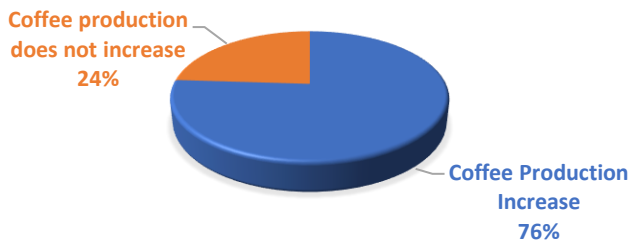
Fig. 1. Increased in coffee production after receiving FDB fund.

3.3 Income impact

Increase in coffee production has also increased their annual income. However, it certainly depends on commodity price fluctuations produced and sold in the market. For example in this study case, the increase in coffee production did not significantly increase their incomes due to the lower coffee price in the market [13].

ANNUAL INCOME

Fig. 2. Interval of total income per year.

Based on Fig. 2, the income earned by HKm farmers from their coffee production was quite varied. On average, the income of FDB funds recipients from HKm farmers was Rp 26.6 million per year or Rp 2.2 million per month. This annual income was much higher than the annual income of Marayoka Village forest farmers in South Sulawesi (only Rp 1–1.25 million per month [14]. Nevertheless, the annual income of most HKm farmers who received FDB was still not sufficient to cover their household needs for one year. The income from coffee production must be followed by other incomes, such as from pepper and other intercrops. Accordingly, HKm farmers must have other sources of income.

3.4 Employment

FDB fund program aimed to open the opportunity of rural communities to work independently and reduce the trend of urbanization [15]. This study has resulted that farm managed by FDB funds recipients from HKm farmers have transformed from self-sufficiency farming into farming with labor assets. However, farming on HKm land was still classified as a micro and small business (UMK) because it could only absorb no more than 20 workers. This dynamic was strengthened through the cross-tabulation results of the number of labors before and after receiving FDB funds (Table 1). The cross-tabulation results showed there was a tendency to increase the labor absorption from forest farmers who receiving FDB funds which also means an increase in their farming scale.

Table 1. Cross-tabulation of the number of workers before and after receiving FDB funds.

		Number of workers after										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Number of workers before	1	28.0%	4.0%	3.0%	6.5%	5.0%	2.0%	.5%				53.0%
	2	2.0%	13.0%	7.0%	2.5%	2.5%	1.0%					28.0%
	3	1.5%		5.0%	.5%	1.5%	1.0%					9.5%
	4	2.0%			1.5%		2.0%	.5%				5.5%
	5			.5%		1.5%	.5%	.5%	.5%			3.5%
	6						1.0%					1.0%
	7											

|		Number of workers after										Total
		1	2	3	4	5	6	7	8	9	10	
	8											
	9											
	10											
Total		33.0%	20.0%	15.5%	11.0%	10.5%	7.5%	3.5%	.5%	.5%	.5%	100.0%

Note: Pearson Chi-Square value: 396.000a, significant at 99% confidence level

3.5 Impact on poverty

According to Kuncuro, there were three indicators to measure the poverty level: ownership of houses, motorbikes, and cars. Fig. 3 showed that there was an increase in the number of houses ownership before and after receiving FDB funds over four years (2018 – 2022. Moreover, the number of motorcycle ownership has increased by 6% and car ownership has increased by 1% during FDB funds period. The facts above showed that the purchasing ability of farmers was quite sufficient to obtain these assets even though the prices of these things were relatively pricey. The rejuvenation of old coffee plants, regular maintenance and fertilization carried out by the FDB agreement has increased their coffee production and has increased their income as well.
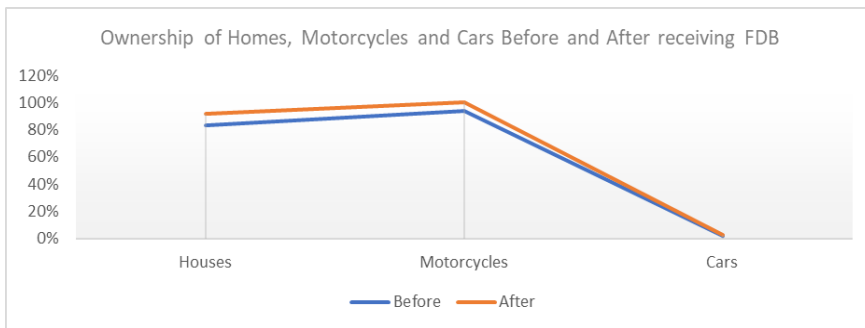
(a)
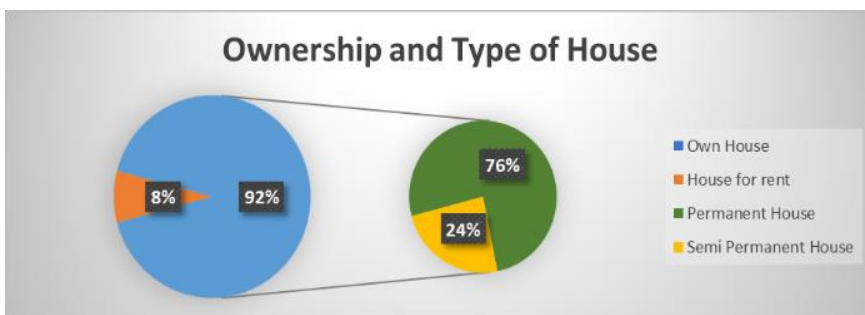
(b)

Fig. 3. (a) Ownership of houses, motorcycles, and cars during 4 years FDB funds; (b) Ownership and type of house of HKm farmer FDB recipient.

Furthermore, there were several reasons for increasing the number of motorcycle ownership among respondents (100%). (1) The need for mobility facility between their residential, village to village locations, and the distance between the sub-district capital and the district capital; (2) Hilly regions made motorcycles became a transportation facility; (3) Around 55.5% of them have owned two or more motorcycles because of the convenience of

purchasing motorcycle through loan instalments. According to the interview, their cars were usually used to carry their harvests.

To achieve the goal of improving HKm farmers economic condition in long term period through FDB fund scheme on coffee commodity, it was necessary to have support from the central and regional governments. The outcome of this effort would be better with the support of various stakeholders such as academia, industry, media, and local communities. In line with this, a study on the Importance of Community Forestry Funds for Rural Development in Nepal revealed that forestry funds could even support rural development. Bhandari (researcher) also added that mutual agreement-based planning was the key to success in forestry funds program [10].

3.6 Business partnership

Coffee business units certainly need support from partnerships in order to assist in the production, harvest, and post-harvest processes, assist with capital and marketing and provide various information. Partnerships could come from private organizations, community organizations (NGOs), government agencies, universities, and other related stakeholders [16]. Fig. 4 showed the types of partnership performed by the respondents. Most partnership targets are farmer groups or Social Forestry Business Groups (KUPS). The various kinds of partnerships that have been carried out are (1) Bringing in *Off Takers* to purchase farmers' coffee production; (2) Providing capital support; (3) Providing education and training; (4) Providing assistance; (5) Provide counselling. The smallest percentage of partnership type was from the aspect of market and capital, even though these were the two things that farmers mostly needed for coffee commodity was still in low price [17].

Fig. 4. Types of partnership.

3.7 Income determinants

Income determinants were essential to identified in order to formulate the right policies for managing FDB funds in the future. The regression results of the determinants of respondents' income are presented in Table 5. Model 1 consists of dependent and independent or explanatory variables. The dependent variable is the gross income of the FDB recipient HKm members surveyed. In addition, the independent variables consist of protected land area, several workers, transportation costs, input costs, type of partnership, participation in planning, and participation in monitoring and evaluation.

Table 5. Regression results of respondents' income determinants.

Independent variable	Model 1	Model 2
Constant	2,2786 E7	1,845E7
	(2,278)*	(3,179)*
Land area (ha)	4,189 E6	4,240E6
	(3,100)*	(3,758)*
Total workforce	2,254 E6	2,221E6
	(3,955)*	(4,112)*
Transport costs (percent)	69845,731	
	(0,087)	
Input cost (percent)	2,900 E6	
	(0,490)	
Types of business partnership	1,235 E6	1,022E6
	(2,198)**	(2,189)**
Planning participation	29074,800	
	(0,007)	
Accurate use of funds	4,853 E6	
	(3,313)	
Participation in monev	-278761,112	
	(-0,066)	
Adjusted R^2	0,401	0,599
F-statistics	18,854*	48,398*

Furthermore, the "backward" method was used to select which independent variables affected the dependent variable. The result was showed in model 2. This model has an Adjusted R^2 of 0.599, higher than model 1, which has an Adjusted R^2 of only 0.401. These results indicated that the variability of changes in all independent variables in the model could explain 59% of the variability of total income, with the remaining 41% explained by other variables which not included in the model.

4 CONCLUSION

The FDB program positively impacted increase in production (76%), income, and employment (20%). Regression analysis has proven that land area, number of labors, and partnerships positively affected annual income. The FDB program has led to many partnerships performed by farmer groups, such as bringing in off takers, capital support, education, and training; providing equipment assistance; and providing counselling. Furthermore, the number of workers, the proportion of transportation costs, the proportion of input costs, the type of partnership, the appropriate use of funds, and their involvement in planning were classified as the income determinants in this study.

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