

Farmers' Perspective on Community Forestry in Cambodia*¹

— A Case Study on the Banteay Angkor Community Forestry Program, Takeo Province —

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I. Introduction

About 60% of 18.1 million ha of Cambodia's total land area is covered by forests. During the last 20 years, Cambodia has experienced a net loss of some 1.5 millions hectares of forests (6). Conflicts of interest between the government and the local people frequently arise on state-claimed forestlands where local people depend on forest products for their daily life. To reduce these conflicts, some attempts have been made to introduce community forestry programs. In this approach, local people are encouraged to involve in planning, management, and sharing benefits from forestlands. The goal of these programs are to ensure the long-term security and stability of the rural poor and forest dwellers while increasing the area of forest cover. At present, although government policies and commitments for community forestry are unclear, the number of community forestry programs has been increasing significantly. They, technically, vary according to the resource to be managed, the interest and ability of community members, and the amounts of support available. However, most of them fall into a form of joint forest management between government and local people and are based on a legally contractual agreement under technical and funding supports of NGOs.

Banteay Angkor community forestry program, which is the subject of this study, is one among these programs and is the first community forestry program implemented in Cambodia. In this program, a local community association was granted land use rights in exchange for its tree planting activities and protection. A portion of the area was allocated to community-managed forest for natural regeneration. Farmers are allowed to keep 80% of the income derived from selling forest products of this land. The rest of the area was allocated for individual family use in which 50% can be used for agriculture on the

condition that certain reforestation requirements are met (2). Like elsewhere, this program seems to have rather limited success due to lack of follow-up monitoring and evaluation. Hill and Shields (3) developed a method to analyze a joint forest management in India based on three closely linked models: village model, biological model, economic model. De Zoysa (1) evaluated a social forestry program in Sri Lanka based on three dimensions: economic perspective, management perspective, and farmers' perspective. However, to the author's knowledge, an appropriate method for analyzing community forestry in terms of social, economic and management perspectives, was lacking in Cambodia. The present study aims at analyzing and evaluating Banteay Angkor community forestry program based on the farmers' perspective as to whether it is successful in terms of social acceptability. Another important objective of this study is to test a method for analyzing community forestry projects in Cambodia.

II. Methodology

So far, 12 villages have been participating in the Banteay Angkor community forestry program which started in 1994 on 500 ha of degraded forest land. We conducted field surveys and used some non-parametric tests (4) to analyze the farmers' impressions. In order to reduce the bias and obtain a clearer inference about the farmers' attitude towards community forestry in the whole area, three villages were chosen from different farming system areas. Trapaingtnol village, Baccod village, and Preymouk village are representatives of lower land, middle land and upper land respectively. The farmers living in the lower land mainly grow rice while those living in the middle land grow both rice and upland crops as their income activities. In the upper land, farmers are more dependent on forest products for their livelihood because of

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land constraints for rice and crops cultivation. Field surveys have been carried out into two steps. First, we conducted a group interview with eight farmers in each target village using the Participatory Rapid Appraisal method (5). It was to collect information about community geography, socioeconomic structure, and resource base. Second, individual interviews with the farmers were conducted using a pre-tested questionnaire. Fifteen percents of the farmers from each target village were chosen which 50% are wealthier and 50% are poorer farmers.

The main part of this questionnaire has two sections: factors affecting the success of the program, and the program impacts. The first section recorded the farmers' impression on program planning, program management, forestry technology, extension service, training of farmers, input supply, environmental conditions, vegetation, marketing, land ownership, and infrastructural development. Each of these factors has some important criteria to be evaluated. The second section was for collecting information on economic, social, infrastructural, and environmental impacts of the program. As for this, we examined the farmers' impression before and after the program. Each of these factors of program impacts was also measured by some important criteria. The Farmers were asked to rank their answers inherently on 5 point Likert Scale.

As for the analysis, we focused on five matters: 1) trend of data on the farmers' impression through descriptive statistics, 2) the significance of the change of the farmers' impression before and after the program through the Paired Sign test, 3) the correlation of the farmers' impression after the program with the overall impact of the program through the Kendall Rank-order Correlation test, 4) the significance of the difference of the farmers' impression among three villages through the Kruskal-Wallis test, and 5) the significance of the difference of farmers' impression between the wealthier and poorer farmers through the Wilcoxon-Mann-Witney test. All tests were conducted on the basis of a 0.05 significant level.

III. Results

Figure 1 shows that 37.5% and 19.7% farmers ranked their impression about the program as good and very good, respectively. This indicates that the farmers had good impression about the program (Figure 1).

Of all the criteria taken into consideration, most of the farmers had good impression about listening to farmers' view, problem identification, selection of participants, kindness and friendliness of field officer, farmers in decision making, concept of community forestry, the number of trees on farmers' land. Bad impression could be observed on farmers'

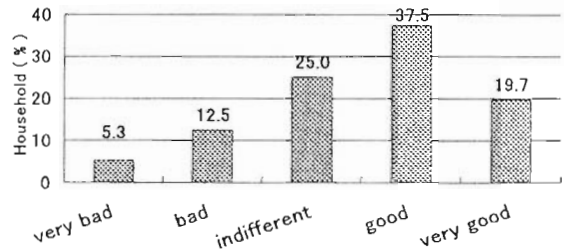


Figure 1 Farmer's overall impression

role in research, use of indigenous knowledge, information flow in extension service, quality available of input supply, subsidy, irrigation system and hospital. Majority of farmers insisted that problem identification, the farmers in decision making, selection of tree species, follow-up promises, type of vegetation, survival of crop and tree, size of farmers' land and land ownership are very important criteria for the success of the program.

In contrast, training period of farmers, market distance, price of input material, land slope, temperature, market for crops and forest products, and transportation are considered as less important criteria for the success of the program from their point of view. It is noteworthy that there were some criteria that the farmers feel bad but consider as very important for the success of the program. The most significant criteria are selection of tree species, subsidy, survival of crops and trees, and irrigation system. (Figure 2).

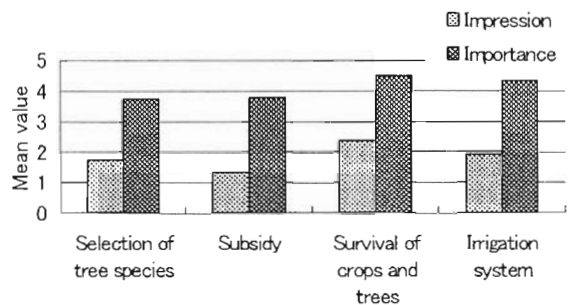


Figure 2 Farmer's impression on four important criteria affecting the success of the program

As for the program impact analysis, it could be concluded that almost all of the criteria of the economic, social, infrastructure and environment impacts have been improved. Evidently, benefit from tree, supply of fuel wood, extension service, and village road have been significantly improved (Figure 3). Land utilization, income from crops, income distribution, market, soil fertilizer, water retention and irrigation system had limited improvements after the program.

However, Paired Sign test on impacts of the program revealed that three criteria are not significant. This means that

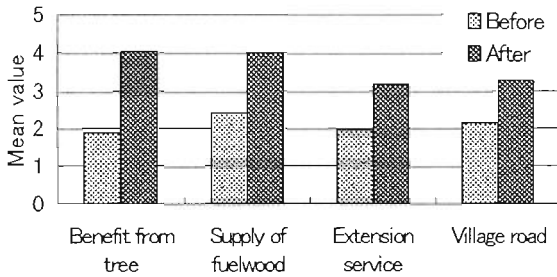


Figure 3 Farmer's impression on four important criteria reflecting the impacts of the program

these criteria have not significantly improved after the program. These are land utilization, income distribution, and water retention. Irrigation system criterion was significant at the probability of 0.05 but because its number of negative signs is greater than number of positive signs, we could conclude that this criterion has become worse than before (Table 1).

Tab. 1 Paired Sign Test

Not Significant Criteria	Positive signs S ⁺	Negative signs S ⁻	Indifferent S ⁰	Tied p-value
1. Land utilization	22	11	23	0.0536
2. Income distribution	10	4	42	0.0907
3. Water retention	12	7	37	0.1794
4. Irrigation system	9	20	27	0.0317*

(* the number of S⁺ is bigger than the number of S⁻)

Based on Kendall Rank-order Correlation test, it could be concluded that only three criteria are significant. These are 1) benefit from trees, 2) supply of fuel wood and 3) work in group (Table 2). On the other hand, it points out the fact that there was no a single criterion of infrastructural and environmental impacts that correlated with the overall impression of farmers toward the program.

Tab. 2 Kendall Rank-order Correlation Test

Statistically Significant Criteria	Tau corrected for Ties	Tied Z-value	Tied p-value
1. Benefit from trees	0.3843	4.1827	< 0.0001
2. Supply of fuel	0.3624	3.9444	< 0.0001
3. Work in group	0.4518	4.9174	< 0.0001

According to Kruskal-Wallis test, farmers have significantly different impressions on only 9 criteria. Based on the mean ranks it could be said that farmers living in the lower land insisted that listening to farmers' view, kindness and friendliness of field officers, organizing farmers groups, follow-up promises of field officers, survival of crops and trees, and transportation were more important. The farmers living in the upper land, however, insisted that quantity and quality of input material and school were more important criteria for the success of community forestry. The lowest mean ranks can be observed from the middle land. This may be by the fact that

the farmers living in this area have better socioeconomic conditions and relationships in their community than that of other two areas (Table 3).

Tab. 3 Kruskal-Wallis Test

Statistically Significant Criteria	Mean ranks of village			Tied p-value
	A	B	C	
1. Listening to farmers' view	22.75	31.08	37.08	0.0206
2. Kindness and friendliness	20.62	34.47	36.63	0.0014
3. Organizing farmer groups	22.73	32.83	34.50	0.0269
4. Follow-up promises	22.92	30.89	37.00	0.0237
5. Quantity of input material	20.63	39.67	28.67	0.0039
6. Quality of input material	21.79	38.67	27.79	0.0016
7. Survival of crops and trees	23.27	32.47	33.88	0.0363
8. Transportation	23.15	29.72	38.25	0.0218
9. School	23.71	35.64	28.17	0.0454

A: Middle land, B: Upper land, C: Low land

The Wilcoxon-Mann-Whitney test indicates that farmers from the poorer group and wealthier group have significantly different impressions on only three criteria. The mean ranks disclosed that financial affordability, follow-up promises, and gain of skills of farmers were more important for the poorer farmers. Wealthier farmers, normally, have more knowledge and can offer more input material to invest in growing trees on their lands than poorer farmers (Table 4).

Tab. 4 Wilcoxon-Mann-Whitney Test

Statistically Significant Criteria	Mean ranks		Tied p-value
	Wealthier group	Poorer group	
1. Financial affordability	20.79	35.18	0.0006
2. Follow-up promises	23.60	32.75	0.0272
3. Gain of skill of farmers	23.56	32.78	0.0263

IV. Conclusion

It could be said that the farmers, generally, have positive impression about the program. Almost all the criteria affecting the program have been improved to some extent, notably, criteria related to trees. However, the program has failed to improve irrigation systems, land utilization, subsidy, and survival of crops and trees, which were considered to be very important criteria for the success of the program. In addition, tree species introduced by the program were said to be incompatible with upper land crops species. Thus, new multi-purpose tree species that can yield more economic benefits should be tested and introduced. Developed forestry technology for both individual and communal lands should also be introduced, particularly for agroforestry, in increasing productivity and reaping tangible benefits from their marginal lands.

Relating to the program impacts, it is revealed that the farmers have changed their impression positively after the program. Benefit from trees and supply of fuel-wood are the

main economic impacts while work in group is the main social impact of the program. This was a positive indication of the development of self-reliant capacity of this community-based organization which is very important for sustainability of any development program.

There is no single criterion of infrastructural and environmental impacts that correlated with the farmers' overall impression but the farmers insist that infrastructural facilities are very important. Thus, improvements of some important facilities in the area under the program are highly required. Furthermore, results also show the fact that farmers living different farming systems, i.e., lower land, middle land, and upper land have different impression on some criteria. Also, the farmers from different living conditions, i.e., poorer and wealthier, have little different perception on community forestry. Therefore, incentives should be provided according to their preferences and practical situations.

Though it may be too early to draw a concrete conclusion on the whole program, Banteay Angkor Community Forestry can be considered a successful program in terms of social acceptability. However, this abstract concept needs to be

considered in a broader view. Analyses of economic perspectives and management perspectives would provide a clearer picture of the community forestry program under consideration. Also, the method applied in this study needs to be more widely tested in a range of social and environmental conditions.

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