

INCOME GENERATION FROM COMMUNITY FORESTRY: THE CASE FOR TBENG LECH AND O SOAM COMMUNITY FORESTRY



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Executive summary

The project “Multi-function forest restoration and management of degraded forest areas in Cambodia” which have been implemented by IRD was launched in December 2011 aims at building capacity of local communities for restoration of community forests in Siem Reap and Kampong Thom provinces for production of timber and NTFPs as a means to improve livelihoods of local communities.

The objective of this study aims at understanding income generation from community forestry. Specifically this study is to assess the livelihood value of the two community forestry, O Soam and Tbeng Lech CFs, before and after the introduction of the APFNet-funded project.

Different method and approaches including focus group discussion (FGD) and household interview were employed for this study. The main objective of FGD is to better understand the livelihood activities and income generation from each activity while household interview tried to capture detail information on NTFP collected from community forestry and their income generation. Thus, FGD would provide snapshot information for main income generation activities while household interview provides detail information for income generation from community forestry in Tbeng Lech and O Soam communities.

There are five main livelihood activities in Tbeng Lech community. These activities include paddy rice production, NTFP collection, selling of labour, vegetable production and firewood and charcoal production. Livelihood activities in O Soam community are quite similar with those of Tbeng Lech community. The only different is that instead of vegetable production, small-scale agricultural plantation is considered as main livelihood activities in O Soam community. The main livelihood activity in Tbeng Lech community is paddy rice production and follows by selling of labour. Unlike Tbeng Lech community, the main livelihood activity in O Soam is selling of labour in the Economic Land Concession (ELC) and follows by small-scale agricultural plantations, such as cassava and cashew nut. The average annual household income from all main sources in Tbeng Lech community was estimated at 5,000,000 Riel (USD1,250) while in O Soam was 7,000,000 (USD 1,750) Riel. This is an average bases for most household in the communities. Therefore, it would be different from previous study which focused on a specific group.

The first main income source in Tbeng Lech community is paddy rice production with the annual income around 2,000,000 Riel (USD 500) or 42% while it followed by wage labour which accounted to 1,500,000 Riel (USD 375) or 30%. Tbeng Lech community forestry plays the fourth main income source for CF member in this community contributed around 500,000 Riel (USD125) or 10% of the total annual income.

The first main income source in O Soam community is labour wage with the annual income around 4,800,000 Riel (USD1,200) or 68% while it followed by plantation

such as cassava and cashew nut which accounted to 1,000,000 Riel (USD 250) or 14%. O Soam community forestry plays the fifth main income source for CF members in this community contributed around 209,000 Riel (USD 53) or 2.7% of the total annual income.

The average contribution of NTFP collection from CF in Tbeng Lech was very high during dry season which accounted to 439,049 Riel (USD110) or 87.7% of annual income from CF while O Soam was only 75,444 Riel (USD 19) or 36.1% of annual income from CF. The most frequent NTFP collection in both communities are rattan (rattan canes and rattan shoots as well as vine), honey, wild fruits, firewood, and wild vegetables.

Collection of wood product such as firewood is still the same like in the previous years. But it was reported increasing of other NTFPs such as mushroom and wild fruits around 10-15% in O Soam and Tbeng Lech community forestry, respectively. However, some specific products such as honey could not be identify whether it is increased or decreased since it is too early to evaluated on this product.

Even only few products have been reported increasing, all of the respondents reported that the CF condition is much better than before. This better condition would highly potential for contribution of household livelihood increment in the near future.

In order to increase income generation to local communities, it is recommended to continue forest restoration activities, and at the same time explore the untapped resources in the two communities as follows:

- Tbeng Lech community forestry has a good potential for development of ecotourism considering its forest landscape, good road networks which are well connected to Siem Reap town and Angkor Wat temple, and safety. In order to realize this, an ecotourism development plan has to be developed which include training of local communities on hospitality.
- O Soam community forest is home to many species of rattans which are highly potential for income generation by value added product such as basket weaving. Basket production skill already exists in the community. Therefore, promoting this activity would provide more income to livelihood of local people.

1. INTRODUCTION

1.1 Background

About 400,000 ha of forested areas in Cambodia have been allocated as Community Forestry (CF) and, thus, placed under the management of local communities living in or adjacent to the forests whose livelihoods has a strong link with forest resources. However, the majority of community forests are severely degraded and poorly stocked of timber and non-timber forest products. The forests have never been rehabilitated, and such rehabilitation depends solely on natural regeneration process because local communities do not have sufficient knowledge and seedling to restore their forests. The project “Multi-function forest restoration and management of degraded forest areas in Cambodia”, launched in December 2011 aims at building capacity of local communities for restoration of community forests in Siem Reap and Kampong Thom provinces for production of timber and NTFPs as a means to improve livelihoods of local communities. In order to achieve this objective, a series of activities have been proposed and implemented, one of which is “Study on the income generated from the community forests”. It was expected that after forest restoration, the income from community forestry contribute to local livelihood will be increased 10 %.

Similar studies have been conducted in other areas for evaluating the contribution of forest resources to livelihood of local communities while Sambol and Edward (2014) conducted Participatory Resource Appraisal for this project in the same communities. It is noted, however, that data and information for previous studies in Cambodia seems out of date while the one studied by Sambol and Edward in 2014 was based mainly on group discussion with qualitative data. Therefore, household survey to quantify benefit from forest in both sites, Siem Reap and Kampong Thom, would complement and better understanding on contribution of forest resources to local livelihood. Furthermore, together with Sambol and Edward study in 2014, this study would provide up to date data and information on forest benefit to a wide range of stakeholders such as policy and decision makers, students, researchers, and organizations.

1.2 Objective

The objective of this study aims at understanding income generation from community forestry. Specifically this study is to assess the livelihood value of the two community forestry, O Soam and Tbeng Lech CFs, before and after the introduction of the APFNet-funded project.

2. METHODOLOGY

2.1 Study site

This study was conducted in two community forestry, O Soam and Tbeng Lech communities (Figure 1). O Soam Community Forestry was established in 2004 which

is located in Salvisay commune, Prasat Balang District, Kampong Thom Province while Tbeng Lech was established in 2000 is located in Tbeng commune, Banteay Srey district, Siem Reap province.

Two main forest types have been observed in O Soam community forestry. These two main forest types are deciduous and semi-evergreen forest. Both forest types have been disturbed by human activities through over harvesting, shifting cultivation, and forest fire.

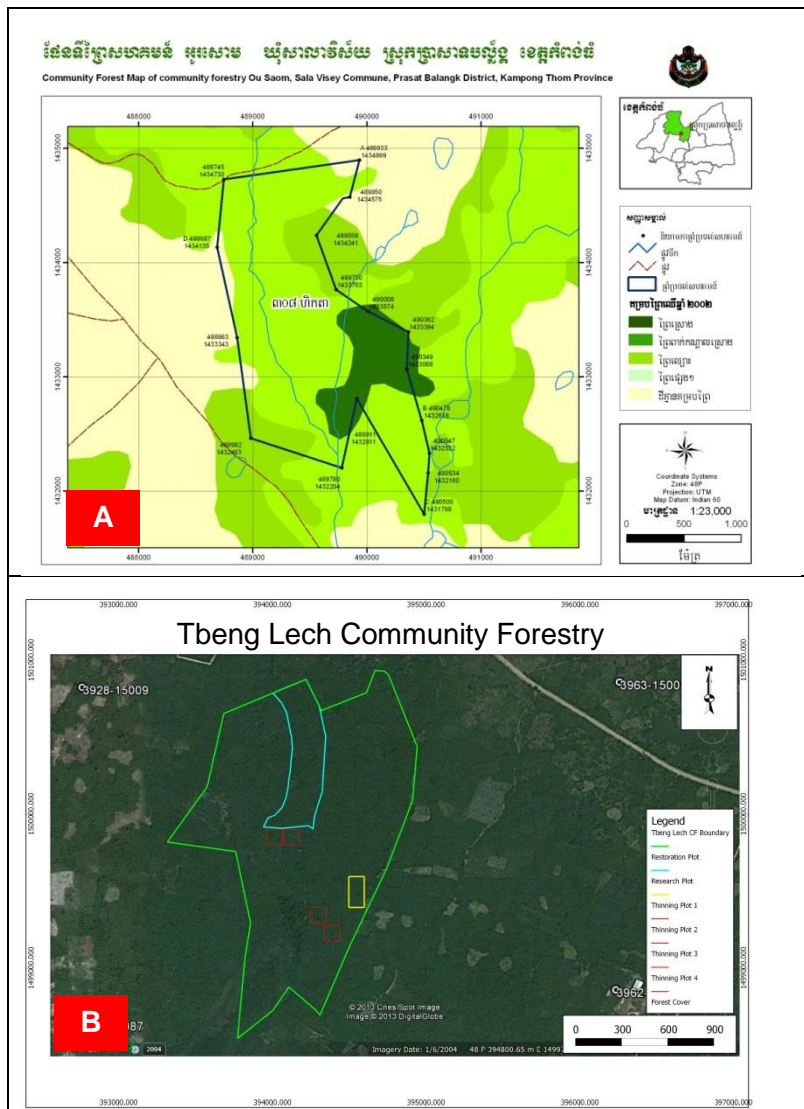


Figure 1: Location of study sites. (A), O Soam community forestry, (B), Tbeng Lech Community forestry

There are three main land cover types in Tbeng Lech community forestry, namely: water lagged area, degraded evergreen forest, and abandon agricultural land. The majority of this community used to be evergreen forest.

Recognizing the importance of forest resources, Forestry Administration has encouraged stakeholder to jointly protect and restore forest resources. Like some

other forest, O Soam and Tbeng Lech community forestry areas have been restored since 2012 by forestry administration funded by AFPNet. There are different method for forest restoration in both sites, including assisted natural regeneration, planting seedling of indigenous tree species in the most degraded area, and forest protection.

2.2 Focus Group Discussion

The study is trying to capture the livelihood activities from different income sources, especially forest resources from community forestry. Since many livelihood activities are also changing seasonally and household interview is too hard for household member to recall income that was generated earlier. Therefore, Focus Group Discussion (FGD) would provide a snapshot for



Figure 2: Group discussion in O Soam Community Forestry

income generation from each main activity within the year. A group of 6-8 people of community member from different household was invited to a group discussion on the topic guided by guiding questions as shown in Appendix 1. The discussions, which took around 2 hours each, focussed mainly on income from each source. The income generated from non-forest related sources was then compared with that from the community forests.

2.3 Household Survey

The study tried to capture the more detail income generated from community forestry which has been restored for the last three years. The information from FGD would provide only snapshot information while household survey would provide detail information on income generated from community forestry.

A number of 30-40 households or around 10-15 % per site was randomly selected. Hence, the total household to be interviewed will be between 60-80 household. However, since time for this study is limited, the enumerator will not be able to wait the household who are absent during their visit. Therefore, their neighbour will be selected to replace the one who was not available during the visit of enumerator.

Since 30-40 households was selected in each community, therefore, the team will start identifying the interval by dividing the total household member from the list (community member list from CF head) in the community by 30- 40. After getting the interval, the first household was randomly selected while the subsequent household by adding the interval that was calculated in each village. Households are defined as a group of persons who commonly live together and take their meals from a common

kitchen unless the exigencies of work prevented any of them from doing so (NIS, 2007)

The interview will follow the questionnaire as shown in Appendix 2. Since this survey was based on participants' recollection of their income from the forest as well as other forest products for consumption for the year, there was a risk of household in recalling information outside the year which could have led to duplicated data. To ensure that only the income generated within the year, the research team try to recall all collected product within two semesters which cover the two seasons, the rainy and the dry seasons.



Figure 3: Household interview in Tbeng Lech community forestry

2.4 Estimating the Product Price

This study attempts to value all collected forestry products in monetary terms. Therefore, it was important to get the prices of the products from the sample households. Therefore, three methods were employed to gauge the product prices: local market price, substitute, and time value. Local market price was based on farm gate prices such as the prices of products that were sold for; the substitute method was employed by using information from the nearby market; while the value of time method was based on the time spent collecting products multiplied by the opportunity cost of local labour.

2.5 Analysis

The study tried to capture the detail of forest-related income from community forestry in comparison to the non-forest related income within the two communities. Therefore, the data was analysed using STATA which is software that many researchers in different research institutions employed for data analysis.

3. FINDING

3.1 General Information of Respondents

This study interviewed 67 households within 2 community forestry, 31 and 36 households in Tbeng Lech and O soam communities, respectively. In general, the age of respondent in the two communities is not old, 43 years old, which is very active in income generation activities.

The majority of respondent in Tbeng Lech community is female which accounted to 61.3 % while the majority of respondent in O Soam community is male which accounted to 72.2%. It is noted that the highest education of respondent in Tbeng Lech community is only secondary education while in O Soam is only primary education (Table 1). It has been observed during group discussion that all of respondent in Tbeng Lech are Khmer while respondent in O Soam community is mostly from ethnic group.

All respondent accounted to 100% in O Soam community have practiced NTFP collection from their community forestry while most of respondent accounted to 90.3 % in Tbeng Lech community have collected NTFP from their community forestry. For those who have never collected NTFP, their main job is selling their labour within community. However, they are also CF member.

Table 1: General characteristics of respondents

	Frequency	Percent
Tbeng Lech Community Forestry		
Sex		
Male	12	38.7
Female	19	61.3
Total	31	100
Education		
Could not read	14	45.2
Primary school	15	48.4
Secondary school	2	6.4
Total	31	100
Involvement in NTFP collection		
Collected NTFP within CF	28	90.3
Never collect NTFP from CF	3	9.7
Total	31	100
Average Age		43.1
O Soam Community Forestry		
Sex		
Male	26	72.2
Female	10	27.8
Total	36	100

Education		
Could not read	8	22.2
Primary school	28	77.8
Secondary school	0	0
Total	36	100
Involvement in NTFP collection	36	100
Average Age		42.9

3.2 Livelihood activities in both CF sites

There are five main livelihood activities in Tbeng Lech (paddy rice production, NTFPs collection, selling labour, vegetable production and firewood and charcoal production) and O Soam (paddy rice production, NTFPs collection, selling labour, plantation, and firewood and charcoal production) community forestry (Figure 4). The first main livelihood activity in Tbeng Lech community is paddy rice production and follows by selling labour. Unlike Tbeng Lech community, the first main livelihood activity in O Soam is selling labour in economic land concession (ELC) and follows by small scale plantation such as cassava and cashew nut in the same province. Most of family member of O Soam community have been employed by ELC.

Furthermore, it was observed that there are also charcoal productions in both communities. The main source of wood is from land clearance from ELC which is nearby their villages and, thus, easy for transportation. Since land clearance is mostly done within dry season that is why charcoal production is very active during dry season when forest land conversion is also active. The charcoal production is more active within Tbeng Lech community due to recent land clearance within a nearby ELC.

Selling labour in Tbeng Lech have been practiced around 3-4 month a year while O Soam community this activity have been practiced the whole year but the work is only haft day basis (This work is only four hours per day).

Livelihood activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tbeng Lech community												
Paddy rice production												
NTFP collection (not firewood)												
Selling labor												
Vegetable production												
Firewood collection and charcoal production												
O Soam Community												
Paddy rice production												

NTFP collection (not firewood)	[Vertical line pattern]										
Selling labor	[Cross-hatch pattern]										
Planation	[Cross-hatch pattern]										
Firewood collection and charcoal production	[Diagonal line pattern]										

Figure 4: Livelihood activities in Tbeng Lech and O Soam community forestry

The collection of non-timber forest product (NTFP) has been practiced all year round. However, some activities only available within specific season such as mushroom is available within rainy season while wild fruit is available only in late dry season and early rainy season.

Valuation of NTFP are mostly based on village market price while some product such as wild vegetable and firewood are based on their willingness to pay and their time spending for collection of those product again their labour wage in their communities.



Figure 5: Collection of NTFP and charcoal production. (A), Charcoal production; (B) Medicinal plant collected from CF; (C), firewood collected from ELC for charcoal production, and (D), different type of mushroom collected from CF

3.3 Market and market access

There is a good road connection and network for both communities. Locations of both sites are not far away from provincial town or city. This provides a good market access for both sites. Higher value NTFP product such as honey, wild fruit, and charcoal are sold to middle man within the village who will sell these products along the road or in provincial town.

3.4 Contribution of Community Forests to Local Livelihood

There is similar NTFP collection from community forestry in both sites. The most frequent NTFP collection in both communities are rattan (rattan cane and rattan shoot), honey, wild fruit, firewood, and wild vegetable.

The study found that the average annual household income range from around 5,000,000 Riel (USD1,250) in Tbeng Lech to 7,000,000 (USD1,750) Riel in O Soam community forestry. This income contributed from different sources. This is an average bases for most households in the communities. Therefore, it would be different from previous study by Sambol and Eward in 2014 which focused on a specific group.

The first main income source in Tbeng Lech community is paddy rice production with the annual income around 2,000,000 Riel (USD500) or 42% while it followed by wage labour which accounted to 1,500,000 Riel (USD375) or 30%. Tbeng Lech community forestry plays the fourth main income source for CF member in this community contributed around 500,000 Riel (USD125) or 10% of the total annual income Figure 6.

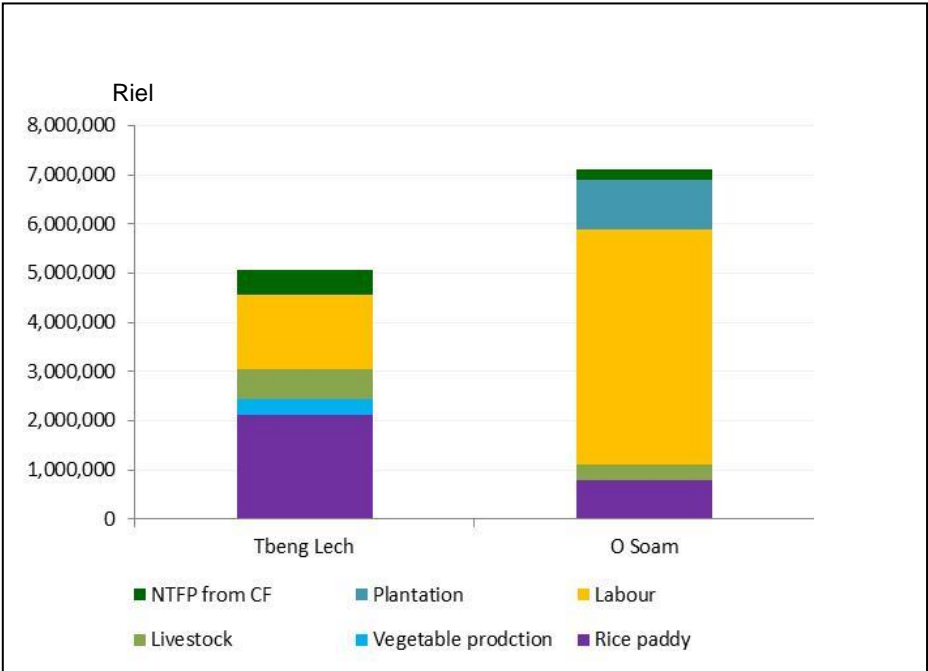


Figure 6: Annual household income by sources in each study site

The first main income source in O Soam community is labour wage with the annual income around 4,800,000 Riel (USD1,200) or 68% while it followed by plantation such as cassava and cashew nut which accounted to 1,000,000 Riel (USD250) or 14%. O Soam community forestry plays the fifth main income source for CF member in this community contributed around 209,000 Riel (USD53) or 2.7% of the total annual income Figure 6.

The average contribution of NTFP collection from CF in Tbeng Lech was very high during dry season which accounted to 439,049 Riel (USD110) or 87.7% of annual income from CF while O Soam was only 75,444 Riel (USD19) or 36.1%. Therefore, unlike Tbeng Lech community, the contribution of CF to local livelihood in O Soam was high during rainy season. This is because most NTFP collection in O Soam is Honey and mushroom and these products have been collected during rainy season.

Collection of NTFP is different from site to site and from season to season as shown in Table 2. It is found that honey collection is done during dry season in Tbeng Lech community forestry while this product has been mostly collected during rainy season in O Soam community forestry.

Table 2: Frequency of NTFP collection

NTFP collection		Frequency
Tbeng Lech community forestry		
Dry season	Pole	20
	Rattan	17
	Fire wood	20
	Fruit	21
	Honey	6
	Vegetable	1
Rainy season	Firewood	3
	Mushroom	24
	Pole	1
	Vegetable	1
	Rattan	1
	Medicinal plant	1
O Soam community forestry		
Dry season	Pole	9
	Fire wood	6
	Fruit	28
	Honey	1

	Rattan	2
	Vegetable	33
Rainy season	Mushroom	36
	Honey	7

All respondents in both sites reported that collection of NTFP, especially wood products such as firewood, from both community forestry is still the same like in the previous time, except mushroom and wild fruit which is observed to be increased around 10-15%. However, some specific product such as honey in O Soam was fluctuated which means that some time it was going up and some time it was down. This is because honey production depends not only the condition of CF alone but also the surrounding environment.

3.5 Condition of Community Forestry

The study reveals that forest condition is very much better in term of its composition and structure. It was reported during group discussion that most part of bare land or high degradation rate in the communities filled up by natural regeneration and artificial planting.

All respondents from household interview reported that vegetation cover of CF in both sites is denser than in the previous time before the project implementation. However, all respondent informed that the collection of products from the ecosystem nearby CF is still the same like in the previous time or even worst. This is because forest areas nearby CFs in both sites have been converted to other land uses.

3.6 Discussion

The contribution of the community forests to household income is low, ranging from only around 3% (209,222 Riel or USD 52 per household) in O Soam to 10% (500,871 Riel or USD 125 per household) in Tbeng Lech community. These rates are considered low compared to previous study in Cambodia. Kasper and Top (2006) reported that the contribution of forests to local livelihood in Kampong Thom, Kratie, Mondulkiri, and Pursat provinces were USD 265, USD 424, USD 167 and USD 314, respectively. The difference could be firstly explained by the forest conditions. Their study was conducted in relatively less-disturb forests, whereas this study conducted in degraded forests. Secondly, this study valued only the forest products collected from within the boundaries of the community forests, not outside the community forests. During the interview, it was found that some households collected forest products from other forest areas outside of the CFs which were not recorded in this study. Most of the forest products that villagers collected from outside CF boundaries are firewood, which is used for charcoal production, and traditional medicines.

The main source of firewood, for charcoal production, is the Economic Land Concessions (ELC) in the surrounding area, which are being cleared to give way for

agricultural crops. Therefore, not before long, when ELC companies finish their land clearance, demand for firewood from CFs will be high. However, high demand for firewood from the CFs in the future will also put CFs at risk, if they do not have proper management plans and effective monitoring teams.

Furthermore, villagers have collected NTFPs within shrub land areas around their houses. Therefore, when this shrub land areas are converted to other land uses, the benefit from CF would be very high since there is no place to collected NTFPs for their daily consumption.

It is difficult to see the increment of income contributed from CFs to livelihood of CF members while CF condition was degraded and restoration activity was started only within the last three years. Thus it could not provide a full direct benefit to local livelihood at this moment. There is no baseline study on the contribution of CF to local livelihood before the project started. It is, therefore, difficult to see the change of CF contribution to local livelihood. However, some specific products such as mushroom and wild fruit were reported increasing between 10 and 15% in O Soam and Tbeng Lech community forestry, respectively, while all respondents reported that the condition of CF is much better than the last three years. Thus, increment of all NTFPs from the CF is surely increased in the near future.

Good condition of CFs would contribute to not only direct benefits livelihood improvement in the future, but also indirect benefits to the ecosystem of the nearby areas since CF provide habitats for wildlife and ecosystems.

4. CONCLUSION AND RECOMMENDATIONS

There are diverse livelihood activities in both study sites which includes paddy rice production, plantation, selling of labour, NTFP collection, vegetable production and livestock raising. Paddy rice production and selling of labour were the two main household livelihoods for the two communities. However, the contribution of forests would be also one income generation activity even it is not much contribution to each household at this moment compared to other main income sources. It will play very important role in the near future when the forest areas nearby community is converted to other land uses and the CF condition is fully functioning resulted from forest restoration activities.

As the forest restoration was started only within the last three years, it could not significantly provide benefit to local livelihood. Some specific products such as mushrooms and wild fruits have been increased between 10 and 15% in O Soam and Tbeng Lech community forests. It is not sure, however, if the increase resulted from the forest restoration activities.

Even the contribution of CFs to local livelihood is not high like some other livelihood activities, the CFs are much better than they were in the past three years. The forests stock many products including species diversity, stand stock, and beautiful landscape.

In order to increase income generation to local communities, it is recommended to continue forest restoration activities, and at the same time explore the untapped resources in the two communities as follows:

- Theng Lech community forestry has a good potential for development of ecotourism considering its forest landscape, good road networks which are well connected to Siem Reap town and Angkor Wat temple, and safety. In order to realize this, an ecotourism development plan has to be developed which include training of local communities on hospitality.
- O Soam community forest is home to many species of rattans which are highly potential for income generation by value added product such as basket weaving. Basket production skill already exists in the community. Therefore, promoting this activity would provide more income to livelihood of local people.

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APPENDIX 1: Guiding question for FGD

1. Please list down main income sources in your community/what are the main income sources in your community?
2. Could you please provide an idea on the approximate annual income for the household within your community?
3. Please provide us the approximate income from each source
4. What is your opinion on NTFPs product from your CF? Is it increased or decreased? Why?

2.3. If yes, what were the quantities and values of forest products that you or your family members collected for both own use and sale within the rainy season?

2.3.1. Forest product	2.3.2.Coll ected by whom?	2.3.3. Quantity collected	2.3.4.Un it	2.3.5. Own use (incl. gifts)	2.3.6. Sold	2.3.7. Price per unit	2.3.8. Type of market	2.3.9. Gross value	2.3.10. Tran- sport/ marketi ng costs (total)	2.3.11. Purch. inputs & hired labour	2.3.12. Net incom e

2.4 Have you observed any change on forest condition in term of products you have collected above?

1 Yes 2.4.1 Observation?.....

2 No 2.4.2 Observation?.....

2.5 Have you observed any increment of forest products that you have collected? if increase how many percent?

3. Other benefit

3.1 Have you ever collected products (such as crab, snail, frog, fish, wild vegetable) from other ecosystem nearby CF? 1. Yes 2.No

3.2 if yes, please tell us the products that you have collected?

.....
.....

If yes, what is the status of these products?

- 1 Increase, how many percent
- 2. Decrease, how many percent
- 3 The same as previous
- 4 No idea