FINAL REPORT

SFB Annual Income Survey of Prey Lang and Eastern Plains Landscapes

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List of Acronyms

AFOLU	Agriculture, Forestry and Other Land Use
AIG	Alternative Income Generation
AIS	Annual Income Survey (2015)
ARBCP	Asia Regional Biodiversity Conservation Program
BLS	Socio-Economic Baseline Survey (2014)
CBPF	Community-Based Production Forest
CF	Community Forestry
CBO	Community-Based Organization
CMO	Complementary Metal Oxide
CPA	Community Protected Areas
CPF	Community Protected Forest
EIC	Education Information Communication
ELC	Economic Land Concession
EPL	Eastern Plain Landscape
EWMI	East West Management Institute
FA	Forestry Administration
FGD	Focus Group Discussion
HA	Hectare
HH	Household
ICT	Indigenous Communal Land Title
IP	Indigenous People
KII	Key Informant Interview
LOP	Life of Project
M&E	Monitoring and Evaluation
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoE	Ministry of Environment
NGO	Non-Governmental Organization
NRM	Natural Resources Management
NTFP	Non-Timber Forest Product
NTFP-EP	Non-Timber Forest Product – Exchange Program
PA	Protected Area
PLL	Prey Lang Landscape
PES	Payments for Environmental Services
PMEP	Performance Monitoring and Evaluation Program
REDD+	Reduced Emissions from Deforestation and Forest Degradation
RGC	Royal Government of Cambodia
SFB	Supporting Forests and Biodiversity
SLA	Sustainable Livelihood Framework Approach
USAID	United States Agency for International Development
USG	United States Government
WCS	Wildlife Conservation Society
WI	Winrock International
WWF	World Wildlife Fund for Nature/World Wildl

Executive Summary

The USAID Supporting Forests and Biodiversity Project (SFB) is being implemented by Winrock International and a consortium of partners including the World Wide Fund for Nature (WWF), East-West Management Institute (EWMI), Wildlife Conservation Society (WCS), and the Center for People and Forests (RECOFTC).

The project goal is to improve the conservation and governance of Cambodia's Eastern Plains Landscape (EPL) and Prey Lang Landscape (PLL) to decrease the rate of deforestation, mitigate climate change, and conserve biodiversity by building the capacity of forest community members to improve forest management decisions; and by building the capacity of government officers to support these efforts.

Objectives of Annual Income Survey:

The overall purpose of the 2015 Annual Income Survey (AIS) is to determine the increase in income in target communities due to livelihood activities implemented by SFB's main partners and seven national NGOs under the Small Grants program. Results are calculated by comparing data from the SFB Socio-Economic Baseline Survey (BLS), conducted in 2014, with data collected under this survey.

Methodology:

The research team conducted fieldwork for the Annual Income Survey by making trips to SFB project sites from May 18 to 31, 2015. Several tools to collect information were adapted from those developed for the Baseline Survey. These included: a household questionnaire, Focus Group Discussions (FGDs) for community forestry groups; Key Informant Interviews (KIIs) for NTFP traders, Forestry Administration/MoE officials and village leaders.

All SFB livelihood project sites in Community Forests, Community Protected Areas, and Indigenous Communal Land Title areas in EPL and PLL (about 60 sites in total) were organized in a database. This site selection database included information on the area's location, type of livelihood activity being implemented, implementing partner(s), and whether or not the site had been sampled during the baseline survey. The database was then stratified to group together sites with similar sampling characteristics. Sites for the annual income survey were randomly selected from these groups in order to capture scenario variations in target communities across the two landscapes, and to ensure the study sample was representative of the full range of SFB's work.

In total, 15 areas containing 15 villages are represented in this survey. About 72.90% of SFB's livelihood sites are in PLL and 27.10% in EPL, so the sample site selection is weighted to reflect this: 11 areas were selected in PLL and 4 in EPL. Across both landscapes, the field team conducted 310 household interviews, of which 226 household respondents are from PLL and other 84 household respondents are from EPL.

Key Findings:

Across PLL and EPL household respondents derive their livelihoods from a range of activities including: agriculture, off-farm income, the collection of NTFPs, and logging and hunting. Although significant income is generated from logging and a number of households collect wood and participate in logging to earn income, these figures are officially underreported, as is income from wildlife hunting activities. For this Annual Income Survey, the income activity with the most significant increase is from the collection of NTFPs.

Progress towards PMEP Target for Indicator 3.3.1: Increase Income by 25%

As outlined in SFB's Performance Monitoring and Evaluation Plan (PMEP), the target for SFB partners in Year 3 of the project is to achieve a 25% increase in income levels of target communities due to economically viable alternative livelihood activities.

Of particular concern is how to analyze data from diverse income streams surveyed by the AIS and BLS, especially income increases that are not directly related to project interventions. Specifically, income from off-farm activities is not a result of SFB project interventions. In this regard, two scenarios comparing results from the AIS and BLS are analyzed based principally on the excluding Off-Farm Income.

The SFB project, as discussed above, is not setting up activities to support increases in off-farm income. This analysis excludes off-farm income from both the baseline and annual income values to ensure the calculation only measures change in income from SFB supported activities (i.e. agriculture and NTFPs). Furthermore, the inflation rate in Cambodia in 2014 was 3.90% (World Bank, 2015), therefore, numbers of production cost and income and others reported by AIS respondents are reduced by 3.90% to account for inflation that has occurred since the baseline was conducted.

- **For PLL, the AIS found average formal income (off-farm excluded) is $1,487 per household as compared with the baseline value of $1,241.**
  - Based on a baseline of $1,241, an incremental income increase of 25% is $310.25/household additional income. So total income per household at AIS should be at least $1,551.25.
  - AIS data shows average income is $1,487, an increase of $246/household. This incremental income increase is 19.85% against BLS survey.

- **For EPL, the AIS found average formal income (excluding off-farm) is $1,598 per household as compared with the baseline value of $1,058.**

  - Based on the baseline, an incremental income increase of 25% is $264.50/household. Thus, total formal income per household at AIS should be at least $1,322.50 in EPL.
  - AIS data shows total household income is $1,598, an increase of $540 or corresponding to incremental income increase is about 51.02% against BLS survey.

- **For PLL & EPL, the weighted AIS average formal income (excluding off-farm) is $1,516 per household as compared with the baseline value of $1,180.**
  - Given this baseline, an incremental income increase of 25% is $295/household, and total formal income per household at AIS should be at least $1,475.
  - AIS data indicates total income is $1,516, an increase of $336. This corresponds to an incremental income increase of 28.44% against the baseline.

Conclusions and Recommendations:

1) **Improving the SFB database:** Issues with the database records of SFB clients participating in livelihood activities presented challenges for fieldwork implementation. Thus, it is recommended that IT and SFB staff review and revise livelihood client records in the database to improve the accuracy. Specific suggestions for how to do this have been provided to the SFB team.

2) **Client literacy rates:** A significant number of SFB beneficiaries/clients are illiterate (37%). However, the AIS fieldwork revealed that SFB team and small grant partners utilize limited Information Educational Communication (IEC) materials for training, which may affect the quality of the training to illiterate clients. Therefore, it is recommended that small grants and SFB partners adapt and adopt more IEC materials to improve the quality of livelihood training activities and the level understanding of illiterate beneficiaries/clients.

3) **Increased support for less privileged beneficiaries:** AIS survey indicates that across the two target landscapes, about 22% SFB beneficiaries/clients have a household member who is in a position of local authority (village representation, CFMC, or other important position). In other words, about one in five has a connection to a person who makes decisions in the village which could create nepotism or cause the benefits of SFB activities to accrue to households that are already more advantaged. This is twice the rate of local authority representatives found in the general population, as measured by the baseline survey results (only 11% of households had a member in a position of power). To improve SFB's social accountability for beneficiary selection, it is recommended that in the final year of implementation, beneficiary selection should focus on less privileged households within the communities.

4) **Forest-based versus farm-based livelihoods:** Majority of household respondents indicates that they were trained farm-based livelihood activities. Likewise, the farm-based livelihoods is aligned with and adapted from the recommendations from Strategy Livelihood Assessment (SFB, 2014). As a result, 80% of household respondents from both PLL and EPL have received training on agriculture livelihood, while only about 50% of respondents received NTFP enterprise development training. However, SFB project framework include a main goal of conservation, so that the livelihood activities should take into account

sustainable forest-based management, conservation agriculture, and ecotourism, rather than focus too heavily on farm-based livelihoods. It is, therefore recommended, for the final year that SFB should widely implement forest-based commodity livelihoods. Farm-based livelihoods should be a complement to, rather than a substitute for, livelihood activities to support forest commodities.

5) **Improved Cook Stoves:** The results from AIS survey shows that across both landscapes, almost 90% of households utilize three-stone cook stoves which attribute to waste of energy and wood fuel input which is commonly used by traditional rural Cambodians for cooking food and others. Therefore, it is essential to introduce the improved cook stove device in the target area which contributes to reduced logging and collection of amount fuel wood from the forest for household cooking. This may also lead to reduced carbon emissions and saving household energy utilization.

6) **Performance Against Target for PMEP Indicator 3.3.1 in Years-3 and Year-4**
Excluding off-farm sources, incremental income increased from baseline to Year-3 by 19.85% for PLL and 51.02% for EPL. Across both landscapes, the weighted average increase in income is 28.44%, which exceeds the 25% target set in the PMEP for indicator (3.1.1) for the SFB project in Year-3.

However, it is unlikely that the increase in income will be as great in Year-4 because the Year-3 results measure progress from the first three years of SFB implementation and by Year-3 most households participating have already diversified their optimum income from agriculture and forest products. Thus, in Year-4 SFB may need to achieve the additional 21.56% income increase required to meet the total Life of Project target of 50% increase in income.

Nonetheless, the results of this survey show SFB livelihood activities have significantly improved incomes in these communities. This is a particularly impressive achievement given their remote locations and limited access to markets.

CHAPTER I: BACKGROUND OF SFB PROJECT AND ANNUAL HOUSEHOLD INCOME SURVEY

1.1: The Supporting Forests and Biodiversity Project (SFB)

Winrock International is a non-profit organization that works to empower the disadvantaged, increase economic opportunities, and sustain natural resources. By linking local individuals and communities with new ideas and technologies, Winrock is increasing long-term productivity, equity, and responsible resource management to benefit the poor and disadvantaged of the world. In Cambodia, the USAID Supporting Forests and Biodiversity (SFB) Project is being implemented by Winrock International and a consortium of partners: World Wildlife Fund, East-West Management Institute, Wildlife Conservation Society, and the Center for People and Forests seven national NGOs who have implemented livelihoods activities since July 2014.

1.1.1: Project Goal

The Project's goal of SFB is to improve conservation and governance of the Eastern Plains (EPL) and Prey Lang Landscapes (PLL) to decrease the rate of deforestation, mitigate climate change, and conserve biodiversity by building the capacity of forest community members to improve forest management decisions and by building the capacity of government officers to support these efforts.

1.1.2: Objectives of Annual Income Survey

The overall purpose of the 2015 Annual Income Survey (AIS) is to determine the increase in income in target communities in Prey Lang and Eastern Plains due to livelihood activities implemented by SFB's main partners and seven national NGOs under the Small Grants program. Results are calculated by comparing data from the SFB Socio-Economic Baseline Survey (BLS), conducted in 2014, with data collected under this survey (Please see detailed ToR in ANNEX).

1.2: Background of Socio-Economic Baseline Study for SFB

The socio-economic baseline under SFB Project for both PLL and EPL was conducted in April 2014. The purpose was to compile socio-economic baseline profiles to identify target communities' current levels of economic activity, and especially establish average income baseline values for SFB project indicators. These baseline values can be used to evaluate project performance against the targets in the Performance Monitoring and Evaluation Plan (PMEP) through income surveys at the end of Year 3 and Year 4 (SFB, 2014[1]), specifically, for indicator *3.1.1: increase in income levels of target communities*

[1]*SFB (2014), Socio-Economic Baseline Study: Incomes and Livelihoods of Engaged Communities in Prey Lang Landscape and Eastern Plain Landscape (USAID: Cambodia)*

due to economically viable alternative livelihood activities. The 2015 annual income values presented in this study are compared with baseline values established in 2014.

Below is a Summary of the tool and process used for the Socio-Economic Baseline Survey.

The research team conducted fieldwork for the socio-economic baseline by making trips to SFB project sites from May 07 to 26, 2014, following development of the research design and survey tools from Middle of March to April 2014. Meanwhile, the timeframe for data collection for the socio-economic baseline was April 2013 and April 2014.

Of particular concern, a participatory approach was used, through which key staff from USAID and SFB's consortium of partners actively participated and/or had the opportunity to give feedback on various aspects of this study.

Several tools were developed to collect information. These included: a household questionnaire, Focus Group Discussions (FGDs) for community forestry groups; Key Informant Interviews (KIIs) for NTFP traders, Forestry Administration officials and village leaders; and village profiles. Equally important, the different sampling characteristics (like the level of intensity of SFB activities, quality of forest, and start date for SFB activities at each site) were used in order to capture scenario variations in target communities across the two landscapes, and to ensure the study sample was representative of the full range of SFB's work. Equally important, techniques to achieve gender balance and mainstreaming were applied across the training and selection of enumerators, and the selection of household respondents and FGD participants.

In total, 18 community forest/ICT sites (11 in PLL and 7 in EPL) containing 21 villages are represented in this survey. Across both landscapes, the field team conducted 630 household interviews, 18 FGDs with community forest groups, 20 KIIs with NTFP traders, 10 KIIs with FA Officials, 3 KIIs with NGOs, and compiled 21 village profiles.

1.3: Progress on Livelihood Program from April 2014 to Date

Since the Socio-Economic Baseline Study was conducted, there have been few important activities aimed at supporting SFB Objective 3 to increase equitable economic benefits from the sustainable management of forests. These activities have helped contribute to increased income of target communities in both PLL and EPL.

1.3.1: Livelihood Strategy Assessment

The Livelihood Strategy Assessment was conducted to stimulate the livelihood framework for Objective 3, helping to build the SFB livelihoods team and to optimize use of resources to achieve its plans (Peramune, 2014)[2]. The recommendations learned from the assessment are described as follows:

[2] Peramune, M.(2014) Livelihood Strategy: USAID Cambodia Supporting Forests and Biodiversity (SFB) Project – Final Report. (SFB Project: Cambodia)

a) **Design and implement a project approach that explicitly addresses both livelihoods and conservation as part of an integrated whole**

This recommendation is aimed to: 1) develop a training/business development module from various existing commodities which are already existed and/or adapted by local community people which range from farm-based livelihoods and NTFPs; 2) Leverage potential conservation-livelihoods promoting partners such as hotels, guest houses, tour operators for ecotourism related livelihoods; and 3) Leverage extensive mobile platform usage in the provinces for livelihoods promotion.

b) **Build market-led livelihoods approaches that addresses current and new market chains**

This involves the development of market-based NTFPs and farm-based livelihood commodities as well as ecotourism development through piloting certain enterprise.

For NTFPs enterprise development includes honey, resin, medicinal plants, mushroom, bamboo, and other NTFPs products which are already available in the target community and some enterprises already have market linkage established, e.g., honey. Likewise, for Farm-based enterprise development, it is mainly egro-ecology farm-based approach which leads to improved nutrition and health of local community which was recommended to adopted, while at the same time it also helps to address market needs within the community and particularly to explore accessible to current and new markets. Primarily, the farm-based livelihoods which are fundamentally important enterprise include rice, chicken, home gardens and others. Equally important, ecotourism enterprise pilot development was also recommended to certain potential and/or already existing enterprises in the target community at EPL to include local and foreign tourists,with agro-ecological farming to be part of this.

c) **Build capacity to use a conservation-linked livelihoods approach**

This is an integrated approach inter-linking conservation and sustainable market development for which SFB livelihood team would be strengthened capacity on agro-ecology practices. Likewise, ideally, the recommendation is also to engage and mobilize local communities including youth to develop business planning. Of particular note, Small Grants Partners were also trained and equipped to deliver on the project objective settings, such as, sustainable NRM and resource assessment, Self-Help Group development and other related activities.

d) **Use partners to develop other livelihood areas that have an impact on the conservation-approach**

This is to identify Small Grants Partners whose continued work will extend the SFB livelihoods approach after training and development; and those can be include cook

stoves and water and sanitation. Meanwhile, it is includes private sector partners that are able to ensure a sustainable technical and market collaboration.

1.3.2: NTFP Resource Assessment

To address and respond to " objective 3 " of the SFB Project, particularly to respond to the Livelihood Strategy Assessment, the Bamboo Resource Assessment and Market Chain was conducted for both PLL and EPL. This Assessment aimed to assess the long term viability for cottage bamboo enterprise development at sites in the PLL: 1) determine the availability and sustainability of bamboo supply at selected sites; and 2) assess the value chain and market potential for particular products based on bamboo supply. The output and outcome of these assessments help to support the sustainable harvest method of wild bamboo products, volume of products and training activities, processing facility to add value to subsector of NTFP, business planning development, and the market linkage of bamboo product from forest to market-end.

1.3.3: SFB Mid-Term Evaluation (MTE)

The MTE[3] Review was finalized in November 2014. The results and analysis were divided into two different timeframes within the evaluation period: Year 1 under the leadership of old COP, and Year 2 under the current COP (who was appointed in December 2013). It is interesting to note that the leadership of the current COP is almost same timeframe as the start date for the Socio-Economic Baseline. Therefore, the results of the MTE and Annual Income Survey will largely reflect what has been achieved since the new COP assumed leadership, especially for objective 3. The conclusions and recommendations from MTE to Objective 3 are described in Box 1[4] as follows, and equally important in the yellow highlight color are relevant and highly relevant for Objective No. 3, and especially they are relevant to outcome and result analysis of this assessment (SFB Annual Income Survey).

Box 1: Conclusions and Recommendations for MTE Evaluation

Conclusions

The theory of change for this project is: *Lasting change requires action across multiple geographic scales with the participation of the full range of stakeholders.*
The SFB results to date are limited, especially given the slow start the first year. The three linked requirements are challenging work at best in the current political and power-base structure in Cambodia. SFB is a complex project with many "moving parts". The project does, however, under the leadership of the COP and the foresight of the current leadership of the implementing partners, appear to demonstrate some ability to adapt and be flexible in the face of difficulty and change. Demonstration of this quality is further supported by the results of the questionnaire administered by the evaluation team. Especially given third year work plan activities and new initiatives in motion, the project seems on track to speak to this theory, and possibly support it in its outcome. It is hoped that the recommendations given here may help shape the next two years of the project to maximize success in this difficult climate.

Recommendations

Two sub-questions have been provided by USAID/Cambodia to capture recommendations from the evaluation and these are considered separately. Each recommendation refers to one or more overall objectives (Obj) listed in parentheses in the recommendations that follow.

Evaluation purpose #2: Propose key actionable recommendations to improve the performance of the project in the remaining period.

2.1 Which SFB activities/approaches should be continued or expanded through the life of the project, and which should be reconsidered or improved?

2.2 What specific recommendations could be made to improve project performance for the remaining period and ensure greater sustainability of results once the SFB project ends?

Recommendations addressing 2.1: Approaches

1. Protected area work should continue to be strongly supported and expanded through the rest of SFB's duration (Obj 1)
    a. Camera trapping and SMART data collection tools in and around protected areas (which can add data towards long term species populations, a

1.3.4: Small Grant Partners

In 2004, there were 7 small grant partners mainly from Local NGOs collaborating and working with SFB project, for both PLL and EPL landscape, whose roles and responsibilities were providing capacity building and training on livelihood development, including agriculture, NTFP enterprise developments and other livelihood related activities.

CHAPTER II: METHODOLOGY

This Household Annual Income Survey collected data from the field about income levels from April 2014 to April 2015, for comparison with data from the Socio-Economic Baseline Survey which calculated income levels from April 2013 to April 2014. Thus, all the tools and methodology employed for data collection is fundamentally replicated from Socio-Economic Baseline Survey (BLS) to ensure the consistency and comparability of results. However, while the BLS included a broader variety of tools such as focus group discussions and key informant interviews, this assessment mainly focused on the household income survey as the paramount tool to collect data on different income generation activities which the project has implemented for livelihood development. This is to measure the incremental income increase from baseline to date and assess if SFB is meeting the 25% target for both PLL and EPL for PMEP Indicator 3.1.1. Of similar effect, data from the Baseline Survey and Annual Income Survey are compared to determine the increase in income achieved as of April 2015. Equally important, the inflation rate in Cambodia in 2014 was 3.90% (World Bank, 2015), hence, numbers of production costs, income, and others related activities which reported by AIS respondents are reduced by 3.90% to account for inflation that has occurred since the baseline was conducted.

2.1: General Tools and Process of SFB Annual Income Survey

The research team conducted fieldwork for the SFB annual income survey from 18 to 30 May, 2015 by travelling to PLL and EPL landscape under SFB project. Equally important, there were various tools and processes utilized for data collection under SFB Annual Income Survey which is described in detail as follows:

2.1.1. Desk review

All existing materials and documents related to SFB project were reviewed, including: Midterm Review Evaluation Report; Strategy Livelihood; Quarterly Report No.9; and SFB database. Of special importance was review of the Socio-Economic Baseline Survey (2014) and database in order to set calculation of income indicators against it. Other relevant materials included training curriculum, and/or policy development and implementation by the Cambodia Government, development partners, and other NGOs that might influence forest dependent communities supported by SFB.

2.1.2. Sample site selection

All SFB livelihood project sites in Community Forests, Community Protected Areas, and Indigenous Communal Land Title areas in EPL and PLL (about 60 sites in total) were organized in a database. This site selection database included information on the area's location, type of livelihood activity being implemented, implementing partner(s),

and whether or not the site had been sampled during the baseline survey. The database was then stratified to group together sites with similar sampling characteristics. Sites for the annual income survey were randomly selected from these groups in order to capture scenario variations in target communities across the two landscapes, and to ensure the study sample was representative of the full range of SFB's work.

To ensure a statistically significant and representative sample of sites were selected, systematic random sampling was used at a 95% confidence level with 5% confidence interval (margin of error). In total, 15 areas containing 17 villages are represented in this survey. About 2/3 of SFB's livelihood sites are in PLL and 1/3 in EPL, so the sample site selection is weighted to reflect this: 11 areas were selected in PLL and 4 in EPL. Across both landscapes, the field team conducted 310 household interviews (216 in PLL and 84 in EPL).See Table 3.1 for details.

The sample was stratified based upon the characteristics described as follow:

- Balance Landscape for CFs/Village under PLL and EPL: ensure the balance between PLL and EPL landscape due to SFB Project intervention. 11 CFs/villages were selected from PLL and 4 CFs/ from EPL for the survey, respectively.

- SFB partners: all SFB partners who are implementing livelihoods activities were randomly selected for the survey, including SFB/WI, WWF, WCS, and small grant partners. Equally important, a single SFB partner implementing livelihoods activities versus multi-partners implementing different livelihood activities within single villages were also selected for the survey aimed at comparing the effectiveness and efficiency of the different module project interventions and implementation.

- Gender balance: To ensure the gender balance among household respondents, females, males, and couples were randomly selected and balanced for the annual income survey.

- Baseline Socio-Economic Survey: Some of the CFs/Villages randomly selected for the baseline socio-economic survey have been also selected for the annual income survey for direct comparison.

Table 2.1: Sample Survey

Category	Name of CF Included in AIS	CF Included in BLS?	Village Name	SFB Partner	Total Sample
PLL	Prey Tatey		Kantir	WI	13
	Ou Das Sko		Sam Aong	WI-MB	29
	Prey Kbal Ou Thnong		Srae Veak Khang keut	WI	20

	Prey Lang Senchey	x	Srae Veal & Bang Korn	WI	21
	Prey Khlong Trapeang Sa'ang	x	Put Trea	WI	18
	Dang Phlet CF	x	Dang Phlet	WI-WCS	21
	Chhaebkeut		Chheab Keut	PKH	24
	Phnom Prasat		Or Rai	PVT	19
	Kiri Soksan	x	Veal Dinh& Anlong Chrey	WI-CRDT	24
	Prasat Teuk Khmao/ Tonsaong Thleak	x	Tonsaong Thleak	FLO	21
	Angkor Ent		Beong Char	CRDT	16
	Sub Total	11			226
EPL	ICT Andong Kraluoeung	x	Andong Kraloeng	WCS	21
	Pulung CF	x	Pulung	CANDO	19
	CF O Nglav Srae huy	x	Srae Huy	MIPAD-WWF	21
	Srae Y CPA huy		Srae I	WWF	23
	Sub Total	4			84
Total	**15**		**15**		**310**

(Source: Annual Income Survey, 2015)

2.1.3. Research Tools

a) Household Interview

The comprehensive household interview survey was developed to gather data on household income and asset levels and their various sources. This tool was based on the household interview form used for the baseline survey which was developed using participatory methods and input from staff of all SFB partners. For the Annual Income Survey, subsets of questions directly relevant to income were used. Following the pilot, slight modifications were made to some questions based on input from the research field team and SFB Objective 3 Team Leader.

To target households participating in SFB livelihood activities for the survey, a name list of all participants in SFB livelihood activities was provided by the Project. Among the name lists for each area randomly selected as sample sites (listed above), SFB participants were randomly selected for the household interview. This differs from the household interviewee selection for the baseline survey, which was based on lists of all households in the village.

b) Focus Group Discussion

Focus Group Discussions (FGDs) were the main tool used to get information from Community Forestry Management Committees (CFMCs). The FGDs were intended to provide an understanding of the general context of livelihood development supported by either SFB and other development partners which contribute to improve income generation activity and food security of target study CF sites from year 2013 (which was the SFB baseline starting date) to present time. Specifically, it aimed to capture qualitative information in relation to change over time in terms of forest utilization, protection, and sustainable forest management. Moreover, the tool is also designed to capture the external sources of support for village and community forests, gender related issues, and existing challenges and opportunities for NRM in the target communities. Meanwhile, the committee participant group size included female and male and ranged from 6 to 10 persons, while the time spent for each FGD was one to two hours. Table 1 below indicates total number of FGDs accounted for assessment is about 4 FGDs from 4 CFs of which from PLL and EPL is comprised of 2 and 2, respectively.

c) Key Informant Interview (KII)

Key Informant Interviews (KIIs) were used to capture the different strategy and perspectives in relation to natural resource management and trading activities, local infrastructure development and socio-economic performance, and to validate the constraints and opportunities for NTFPs and sustainable forest management.

A key stakeholder group targeted for KIIs were provincial forest officials and MoE officials who are in charge of and/or responsible for forest area sites. The main themes captured during these interviews include the key issues and challenges in relation to NRM regulation and trading activities within PLL and EPL. In total, 4 officials were interviewed.

Likewise, as far as the NTFPs case studies are relevant and incorporated into the larger study, especially resin and bamboo products, the target list of key informants from different layers of the those NTFP supply chains in the target sites have been used for interview. These include: resin and bamboo traders and wholesalers as well as local retailers. As shown in Table 2.2, 12 NTFP traders were selected for KIIs.

It is worthy to note that the KII for Small Grant NGOs for both PLL and EPL was conducted mainly through phone interview in order to gain wider understanding if they have utilized different livelihood strategy to support the target local communities.

Table 2.2 : Different Type of FGDs and KIIs Interview

Landscape	Type of Interview

	No. of FGD Interview with CFMC	No. of KII Interview with FA/MoE	No.KII with NTFPs trader
PLL Landscape	2	2	9
EPL Landscape	2	1	3
Total	4	3	12

(Source: Annual Income Survey, 2015)

d) Case Studies

Two main case studies – bamboo and resin from PLL landscape for this Annual Income Survey have been used to highlight the key importance of livelihood impact from SFB project interventions and implementation, including cost and benefit analysis, and key challenges and opportunities for NTFP trading business (These Two Case Studies are in the Report ANNEX).

2.2: Data Entry and Data Analysis

Data entry and analysis were performed using the Statistical Package for Social Science (SPSS) Program and Microsoft Excel. Equally important, to ensure the quality of data, all sheets of completed interview questionnaires were cleaned and enumerators were given feedback by the research team within a working day, or before leaving a CF/village site and moving to another site. Furthermore, three data entry personnel were hired, while the research team worked on data cleaning, processing, and analysis.

2.3: Limitations and Challenges for the Annual Income Survey

During the pre-data collection and during the course of data collection period, there were various issues encountered in relation to SFB databases that were used for sample site selection and participant name lists. The details of these constraints are described below.

a) SFB Database for Livelihood Participants

The name list from the SFB database with livelihood participants was of mixed quality, and created confusion in the field when the research team arrived at selected sites and attempted to locate the participants randomly selected from the list. Specifically, the list from the database of participants who were supposed to have attended livelihood trainings (based on information provided by SFB partners and small grant NGOs) included both livelihoods participants and people who had attended general trainings on other SFB topics. As a result, the research team had difficulty to differentiate and split clearly between participants who had livelihood-specific training versus general trainings. Thus, it was time-consuming to verify to ensure that the population and sampling households were in fact SFB livelihood participants. Meanwhile, majority of small grant

NGOs have done various livelihood activities, but it seemed these participants were not included in the names entered in the SFB database.

b) Matter of List of Participants

The following points describe specific technical issues with the SFB database which affected quality of M & E and survey results.

- Incorrect Data Entry: There were various incorrect codes in SFB livelihood database, for instance, Chheb Lech CF is coded in database but not exist in the field.

- Some CFs have livelihood activities but not entered in SFB livelihood database for majority of small grant partners, such as, PHK, MIPAD and others.

- Some CF name is incorrect spelling: for instance, CF Srae Huy and O La ngac Srae Huy (Nick name record in database), but both of them recorded in database and in fact there is only one official name - O La ngac Srae Huy CF.

- Some training participants indicated their nick name but not official name which made extremely difficult to verify individual participants during the fieldwork.

- In some cases, more than one member of a household attended the same livelihood training (such as husband and wife), so both appeared on the name list. However, the income survey is at the household level and each household could only be interviewed one time, reducing the number of possible interviewees within the village.

CHAPTER III: SOCIO-ECONOMIC PROFILE OF HOUSEHOLD RESPONDENTS

3.1: Household Profiles and Demographic Information

This section describes and analyzes the profile of households (HH) surveyed for annual income survey (2014-15) against baseline survey (2013-14), including the age, gender, ethnicity, and educational backgrounds of respondents. Thus, the purpose of comparison is to identify if those indicators/parameters are significantly different between two surveys for the different timeframe analysis.

Similar to the baseline survey, for the purposes of this annual income survey, the term "household" includes all people currently living in the home. A household can include more than one family, e.g. newly married children may stay in the same household as their parents. Children living elsewhere are included *if they still receive money from the household*. Household members do not include children living elsewhere if they give money earned elsewhere to the household.

3.1.1. Age of Respondents

Table 3.1 indicate that the average age of respondents from AIS defined as the "head of household or family" is 39 years old for PLL and is 41 years old for EPL, while the average across two landscapes is 39 years old. This average figure is slightly lower than BLS (41). It is, therefore, concluded that those household respondents are still part of the productive labor force for both on-farm and off-farm activities to earn income to support their family members.

Table 3.1: Age of household respondent

Landscape	Annual Age of Respondents(years)
PLL average	39
EPL average	41
Average (PLL & EPL)	39

(Source: Annual Income Survey, 2015)

3.1.2. Total Household Members

Table 3.2 reveals that for AIS survey the average HH size in PLL and EPL is similar at 5.53 and 6.56 persons respectively. The average for both landscapes is 5.81 persons per household, similar to the BLS survey of 5.24. Moreover, for AIS survey, the average number HH members for both PLL and EPL who are active in the labor force and can engage in work for both on-farm and off-farm activities is about 1.60. Thus, a higher no. of household members in the family may lead to higher productivity for supporting household livelihood. Equally important, it is also potentially contributed for engagement

in SFB project includes livelihood development participation and forest and biodiversity conservation.

Table 3.2: Total Household Member

Landscape	Annual Average household (no.)
PLL	5.53
EPL	6.56
Average (PLL & EPL)	5.81

(Source: Annual Income Survey, 2015)

3.1.3. Gender of Respondents (BLS vs.AIS)

In general, relations between men and women in Cambodian society have been described as "relatively equal," as demonstrated by the flexibility of gender roles in agricultural production, women's contributions to family income and their important decision-making roles within the family. However, overall gender inequality and gaps persist, especially in IP communities: the voices, participation, and decision-making of women in households are fairly marginalized. Thus, to ensure gender balance in response rates, the research design for AIS survey has adapted a similar approach and methodology to BLS survey baseline study by balancing the inclusive gender approaches for both survey, such as, targeting female participants, gender mainstreaming questions for NRM, and especially to hire more female enumerators for data collection (5 female enumerator out of 8 enumerators). Hence, it was suggested that all enumerators should include both female and male heads of household in interviews, and encourage both genders to respond to the questions.

The AIS survey adapted an approach similar to BLS survey because to include both spouses' respondes during the course of the interviews, the male perspective was often observed to be dominant during the course of the interview, in terms of off-farm activities while women complemented the responses in terms of on-farm and household affairs during the interview. In this regard, for couple interviews, generally it was the male and female who participated to provide the compliment answers to the questions, and this is different from the BLS survey where Anecdotal evidence indicates that that for couples the male is dominant during the course of interview, for both landscapes.

Table 3.3 below indicates that for AIS survey in the PLL target site, the percentage of female, male, and couple interviews was about 33%, 30%, and 37%, respectively. Similarly, in EPL 26% of respondents were female, 37% male, and 37% couples. As a result, the number of female (31%) and male respondents (32%), and couple respondents (37%) across the two landscapes is very similar. Thus it can be concluded that the AIS survey represents a fairly gender balanced view which contributed to minimize any gender bias in these survey results which is similar to BLS survey.

Table 3.3: Gender of Respondents (AIS)

Landscape	Male Respondent	Female Respondent	Couple Respondent	Total
Percentage PLL (%)	**30%**	**33%**	**37%**	**100%**
Percentage EPL (%)	**37%**	**26%**	**37%**	**100%**
Average (PLL & EPL)	**32%**	**31%**	**37%**	**100%**

(Source: Annual Income Survey, 2015)

3.1.4. Educational Background of Respondents (AIS)

Educational background of household respondent plays a paramount important role, and can greatly affect the implementation and intervention as well as impacts for SFB project with a strong concentrates on training and capacity building in rural forest dependent community. Equally important, Understanding the educational background of respondents in SFB target sites can help SFB team and small grant partners to design appropriate training materials and activities which contribute to the capacity development of community members and forest committee members, and enhance community enterprise development to improve income generation activities. Specifically, the different educational background of household respondent can contribute to produce different outcome and impact of SFB project.

Table 3.4 below shows the different categories of educational background and average levels of respondents surveyed for AIS survey. Table 3.4 reveals that the different categories of educational background of which PLL and EPL are almost no significantly different results. For AIS survey across two landscapes, the percentage of respondents who are illiterate is 37%, a slightly lower rate as compared to BLS survey (43%). However, anecdotal evidence from the AIS field survey reveals that SFB team and small grant partners were utilized limited IEC materials for training which this may have some affect on the quality of the training to those who are illiterate clients.

Table 3.4 Educational Background of Respondents (AIS)

Landscape	None at all	Both literate and numerate	Literate	Numerate	Total
PLL	36%	50%	8%	6%	100%
EPL	39%	54%	6%	1%	100%
Average (PLL &EPL)	37%	51%	5%	8%	100%

Literacy categories used:

- Literate, i.e. the respondent can only read and write
- Numerate, i.e. the respondent can calculate basic numbers and/or figures
- Both literate and numerate, i.e. respondent who can read and write, and also calculate the basic numbers and/or figure

- None at all, i.e. the respondent is neither literate nor numerate

3.1.5. Indigenous People (AIS)

Based on the 2012 Cambodian Population Census, there are 17 ethno-linguistically differentiated indigenous community groups[5] located across 15 provinces, including in the northeast. Geographically, indigenous communities in Cambodia have historically inhabited upland and forested areas,[6] with particular concentrations in the northeastern provinces. Their locations follow the biodiversity corridors of, and natural boundaries between, Cambodia, Vietnam and Laos including the Mekong River and its tributaries the Srepok, Sekong and Se San. There are also, however, upland communities living in the southwest and lowland communities with a history of practicing Buddhism and lowland/paddy-based agriculture living in the north-central plains (Socio-Economic Baseline Survey SFB, 2014).

Table 3.5 below shows that for AIS survey, there are two main IP communities living in the project target areas, PLL and EPL: the Kuy and the Bunong people which is consistent with BLS survey result. Interestingly, for PLL, there are also few ethnic minority groups resettled there, such as, Lao.

Data analysis from AIS survey (2015), Table indicates that 64.6% of household respondents from PPL were Khmer and 34.5% were *Kuy*, and less than 1% were Bunong and Lao, while from the EPL landscape 98% were Bunong and the rest were Khmer (2%). As a result, 52% of total sample respondents were IP (Table 3.4). However, AIS survey further asked household respondents who identified themselves as Khmer ethnic (147 samples corresponding to 64.6% from PLL) whether they practice and worship spiritual forest, grave forest and others, interestingly, only 50 household samples (22%) who did not practice such spiritual belief, otherwise most of them practice this animation in religiously. Thus, it can be fairly concluded that majority of household respondents from PLL were IP only 22% were Khmer immigrants to recently resettled in the target PLL site. Furthermore, the result analysis from AIS survey about IP is similar figure to BLS survey data.

Table 3.5 Indigenous People (AIS)

Landscape	Ethnicity of Respondent				Total Indigenous People	Total All Groups
	Khmer	Bunong	Kuy	Other		
Percentage PLL (%)	74%	0%	26%	1%	27%	100%
Percentage of ethnic people in EPL (%)	5%	94%	0%	1%	95%	100%
Average (PLL & EPL)	**55%**	**26%**	**19%**	**1%**	**46%**	100%

(Source: Annual Income Survey, 2015)

[5] *Includes Jarai, Bunong, Stieng, Kavet, Kreung, Tumpuon, Mil, Por, Suy, Kuy, Kraol, Soch, Brao, Lun, Thmon, Khmer Dam, Kanchruk*

[6] *As distinguished from immigrant minority groups such as the Vietnamese, Chinese, Cham, Lao and Thai.*

3.1.6. Households with Responsibilities in the Village (AIS)

This section is aimed to analyze the different types and dynamics of socio-political structures including kinship and nepotism for household respondents who are now SFB clients. These factors may affect SFB project intervention in relation to social accountability including accountability and transparency. Thus, household respondents were asked: "Do you or anyone else in your household hold a position of responsibility in the village?"

Table 3.6 from AIS survey indicates that that among the two target landscapes, about 22% of households in the sample responded "yes." – they do have household members in positions of local authority or have a management or coordinating position in the target village and/or community forest-based management. The 22% of households in the AIS with positions of authority is significantly higher than BLS survey result (11%), which is based on the average for all households in the village. Thus, this current figure indicates that, to some extent, SFB clients selected for livelihoods activities are twice as likely as the average household to have a household member in a position of power. It is important for social responsibility that the SFB Project takes this into account, and encourages the participation by the majority of villagers who are not in positions of power.

Table 3.6 Households with Responsibilities in the Village (AIS)

Household or member holds position in the village	PLL		EPL		Total	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Yes	51	22.6%	19	22.6%	70	22.6%
No	175	77.4%	65	77.4%	240	77.4%
Total	**226**	**100%**	**84**	**100%**	310	**100%**

(Source: Annual Income Survey, 2015)

3.2: SFB Project Interventions (Baseline vs. Annual Income Survey)

This section discusses the main SFB project intervention activity and output on capacity development of local community and the awareness and/or local knowledge about brand name of SFB and USAID support project, from socio-economic baseline to the AIS survey period.

3.2.1. Local People Knowing Project and USAID (BLS vs AIS)

The survey questions for both AIS and BLS survey were designed to ask participating households about their awareness and/or knowledge of activities taking place sponsored either by: 1) SFB project and 2) USAID Project.

Figure 3.1: Local Knowledge of SFB and USAID Project

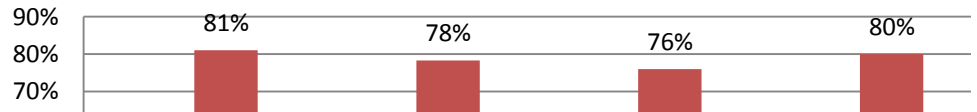


Figure 3.1 indicates that of BSL survey respondents, only a small proportion (14%) from PLL knew about the SFB project, while in EPL it was 27%. However, currently, AIS survey results show that the majority of household respondents from both PLL and EPL know about the SFB project (at the rate of 81% and 76%, respectively). Likewise, the question was asked whether household respondents who are SFB beneficiaries/clients know the activities are supported by USAID. Similarly, from AIS survey, 78% and 80% of household respondents from PLL and EPL know about USAID's support, which is a significantly higher rate as compared to BSL survey (only 9% from PLL and 18% from EPL knew about USAID project support).

The reasoning is that the marketing and media promotion in combination with SFB staff and small grant partners' introduction to SFB beneficiaries/clients about SFB and USAID project support has been effective in the past year. As a result, there were significantly increased rates of local community/clients who know about SFB and USAID Project in both landscapes.

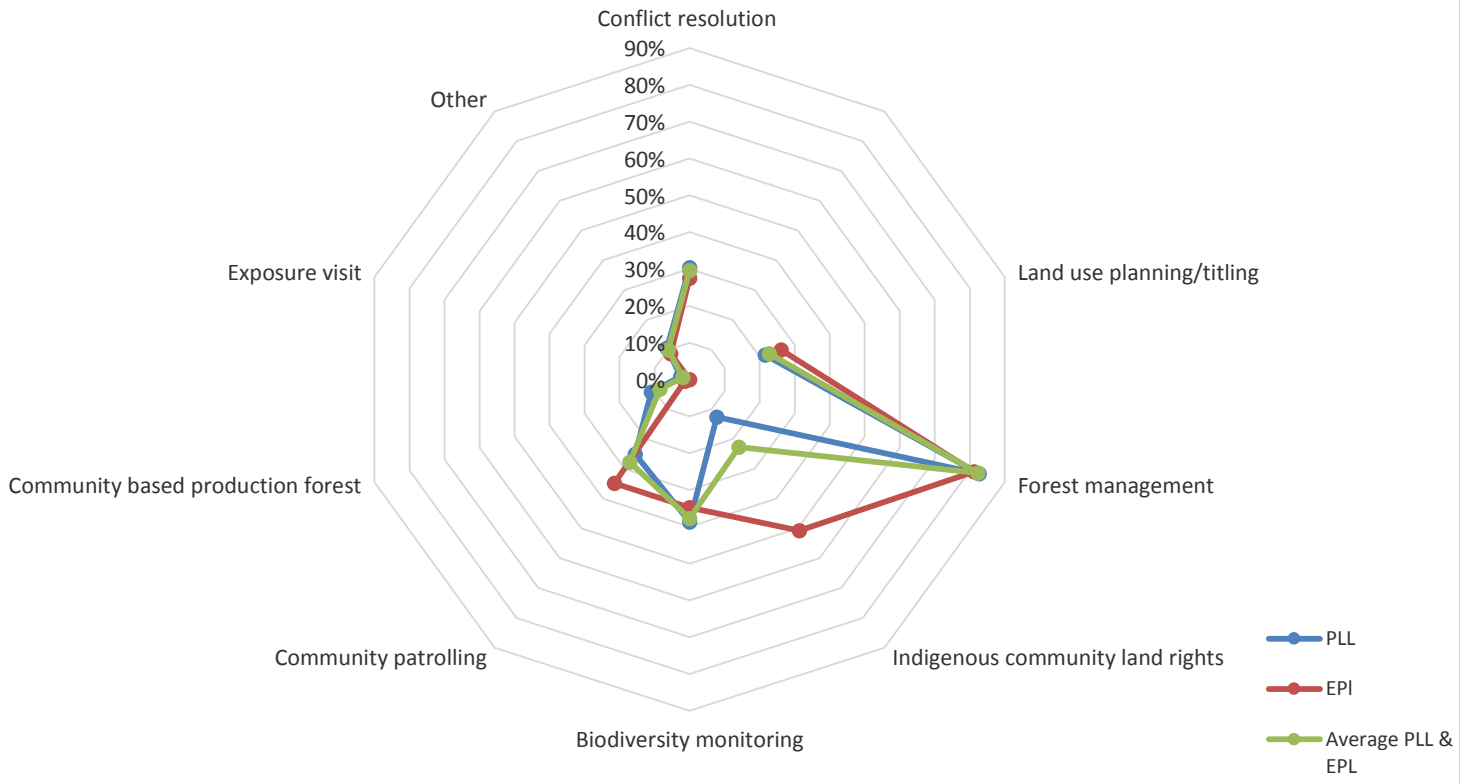
3.2.2: Households Attending Training (AIS)

Since the baseline study to current time, SFB team and small grant partners have been implementing the SFB project to most of the target sites, initiating training activities and supporting community forestry committees and members. Training is divided into two parts from this AIS survey – general training activities and livelihood training activities. Thus, the general training activities include at least 8 training topics which are described as follows:

1) Conflict resolution
2) Land use planning/titling
3) Forest management
4) Indigenous community land rights

5) Biodiversity monitoring
6) Community patrolling
7) Community based production forest
8) Exposure visit

Figure 3.2: AIS: Percentage of people attending training in different topic by diffferent landscape



Data analysis from AIS shows that most households surveyed for their livelihood participation (83%) have also accessed trainings on forest management for both PLL and EPL landscape. Interestingly, about 40% of household respondents answered that they accessed training on Indigenous community land titling and biodiversity monitoring, for both PLL and EPL.

The second type of training is mainly related to livelihood-based training which once was previously proposed in the Strategy Livelihood Assessment (SFB, 2014) and is now being implemented by SFB team and small grant partners. These activities range from NTFP enterprise development, ecotourism, saving, and farm-based livelihood (e.g. chicken, pig, rice and others), and others. Anecdotal evidence from the field survey by AIS reveals that some of trainings, however, were done only one-time and lack follow-up activities which thus may not have much impact on income generation. Furthermore, there is lack of proper training curriculum development which may affect quality of training

offered to beneficiaries for both SFB team and small grant partners, except WWF and WCS site. Of particular concern, the majority of SFB team and small grant partners conducted training and field implementation for livelihood development with minimal collaboration in the field despite operating at the same target village and CF. Therefore, the majority of beneficiaries who accessed livelihood training, to some extent, overlapped with each other by participating in activities of more than one SFB partner.

Table 3.7 shows that 80% of household respondents from both PLL and EPL have received training on agriculture livelihoods which includes chicken, pig, rice, and other agricultural commodities. Interestingly, about 52% of household respondents received NTFP enterprise development training, such as, resin, honey and other forest products which are directly related to SFB project framework. It appears likely that the majority of SFB team and some small grant partners for both PLL and EPL were mostly selected for farm-based livelihood for training based on their staff skill and expertise and also based on the recommendations from Strategy Livelihood Assessment (SFB, 2014).

Table 3.7: Different type of livelihood training by different landscape (AIS)

	Business Skill		Saving group		NTFPs		Ecotourism development		REDD+		Agriculture Livelihood training		Other	
	Number	Percentage (%)	Number	Percentage	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
PLL	4	1.80%	72	33.20%	110	50.90%	10	4.60%	1	0.50%	183	84.30%	9	4.10%
EPL	0	0	13	16.50%	45	57%	27	34.20%	0	0	52	65.80%	11	13.90%
Average PLL & EPL	4	1.40%	85	28.70%	155	52.50%	37	12.50%	1	0.30%	235	79.40%	37	12.50%

(Source: Annual Income Survey, 2015)

3.3: Household Assets

The household assets of respondents for AIS survey are referred to either as capital assets or as other natural assets legally owned by the household. Capital assets owned by households include housing, and other materials that can be utilized for more than a year such as transportation and machinery. However, for AIS survey, there is no deepened analysis for capital assets but rather just an indication if household respondents owned them or not. In the BLS there is more comprehensive analysis, especially to calculate the wealth of the capital assets. The other types of capital assets that can be legally protected are land and resin trees and these have been also incorporated into analysis.[7]

3.3.1: Land Tenure (AIS)

Land is one of the productive assets for household wealth and welfare in the study sites, the different land categories which have been cultivated by household respondents are rice land, *chamkar* land, and residential land. Table 3.8 below indicates the different amounts of land owned as stated by respondents from the PLL and EPL landscape.

- *Residential land*: In this study, residential land includes pieces of land allocated for building housing and parts set aside for home gardening and other crop cultivation and animal raising. Data from AIS Table 3.8 shows that in EPL the average per household residential land is about 0.036 hectares, while the average in PLL is 0.011 hectares. Across the two landscapes, average residential land is 0.018 hectare per household.

- *Agricultural land:* Land that is commonly used to cultivate rice and other crops to support food security in respondent households. The different categories of agricultural land are as follows:

    - *Rice land:* Most respondents cultivate rice by using land preparation methods including plowing and transplanting, and some have applied chemical fertilizer and pesticides in order to increase yields. Recently, local people have utilized motor trailers (*koyun*) for land preparation. Table 3.8 indicate that across two landscapes of PLL and EPL, the average rice land is estimated to be at 1.045 hectares per household

    - Chamkar *land*: Land used for growing rice and other crops. *Chamkar* land is commonly the result of converting forestland for agricultural activity. In other words, *chamkar* is slash and burn farming. Table 3.8 indicates that across two landscapes of PLL and EPL, the average rice land is estimated to be at 1.92 hectares per household.

[7]Resin trees are stipulated by Article 40 of the Cambodia Forestry Law (2002) as having a Customary User Right for local people.

To disaggregate land by different types of use, Table 3.8 reveals total average land holding per household for PLL and EPL is 3.16 ha and 3.25 ha, respectively. Meanwhile, across two landscapes, the average land holding is estimated to be at 3.18 hectare/ household.

Table 3.8: Land tenure (AIS)

Category of Landscape	Residential Land (ha/hh)	Chamkar Land (ha/hh)	Rice Land (ha/hh)	Fallow land (ha/hh)	Other (ha/hh)	Total Land (ha/hh)
PLL	.0111	1.9638	0.9854	0.1934	.0088	3.1625
EPL	.0369	1.8299	1.2083	0.1786	.0060	3.2597
Grand Total (PLL & EPL)	0.0181	1.9275	1.0458	0.1894	0.0081	3.1889

(Source: Annual Income Survey, 2015)

3.3.2.: Resin Trees

Resin is tapped mainly from the evergreen tree species, *Dipterocarpus alatus*, but also collected from a variety of other species. Resin may be harvested in liquid and solid forms. It is used domestically for sealing and waterproofing boats and exported for these uses, as well as for paint and varnish manufacturing (NTFP-EP, 2009). Tapping occurs across most of Cambodia's forest areas, in at least ten provinces, with activity most prevalent in the north and northeast regions, especially for the study sites of the PLL and EPL landscape (NTFP-EP 2009 and CDRI 2003). CDRI 2003 indicates that although the customary practice is to own resin trees, such ownership has no formal legal basis. Under the 2002 Forestry Law, forests are the property of the State (Article 2.B). While the State can grant customary user rights to timber products and non-timber forest products (NTFPs) under Article 2.C, such rights provide less security of tenure than owning private property because the State can remove user rights in the future. Resin comes under user rights, while still being an important capital asset for respondents.

Table 3.9 indicates household respondents who own resin trees for tapping in order to earn income and some is allocated for household consumption, such as, making torch and caulking boat. Data analysis from AIS survey shows that total resin trees ownership by household respondent in the two landscapes was found to be relatively high, as many as 32% of all respondents .

Meanwhile among those who owned resin tree, based on AIS survey result, indicating from 2004 to 2015, there were 5% of household respondent answered that they have lost some resin tree to illegal loggers and Economic land Concessions (ELC). Furthermore, anecdotal evidence suggests that some of local community people who owned resin trees also logged out resin trees for their own house construction.

Table 3.9 Percentage of Respondents Owning Resin Trees (AIS)

AIS	Yes	No	Total

PLL (%)	28%	72%	100%
EPL (%)	43%	57%	100%
Total (PLL &EPL)(%)	32%	68%	100%

(Source: Annual Income Survey, 2015)

3.4: Housing Conditions

Housing condition of household respondents indicates household wealth which reflects the different socio-economic segments of household respondents. Meanwhile, ownership of the house, indicating asset transformation and how well independent of household respondent to address their settlement in the target village.

3.4.1. Ownership of Housing

According to AIS survey result, most of household respondents (86%) for both PLL and EPL have built their own house, which is a slightly lower rate, as compared to BLS (93%). However, AIS survey shows that 9% of household respondents for both PLL and EPL landscape purchased their house from others, which is relatively higher than BLS survey result (only 2% purchased). It indicates that a recent house respondent has more savings and wealth accumulation.

Table 3.10: Ownership of Housing (AIS)

AIS	Self-built (%)	Bought (%)	Inherited (%)	Other (%)	Total (%)
PLL	84%	9%	5%	2%	100%
EPL	91%	8%	1%	0%	100%
Total	**86%**	**9%**	**4%**	**1%**	100%

(Source: Annual Income Survey, 2015)

3.4.2. Housing-building Materials

Different types of house-building materials are indicative of different living conditions, reflecting different socio-economic segments of household respondents.

a) Types of House Roof

AIS results from Table 3.11 indicate that across the two landscapes, 8% of respondents had thatched roofs, indicative of poor living conditions. However, 66% of household respondents had zinc roofs and another 14% Fibro. These are likely to be the better off socio-economic segment able to invest more resources into housing.

3.11: Types of House Roof (AIS)

Type of	PLL (%)	EPL (%)	Average

house roof			
Zinc	60%	80%	66%
Tile	15%	5%	12%
Thatch	10%	2%	8%
Fibro	14%	12%	14%
Other	1%	1%	1%

(Source: Annual Income Survey, 2015)

b) Types of House Wall

The result from AIS survey shows that house walls made of wood/timber represented 87% of respondents' housing, while the second largest group was houses made of bamboo (7%). Most timber/wood is collected or logged from the forest, and some of them cut their own resin tree for housing material. Therefore, only some of this timber/wood was purchased from other loggers.

3.12 Type of House Wall (AIS)

Type of house wall	PPLL(%)	EPL (%)	Average (%)
Bamboo	8%	5%	7%
Brick	0%	1%	1%
Other	3%	1%	2%
Thatch	3%	0%	2%
Wood/timber	85%	93%	87%
Zinc	1%	0%	1%

(Source: Annual Income Survey, 2015)

3.5: Other Household Capital Assets

Materials owned by household respondents, such as transportation means etc., are key capital assets to increase economic productivity, especially for business investment opportunities. Some increase household welfare and entertainment as well as receiving information (e.g. Radio and TV).

Based on AIS results, across the two landscapes almost all household respondents have motorcycles (82%), which facilitate transportation for the household and for business investment, and this figure is relatively lower than BLS (94%). It is worthy to note that motorcycle is also used as a means for transporting wood and timber from the forest. Thus, the higher percentage motorcycle ownership, the more increasing activity in transporting other goods including wood and timbers.

Similarly anecdotal evidence from the AIS and BLS fieldwork suggested that some households use motorbikes for transporting timber from forest to village, or to timber traders' warehouses.

AIS indicates that across the two landscapes, most respondent households (85%) have at least one cellphone which is used for communication but this figure is lower than that of BLS (104%). Thus cell phone is the most effective means of social and business communication. Meanwhile, 20% of total respondents own TVs for both AIS and BLS, which may contribute to increased access to information and overall welfare.

More interestingly, data analysis from BLS reveals that about 33% of total respondents owned *koyuns* (motor trailers) and AIS suggests the figure is significantly increased to 44% for both PLL and EPL. This equipment is multi-purpose, commonly utilized for land preparation, pumping water for irrigated crops, and for transportation, especially to transport timber or fuelwood from forests to houses and onto timber traders' warehouses. In practice, each *koyun* can carry 2-2.5 cubic meters of wood or timber. Anecdotal evidence from both AIS and BLS fieldwork suggested that *koyuns* are also hired by timber traders or ELC concessionaires to transport timber from ELC sites.

Although logging timber was underreported by household respondents for both AIS and BLS, there is evidence that those who owned *koyun* potentially had direct or indirect earned income from the logging business. Consequently, it might be assumed that under AIS 46% of *koyun* owners were directly or indirectly involved in collecting timber and wood for home consumption and trading.

3.13 Household Capital Assets

Category of asset	BLS	AIS
	Percent (%)	Percent (%)
Number of owned automobiles	2%	1%
Number of owned trucks/vans	1%	1%
Number of owned motorcycles	94%	82%
Number of owned boats	9%	7%
Number of owned bicycles	22%	36%
Number of owned of specified *koyuns* (motor trailers)	33%	46%
Number of owned electric generators	14%	9%
Number of owned specified others	2%	3%
Number of owned cellphones	114%	85%
Number of owned batteries	59%	67%
Number of owned TVs	20%	20%
Number of boat with engine	0%	3%
Number of Radios	0%	23%

(Source: (BLS (2014) and AIS (2015))

3.6: Type of Cook Stove Use for Household Respondent

Table 3.14 indicates the different types of cook stove utilized by household respondents to cook food. The results analysis from AIS survey shows that across two landscapes almost 90% have utilized stone cook stoves in households which attribute to

waste of energy and input and which are common used by traditional rural Cambodians for cooking food and others. However, almost 70% of total respondents from PLL and EPL have used New Lao Stove which somewhat increases the efficiency of fuelwood which contributes to reduced carbon emission discharge to atmosphere. Furthermore, only 32% of household respondents used Mong or Siem cook stove. It is worthy to note that only some household respondents used improved cook stove like Neang kongrey stove and others.

Table 3.14: Type of Cook Stove Used by Household Respondent

Type of Cook Stove Used	PLL (%)	EPL (%)	Total Average (%)
Stone cook stove	88.1%	92.9%	89.4%
Mong or Siem cook stove	34.1%	25%	31.6%
Traditional Lao stove	31.9%	41.7%	34.5%
Neang kongrey stove	3.5%	1.2%	2.9%
New Lao Stove	64.6%	76.2%	67.7%
LPG cook stove	0.9%	2.4%	1.3%
Rice cooker	0.4%	0%	0.3%
Coal	0.%	1.2%	0.3%
Kerosene	0.4%	0%	0.3%
Electricity	0.4%	0%	0.3%
Other	6.2%	1.2%	4.8%

(Source: Annual Income Survey, 2015)

3.7: Shocks and Crises

Shocks and crises here refer to severe negative impacts to an individual or entire household due to natural calamities, family illness and/or death from April 2014 to April 2015 (AIS). It is worthy to note that a household respondent who responded “yes” for shock and crisis they may be impacted by more than one shock and crisis (Table 3.18). Data analysis from AIS indicates that majority of household respondents (73%) faced a severe shock and crisis for both PLL and EPL.

3.15. Faced severe shocks or crisis between April 2014 to April 2015

Landscape	Faced severe shocks or crisis (%)
PPL (%)	75%

EPL (%)	70%
Total Average (%)	73%

(Source: Annual Income Survey, 2015)

Table 3.15 from the AIS indicates that the main causes across the two landscapes were flooding (54%), drought (21%), suffered from pest attack (19%) and loss of NTFPs (18%). This suggests that natural disaster (flooding and drought) may be the most impact on the livelihoods of household respondents. In general, Table 3.16 reports that the average cost to pay for all causes of shock and crisis from both PLL and EPL landscape is roughly estimated to be at $ 328/household per year.

3.16: The main cause of severe shock or crisis

(Source: Annual Income Survey, 2015)

Landscape	Flood		Get suffer from Damage caused by pests		Drought		Storm		Loss of NTFPs products		From Other		Total Cost ($)
	Percent (%)	Cost Average of Destruction ($)	Percent (%)	Cost Average of Destruction ($)	Percent (%)	Cost Average of Destruction ($)	Percent (%)	Cost Average of Destruction ($)	Percent (%)	Cost Average of Destruction ($)	Percent (%)	Cost Average of Destruction ($)	
PLL	64%	126.38	15%	31.98	20.60%	36.17	3%	0.62	15%	67.75	2%	11.09	273.99
EPL	35%	75.84	31%	175.23	20.30%	29.44	5%	2.37	27%	84.87	12%	93.86	461.61
Average PLL&EPL	54%	113.15	19%	71.86	20.50%	34.52	4%	1.11	18%	72.91	4%	34.09	327.64

CHAPTER IV: MAIN SOURCES OF LIVELIHOODS AND INCOME GENERATION

Generally, the assessment of the two landscapes indicates that household respondents primarily sustain their livelihoods through farming and forest product collection. Another very important livelihood source of income is derived from off-farm activities, including casual labor, public services and other gift, pension, services and village trading activity. In this section we describe and analyze the details of household respondents in relation to different livelihood sources for support of their food security and income generation activities.

4.1: Agricultural Activity and Income

Most household respondents indicated cultivated rice production as their main source for food security and generating income through sale. This reflects the high priority they place on food security, and the fact that rice farming requires the greatest amount of their labor and time. The dominant farming activities are paddy rice cultivation (*sre*, please see below), *chamkar*, livestock raising and livestock products, and services.

4.1.1: Rice and Other Crop Cultivation Activities and Income

Rice cultivation across two landscapes, as described above, consisted of paddy rice cultivation (*sre*) and *chamkar*:

- *Sre* translates literally from the Khmer language as “rice field” and refers to the practice of wet season rice cultivation. Likewise, for Prey Land Landscape and Eastern Plain Landscape it is usually done on flatter lowland terrain, using draft animals for plowing, and involving transplanting. Recently in both PLL and EPL landscapes in terms of land preparation, majority of local farmers use machinery for plowing instead of draft animals, and anecdotal evidence suggest that this change has been practiced for a few years. Data analysis from AIS reveals that, the rice yield from PLL is about 1,546 Kg/ha which is lower rate, as compared to EPL (1,615 Kg/ha). The relatively different yield is because EPL consisted of rich soil fertility, although PLL takes effort to provide training to farmers about the agricultural intensification including SRI technique.

Table 4.1: Rice Productivity

Landscape category	Yield (Kg/ha)
PLL	1,546
EPL	1,615
Average	1,560

(Source: Annual Income Survey, 2015)

- *Chamkar* is a common agricultural practice in the upland area of the study. It involves the intermixing of rice and other cash crops. It is generally practiced by villagers in study areas where the land is not flat enough to support wetland rice. Under *chamkar* practices, villagers clear forested areas by burning trees and grass, thus converting the land into small plots for cultivating rice and other crops ("slash and burn" agriculture). All *chamkar* land has locally recognized boundaries where there are customary user rights rather than official land titles, except one study community – Andong Kraleng – where the SFB project supports Indigenous Communal Land Titling. This land is officially recognized by the Government. Specifically, for annual income survey, the *chamkar* land have also grown various cash crops, such as cassava, bean, cashew, and others, while during the course of the baseline survey most commonly grown agricultural commodity was rice and home garden. Recent economic land concession developments which the Government has granted forestland to private concessionaires for large-scale farming in the study sites, and this may cause potential conflicts between private agricultural investment and local villagers' *chamkar* land.

- Residential land is commonly cultivated vegetable, fruit trees, and poultry and livestock raising.

Table 4.2: Rice and Other Crops Income per Household per Year

Landscape	**Average income from rice and crops ($/HH)**
PLL	$ 726
EPL	$ 857
Average	$ 761

(Source: Annual Income Survey, 2015)

Income generation activity (Gross income = Sales + Home Consumption + Gifts) from rice and other crops of different land is estimated in Table 4.1. However, Net Income (Gross Revenue – Input Costs) will be analyzed separately in detail in Chapter V: PMEP section:

- Gross Revenue = Price ($/HH) x Quantity of Product (Kg/HH)
- Input Cost includes seed, fertilizer, pesticide, hired labor, and other variable costs

- Based on Table 4.2, the annual income derived from rice and other crops across the two landscapes is estimated to be at $ 761 which is slightly higher, as compared to BLS ($ 536) per household per year. The increase of income partly derives from the diversified agricultural production and also SFB project intervention and promotion including supporting System Rice Intensification and vegetable growing in homestead for both PLL and EPL.

4.1.2: Poultry and Livestock Activity and Income

Data analysis from AIS shows that household respondents across the two landscapes often raise poultry and livestock in a traditional way: free range and without vaccination as most of the villages were remote and difficult to access by Government agriculture extension service and vaccination.

a) *Poultry*: Most poultry is raised free range on residential land. Across the two landscapes, chickens are the main commodity, raised mainly for home consumption and also to celebrate traditional ceremonies among IPs. Despite challenges with veterinary services, the majority of household respondents were able to raise chickens for sale in addition to home consumption, some of the target villages, however, have received vaccinations by SFB team. Across the two landscapes, on average each household respondent raised 11.86 chickens. Meanwhile, average income generation from chickens across the two landscapes is estimated at $ 22 per household respondent/year. The second main sources are common ducks and Muscovy; however, these are considered a minor commodity in the target study across the two landscapes. Meanwhile, the average income and number of poultry production raised by household respondent for AIS is slightly decreased, as compared to BLS. For poultry production, the production raised is not different from BLS may be because SFB project just started providing training and vaccination for certain target sites.

b) *Pigs*: Pigs are raised mainly for sale to earn income for supporting livelihoods. Though most pig farmers find it extremely difficult to access vaccination and treatment, across the two landscapes the average pigs per household is estimated at 2.35 head which is slightly less than in BLS (2.71 head). This is because SFB project began providing training and vaccination to the target sites. However, Table 4.3 reports that the average income across two landscapes is similar between AIS and BLS survey, which is estimated to be at $ 89 per household per year.

c) *Cows and buffalo*: These are capital assets raised as draft animals and transportation means as well as for sale in the last resort (e.g. family shocks and crises), and also used for traditional ceremonies by IP people. Though cows and buffalo are commonly utilized as draft animals for land preparation and transportation, it was found that a significant number of household respondents were exchanging cows and buffalo for motor trailers (*koyun*) for both BLS and AIS. Of particular concern, the trading commodities, such as, cows and buffaloes to exchange with *koyuns* is mainly used for facilitating in trading timber and fuelwood collection, and also to minimize the impact risk of animal mortality due to the lack of veterinary services. Furthermore, data analysis from the AIS indicates that that across the two landscapes, the average is 2.35 cows and 3.47 buffalo per household. The average income from sale of cows and buffalo is estimated at $156 and $133, respectively, which is relatively higher compared to BLS.

Table 4.3: Poultry and Livestock Raising

Landscape	BLS: Average Heads and Income of Animals per Household											
	Poultry				*Livestock*							
	Chicken		**Ducks**		**Muscovy**		**Pigs**		**Cows**		**Buffalo**	
	No. of heads	**Income ($/head)**	**No. of heads**	**Income ($/head)**	**No. of heads**	**Income ($/head)**	**No. of heads**	**Income ($/head)**	**No. of heads**	**Income ($/ head)**	**No. of heads**	**Income ($/ head)**
PLL	24.71	24.71	0.16	0.1	0.08	0.11	2.28	90.28	3.08	125.67	1.85	120.02
EPL	12.31	19.62	0.74	0.41	0.37	-	3.57	87.06	3.57	186.91	1.19	70.06
Average (PLL &EPL)	**16.61**	**23.16**	**0.35**	**0.2**	**0.18**	**0.08**	**2.71**	**89.34**	**2.71**	**146.08**	**1.63**	**103.37**
Landscape	**AIS: Average Heads of Animals per Household**											
	Poultry				*Livestock*							
	Chicken		**Ducks/Muscovy**		**Pigs**		**Cows**		**Buffalo**		Other	
	No. of heads	**Income ($/head)**	**No. of heads**	**Income ($/head)**	**No. of heads**	**Income ($/head)**	**No. of heads**	**Income ($/**	**No. of heads**	**Income ($/**	No.of head	Income ($/
PLL	14.51	23..64	9.75	4.43	3.46	78.03	2.04	153.97	3.54	130.69	0	0
EPL	11.86	11.94	4.67	6.17	3.88	121.87	3.02	162.02	3.33	142.7	0	0
Average (PLL &EPL)	**13.77**	**20.47**	**7.21**	**4.9**	**3.6**	**89.91**	**2.35**	**156.15**	**3.47**	**133.94**	0	0

(Source: BLS (2014) and AIS (2015)

d) *Animal products and services*: Data was collected on income from animals in terms of the related services and products sold by household respondents. Table 4.4 from AIS shows that that the income from animal service and products is a minor amount, and this is significantly lower compared to BLS survey, for instance, where the average income from pig services and products across the two landscapes is estimated to be $ 58.17 per household, as compared to only less than1$ for AIS.

Table 4.4: Income from Animal Services and Products

Landscape	Average Animal Services and Products Income per Household ($/HH)				
	Poultry		Livestock		
	Chicken	Ducks	Pigs	Cows	Buffalo
Average PLL&EPL	0.02	0	0.68	0.39	1.57

(Source: Annual Income Survey, 2015)

4.2: Natural Resource-Based Livelihoods and Income

Forests play an essential role in supporting rural livelihoods in the PLL and EPL landscapes and include home consumption and trading activity to earn income for supporting livelihood of rural forest dependent. SFB project under objective No.3 has provided significant support to NTFPs enterprise development to local communities through training, field exposure and other related livelihood activities to PLL and EPL target sites. Based on AIS data, 52% of NTFP enterprise-based development has been formulated and supported by SFB and its small grant partners. However, AIS survey data indicates that most of income gain from NTFP enterprise development, including resin, rattan, honey, IBis rice, ecotourism, and other related activities, are mainly from individual sold out produce and services rather than collective action and/or group income earned.

4.2.1: Main Sources of Forest Products for Household Consumption

Based on data analysis from the AIS there are a variety of forest products which contribute to supporting home consumption and food from the forest for household respondent in both PLL and EPL.

Table 4.5 from AIS and BLS indicates that at least 12 main forest products are consumed in households, including for cooking energy, building and housing repair materials, and food. Specifically, data analysis from AIS reports that (93.50%) of household respondents across the two landscapes collected fuelwood for cooking energy, which is slightly lower rate, as compared to BLS (96%). Housing construction and repair utilizes timber from the forest, with an average of 23% of households using timber across the two landscapes from AIS survey. Likewise, rattan is used for housing and furniture materials (19% of household respondents).

Meanwhile, AIS survey indicates that for both PLL and EPL landscape, the main food consumption items from the forest are bamboo shoots (52% of household respondents), mushrooms and wild vegetable (71%), and wild fruit (59%). Moreover, around 30% of total respondents hunted wildlife for household meat consumption and this figure is a slightly higher rate, as compared to BLS (22%). It is, therefore, fair to conclude that food from the forest for supporting home consumption is still significantly important for household respondents since BLS to AIS survey.

Table 4.5: Percentage of HH using different types of forest products for home consumption

Consumption in family	BLS			AIS		
Product	Percentage of HHs using product (PLL)	Percentage of HHs using product (EPL)	**Average percentage (PLL & EPL)**	Percentage of HHs using product (PLL)	Percentage of HHs using product (EPL)	**Average percentage (PLL&EPL)**
Resin	4%	5%	**4%**	7%	7%	**7%**
Rattan	25%	26%	**25%**	12%	39%	**19%**
Vine	30%	2%	**21%**	13%	13%	**12%**
Medical plant/herb	27%	2%	**19%**	23%	37%	**28%**
Wild vegetables[8]	67%	34%	**56%**	N/A	N/A	**N/A**
Timber	15%	6%	**12%**	23%	23%	**23%**
Fuelwood	99%	90%	**96%**	94.70%	90.50%	**93.50%**
Mushroom[9]	53%	47%	**51%**	N/A	N/A	**N/A**
Wild fruits	56%	22%	**45%**	55%	69%	**59%**
Bamboo/shoot	71%	56%	**66%**	45%	69%	**52%**
Wildlife hunting	28%	10%	**22%**	2710%	35%	**29%**
Mushroom & Wild vegetable[10]	N/A	N/A	**N/A**	70%	72%	**71%**
Other[11]	N/A	N/A	**N/A**	3%	4%	**3%**

(Source: BLS (2014) and AIS (2015))

4.2.2. Main Forest Products Collected for Income

Although NTFPs and other forest products are often overlooked, in the PLL and EPL landscapes, however, they are one of the main income sources to support income

[8] *Data is not available for AIS*
[9] *Data is not available for AIS*
[10] *Data is not available for BLS*
[11] *Data is not available for BLS*

of household respondents. Table 4.6 indicates that at least 12 kinds of forest products were collected for sale and to earn income since the baseline until recently. About 19% of household respondents across the two landscapes revealed that they have been tapping resin to earn income since BLS, and recently, based on AIS, have found that the resin tapping has been increasing for up to 37% of total respondent for both PLL and EPL. Moreover, based on AIS survey, the second biggest local people earned income source is logging timer (21% of household respondents) and hunting wildlife (11%). However, these informal incomes may be underreported. For instance, as discussed in the sections above, 44% of household respondents owned motor trailers (*koyun*) which is associated with transporting timber and collecting fuelwood from the forest but there was only 21% of total respondents reported that they are collecting and logging timers and fuelwood for sale. Meanwhile, it is worthy to note that the figure from BLS for timber and wildlife collection is relatively lower than AIS which consisted of only 13% and 1%, respectively.

Table 4.6: Main Forest products for Income Generation

Product	BLS			AIS		
	Percentage of HHs earned income in **PLL (%)**	Percentage of HHs earned income in **EPL (%)**	**Average income earned (PLL and EPL) (%)**	Percentage of HHs earned income in **PLL (%)**	Percentage of HHs earned income in **EPL (%)**	**Average income earned (PLL and EPL) (%)**
Resin	16%	26%	**19%**	33%	48.60%	**37%**
Rattan	0%	9%	**3%**	4%	12.90%	**6.30%**
Honey	8%	11%	**8%**	10%	1.20%	**8.10%**
Vines	1%	1%	**1%**	2.50%	0%	**1.80%**
Wild vegetables[12]	0%	9%	**3%**	N/A	N/A	**N/A**
Timber	15%	10%	**13%**	21.30%	21.40%	**21.30%**
Fuelwood	2%	10%	**5%**	6.90%	0%	**5.10%**
Mushrooms	5%	9%	**6%**	N/A	N/A	**N/A**
Wild fruit	2%	1%	**1%**	16.80%	15.70%	**16.50%**
Bamboo shoots	2%	4%	**3%**	11.40%	14.30%	**12.10%**
Wildlife	10%	6%	**9%**	11.40%	8.60%	**10.70%**
Mushrooms/Wil[13]d Vegetable	N/A	N/A	**N/A**	31.20%	20%	**28.30%**
Medicinal plants/ herbs[14]	N/A	N/A	**N/A**	5.40%	8.60%	**6.30%**
Other[15]	N/A	N/A	**N/A**	5.40%	25.70%	**10.70%**

(Source: BLS (2014) and AIS (2015))

4.2.3. Analysis of Income Generation from Forest Products

In connection to income earned from forest products, this section aims to quantify the different sources of income from forest products, including income from NTFPs,

[12] *Data is not available for AIS*
[13] *Data is not available for BLS*
[14] *Data is not available for BLS*
[15] *Data is not available for BLS*

informal[16] income from timber and hunting wildlife, and other income from other forest products.

- ***NTFPs Income***

Based on AIS analysis the primary Income earned for household respondent derived mainly from resin, honey, fishing, mushrooms and others. The average income across the two landscapes of PLL and EPL is estimated at $619 per household/year, which is significantly high as compared to BLS ($250). Enterprise development for NTFPs products has been formed by SFB partners and small grant partners after the BLS survey which include resin, honey, mushroom, IBIS rice, bamboo, eco-tourism, and others from both PLL and EPL, and although the group income has not yet significantly important, however, the majority of household respondents have accessed training, exposure trip, and other livelihood activity which has helped in their capacity development and impacted on individual household income. For example, most households who are resin collectors also collected products and did simple filtering method and it adds value to resin which contributes to increased price from $0.6/Kg up to $1 or $1.5/Kg, and this was the case for honey also and other NTFPs product collected from the wild. Thus, these capacity building activities have had positive influence on NTFPs enterprise development which may lead to increased income of SFB beneficiaries. Meanwhile, the SFB has helped to support the improvement of sustainable forest management and other capacity building on forest management, patrolling, and biodiversity monitoring which these not only contribute the strengthen law enforcement for forest management but also increase the quantity of NTFPs products including fish collecting from the forest stream and lake nearby village and CF/CPA, for instance, the Prey Kbal O Thnoung CF of PLL landscape where fish catch per household was significantly increased due to increase fish as the result of sustainable fish harvest with the use of traditional fishing gear.

Table 4.7: Formal Income from Forest products

Type of formal income from forest product	PLL($)	EPL($)	Total Average Income (PLL&EPL)($)
Resin	510.64	538.76	518.26
Honey	9.88	20.34	12.72
Rattan	11.13	42.35	19.59
Bamboo	0.14	0.00	0.10
Vine	0.35	0.00	0.25
Fishing[17]	28.23	7.54	22.62
Mushroom	54.53	10.05	42.48
Medicinal plant	0.15	0.00	0.11

[16]*Informal income mainly refers to collection of timber and hunting wildlife activities prohibited by law (Forestry Law, 2002)*

[17] *Fishing is often done from the forest stream, and DE BEER at al (1989) has list wild fish from the forest is also considered as NTFPs (DE BEER, J.H. and McDermott, M. (1989). The Economic Value of Non-Timber Forest Products in South East Asia. (The Netherlands Committee for IUCN: Amsterdam))*

Fuel Wood	1.93	0.00	1.41
NTFP Enterprise development group income Ecotourism, Ibis rice, and other NTFPs)	1.60	1.93	1.69
Grand total formal income	**618.58**	**620.97**	**619.23**

(Source: Annual Income Survey, 2015)

- ***Timber and hunting wildlife Income***

Data analysis from AIS shows that informal income is estimated at $58 per household/year. Variation between PLL and EPL is low in terms of this informal income; however, it is a drastically drop of informal income in AIS, as compared to BLS. Nevertheless most of these informal incomes are often underreported[18].

Table 4.8: Informal Income from Forest Products

Type of informal income from forest product	PLL($)	EPL($)	Total Average Income (PLL&EPL)($)
Timber	37.32	53.85	41.80
Hunting wildlife	18.45	10.39	16.26
Grand total informal income	**55.77**	**64.24**	**58.06**

(Source: Annual Income Survey, 2015)

4.3: Gender and Youth Role in Forest Products

This section discusses the roles and responsibility of gender and youth in households; includes the division of labor among household respondents and household members who have been actively engaged with NTFP products (the collection, sale, and management of income from the sale of NTFPs and other forest products). Youth is defined as those aged from 18 to 29 years old.

- ***Collection of NTFPs and other forest products*:**

Table 4.9 reports that the majority of adult males (69%) often go to the forest to collect NTFPs and other forest products for either household consumption or sale to earn additional income; whereas 16% of male youth are primarily responsible for collecting forest products for either home consumption or sale to earn income to support their household livelihood. Consequently, most males (84%) enter the forest to collect NTFPs and other forest products in both the PLL and EPL landscapes. Whilst, only a minority of females (16%) primarily collected NTFPs and forest products for home consumption or generating income.

- ***Decision-making on sale of NTFPs and other forest products*:**

The result survey from AIS indicates the strong link between NTFPs and other forest products and livelihoods of local communities. Thus, the collection of NTFPs and other forest products for sale were the main sources of income for the majority of household respondents across PLL and EPL landscape. The main NTFPs products for sale, as

[18] *Anecdotal evidence from the field observation, and informal discussions with various household respondents reported that income derived from timber is roughly $ 200 per household/month corresponding to $ 2,400 per household/year.*

stated section above, include resin, honey, and others. Thus, Table 4.9 reports that in terms of decision-making to sell NTFPs and other forest products, 37% of adult and 5% of youth females had authority in the household; while almost 50% and 10% of youth males have decision-making for selling products collected from the forest. Therefore, it is suggested that majority of male who primarily made decision for the sale of NTFPs and other forest products collected from the forest

- ***Keeping money from the sale of NTFPs and other forest products:***

Table 4.9 shows that that 86% of adult women and 11% of youth women have final executive power in terms of keeping money from the sale of NTFPs and other forest products, although it is worthy to note that for the PLL and EPL landscape for those women who keep money is not necessary to prove that she has a final word on the decision-making how to spend money. In fact men still are the predominant decision makers, especially the final word how money is used.

Table 4.9: HH member primarily involved in each step of NTFP and forest product collection, sale, and management of income

Type of activity	Adult female (%)	Youth female (%)	Adult male (%)	Youth male (%)	Total youth (%)	Total Female (%)	Total male (%)
Primary responsibility for Collecting NTFPs and forest products	12%	3%	69%	16%	**19%**	16%	84%
Primary decision maker to sell NTFPs and forest products after harvested	37%	5%	48%	10%	**15%**	42%	58%
Primary money manager from NTFP and forest products sales	86%	6%	4%	4%	**11%**	92%	8%

(Source: Annual Income Survey, 2015)

4.4: Off-farm Activities and Income (BLS vs.AIS)

The diversity of income sources is fundamentally important to sustaining livelihood activities in the PLL and EPL landscapes. Thus, Table 4.6, in addition to income generated from agriculture and forests, other sources of income, are derived from off-farm activities, including: casual labor; wage labor; gifts from relatives, pension, civil servants, village business activities; permanent employment in the private sector or government, and inheritances. It is worthy to note that almost 20% of respondent from AIS survey earned off-farm income from pension and Government employment which is relatively higher rate as compared to BLS which indicating that almost 20% of SFB respondents are working in public services.

Furthermore, Table 4.10 indicates that from AIS survey, a total average income derived from off-farm activities is lower ($ 866/HH/year) in PLL compared to EPL ($1,055/HH/year). Across the two landscapes, the total average income from off-farm activities is estimated at $911/HH/year, of which $ 257/HH/year comes from casual labor. Selling labor for agricultural activity inside and outside the village is common practice in both PLL and EPL. The labor includes harvesting crops for better-off households in the

village, or working at large-scale agricultural plantation, especially with ELC. It is worthy to note that a total income from AIS ($ 911) is significantly higher than BLS ($ 333).

Table 4.10: Off-Farm Income Activity

Type of off-farm Activity	Average income PLL ($/HH/year)	Average income EPL ($/HH/year)	Average income PLL &EPL ($/HH/year)
Inheritance and pensions, Gift or Donation	219	82	176
Selling labour	222	353	257
Services and small businesses	301	441	339
Permanent jobs	124	179	139
Total	**866**	**1055**	**911**

(Source: Annual Income Survey, 2015)

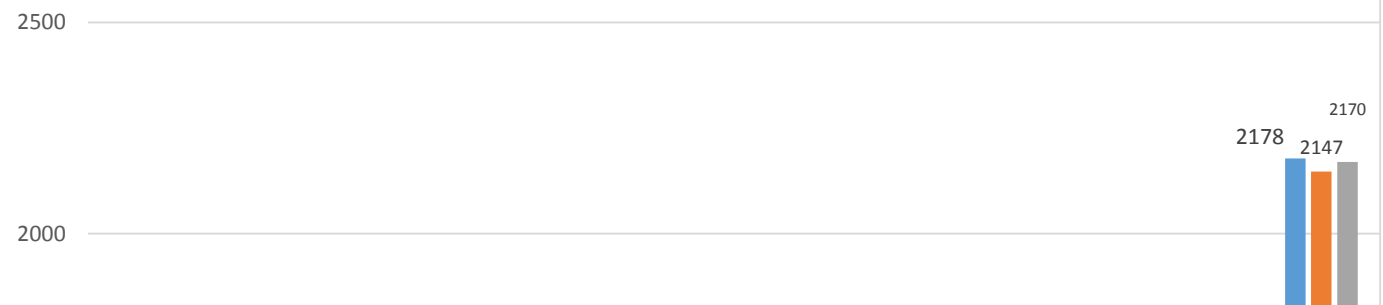
4.5: Household Expenditure

Data analysis from AIS of household respondent spending and budget allocation is not intended deepen analysis here *per ser*. However, the AIS survey aims only to understand general household expenditure or purchasing power in terms of cash for certain basic items or basic needs. Figure 4.1 indicates household expenditure on a monthly basis, and then we extrapolate to yearly basis. The main items bought by household respondents include:

- Rice for consumption
- Non-rice food for consumption
- Clothing
- Medical costs
- Fuel/transport
- School fees
- Medical fees
- Building materials
- Traditional ceremony expenses (weddings/funerals etc.)

Figure 4.1 from AIS survey shows fairly different annual spending for PLL and EPL, at $ 2,178 and $ 2,147 per household per year, respectively. Average spending across the two landscapes is estimated at $ 2,170 household/year, and this figure is relatively lower than BLS for both two landscapes, respectively.

Figure 4.1: Household Expenditure ($/Household/Year)



CHAPTER V: SFB PERFORMANCE ON PMEP TARGET FOR Y3– INDICATOR (3.3.1): 25% INCREASE IN INCOME

The Performance Monitoring and Evaluation Plan (PMEP) for SFB provides USAID with an effective framework for evaluating and reporting on the project's diverse outputs and outcomes through its standard and custom indicators (SFB, 2014). Likewise, to conduct monitoring and review SFB project through AIS survey not only enables SFB to identify progress and outcomes of project intervention and implementation, but it also helps to construct and estimate the SFB performance on indicator 3.1.1 (increase in income levels of target communities due to economically viable alternative livelihood activities) for Year-3. The target for this is to increase in income by 25% against baseline survey (BLS, 2014).

5.1: Main Sources of Income Generation

Based on AIS and BLS results, across PLL and EPL formal household income is commonly generated from three main sources:

a) Agricultural activity, including crop production (e.g. rice, vegetable, and other cash crops) and livestock.

b) Forest product collection activity: including the collection of NTFPs, NTFPs/forest related enterprise development (Ibis rice, eco-tourism, and etc.) and informal income from hunting wildlife and logging activities. However, for this analysis, the formal income from NTFPs will be fully included for analysis, while informal income from the forest is excluded from the analysis.

c) Off-farm income, including the wage labor, casual labor, inheritance, pension, civil servants, and etc.

Consistent with BLS methodology, the AIS survey calculates all agricultural activities, such as, agricultural crops and livestock, based on net income = Gross Income (Price x Quantity) – Input Cost (fertilizer, seeds, labour, pesticide, etc.). The inflation rate in Cambodia in 2014 was 3.90% (World Bank, 2015), so numbers reported by AIS respondents are reduced by 3.90% to account for inflation that has occurred since the baseline was conducted.

Moreover, data on informal income from sources such as illegal logging and wildlife hunting was also collected through household interviews for the BLS and AIS. However, it is notoriously difficult to get accurate data on these kinds of activities, as they are chronically underreported. Because SFB livelihood activities aim to increase income from formal sources, informal sources of income are excluded from all average formal income calculations. Based on AIS indicate that the total informal income from hunting wildlife

and timber is $ 56/HH/Year which is drastically lower than BLS ($ 290) for both PLL and EPL which is corresponding the significantly reduction of total informal income up to (-80.76%), as compared to BLS.

Although off-farm income is not necessarily influenced by SFB project activities, this scenario is included to deepen understanding of the overall income generation of household respondents and the economic context in which to interpret the results of the Annual Income Survey. For example, the portion of income earned through agriculture and NTFP activities may drop if members of many households in forest communities are shifting into paid labor from off-farm activities. Also, calculating average formal income to include off-farm income is consistent with the Baseline Survey methods.

However, it is recommended that off-farm income be excluded when calculating results for indicator 3.3.1 progress, because Project activities are only designed to influence formal income levels from agricultural and NTFP activities. This requires adjusting the values set by the Socio-Economic Baseline Survey to exclude off-farm income as well. Adjusted values for the Baseline and Annual Income Survey results are provided in the Excluding Off-Farm Income section – it is recommended that these values be used for reportingY3 data to USAID.

5.2: Income Generation in PLL

AIS results indicate that total average formal income per annum, including off-farm activities, for household respondents in PLL is $2,320.

- The main source of income was derived from agricultural activities which were estimated to be a $894 per household/year, which corresponds to 38.54% of total income. The main agricultural activities which generate income are livestock raising and crop cultivations, such as, rice, vegetable, cassava, cashew, and other cash crops.
- The second highest source of income is off-farm activities, estimated at $833 per household/year, which is 35.90% of total income.
- The third highest formal income source is mainly generated from forest product collections, including the collection of NTFPs like resin, honey, rattan, and others. Specifically, the collection of NTFPs is 25.55% of all household income ($593 per household/year).

5.2.1. Including Off-Farm Income for PLL

The sources of income that can be significantly increased are from agriculture and the collection of forest products and other off-farm income. At the baseline stage, average formal household income from these sources (earned from April 2013-April 2014) was $1,658. At Year-3 of the project, an incremental income increased of25% over baseline corresponds to $414.5 additional income household/year. Thus, to meet the target, total income at Year-3 should be at least $2,072.50 per household/year for PLL.

AIS survey data shows average formal household income (earned from April 2014

to April 2015) is $2,320. This is an incremental income increase from BLS to AIS of $ 662, corresponding to 39.96% which it surpasses the performance indicator setting by 25%.

5.2.2. Excluding Off-Farm Income for PLL

Excluding off-farm income from the analysis, because it is not necessarily impacted by SFB project intervention, the sources of income that could be increased due to SFB activities are agriculture and the collection of forest products. Under this scenario, at the baseline stage, average formal household income (earned from April 2013-April 2014) excluding off-farm sources was $1,241.At Year-3 of the project; an incremental income increase of 25% would correspond to $310.25/household/year. In other words, total income per household/per year at Year-3 should be at least$1,551.25 for PLL.

AIS data shows average formal income (earned from April 2014 to April 2015) is $1,487, an incremental income increase from BLS to AIS of $246 which this corresponds to a 19.85% increase, which is relatively under the target set for the performance indicator of 25% increase in income in Year-3.

5.3: Income Generation in EPL

AIS results indicate that average income (from all formal sources including off-farm activities) per annum for household respondents in EPL is $2,612.

- The first highest sources of income are off-farm activities. At $1,014 per household/year, this is 38.82% of total income.
- The second highest source of income is derived from agricultural activities, at $1,003 per household/year. This corresponds to 38.40% of total income. These include activities like livestock raising and crop cultivations (such as rice, vegetable, cassava, cashew, and other cash crops).
- Meanwhile, the third highest formal income generation activities are from forest product collection, including NTFPs like resin, honey, rattan, and others. Specifically, the collection of NTFPs is 22.78% of total formal income or which $595 per household/year.

5.3.1. Including Off-Farm Income for EPL

At the baseline stage, formal sources of income (earned from April 2013-April 2014) totaled $1,404. At Year-3 of the project; an increase of 25% would correspond to $351 household/year. In other words, total income at Year-3 should be at least $1,755 per household/year for EPL.

Analysis of AIS data shows total average income from all formal sources (earned from April 2014 to April 2015) is $2,612. This is an incremental income increase from BLS to AIS of $1208, which corresponds to a 86.02% increase, far surpassing the target for the performance indicator set at 25%. However, this extreme increase cannot be attributed to SFB activities because the majority of the increase is due to much higher off-farm incomes reported by respondents in 2015.

5.3.2. Excluding Off-Farm Income for EPL

Excluding off-farm income from the analysis because it is not necessarily impacted by SFB project intervention, the sources of income that can be significantly increased are from agriculture and the collection of forest products.

Under this scenario, at the baseline stage, average formal income (earned April 2013-April 2014) was $1,058. At Year-3, an incremental income increase of 25% would correspond to $264.50 household/year. In other words, total income at Year-3 should be at least $1,322.50 per household/year for EPL.

Analysis of AIS results shows average formal income (earned from April 2014 to April 2015) is $1,598, an incremental income increase from BLS to AIS of $540. This corresponds to a 51.02% increase, which surpasses the 25% target set for the indicator.

5.4: Average Income Generation Across PLL and EPL

Calculation of average income generation across both landscapes is based on a weighted average of approximately 2/3 PLL and 1/3 EPL to account for the greater number of livelihood sites within PLL. Weighting of AIS results occurs through the selection of the 310 households sample, of which 226 are in PLL (72.9%) and 84 in EPL (27.1%). The BIS results are similarly weighted based on a sample of 630 households, 210 in EPL (33.3%) and 420 in PLL (66.6%).

AIS results indicate that average formal income (including off-farm sources) per annum for households across both landscapes is $2,392.

- The first highest source of income is from agricultural activities including livestock raising and crop cultivation (rice, vegetable, cassava, cashew, and other cash crops). Agricultural income is $922 per household/year, which corresponds to 38.55% of total income.
- The second highest sources of income are off-farm activities, totaling $876 per household/year or 36.64% of total income.
- The third highest income source is generated from forest product collection, including NTFPs like resin, honey, rattan, and others. Specifically, collection of NTFPs is 24.81% which is corresponds to $593 per household/year.

5.4.1. Including Off-Farm Income for both PLL and EPL

At baseline, total average formal income (including off-farm sources) for the period from April 2013-April 2014 was $1,573. At Year-3, an incremental income increased of 25% would correspond to $393.25 household/year. In other words, average total income across both landscapes at Year-3 should be at least $1,966.25 per household/year.

AIS results shows total formal income (earned from April 2014 to April 2015) is $2,392. This is an incremental income increase from BLS to AIS of $819, which

corresponds to a 52.06% increase, surpassing the performance indicator target of 25%.

5.4.2. Excluding Off-Farm Income for both PLL and EPL

Excluding off-farm income from the analysis because it is not necessarily impacted by SFB project interventions, sources of income that can be significantly increased are from agriculture and the collection of forest products.

At the baseline stage, average formal income (excluding off-farm sources), earned in the period from April 2013-April 2014, was $1,180. At Year-3, an incremental income increase of 25% would be $295 household/year. In other words, average income across both landscapes at Year-3 should be at least $1,475 per household/year.

AIS results show that average formal income (earned from April 2014 to April 2015) is $1,516, an incremental income increase from BLS to AIS of $336. This corresponds to 28.44% increase, which surpasses the 25% target set.

5.5: Setting Realistic Expectations for Year-4 Performance

SFB has made impressive achievement in increasing income from baseline to mid-term. Excluding off-farm income sources, there is an increasing of 19.85% for PLL and 51.02% for EPL and average to 28.44% across both landscapes. Thus, the SFB Project has exceeded the Year-3 target of 25% target set in the PMEP for indicator (3.1.1) by 28.44%. The Year-4 target is an additional 25% increase in income to achieve a Life of Project target of 50% over baseline income levels.

However, it is unlikely that the increase in income in Year-4 will be as great as it was in Year-3 because the Year-3 data actually measures the achievement of the first three years of the Project. Also, most households participating in SFB livelihood activities have already diversified their optimum income from forest products and other off-farm activities. Thus, in Year-4 the project may need to achieve the additional 21.56% income increase required to meet the total Life of Project target of 50% increase in income.

Table 5.1: Main Source of Income from BLS (Including Off-Farm Income)

Category of Landscape	Source of Formal Income					Total Formal Income ($)	Source of Informal Income		Total Informal Income
	Agricultural crops	Livestock	Total agricultural income (Agricultural crop + livestock)	Forest income (NTFPs)	Off Farm		Wildlife	Timber	
PLL ($/hh/year)	329	713	1,042	199	417	1,658	49	246	295
PLL (%)	19.84%	43.00%	62.85%	12.00%	25.15%	100%	_	_	_
EPL($/hh/year)	341	366	707	351	346	1,404	14	265	279
EPL (%)	24.29%	26.07%	50.36%	25.00%	24.64%	100%	_	_	_
Average for PLL & EPL ($/hh/year)	333	598	930	250	393	1,573	37	252	290
Average percent for PLL &EPL(%)	**21.17%**	**38.02%**	**59.12%**	**15.89%**	**24.98%**	**100%**	**_**	**_**	**_**

Table 5.2: Main Source of Income from AIS (Including Off-Farm Income)

Category of Landscape	Source of Formal Income					Total Formal Income ($)	Source of Informal Income		Total Informal Income
	Agricultural crops	Livestock	Total agricultural income (Agricultural crop + livestock)	Forest income (NTFPs)	Off Farm		Wildlife	Timber	
PLL ($/hh/year)	464	431	894	593	833	2320	18	36	54
PLL (%)	19.98%	18.56%	38.54%	25.55%	35.90%	100%			
EPL($/hh/year)	678	325	1003	595	1014	2,612	10	52	62
EPL (%)	25.96%	12.44%	38.40%	22.78%	38.82%	100%			
Averagel for PLL & EPL ($/hh/year)	522	400	922	593	876	2,392	16	40	56
Average percent for PLL &EPL(%)	**21.81%**	**16.74%**	**38.55%**	**24.81%**	**36.64%**	100%			

Table 5.3.: Different Source of Income Between AIS and BLS (Including Off-Farm Income)

Category of Landscape	Different Agricultural crops(AIS vs. BLS)	Different Livestock (AIS vs. BLS)	Total Different agricultural income (Agricultural crop + livestock) (AIS vs. BLS)	Different Forest income (NTFPs) (AIS vs. BLS)	Different Off Farm (AIS vs. BLS)	Total Different Formal Income ($) (AIS vs. BLS)	Different Wildlife (AIS vs. BLS)	Different Timber (AIS vs. BLS)	Total Different Informal Income (AIS vs. BLS)
PLL ($/hh/year)	135	-282	-148	394	416	662	-31	-210	-241
PLL (%)	40.92%	-39.59%	-14.17%	197.95%	99.80%	39.96%	-63.83%	-85.42%	-81.83%
EPL($/hh/year)	337	-41	296	244	668	1208	-4	-213	-217
EPL (%)	98.82%	-11.22%	41.86%	69.49%	193.03%	86.02%	-28.68%	-80.47%	-77.87%
Average for PLL & EPL ($/hh/year)	189	-198	-8	343	483	819	-21	-212	-234

Average percent for PLL &EPL(%)	**56.67%**	**-33.03%**	**-0.84%**	**137.38%**	**122.98%**	**52.06%**	**-57.76%**	**-84.06%**	**-80.76%**

Table 5.4: Main Source of Income from BLS (Excluding Off-Farm Income)

Category of Landscape	Source of Formal Income					Total Formal Income ($)	Source of Informal Income		Total Informal Income
	Agricultural crops	Livestock	Total agricultural income (Agricultural crop + livestock)	Forest income (NTFPs)	Off Farm		Wildlife	Timber	
PLL ($/hh/year)	329	713	1,042	199	0	1,241	49	246	295
PLL (%)	26.51%	57.45%	83.96%	16.04%	0%		_	_	_
EPL($/hh/year)	341	366	707	351	0	1,058	14	265	279
EPL (%)	32.23%	34.59%	66.82%	33.18%	0%		_	_	_

Average for PLL & EPL ($/hh/year)	333	598	930	250	0	1,180	37	252	290
Average percent for PLL &EPL(%)	**28.22%**	**50.68%**	**78.81%**	**21.19%**	**0%**		**–**	**–**	**–**

Table 5.5: Main Source of Income from AIS (Excluding Off-Farm Income)

Category of Landscape	AIS Source of Formal Income					Total Formal Income ($)	AIS Source of Informal Income		Total Informal Income
	Agricultural crops	Livestock	Total agricultural income (Agricultural crop + livestock)	Forest income (NTFPs)	Off Farm		Wildlife	Timber	
PLL ($/hh/year)	464	431	894	593	0	1,487	18	36	54
PLL (%)	29.95%	27.83%	57.78%	38.30%	0%				
EPL($/hh/year)	678	325	1003	595	0	1,598	10	52	62
EPL (%)	40.77%	19.54%	60.31%	35.77%	0%				

Average for PLL & EPL ($/hh/year)	522	400	922	593	0	1,516	16	40	56
Average percent for PLL &EPL(%)	**33.06%**	**25.38%**	**58.44%**	**37.61%**	**0%**				

Table 5.6: Main Different Source of Income between AIS and BLS (Excluding Off-Farm Income)

Category of Landscape	Different Agricultural crops(AIS vs. BLS)	Different Livestock (AIS vs. BLS)	Total Different agricultural income (Agricultural crop + livestock) (AIS vs. BLS)	Different Forest income (NTFPs) (AIS vs. BLS)	Different Off Farm (AIS vs. BLS)	Total Different Formal Income ($) (AIS vs. BLS)	Difference Wildlife (AIS vs. BLS)	Different Timber (AIS vs. BLS)	Total Different Informal Income (AIS vs. BLS)
PLL ($/hh/year)	135	-282	-148	394	0	246	-31	-210	-241
PLL (%)	40.92%	-39.59%	-14.17%	197.95%	0.00%	**19.85%**	-63.83%	-85.42%	-81.83%

EPL($/hh/year)	337	-41	296	244	0	540	-4	-213	-217
EPL (%)	98.82%	-11.22%	41.86%	69.49%	0.00%	**51.02%**	-28.68%	-80.47%	-77.87%
Average for PLL & EPL ($/hh/year)	189	-198	-8	343	0	336	-21	-212	-234
Average percent for PLL &EPL(%)	**56.67%**	**-33.03%**	**-0.84%**	**137.38%**	**0.00%**	**28.44%**	**-57.76%**	**-84.06%**	**-80.76%**

CHAPTER VI: CONCLUSIONS AND RECOMMENDATIONS

This chapter draws conclusions from the analysis of results and proposes recommendations which may help SFB to improve performance in the next coming year. Equally important, the recommendations are diverse and address the overall SFB livelihood component.

1) **Client literacy rates:** A significant number of SFB beneficiaries/clients are illiterate (37%).However, the AIS fieldwork revealed that SFB team and small grant partners utilize limited Information Educational Communication (IEC) materials for training, which may affect the quality of the training to illiterate clients. Therefore, it is recommended that small grants and SFB partners adapt and adopt more IEC materials to improve the quality of livelihood training activities and the level understanding of illiterate beneficiaries/clients.

2) **Increased support for less privileged beneficiaries:** AIS survey indicates that across the two target landscapes, about 22% SFB beneficiaries/clients havea household member who is in a position of local authority (village representation, CFMC, or other important position).In other words, about one in five has connection to a person who makes decisions in the village which could create nepotism or cause the benefits of SFB activities to accrue to households that are already more advantaged. This is twice the rate of local authority representatives found in the general population, as measured by the baseline survey results (only 11% of households had a member in a position of power). To improve SFB's social accountability for beneficiary selection, it is recommended that in the final year of implementation, beneficiary selection should focus on less privileged households within the communities.

3) **Forest-based versus farm-based livelihoods:** Majority of household respondents indicates that they were trained farm-based livelihood activities. Likewise, the farm-based livelihoods is aligned with and adapted from the recommendations from Strategy Livelihood Assessment (SFB, 2014). As a result, 80% of household respondents from both PLL and EPL have received training on agriculture livelihood, while only about 50% of respondents received NTFP enterprise development training. However, SFB project framework and a high objective goal is conservation, so that the livelihood activities should take into account sustainable forest-based management, conservation agriculture, and ecotourism, rather than focus so heavily on farm-based livelihoods. It is, therefore, recommended, for the final year that SFB should widely implement forest-based commodity livelihoods. Farm-based livelihoods should be a complement to rather than a substitute for, livelihood activities to support forest commodities.

4) **Improved Cook Stoves:** The results from AIS survey shows that across both landscapes, almost 90% of households utilize three-stone cook stoves which

attribute to waste of energy and wood fuel input which is commonly used by traditional rural Cambodians for cooking food and others. Therefore, it is essential to introduce the improved cook stove device in the target area which contributes to reduce logging and collecting the amount fuel wood from the forest for household cooking which this may lead to reduced carbon emissions and saving household energy utilization.

5) Performance Against Target for PMEP Indicator 3.3.1 in Years 3 and 4

Excluding off-farm sources, incremental income increased from baseline to Year-3 by 19.85% for PLL and 51.02% for EPL. Across both landscapes, the weighted average increase in income is 28.44%, which exceeds the 25% target set in the PMEP for indicator (3.1.1) for the SFB project in Year-3.

However, it is unlikely that the increase in income will be as great in Year-4 because the Year-3 results measure progress from the first three years of SFB implementation and by Year-3 most households participating have already diversified their optimum income from agriculture and forest products. Thus, in Year-4 SFB may need achieving the additional 21.56% income increase required to meet the total Life of Project target of 50% increase in income.

Nonetheless, the results of this survey show SFB livelihood activities have significantly improved incomes in these communities. This is a particularly impressive achievement given their remote locations and limited access to markets.

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PUBLIC ANNEXES

SCOPE OF WORK

The overall purpose of this Terms of Reference is to conduct the annual income survey with a sample of participants from SFB livelihoods activities. This survey will include SFB's main implementing partners and the seven national NGOs. Existing baseline data for SFB will be reviewed to derive parameters comparable to the baseline survey. The Research Consultant(s) will be responsible to perform the following tasks:

1) Develop a research design in coordination with SFB's Monitoring and Evaluation Sr. Advisor for submission to Project management for approval. This should include suggested sampling size to produce statistically valid results for livelihoods activities that were conducted in 52 Community Forests (CFs) in PLL and 8CFs, 5 Community Protected Areas, and 2 Indigenous Communities in EPL.

2) Literature review to support income survey method justification, review of existing SFB baseline data, socio-economic reports, and so on.

3) Draft survey questionnaire and identify randomly selected respondents from list of SFB participants in sample villages. Consultant will work with Project management through the M&E Sr. Advisor to finalize all data collection methods, report outline, and survey instruments. All data must be disaggregated by gender and ethnicity.

4) Conduct survey to determine changes in income levels over the past year.

5) Perform data analysis, calculate results to be reported against SFB livelihoods indicator 3.1.1, formulate conclusions and recommendations. The conclusions and recommendations should provide a comparative assessment of livelihoods activities providing insights on the most successful activities.

6) Submit draft report to Project management for feedback and revise as requested before finalizing report.

7) Provide a presentation of the final survey results to Project team,

ANNUAL HOUSEHOLD INCOME SURVEY QUESTIONNAIRE

I. Respondent profile

1. Telephone No. _____
2. Date of interview:_____ started time: _____ended time: _____

   Instructions:

   - Please enter the first and last name of the interviewee(s) on the lines below.
   - Write the FAMILY Name in capital letters so which name is first and which FAMILY.
   - The primary person responding to the questions should be interviewee #1. If there is a second person responding (e.g. the husband or wife of the first interviewee) please write their name.

3. First and FAMILY name of interviewee(s):

   1)_____ 2)_____

   3.A. Type of interview

   ☐1. Husband/Male head of household ☐2. Wife/Female head of household ☐3. Couple

4. Address: Village _____,Commune_____,District_____, Province_____.

Instructions:

- Complete this section after the interview is completed.
- Use Village Profile sheet for geographic data.
- Insert total number of members in interviewee's HH from Table II in HH demographics section.

5. Total number of members in interviewee's HH:_____
6. Community Forestry Type:☐1.CF, ☐2.CBPF, ,☐3.CPA, ☐4. ICT ☐5Other….(Specify)
7. Community location: Village_____,Commune_____,District_____Province_____
8. SFB Landscape (EPL or PLL):☐1. EPL, ☐2.PLL, ☐3.ohter_____
9. Under SFB Partner Name_____

II. Household demographic

10. Instruction for the Question and Table:

- First in list should be the interviewee. List all members of the household.
- ***For the purposes of this survey a household should include all people currently living in the home and any children living elsewhere if they still receive money from the household***. *A household could be more than one family, e.g. newly married children may stay in the same household as their parents. ONLY include children living elsewhere if they still receive money from the household – DO NOT include children living elsewhere if they give money earned elsewhere to the household.*

- **CODE A:** 1: Male, 2: Female

- **CODE B:**1:Household Head, 2:Husband or Wife, 3:Son or Daughter, 4:Parent, 5:Other

- **CODE C:** 1:Married, 2:Single, 3:Widow/widower, 4:Divorced

- **CODE D:** 1: Literate, 2: Numerate, 3: Both literate and Numerate, 4: None at all (if 4 skip E)

- **CODE E:** Enter highest grade completed by each person. For members who are studying at university please enter how many years of study they have completed, like this: 1YU, 2YU, 3YU.

- **CODE F:**1: Khmer, 2: Bnong, 3: Kouy, 4: Tom Poun, ☐5:Other_____

_____

N⁰	**Gender (CODEA)**	**Age (year)**	**Relationship with interviewee (CODE B)**	**Family status (CODE C)**	**Educational capacity (CODE D)**	**Highest grade completed (CODE E)**	**Ethnicity (CODE F)**
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							

11. Do you or anyone else in your household hold a position of responsibility in the village?

☐1. Yes , if yes specify:_____ ☐2.No

12. SFB Meetings or Trainings Attended/Partner Brand Recognition

Instruction for enumerators:

- Use local partner name rather than SFB since local people may not know the SFB project.
- See Village Profile sheet for the list of meetings/trainings held in that community and SFB partners working at the site.

12.A: Have you or anyone else in your household attended any general training on NRM by [SFB and local partner name]?

☐1. Yes ☐2. No, (if no, skip to Q15C)

12.B: If Yes, what topics were included in the training (select all that apply)

☐1.Conflict resolution

☐2.Land use planning/titling

☐3.Forest management

☐4.Indigenous community land rights

☐5.Biodiversity monitoring

☐6.Community patrolling

☐7.Community based production forest

☐8.Exposure visit

☐9.Other, please specify_____

12.C: Have you or anyone else in your household attended any livelihood training activities sponsored by SFB and/or local partners?

☐1. Yes ☐2. No (if no, skip to Q16)

12.C1: If yes, what types of training did you attended? (Please tick as many as you attended from April 2014 to April 2015)

Type of livelihood training	Specific commodity/products trained	Approach/Implementation	Status
☐1.Business skill			
☐2. Savings group			
		☐Training ☐Self-Help Group Member	
☐3.NTFPs			
	3.A. Bamboo ☐		
		☐Training ☐Enterprise Group Member	
	3.B. Resin ☐		
		☐Training ☐Enterprise Group Member	
			☐Date join enterprise group (Momth/Year): ☐Estimated Income after joining enterprise group:.....KHR/Month

	3.C: Honey ☐		
		☐Training ☐Enterprise Group Member	Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month
☐4.Ecotourism development			
		☐Training ☐Enterprise Group member (Establish business together) ☐Payment for Environmental Services Agreement	Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month
			☐Signed ☐Payment received
REDD			
		Training	

		Free Prior Informed Consent (FPIC)	
			☐Signed
			☐Payment received
☐5.Agriculture livelihoods training			
	5.A: Vegetable		
		☐Training ☐Enterprise Group Member	Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month
	5.B. Mushroom		
		☐Training ☐Enterprise Group Member	Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month
	5.C. SRI		
		☐Training ☐Enterprise Group Member	

			Date join enterprise group (Momth/Year):
			Estimated Income after joining enterprise group:.....KHR/Month
	5.D. Ibis Rice		
		☐Training ☐Village Market Network Member	
			Date join enterprise group (Momth/Year):
			Estimated Income after joining enterprise group:.....KHR/Month
	5.E. Chicken raising		
		☐Training ☐Enterprise Group Member	
			Date join enterprise group (Momth/Year):
			Estimated Income after joining enterprise group:.....KHR/Month
	5.F: Pig raising		
		☐Training ☐Enterprise Group Member	

			Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month
☐6. Other			
		☐Training ☐Enterprise Group Member	Date join enterprise group (Momth/Year): Estimated Income after joining enterprise group:.....KHR/Month

12.F: Have you heard about the Supporting Forests and Biodiversity (SFB) Project?

☐1. Yes ☐2. No

12.G Do you know that there is a project at this site paid for by the American people (USAID)?

☐1. Yes ☐2. No

III. Household assets

13. Residential land: _____m^2(width _____m xlength _____m)

14. When was your house built? _____-

_____

15. How was your house built? ☐1. Byyourself☐2.Inherit☐3.Buy☐4.Other, specify_____

16.What is the size of your house? _____m^2 (width _____m xlength _____m)

17.How many rooms do you have in your house? _____

18. Roof type: ☐1.Fibro ☐2.Thatch ☐3.Zinc☐4. Tile ☐5.Other, specify _____

19. Wall type: ☐1.Wood/timber ☐2.Brick ☐3.Thatch

☐4.Zinc☐5.Bamboo ☐6.Other (specify) _____

20. What land did your household use to grow crops between April 2013 and April 2014?

Note:

- If multiple plots, list all. Yield data to be collected in most appropriate units (eg. number of rice sacks (*bay*) for rice yields or kg for cassava). Sizes of all units should be checked locally. Remember to ask about fallow land that may not be under current cultivation but which the household have customary ownership rights.If land was bought or is rented, record the price paid. If a gift or inheritance, record the person who gave it.
- **CODE A:** 1. Cropping on residential land, 2.Chamkarland, 3. Rice land, 4. Fallow, 5. Other,specify_____
- **CODE B:**1.Cleared, 2. Bought, 3. Rent in, 4. Rent out, 5. Inherited, 6. Gift, 7. Other, specify_____

N°	**Kind of land (CODE A)**	**W (m)**	**L (m)**	**Land size (m^2)**	**Year land claimed**	**Kind of crop**	**Access to land (CODE B)**	**Year growing crop before April, 2015**

1								
2								
3								
4								
5								
6								
7								
8								

21. Did you buy any land between April 2014 -April 2015? ☐1.Yes ☐2. No (skip toQ 22)

21. A: If Yes, what size? _____m^2 (Width _____m x Length _____m)

21. B: If Yes, what price? _____ KHR

22. Did you sell any land from April 204-April 2015? ☐1. Yes☐2. No(skip to Q 23)

22.A: If Yes, what size? _____m^2 (Width _____m x Length _____m)

22. B: If Yes, what price? _____KHR

22. C: What was the land used for by your household before the sale?_____

23. Has your household been affected by any companies or individual claiming your land between April 2014
-April 2015?☐1. Yes ☐2. No If Yes, how much land did you lose? _____ha

24. Has your household been affected by any companies or any individual claiming your resin trees from April 2014-April 2015? ☐1.Yes ☐2. No If Yes, how many trees did you lose? _____

25. Type of assets in the household up to April 2015 (Select all that apply)

Type of asset	Number owned	Year asset was acquired
1) Transportation		
1.1) Automobile		
1.2)Truck/van		
1.3.) Motorcycle		
1.4.) Bicycle		
1.5.) Boat (hand paddled canoe)		
1.6.) Boat with engine		
1.7.) Hand tractor		
1.8.) Other, specify_____		
2) Household electronic compliances/ electrical devices		
2.1.) Electric generator		
2.2.) Mobile phone		
2.3.) Regular telephone (Land line)		
2.4.) Battery		
2.5.) TV		
2.6.) Radio		
2.7.) Other, specify_____		

26. Which cooking devices do you use?

☐1. Stone cookstove☐2.Mong or Siemcookstove☐3.Traditional Lao stove

☐4.NeangKongrey stove ☐5. New Lao stove ☐6. LPG cookstove☐7. Rice cooker

☐8. Biogas ☐9. Coal ☐10. Kerosene☐11.Lliquefied petroleum gas (LPG)

☐12. Electricity☐13. Solar ☐14. Other_____

27. Where did you get your cooking device?

☐1. Market/shop in the village ☐2. Market in the city/town ☐3. Mobile seller

☐4. Manufacturer ☐5.Hired worker to construct it☐6.Other_____

28. Do you collect or buy your fuelwood?☐1.Yes ☐2. No (skip to Q 30)

28. A. If Yes, do you ?☐1. Collect ☐2. Buy (both can be checked if they collect & buy)

29. If the household uses woody biomass fuel, please complete the table below.bbelowbelow

Source of materials collected	**Fuelwood collection time (total time per month)**	**Volume collected (M^3/month)**	**If purchased, please estimates the average cost (KHR/month)**
In CF area			
Neighboring CF area			

Production forest area			
Chamkar/ricefield			
Other, specify_____			

IV. Income and cost from agriculture activities

30. Income from agricultural activities within the last 12 months, from April 2014 to April 2015.

Instruction for Questions and Table:

- Before asking details on income, please ask them to list their sources of income or livelihood activities. The term of livelihood this does not always mean cash income. Then, please ask their annual cash/costed income from these livelihood activities

Nº	**Name of crop**	**Unit**	**Quantity for consumption**	**Quantity forsale**	**Quantity for gift**	**Avg. price (KHR/Kg)**	**Total (KHR)**
1.	Paddy rice						
2.	Chamkar rice						
3.	Cashew nut						
4.	Cassava						
5.	Rubber						
6.	Vegetable						
7.	Beans						
8.	Fruits						
9.	Other, specify_____ _						

31. Cost of Agricultural Production, April 2014 to April 2015

Nº	**Items**	**Quantity**	**Unit**	**Price per unit**	**Total cost (Riel)**
1.	Seeds				
2.	Seedlings				
3.	Planting material				
4.	Chemical fertilizers				
5.	Manure/green manure				
6.	Pesticides/herbicides/fungicides				
7.	Draft power				
8.	Hired labor				
9.	Hired machinery				
10.	Transport/marketing				

11.	Payment for land rental				
12.	Other, specify_____				

32. Ownership of livestock and other animals and income from sales for a period of 12 months from, April 2014 to April 2015.

1. Type of animal	**2. Beginning number 12 months ago up to April 2014**		**3.Sold (including bartered), live or slaughtered**		**4.Slaughtered for own use (or gift or share given)**		**5. Lost (theft, death)**		**6. Bought or received as a gift or as earned share**		**7. New from own stock**		**8. Normal kept in household**		**9. Price per Kg of each animal (KHR/Kg)**	**10. Total end value**		
	Nºofheads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)	Nºof heads	Average weight (Kg.)		Nºof heads	Average weight (Kg.)	Total in value
Cow																		
Buffalo																		
Pig																		
Chicken																		
Duck																		
Muscovy																		
Other, specify _____																		

33. What are the quantities and values of animal products and services that you produced from April 2014-April 2015?

Type of animal	1.Product /service	2. Unit type	3. Units produced	4. Own use (including gifts)	5. Sold (including barter)	6. Price per unit	7. Total value (3 x 6)
Cow							
Buffalo							
Pig							
Chicken							
Duck							
Muscovy							
Other,specify _____							

34. What are the quantities and values of your expenses (inputs) used in livestock and animal production from April 2014-April 2015?

Inputs	Unit	Quantity	Price per unit	Total costs
Feed/fodder	(KG)			
Rental of grazing land	(ha)			
Medicines, veterinary services	(KHR)			
Costs of maintaining barns, pens, etc.	(KHR)			
Hired labor	(KHR)			
Inputs from own farm	(KHR)			

V. Natural resource-based livelihoods and income

35. Forest Products for Income and Household Use

35.A.What are the most important forest products that you collect for income generation?

(Select all that apply)

☐1. Resin ☐2. Timber ☐3. Bamboo/shoot

☐4. Rattan ☐5. Firewood ☐6. Wildlife (hunting/trapping)

☐7. Vine ☐8. Mushroom ☐9.Do not collect anything

☐10. Medicinal plants/herbs ☐11. Wild fruits or vegetables ☐12. Other, specify_____

35.B.What are the important forest products that you collect for home consumption?

(Select all that apply)

☐1. Resin ☐2. Timber ☐3. Bamboo/shoot

☐4. Rattan ☐5. Firewood ☐6. Wildlife (hunting/trapping)

☐7. Vine ☐8. Mushroom ☐9. Do not collect anything

☐10. Medicinal plants/herbs ☐11. Wild fruits or vegetables ☐12. Other, specify_____

36.Resin Tapping Activity

36.A. For the period from April 2014 to April 2015, were you tapping for resin?
☐1. Yes ☐2. No (if no, move to Q 37)

36.B. If Yes, how many resin trees does your household own and tap? _____

36.C. And how many times did you tap during this 1 year period?_____ ?

Nº of trees in group	Length of trip (No. days)	Yield [kan[19] sack/trip] (Kg/trip)	Trips/month (dry season)	Trips/month (wet season)	Nº of months collected for

36.D. What price did you sellthe resin for fromApril 2014 to April 2015? _____KHR/kan (Average)

Min._____KHR/Kg Max. _____KHR/Kg

36.E. Did you buy any resin trees from April 2010 -April 2015 (last 5 years)?

☐1. Yes ☐2. No

If Yes, how many trees? _____ What was the price paid (total)? _____KHR

36.G. Did you sell any resin trees from April 2014 to April 2015 (last year)?

☐1. Yes ☐2. No

If Yes, how many trees? _____ What was the price paid (total)? _____KHR

[19] It is a plastic container consisted of 30 litre in volume, however if kan used for package resin, then it contain volume is 27-28 liquid of resin products

37. Main income from all kinds of products collected from the forest from April 2014 to April 2015

Instructions: If the unit is not standard (kg), ask them to show you the unit and weigh it. Record weights below.

1.Product / NTFPs	**Production**					**Cost**		**9.Income per month [(6-(7+8)]**
	2.Unit	**3.Unit harvest**	**4.Unit sold**	**5.Mean price per unit**	**6.Gross incomeper month (4 x5)**	**7.Hired labor per year**	**8.Inputs, transport, taxes, share, etc. per year**	
Resin	Kan							
Honey	Liter							
Rattan	Batch							
Bamboo	Stem							
Vine	Batch							
Hunting	Trip							
Fishing	Trip							
Mushroom	KG							
Medicinal plant	KG							
Fuelwood	M^3							
Other(specify) _____								

38. Gender in NTFPs and other Forest Products Collection

38.A.Who takes the most responsibility in collecting NTFPs and other forest products?

☐1. Elderly male ☐2. Elderly female ☐3. Youth male
☐4. Youth female ☐5.Other, please specify_____

38.B.Who usually makes decisions about selling NTFPs and other forest products after harvesting?

☐1. Elderly male ☐2. Elderly female ☐3. Youth male
☐4. Youth female ☐5.Other, please specify_____

38.C.Who takes most responsibility for managing money after selling NTFPs and other forest products?

☐1. Elderly male ☐2. Elderly female ☐3.Youth male
☐4.Youth female ☐5. other, please specify

VI. Sources of income and expenditures

39. Miscellaneous sources of cash fromApril 2014- to April 2015. (Please tell us about any kinds of income to your household in the last 12 months, cash or in kind, that have not yet been mentioned)

Instruction for the Questions and Table below:

- Please use the code in household demographic
- Remind respondent of how "household" is defined for this survey.

Nº	Type of income	Total amount received in last 12 month before April 2015
1	Renting out own land	
2	Remittances	
3	Gifts from family or friends	
4	Inheritance	
5	Pension	
6	Support from government (social pension or other form of social security)	
7	Income from local politicians (gift)	
8	Support from NGO	
9	Compensation for lost income	
10	Earning from NTFP community enterprise development (resin, honey, and etc.)	
11	Ecotourism activity	
12	Insurance or accident related payment	
13	Other, specify_____	

40. Does anyone in your household have a job / formal employment? ☐1.Yes ☐2. No

Instruction for the Questions and Table:

- Please use the code in household demographic

Name (code)	Job title	With which type of agency?			Where	Salary (KHR/month)	Nº of months worked/year
		☐NGO	☐Public	☐Private			
		☐ NGO	☐Public	☐Private			
		☐ NGO	☐Public	☐Private			
		☐NGO	☐Public	☐Private			
		☐NGO	☐Public	☐Private			

41. Does anyone in your household sell their labour? ☐1. Yes ☐2. No

42. Instruction for Question and Table below:

The data reported here will be used to collect NET profits, not gross incomes. If respondents are unclear help them first, for each service, to estimate the capital costs, such as buying wine making equipment or a generator, and operational costs, such as labour costs, fuel costs and input costs (eg. ingredients for making rice wine or shop stock).

Name (code)	Purpose of labour	Average Wage [KHR/day]	Nº of days worked /dry season	Nº of days worked /wet season	Where do they work?

43. Does your household operate any of the following services within the village?

Nº	Service	Yes/No	Capital costs (Start-up)[KHR]	Nº of employees participated in the business	Gross income [KHR/year]	Operational costs [KHR/year]	Net income [KHR/year]
1	Village shop	☐ yes ☐ no					
2	Rice threshing service	☐ yes ☐ no					
3	Rice milling service	☐ yes ☐ no					
4	Produce rice wine	☐ yes ☐ no					
5	Karaoke shop	☐ yes ☐ no					
6	Video service	☐ yes ☐ no					
7	Generate electricity / charge battery	☐ yes ☐ no					
8	Resin trader	☐ yes ☐ no					
9	Cassava trader	☐ yes ☐ no					
10	Cashew trader	☐ yes ☐ no					
11	Rubber nursery	☐ yes ☐ no					
12	Blacksmith	☐ yes ☐ no					
13	Mechanic	☐ yes ☐ no					
14	Carpenter	☐ yes ☐ no					
15	Rent buffalo for ploughing	☐ yes ☐ no					
16	Rent koyun for ploughing	☐ yes ☐ no					
17	Motorbike service	☐ yes ☐ no					
18	Handicraft production	☐ yes ☐ no					
19	Other_____						

44. Household expenditure and consumption and energy costs

44.A.What were the energy sources for your household before April 2015?

	(a) Used or not used	(b) Purpose of consumption	(c) Cost per month

	1=Yes 2=No	1=House lightning 2=Cooking 3=Clean water 4= Pump 5=Washing 6=Clothes 7=Business Consumption, 8= Other, specify_____	KHR
Candles			
Firewood			
Charcoal			
Kerosene			
Gas			
Alkaline battery			
Battery			
Torch			
Owned generator			
Purchased electricity from neighbor			
Purchased electricity from private business			
Purchased electricityEDC (Electrity du Cambodge-State Enterpise)			
Other_____			

44.B.Other household expenditures

How much does your household spend on the following items per month?

Expense	**Last month [KHR]**
Rice (for consumption)	

Non-rice food (purchasing for consumption)	Meat/fish	
	Vegetable/fruit	
Clothing		
fuel/transport		
school fees		
medical fees		
building materials/repairs		
weddings/ceremonies/gifts		
Other, specify_____		

VII. Loans and savings (April 2014-April 2015)

45. Did your household access credit from April 2014 -April 2015?

Nº	Loan sources	Did you borrow loan in last year?	Type of loan	Type of payment	Interest rate/month (%)	Condition: Collateral	Type of collateral (specify in writing)	Total amount (both borrowed amount plus interest rate inKHR)
1	Saving group	☐Yes ☐No				☐Yes ☐No		
2	Rice bank	☐Yes ☐No				☐Yes ☐No		
3	Private money lender	☐Yes ☐No				☐Ye ☐No		
4	Resin traders	☐Yes ☐No				☐Yes ☐No		
5	Relatives/neighbours	☐Yes ☐No				☐Yes ☐No		
6	MFI	☐Yes ☐No				☐Yes ☐No		
7	Other (specify)	☐Yes ☐No				☐Yes ☐No		

46. If yes, what are the three main purposes of taking the loan?

☐1. To buy farm or other tools/implements	
☐2. To buy inputs such as seeds/fertilizers/pesticides	☐11. To pay for health expenses
☐3. To buy livestock	☐12. To pay for education expenses
☐4. To pay for hired labour	☐13. To pay for debt
☐5. To buy land	☐14. For wedding
☐6. To pay rent/taxes	☐15. Support migration of a relative
☐7. To start or additionally equip an off-farm business	☐16. For NTFP development
☐8. For funeral	☐17. For ecotourism development
☐9. To buy food/goods for the HH	☐18. For other enterprise development
☐10. To pay for building materials	☐19. Other, please specify_____

47. For your outstanding loan, when do you expect to finish paying it off?
(Date/mm/yy)_____

VIII. Time of Crisis

48. Have you faced severe shocks or crises between April 2014 to April 2015?

☐1.Yes ☐2. No (skip to Q48.C)

.48 A. If yes, what was the main cost to recover per crisis?

Itemj	Cost Estimation to recover from the crisis (KHR/crisis)
☐1. Flood	
☐2. Damage caused by pests	
☐3.Drought	
☐4. Storm	
☐5.Loss of NTFPs products	
☐6.Other_____	

48.B. In looking toward the future, what do you believe are the greatest threat to your livelihood? Rank them 1-3 at maximum, 1 indicates most serious threats, 2 medium, 3 weak

☐1. Floods ☐2. Droughts ☐3. Unpredictable bad event

☐4. Land grabbing ☐5.Lack of access to NTFPs products ☐6. Lack of cart

☐7.restrictions on forest access for cattle ☐8. Security problems, robberies, specify_____

☐9.Poor roads ☐10. Other, specify_____

Note and impression of interviewer

Thank for you time!!!

NTFP Trader Key Informant Interview Guide

I. Demographic Information

1. Questionnaire No. :_____
2. Date (dd/mm/yyyy) :_____/_____/_____
3. Name of interviewer :_____
4. Name of interviewee :_____
5. Age (year) :_____
6. Sex :_____
7. Ethnicity :_____
8. Address and cell phone : :_____
9. Community Forestry Name: 1.CF☐ 2.CBPC☐ 3.CCF☐ 4.CPF☐ 5.CPA ☐ 6. ICT☐ 7. Other☐….
10. Village, Commune, District, Province:_____
11. SFB Landscape (EPL or PLL):☐1. EPL,☐ 2. PLL

II. Business Information

12. Main occupation :_____
13. Minor occupation :_____
14. Your date of starting NTFP trader (dd/mm/yyyy):_____
15. What products do you produce and sell out:_____
    In your CF/CBPF/CCF/CPF/CPA/Other area how many traders do you think are also buying and selling NTFPs products like
    you? :_____
16. Compared with these other traders, are you a smaller or bigger producer than them?
    ☐ Smaller than them / ☐bigger than them

    How would you describe the trend in the value of your NTFPs product collection in the last 1 years up to April 2015? :_____

Please use the following codes1 great decrease; 2 decrease; 3 Neutral; 4 increase; 5 highly increase

17. How many villages do you serve with your NTFPs trade business?

No.	Name of Village	Total production purchased (Kg/year)	Total sale/revenue per year (KHR/year)	Means of transportation
1				
2				
3				
4				

18. Who do you sell your NTFPs products to?
    ☐Wholesaler, Why? : _____
    ☐Retailer, Why? :_____

☐The combination between wholesale and retail, Why?:_____

19. Who/where do you sell your NTFPs products?

No.	Name of business partner who you sell your product	Address	Type of your business partners 1.wholesaler 2.Retailer, 3.Combination)	Hours to transport from your house to your main wholesale or retail outlet (minute)	Distance from collection site to house (Km)	Means of transportation
1						
2						
3						
4						

III. NTFPs Pricing

20. What is the trend for NTFPs products over the past years up to April 2015?
    a. Are villagers providing more or less NTFPs?:_____

Please use the following codes: 1 great decrease; 2 decrease; 3 Neutral; 4 increase; 5 highly increase

    b. Are there more or less traders in NTFPs trade business over the past year up to April 2015:_____

Please use the following codes: 1 great decrease; 2 decrease; 3 Neutral; 4 increase; 5 highly increase

    c. Is the NTFPs products price is higher or lower over the past year up to April 2015?:_____

Please use the following codes: 1 great decrease; 2 decrease; 3 Neutral; 4 increase; 5 highly increase

21. Why does the price that you offer NTFPs collectors fluctuate (change) during the course of the year April 2014 up to April 2015?(Please tick all as apply and rating them based on code provide below)
    a. ☐Change in transport costs_____
    b. ☐Quality of NTFPs change_____

c. ☐Demand-driven shift (such as more demand by consumers at some time of the year)_____
d. ☐Supply-driven shift (such as greater production at some time of the year)_____
e. ☐Other reason_____

Please use the following codes: Please use the following codes: 1 very low; 2 low; 3 neutral; 4 increase; 5 highly increase

22. Why does the price at which you sell NTFPs fluctuate (change) during the course of theone5 years up to April 2015? (Please tick all as apply and rating them based on code provide below)
    a. ☐Change in transport costs_____
    b. ☐Quality of NTFPs change_____
    c. ☐Demand-driven shift (such as more demand by consumers at some time of the year)_____
    d. ☐Supply-driven shift (such as greater production at some time of the year)_____
    e. ☐Other reason_____

Please use the following codes: Please use the following codes: Please use the following codes: Please use the following codes: 1 very low; 2 low; 3 neutral; 4 increase; 5 highly increase

23. Do you offer loans to NTFPs collectors from various villages where you are trading with as part of your NTFPs trade business?
    ☐ No,
    ☐Yes, if yes how many collectors do you make loans to?

No.	Name of village	Number of total outstanding loans April 2015	Average size of loans (KHR/NTFP collector)	No. of collectors you offered loans
1				
2				
3				
4				
5				
6				

24. Do you charge an interest rate?
    ☐Yes, How much interest rate_____%/month
    ☐ No

24.1. What happens if people cannot pay back the loan?

_____

_____

24.2. What kinds of formal and informal fees do you pay for transport from villages to the place of sale (formal fee are fees for which you receive a receipt)?

No.	Types of fees	Amount paid per trip (KHR/Trip)	Amount paid per year (KHR/Year)
1	License		
2	Local authority		
3	Check points		
4	Other (specify)		

IV. Processing

25. What types of NTFPs products do you or your spouse process?
If not why?:_____

No.	Type of NTFPs products are trading	Do you process this product	If not, why: (please explain)
1.	Resin	☐ Yes ☐ No	
2.	Honey	☐ Yes ☐ No	
3	Rattan	☐ Yes ☐ No	
4.	Bamboo	☐ Yes ☐ No	
5.	Vine	☐ Yes ☐ No	
6.	Hunting	☐ Yes ☐ No	
7.	Fishing	☐ Yes ☐ No	
8.	Mushroom	☐ Yes ☐ No	
9.	Medicinal plant	☐ Yes ☐ No	
10.	Fuelwood	☐ Yes ☐ No	
11.	Other (specify)	☐ Yes ☐ No	

V. Alternative Business

26. What would you do if the NTFPs trade business did not exist?

_____

_____

27. What would be your daily income from that alternative job?

_____

_____

28. What are the main constraints/challenges you face in the NTFPs trade business? And how do you rate them the main challenges? And how do you manage/overcome these constraints?

No.	a)Challenges in business	b)Rate of challenges	c)How are these challenges resolved?
1			
2			
3			
4			
5			
6			

Instruction for the Table:

- In column b) please code: 1) High challenge, 2) Medium challenge, 3) Low challenge
- In column c) please code: 1) Successfully solved, 2) Partly solved, 3)

29. What types of change would you like to see in your NTFP trade business in the future?
1._____
2._____
3._____
4._____

FA and MoE Official Key Informant Interview Guide

I. Demographic Information

2. Questionnaire No.:_____
1. Date (dd/mm/yyyy): _____
2. Name of interviewer:_____
3. Name of interviewee:_____
4. Age:_____
5. Gender:_____
6. Ethnicity:_____
7. Address and cell phone_____
8. Community Forest name under you responsibility:_____
9. Village, Commune, District, Province:_____
10. SFB Landscape: 1.☐Eastern Plain Landscape (EPL), 2.☐Preylang Landscape (PLL)

3. Business Information

12. What is your position in the FA?_____
13. How long have you been working in this position?_____
14. How many technical staff work in the FA at your level?_____
15. In the area you cover" or "in the area your office covers, what are the main non-timber forest products?_____
_____
16. Who and how many people are collecting NTFPs and other forest products?

Type of people collect NTFPs:	Estimated number of people per year (No.)
1. ☐Local community	
2. ☐Outsider from neighbouring CF/CBPF/CCF/CPF/CPA/ICT/Other	
3. ☐Outsider within province	
4. ☐Outsider from different province	
5. ☐Other (specify)	

17. What form of permits, rights or concessions do they need to harvest and transport these NTFPs and other forest products in your area up to April 2015 ?
_____

18. What are the regulations and quotas imposed by the FA cantonment for trading NTFPs and other forest products in your province up to April 2015?
_____

19. For what type of NTFPs were licenses and transport permits were requested from your office in April 2015 (How much was volume? And how much in taxes were collected for each product?

Types of products	April 2015	
	Quantity	Amount (KHR)
1. *Resin*		
2. *Honey*		
3. *Rattan*		
4. *Bamboo*		
5. *Vine*		
6. *Hunting*		
7. *Fishing*		
8. *Mushroom*		
9. *Medicinal plant*		
10. *Fuelwood*		
11. *Other (specify)*		

20. Among those main NTFPs products, which are being traded in your area, which is traded as the raw materials and which is traded with a processing workshop? If Yes, how many those shop/wholesalers in your areas covers (up to April 2015)?

Types of NTFPs products	Trading Transformation (1. Raw materials, 2. Processing)	Number of SMEs for NTFPs
1. *Resin*		
2. *Honey*		
3. *Rattan*		
4. *Bamboo*		
5. *Vine*		
6. *Hunting*		
7. *Fishing*		
8. *Mushroom*		
9. *Medicinal plant*		
10. *Fuelwood*		
11. *Other (specify)*		

.....

21. How would you describe the trend of your forest products tax collection in the last five years up to November2012? _____

Please use the following codes:☐ 1, great decrease; ☐2 some decrease; ☐3 Neutral;☐ 4 increase; ☐5, highly increase

22. Does the FA plan to plant NTFP tree species in the community forest? If yes, what types of species of tree did you propose to plan (April 2015)?

Type of NTFPs and Tree	Planting	Quantity (Number)

1. Rattan	☐ Yes ☐NO	
2. Bamboo	☐ Yes ☐ NO	
3. Resin	☐ Yes ☐ NO	
4. Tree 1 (please name it)	☐ Yes ☐ NO	
5. Tree 2 (please name it)	☐ Yes ☐ NO	
6. Tree 3 (please name it)	☐ Yes ☐ NO	
7. Other (specify)	☐ Yes ☐ NO	

23. What are the main constraints/challenges you face in the NTFPs trade business? And how do you rate them the main challenges? And how do you manage/overcome these constraints?

No	a) Types of most challenges in NTFP trade	Rate of challenge	b) How were these challenges resolved?
1.			
2.			
3.			
4.			
5.			
6.			

Instruction for the Table:

- 1) High challenge, 2) Medium challenge, 3) Low challenge
- In column b) please code: 1) Successfully solved, 2) Partly solved, 3) unsolved at all

24. What are the main constraints/challenges you face in forest product management and trade in your forest areas? Please rate them the most challenges? And how do you manage/overcome these constraints?

No	a) Types of most challenges in forest product management	b)Rate of challenge	b) How were these challenges resolved?
1.			
2.			
3.			
4.			
5.			
6.			

Instruction for the Table:

- In column b) please code: 1) High challenge, 2) Medium challenge, 3) Low challenge
- In column c) please code: 1) Successfully solved, 2) Partly solved, 3) unsolved at all

25. What changes would you like to see in the NTFP and other forest products trade in the future for your working area?

1)_____
2)_____
3)_____

4)_____

Forestry Focus Group Discussion
(Community Forestry Committee)

I. Demographic Information

1. Questionnaire No. :_____
2. Date: (dd/mm/yy) : _____
3. Name of interviewer : _____
4. Community Forestry Type: 1☐.CF, 2☐.CBPC, 3☐.CCF,4.☐CPF,5☐.CPA, 6. ☐Other
5. Village : _____
6. Commune : _____
7. District : _____
8. Province : _____
9. Landscape :.☐1. (EPL)☐2.(PLL)
10. Number of members participating in Focus Group Discussion for Committees:

Khmer Men : _____
Khmer Women : _____
Indigenous Men : _____
Indigenous Women : _____
IP Youth :_____
Khmer Youth :_____

II. Training

11. What types of programme activities have been implemented by SFB to your CF/village(April 2014 to April 2015)? Please describe.

12. What type of training provided by SFB Project? Please describe.

13. What type of training provided by SFB is useful (April 2014 to April 2015)? If yes, in what way? Please describe.

14. Did your community members have been materialize the training for improved income activity? And how? (April 2014 to April 2015)
15. Has your community developed sub-group of NTFP producers since April 2014? If yes, what type of NTFP sub-group

III. Conflict over NRM

16. Did any change in illegal use of forest products (April 2014 to April 2015)? If yes, please describe.
    a) Timber:
    b) NTFPs:
    c) Wildlife:
    d) Other (Please specify):
17. Did any change in illegal forestland conversion/production forest (April 2014 to April 2015)? If yes, please describe.

FIELD GUIDE FOR FIELDWORK AND TENTATIVE WORK PLAN

Annual Household Income Survey:
Prey Lang Landscape and Eastern Plain Landscape

Date: 15 May, 2015

Background

Sampling at Community Level

There will be three types of interaction at the community level during this study: FGDs for Committees, NTFP Trader KII, FA Official KII, SFB Partners NGO Interview KII and Household Interview.

It is worthy to note that every interview need to apply prior informed consent to comply with ethnically approach in the survey.

Type of interaction	**Number per village site/SFB partner**	**Remark**
Household Interview	20	to get the list of training beneficiaries which had been trained livelihood activity by SFB Project.
FGD for CF Committees	1-2 FGD per landscape site (4-11 persons)	Some data/information is collected from SFB project and national statistical database, and validating with the participants
NGO SFB Partners-KII	7 small grantees	To interview all SFB partners working on small grants
NTFP Trader-KII	1-2 persons/landscape	In case the village consisted of NTFP traders, otherwise 2-4 NTFPs per provincial site
FA Official -KII		1-2 persons per landscape site

Household Interview

Each SFB partners of which at least one village will be selected for household interview,. A total of 20 in-depth and open-ended individual/household interviews will be carried out at every site.

- **Process:**

1) Get the list of CFs and training beneficiaries from SFB project for random sampling.
2) Since CF had selected, then select village within CF site
3) Get the list of village from SFB and random sampling for household survey. And finally randomly choose 20 household per target village.
4) Random sampling based on list, with an interval: x/20 (X is total household who are training beneficiaries in the village) in the consultation process with

village chief and/or CF committees. It is worthy to note that gender participation in household must be included to make sure that we will have gender voice equity and equally.

FGD for CF Committees

A total of 5-11 participants will be selected for FGDs at the CF level. A total FGD time spending is 1 to 1.5 hours. There should be 2 facilitations who will be conducted the FGD : one male and other is female. One should facilitate in order to receive information/data while other is making note. Additionally, a mixed group for men and women CF committees will be participated in the FGD.

- **Participants criteria**

These will be selected as per the following:

- Men committees
- Women committees
- Youth male and female who are sitting in the committees
- Any special group that may exist in the village, including ethnic minorities

- **Tools for FGDs**

There are various tools from SLA will be used for proceeding the FGDs, those will be included livelihood analysis, time trend, and especially Vann Diagram. Equally important for the 5-scale pints and other scale – the small pies of rock will be used to demonstrate the scale.

- **Materials for FGD**

Meanwhile, the materials used for conducting the FGD are as follow:

- Pen
- Pencil and markers
- Flip Chart
- Scissor and knife Rubber band (to secure the rolled up sheets of paper)
- Eraser
- Stapler and staple pins

1. **Examples of some of the methods to be used during FGDs and individual interviews**

- **Venn Diagram**

- **Livelihood analysis**

Livelihood analysis at the community level this can be used for analysis during a FGD. This method is used to get an overall picture about the sources of livelihood in the village.

Introduction for Annual Household Income Survey

A full introduction should be given before starting the fieldwork at any location. Sometimes we need to repeat the full introductions before starting a FGD, Household Interview, and other types of interview. Introduction should include:

- Personal introductions (names)
- Purpose and objectives, and how the study results may be used
- Duration
- Make it clear that no all information is only used for project intervention and development, and equally important all name and other personality for those whose participated in the interview process will be treated as a highly confidential

Daily Review and Planning

It is important that the team meets every evening to review the day's work and to plan for the next day. The review should include a discussion on any new issue that may have emerged as well as to assess the progress made. This helps in planning for the next day. The team leader must report to WI for every evening for the progress of activity and the level of achievement (no. households interview, FGDs, and others)

Site report

Once the fieldwork at a particular location is completed the team leader will put together a report based on all the discussions with the community and the analysis carried out by them as well as conclusion remarks and recommendations.

II. Estimated Time for Each Set of Questionnaire

Type of questionnaire	**Number of hours**
FGDs for CF committees	1.0 -1.30
NGO partners (SFB Partners for livelihood programme)	1.0 – 2.0 (max.)
Household survey	1 hour (max.)
NTFP trader	1.0 (max.)
FA Official	0.5 – 1.0

Staffing Fieldwork

1. Field Enumerator

The Field enumerator will be supervised by and report to a Site Teamleader/team member. The main responsibilities of the field enumerator are to:

- Organize and conduct household interview;
- Organize and facilitate focal group discussions at village level, if necessary and appointed by supervisor;
- Report regularly and daily to Site Teamleader/team member.

2. Site Team Leader/Team member

The Site Team Leader/Team members have the following additional responsibilities, in addition to Contract with WI.

- Coordinate the preparation of the village field survey reports according to established guidelines;
- Act as the project liaison with village leaders and Team leader as well as SFB Partners;
- Manage petty cash disbursements in the field;
- Coordinate with SFB partners for the survey;
- Report daily basis to Team leader consultant on the progress of field activity
- Writing case study

3. Name of Field Enumerators and Consultants

No.	Name	Sex	Position	Tel./E-mail
1	Prom Tola	Male	Team lead	Tel: 097 778 1933 E-mail: tolaprom@yahoo.com
2	Sean Prum	Male	Team member	Tel: 097 431 2796 E-mail: prum.sean@gmail.com
3	TepThavrin	Male	Team member	
4	Ly Visal	Male	Team member/Data analyst	Tel: 097-6277771 visal88889999@gmail.com
5	Sieng Sovannary	Female	Enumerator	Tel: 097-654 4854
6	Sam Tevy	Female	Enumerator (Bunong IP)	Tel: 097-723 4639
7	Prom Rat Samnang	Male	Enumerator	Tel: 098-420947
8	Phil Sophorn	Male	Team member	Tel: 010683378
9	Heang Lina	Female	Team member	Tel: 093211354
10	TuyVitu	Male	Team member	Tel: 087577275
11	So KhanSom	Fermale		077-885188
12	Srey Mean	Female		097-7726679

Tentative Work Plan

Date	Venue	Remark
18 May	Training at Kampomg Thom (2:00 p.m)	All
19 May	Pre-test questionnaire and validate it	All
20 May to 21 May	Fieldwork survey at Kampong Thom site	Group I and Group II
22 May to 23 May	Fieldwork survey at Preah Vihear site	Group I and Group II
24 May to 25 May	Fieldwork survey at Stung Treng site	Group I and Group II
25 May to 26 May	Fieldwork survey at Kratie site	Group I and Group II
26 May to 30 May	Fieldwork survey at MDK site	Group I and Group II

Resin Case Study: Preah Vihear Province

Background of Resin

Resin is an NTFP, which is tapped mainly from the evergreen tree species, *Dipterocarpu salatus,* but also collected from a variety of other species. Resin may be harvested in liquid and solid forms. It is used domestically for sealing and waterproofing boats and exported for these uses as well as for paint and varnish manufacturing. Tapping occurs across most of Cambodia's forest areas, in at least ten provinces including Preah Vihear province (NTFP-EP, 2009). Resin is a good case study for forest product trade, which includes social and economic benefits for local communities, forest management[20], and export potential, because the SFB Project supports Resin Associations to initiate resin enterprise development, through NGO partners such as Ponlok Khmer (PKH) in Preah Vihear.

Generally, in Cambodia, resin is one of the most important NTFPs that can contribute to support livelihoods in forest communities. However, it has been overlooked in policy-making in terms of its economic value, and in national planning. As commonly practiced, the trees from which people collect resin are beyond the boundaries of their Community Forest (CF) and Community Protected Area (CPA) areas. In Preah Vihear, communities often claim management of resin trees over an area much larger than the than the legally recognized CF. Government technical departments (FA and MoE) implementing the CF formalization process argue that the size of CF areas granted should be limited relative to the capacity and ability of each community to manage it.

Resin Tapping as a Livelihood Activity

Based on Field survey and data information from PHK and WI indicates that two main villages have been collecting resin for trading activities – Chheb Keut and Danplet SFB supported villages. However, there were four other villages located within SFB site but the project did not have any activities supporting here, are also accounted for study because those four villages have been reported from traders and wholesalers about their business activity link to resin products. Therefore, this case study reveals the importance of resin tapping activities in SFB project In Preah Vihear, some villages have been supported and some others are yet to be supported but they have linked to resin market. As the result there is at least 560 households from six villages of Preah Vihear have been accounted for in the analysis.

. On average, across the six village sites, resin-tapping households can own from 50 to 500 trees per household. Commonly, they make trips to tap resin 3 to 5 times per month. Specifically, on each trip each household can collect 3 to 5 *kan*s[21] (which is equivalent to 81 to 135 kg of resin/trip/household, while the average price offered by trader to local resin tapper is 0.92 Kg/kg More importantly, tapping resin takes place somewhat distance to their homes, as most of resin tree grow along streams in the core zone of forest protected areas, so it may take 1 to 3 days to complete each trip. Most of the resin sold by local resin tappers is in un-processed form and/or raw materials.

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[20] Resin is managed in Cambodia under customary user rights by the Forestry Law (2002), which encouraged resin tappers to sustainably protect and collect resin to support livelihoods and forest conservation.

[21] A kan is a plastic container that can hold up to 30 liters of liquid product. One kan is approximately about 27 Kg of liquid resin.

Table 1: Economic Value of Resin Product

Name of Village	No. of Household who tapping resin (No.)	Total minimum production/Year (Kg)	Total maximum production/Year (Kg)	Total Minimum income ($/Year)	Total maximum income ($/Year)
ChhaebKeut	150	218,700	364,500	202,298	335,340
Narong village	80	116,640	194,400	107,892	178,848
Kunnapheap	100	145,800	243,000	134,865	223,560
Dang Phlet	150	218,700	364,500	202,298	335,340
Poteab	30	43,740	72,900	40,460	67,068
Mlouprey	50	72,900	121,500	67,433	111,780
Total	**560**	816,480	1,360,800	**755,244**	1,251,936

(Source: Annual Income Survey)

Table 1 above shows that the total economic value per annum of resin tapping for these six villages is ranged from $755,244 to $1,251,139. This income contributes to improved livelihoods in local communities and it provides a fundamentally important incentive for sustainable forest management and conservation in the target sites. Interviews conducted with resin association groups formed by SFB partners in Chhebkeut and Dangplet indicates that the income earned from resin products are used not only for food consumption but also allocated to investments in agricultural inputs to increase rice production and productivity and, equally important to spending on children's education. There are a few challenges that threaten the population of resin trees including ELC, illegal loggers, and logging resin for house construction, all of which impact on resin production and sustainable forest management.

Resin Enterprise Development Initiatives

Resin associations have been initiated by SFB partners, such as PHK and WI, to promote resin business development in villages or under the umbrella of Community Forestry. The purpose of the association is to increase the income of resin tappers by ensuring economics of scale in resin trading. In addition, members may gain access to credit or loans, and benefit from collective bargaining power with other resin actors, such as provincial wholesalers in the market chain. Each resin association is comprised of 12 to 15 members. However, as of April 2015, WI and PHK had only started to provide capacity building on business planning, enterprise development, and financial literacy, thus these social enterprises have yet to start group business operations. As a result, to date all resin members sold out their resin products individually to resin traders and resin provincial wholesalers. The formation of business group and sold out resin products to association which helps to aggregate products and to have better bargaining power with wholesalers for selling their product in the collective action form, while at the same time this group business operation can help to add-value to the local community through group business development and upgraded processing facilities.

Business Trade Actors in Resin

A few layers of private sector have been investing in resin trade, processing, and exporting resin products from the forest gate to market-end. They are mainly resin traders and wholesalers.

Resin Traders: There are two layers of resin traders across these six villages:1) village resin traders, and 2) district/provincial resin traders who are operating businesses inPreah Vihear.

Village resin traders purchase resin from resin tappers in the village or sometimes at the forest gate. For Danplet and Chhebkeut villages, which are under SFB project support, there are three village traders who actively compete to purchase resin from tappers. Each of them, on average, can buy from 200 to 450 *kan* (5,400 to 12,150 Kg) of resin product per month. Most resin product is purchased in raw materials, while the purchase price from resin tappers varies depending mainly on quality and seasonality. A low price offered to resin tappers is $0.65/Kg, while the high price is $0.95/Kg. The village traders from Chhebkeu and Dang Plet often do not process resin purchased from local tappers, but rather wait for district traders to buy their products at the village shop (home).

Meanwhile, the district/provincial traders purchase resin products from either village traders or directly from resin tappers. Traveling by truck and motorbike, district provincial traders can carry about 300-400 kg by motorbike or 1,000 to 2,000 kg by truck. The district traders then bring resin to a more central or semi-urban area for sale and/or supply to a provincial wholesaler. The district traders may operate independently from wholesalers or in a close relationship with provincial wholesalers in Preah Vihear if they are able to access loans from them or are fully employed by a provincial wholesaler. Interestingly, along the trade route from the village to provincial wholesalers district traders must pay informal fees to different authorities which estimated at KHR 370/Kg ($0.09/Kg), and these amount of informal fees would add to resin trade cost which would be passed this cost to resin tappers. Estimates suggest that traders earn KHR 2500 to 5000/*kan* ($23 to $46/tonne).

Wholesalers: purchase resin from district traders, perform filtering, and stock resin for exporting to Vietnam and Thailand, playing roles as transporters and exporters. Wholesalers may provide credit to traders to ensure a supply of resin. Wholesalers indicate that their business operation depends on internal and external credit sources including self-financed or accessing loans from Microfinance Institutions. In the SFB village sites, there are few wholesalers. However, only one wholesaler actively operates resin business at large-scale for exporting because he has a transport permit and license from Forest Administration and Ministry of Agriculture, Forestry and Fisheries (MAFF), while the others do not. The formal fee paid to get license and transport permit is about KHR315/Kg but to comply it, it is extremely difficult include time consuming. Thus, most of resin wholesalers were dared to pay informal fees for transporting resin products across the province, it is usually they paid 50% lower than formal fees. Since resin is processed through filtering and packaging into bags of 100 Kg of resin, the wholesaler hires trucks to transport their resin product from the warehouse to border gates at Vietnam and Thailand. Each shipment is estimate at 20 to 40 tons of good quality resin products after filtering. The final price for export to Vietnam and Thailand is approximately $1.5 to 2/Kg.

Moreover, the wholesaler purchases resin products not only SFB target sites but also

aggregates resin from other areas, such as other districts of Preah Vihear outside SFB sites and Stung Treng province. Although resin products are currently exported by wholesalers in a raw form to neighbouring countries, a simple locally processing like filtering and/or sorting to differentiate between good quality and waste product (poor quality) might provide value-added and minimize the pollution if waste resin products is disposal on the ground. In Preah Vihear, most wholesale places make torch in the warehouse, and in some case they sold out the waste products on to torch processor in the Preah Vihear town. Anecdotal evidence indicate that torch products made and sold on to torch traders which distribute to retail consumers for start cooking fire and lighting at night. One wholesaler reveals that torch is sold on to Thailand.

Poor Business Enabling Environment for the Resin Sector

The government has established a number of permit, licensing and fee requirements to transport and export resin and other non-timber forest products. It is worth noting that only one wholesaler in the Preah Vihear sites covered by this case study is actively complying with these processes, while of the other wholesalers almost none that are active in the resin trade hold the appropriate licenses and permits. As a result, they work through an informal process involving numerous fee payments to a variety of institutions. The trader transport resin from villagers to wholesalers place would pay almost similar to formal fee rates, while the whoelsaers who dared to transport from provincial town to Vietnam and/or Thailand is almost impossible due to lack of transport permit and license, as the result, they often sold out their products to one wholesalers who had applied transport permit and license. Consequently, all of these fees would be passed to resin tappers in the form of reduced buying prices. Equally important, there is only one wholesaler who holds the permit and license which enables export, while the others seem to sell most of their resin products to one wholesaler which may create a monopolized situation in the resin sector in Preah Vihear.

Conclusion remarks and Recommendations

- *Support Improved Policy Implementation*: Although formal fees imposed by Forest Administration (FA) for resin products provide a useful tool for Government revenue, the majority trade actors in the resin supply chain studied are not compliance with these regulations. The formal process and payment of fees is extremely difficult for most trade actors, except for wholesalers aggregating resin products at large scales that are willing to pay the formal fees to facilitate transportation from the province to borders with Vietnam and Thailand. Of particular concern, for most resin traders, the formal fees have become a barrier to business, as they may also be required to pay informal fees to several authorities. If only a few traders and wholesalers can comply with the regulations and operate formally, it is likely to create a provincial monopoly which could negatively impact on resin tappers income. Thus, it is essential for SFB in working closely with other development agencies as well as civil society to support Government mechanism to review the laws and regulations on resin trade to ensure a better enabling environment and trade efficiency, as the resin products is those poor who is trading which is align with Government policy to support and encourage products produced by the poor which may subject to tax reduction and exemption.

- Supporting Resin Enterprise Development: Resin enterprises in Dangplet and Chhebkeut village have been established. However, these groups are lacking market information, capital and human resources to initiate resin business investment. Meanwhile, resin tappers

and members of associations lack the skill and expertise to process resin, include simple filtering and making vanish as well as other artist products that made of resin which can increase and add value to resin which may lead to improving income generation and providing more incentive for local resin tappers for sustainable forest management and conservation.

Bamboo Case Study: Kratie Province

Introduction

Despite deforestation and the degrading of forests over the last decades due to forest concessions, illegal logging and Economic Land Concessions (ELCs) granted by the Government for agricultural plantations, Non-Timber Forest Products (NTFPs) still play an important role in the livelihoods of rural forest communities. Likewise, although NTFPs play a significant role in Cambodia's rural economy, this economic activity has often been overlooked. Bamboo is a main NTFP products which has been used for home consumption and trading to earn income for supporting livelihoods of local communities in SFB project sites. Thus, one CF has been selected for the case study, Tonsong Thlak village of Prasat Teuk Kmao CF, Kratie province, where the majority of local community people collected bamboo for trade.

Purpose of Case Study

The main purpose of this case study is to highlight the reliance of forest dependent communities on trading bamboo for supporting their income generation activities, and to identify the trade cost and benefits including law and regulation framework that affects the trade efficiency of bamboo products from forest to market-end.

Methodology

Tonsong Thlak village from Prasat Teuk Kmao CF, Kratie province, and also Da commune, Chit Borey District of Kratie province have been selected for the case study for SFB Annual Income Survey. The fieldwork and data collection for the case study are from 26 to 28 May, 2015. The tools used for data collection for the bamboo case study include FGD with collectors, and Individual Interviews with traders and wholesalers along the trade route. Equally important, some of information from Bamboo Market Study (Hourt K., 2015) is also being used for the basis for this case study analysis. One FGD in Tonsong Thlak village from Prasat Teuk Kmao CF was conducted during the course of the field work, and there were seven local communities who have been collecting bamboo products from the forest which participated in the FGD. Additionally, there are six different traders and wholesalers who are actively trading bamboo from Da commune and Kratie town who were included in this study which is mainly to analysis the cost and benefit, challenges and opportunities for bamboo trading products from the village to market.

Bamboo Species for Trading Activity

There were two main wild species collected from the local communities for trading activity: *B.bambos* (Russey Roleak) and *Gigantochloa albociliata* (Russey Khley).

- *Wild Bamboo (Khley)*

Khley is grown in CF Prasat Teuk Kmao but a small volume has been harvested for trading due to low value in the market-end, as compared to Roleak.

- *Wild Bamboo (Roleak Roleak)*

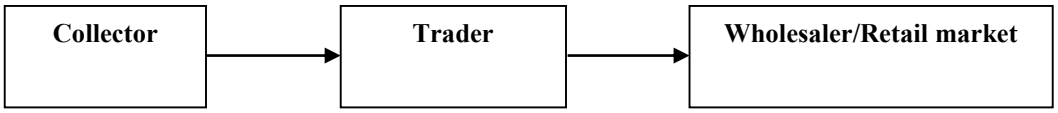
Roleak is found to grow in the majority of CFO target sites. Equally important, Roleak has been traded more widely in the provincial town of Kratie and Kampong Cham province, and most of these products have been supporting a different uses of lower Mekong province of Cambodia, including Kampong Cham, Kandal, Takeo, Prey Veng, and around Tonle Sap Lake (Hourt K., 2015).

Based on the volume of production among those two types of wild bamboo, it is clear that Roleak has been traded within and across provinces, and involves a significant number of households from CF Prasat Tuek Kmao collecting it for sale. As a result, the value chain assessment is focused mainly on Roleak production.

Market Actors in Wild Bamboo (Roleak Roleak)

In general, the value chain of wild bamboo (Roleak) is not complex, due to the commodity being low quality and lacking processing in the Tonsong Thlak village of Kratie SFB project, Kratie province. Based on the value chain assessment, it is suggested that the market actors of wild bamboo (Roleak) in Tonsong Thlak village of Prasat Tikmao CF are mainly classified into (1): collector, (2) trader, (3) wholesaler/retail market as the first consolidation of product.

Based on the trade routes studied, it is possible to identify a generalized market flow for wild bamboo (RoleakRoleak) trade structure. A detailed description of each actor in this market structure is provided below.



1) Collector

There are 15 households, most of whom are committee members of Prasat Teuk Kmao CF, who collect wild bamboo (Roleak) for sale, to support their livelihood. A household head, accompanied by one or two household members (wife and husband) travel to CF areas or forest land nearby, using mostly motor trailer (*Koyun*) and some of them using an oxcart for transportation to take wild bamboo (Roleak) from the forest to the village house. Each household spends one or two days in the forest and can collect an estimated at 50-70 poles of wild bamboo (Roleakk) per trip, each pole is: (10 -12 cm in diameter) x (8-10 m in length). As products are collected, the collectors continue to transport them by either Koyun or oxcart from forest to village, to sell them directly to the trader. It is worth noting that some collectors in the areas such as Roleak use bamboo for repairing house. Anecdotal evidence indicates that some bamboo collectors took bamboo products from the forest not necessarily following the sustainable harvesting method. They cut most of the bamboo clump but selected only a few good stalks of marketable size.

2) Trader

There are a few traders who regularly purchase wild bamboo (Roleak) from local community and sell to wholesalers at Kampong Cham provincial town. The majority of traders transport wild bamboo from CF Prasat Teuk Kmao using floating bamboo with boat engine (*Kbonn*) raft. Each *Kboon* can carry at least 4,500-5,000 poles of wild bamboo (Roleak). Equally important, the trader cuts wild bamboo material (10-12 meter in length) purchased form collectors and splits into two pieces, and each piece is 5-6 meter in length in order to accommodate bamboo to suit with the

Kbonn for transporting from Tonsong Thlak village of Prasat Teuk Kmao CF to Kampong Cham provincial town and sell out along the trade route. Interestingly, all traders only purchase wild bamboo (Roleak) in wet season as they can carry the products using water ways. It is worthy to note that not all of these bamboo traders did not apply for transport permit and license, and as a result, they often paid informal fees along the water way to different Government Institutions in order to transport their products across province.

3) Wholesaler/Retail market

There are a dozen Kampong Cham provincial wholesalers who sell out wild bamboo (Roleak) to retailers in the provincial town. They are only sold wild bamboo, but also wild bamboo (Kley), wood and pole. But they did not apply for a license from the Forest Administration to operate their business. They purchase wild bamboo including *Roleak* and *kley* from mainly traders. The majority of wild bamboo (*Roleak*) products are sold to consumers who purchase the products to fence their houses, build cottage house for restaurant, and as construction materials. Therefore, there is no processing happening at the wholesale stage. The total annual production for sale is estimated to be .

Table 1: Wild Bamboo (Roleak) Product Matrix

Function/Actor	**Collector**	**Trader**	**Wholesaler/ Retail**	**Description of activity**
Processing	x			Some collectors using wild bamboo for repairing house, but did not have any processing facility.
Sorting	x	x	x	Simple differentiation between good quality and poor quality wild bamboo (Roleak Roleak).
Transporting	x	x		Use hand tractor with trailer (Koyun) and oxcart and floating bamboo with engine boat.
Collecting	x			The collection of wild bamboo (Roleak) from CF areas or forest land nearby.

(Source: Annual Income Survey, 2015)

Processing Facility of Wild Bamboo (Roleak)

The bamboo processing facility in Prasat Teuk Kmao is basic and most products are collected and sold in the raw form. Most wild bamboo (*Roleak and Khley*) has been widely used as raw material for repairing house at community level. Therefore, there is almost no processing of wild bamboo (Roleak) taking place at Tonsong Thlak village of Prasat Teuk Kmao CF. However, for both *Roleak* and *Kley* wild bamboo have been widely used in Kratie province, including house construction, cottages, fencing houses, etc.

Moreover, the wild bamboo (Roleak has been widely processed and used in other areas in Cambodia, such as, cottage construction, fishing traps, thatch frames, and baskets, and other

souvenir products. Equally important, Hourt K.(2015) has studied the market chain on bamboo which has identified the processed product from the bamboo as follows:

- Fence for house: wooden poles and bamboo are the two main components of fences surrounding houses and farm gardens to prevent cows and buffalos from entering.

- Cottage and thatch frame: Most cottages where located in the ricefield ont farmland and made of bamboo material, which included poles, walls, floors and interior parts. Moreover, the bamboo slats are used as a frame of thatches for roofs of houses.

- Fishing gear: the bamboo has been widely used as the key materials for fishing gear, especially along the Mekong and Tonle Sap River.

- Traditional basket: Most people only have processed bamboo for traditional basket due to lack of skill and expertise to upgraded/modernized it.

- Skewer and insane: These products have been commonly used by Cambodia people. For insane, new upgraded machine has replaced manual processing which can contribute to value adding for bamboo enterprise business.

Law and regulation for Bamboo Trading Activity

Forestry Law (202) under Article 25 and 26 stipulate that the harvest, stocking, trade and export of NTFPs include bamboo needs to comply with numerous permits and licenses, however, local communities have "customary user rights" to harvest NTFPs (including bamboo) without a permit (Article 40). Current practicality shows that these communities want to sell NTFPs, such as to a trader or wholesaler, therefore, a transport permit is required and corresponding formal fees may be imposed, as a result, local communities are always subject to a transport permit and associated formal fees. In addition to the transport permit, bamboo wholesalers must hold a permit to stock and distribute bamboo (Article 25.A.8), and exporters must obtain an export license (Article 25.A.11). In response to this, specifically, MAFF and FA (2000) have developed Guidelines on Official Fee Rates for Forest Products which establishes fees for the transport of 71 types of forest products, including bamboo. According to the guidelines, forestry officials are to assess a fee and pass it on to the National Treasury and the National Bank of Cambodia. Five percent of this amount will be allocated for forest management.

Table 2: Official Fee Rates for Bamboo

Type of Forest Product	Unit	Total Fee (KHR/unit)[22]
Bamboo (stem diameter >5 cm)	1 tonne	15,750
Bamboo (stem diameter <5 cm)	1 tonne	10,500

(Source: Ministry of Agriculture, Forestry and Fisheries (2000))

In conclusion, this formal regulation which has been imposed is the key constraint for bamboo trading activity along the trade route. Based on *per commu* with Mr. Kuy Eang Hourt, only traders from Kratie province applied for transport permit and license from Forest

[22] 1 Total fee is equal to the transport fee plus a five percent forest management fee.

Administration and MAFF, while other traders did not comply. Thus, this created a loophole for informal fee collection from different Government Institutions, although it was lower than paid formal fees

Economic Analysis of Market Chain

For each trade actor of trade routes studied in wild bamboo (Roleak), the information collected from each actor included trade practices, prices and margins and trade costs, which is used in economical analysis of bamboo per pole and per trip and/or per volume of trading activity. As indicated in Table 3, there is significant variation in prices, costs, and fees among trade actors the trade route.

1) Collector

Table 3 indicates that the profit margin per pole which is earned by collector from the forest to village is $ 0.194/pole corresponding to $11.61/trip of 60 poles. It is a higher profit margin, as compared to trader and wholesaler. However, the total amount earned per trip is significantly lower than the trader and wholesaler due to the volume of product sale being minimal.

Table 3: Cost and Benefit Analysis for Bamboo Collector

Description	Number	Unit	Price/unit ($)	Total ($)
RoleakRoleak Bamboo collecting (Costing)				
-Fuel for Koyun per trip (2 days time)	3	Liters	0.963	2.89
-Meal per trip (of 2 people for 2 days time)	4	person/day	2	8.00
-Other refreshment and snack per trip	4	person/day	0.75	3.00
Total cost				13.89
Number of Roleak bamboo collected per trip	60	Poles	0.425	25.50
Profit per trip				11.61
Profit margin per pole				0.194

(Source: Annual Income Survey, 2015)

2) Trader

Table 4 indicates that the profit margin per pole earned by the trader is $0.174/pole corresponding to $781.25/trip for 4500 poles. Traders sell wild bamboo product as raw materials to wholesalers which they purchased from the collectors, however, the profit margin is slightly lower than collector. Also, the volume of trading activity per trip is at large scale level, therefore, they are able to earn significantly higher income, as compared to collector.

Table 4: Cost and Benefit Analysis for Bamboo Trader

Description	Number	Unit	Price/unit ($)	Total($)

Meal per trip of 5 days	1	number of trip	25	25.00
Volume of Roleak Bamboo purchased	4500	poles	0.425	1,912.50
Labor to take bamboo in Kboon (4 people)	1	set	62.5	62.50
Informal fee paid along water way per trip	1	trip	31.25	31.25
Total cost				2,031.25
Selling price of Roleak bamboo at Kampong Cham province	4500	poles	0.625	2,812.50
Profit per trip				781.25
Profit margin per pole				0.174

(Source: Annual Income Survey, 2015)

3) ***Wholesaler/Retail market***

Table 5 indicates that the profit margin per pole which is earned by wholesaler who sells wild bamboo product to the retail market is $0.116/pole corresponding to $523 for 4500 poles. Although the profit margin per pole is lower, as compared to collector and trader, the total amount of profit is significantly higher, as compared to collectors.

Table 5: Cost and Benefit Analysis for Bamboo Wholesaler

Description	Number	Unit	Price/unit ($)	Total($)
Volume of Roleak bamboo purchase at wholesaler's gate	4500	pole	0.625	2,812.50
Labor cost	1	set	37.5	37.50
Other cost	1	set	2	2.00
Total cost				2,852.00
Selling price of Roleak bamboo at wholesaler's gate	4500	poles	0.75	3,375.00
Profit per trip				523.00
Profit margin per pole				0.116

(Source: Annual Income Survey, 2015)

Recommendations for Project SFB Implementation

Recommendations are synthesized from the field assessment and are used to identify key priorities for the SFB Project for operating in the future and which are summarized as follows:

- **Sustainable Harvest**

SFB project and its NGO partner should consider to train the beneficiaries on the sustainable harvest method of bamboo which contributes to conserve the forest and improving income generation from the sustainable collecting bamboo.

- **Business Planning**

Develop business plans including financial analysis for business, production aggregation, risk assumption etc. The project will need to recruit and mobilize key technical institutions or facilitators to formulate the business plan. Project staff needs to follow up activities and set up a monitoring and evaluation system to measure the progress of output, outcome and impact of the project development against a log-frame setting. This exercise would help potential beneficiaries from the SFB project actively participate in the development of business planning, so that they feel they own the participatory planning process.

- **The Formation of Bamboo Producer Groups**

Some community members are considering joining the group. It is essential for the SFB project and its partner to facilitate forming producer groups within Prasat Teuk Kmao CF aimed at providing capacity building as needed. This would lead to increased economies of scale in terms of processing products for wild bamboo.

- **Processing Technology and Marketing Network**

The SFB Project should consider supporting group leader to build capacity including training on new diversified products (e.g. souvenir products) from wild bamboo .The quality of products will meet the market standard and the group leader can pass on skills and expertise through on-the-job training. Equally important, the SFB Project and its partner NGO should facilitate a study tour and exposure visit for supporting target beneficiaries, so that they can gain new market networks and product development opportunities with social enterprises and/or private enterprises in areas, for instance Phnom Penh and other tourist zone.

- **Marketing skill development**

Train group leader on management skills so that they will be able to manage production resources and human resources (members) to be more effective and efficient, in order to meet the needs of the end market.

- **Saving group formation**

The formation of saving groups can help build social cohesion and solidarity among members. Each member can access loans from the members' deposits every month and these loans can be used for purchasing raw materials and equipment for processing products.

- **Access to capital investment**

The SFB project should provide financial support for group leader in terms of capital investment, including business start-up capital and other fixed assets, so that he/she will be able to provide on-the-job training for processing skills. Equally important, the SFB project and its NGO partner should help establish links between group leader and Microfinance Institutions (MFI) to access loans for capital investment on the processing product.