



# **BBP-VC-Gap Analysis Phnom Kulen National Park (Cambodia)**

Prepared for

## **Biodiversity-based Products (BBP)**

**as an economic source for the improvement of livelihoods and  
biodiversity protection**

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## LIST OF ACRONYMS

|                |   |
|----------------|---|
| <b>ACB</b>     | ASEAN Conservation of Biodiversity                      |
| <b>ADF</b>     | Archeological Development Foundation (ADF)              |
| <b>AHA</b>     | Angkor Handicraft Association                           |
| <b>AHP</b>     | ASEAN Heritage Park                                     |
| <b>AMS</b>     | ASEAN Member State                                      |
| <b>BBP</b>     | Biodiversity Based Products                             |
| <b>FGD</b>     | Focus Group Discussion                                  |
| <b>GIZ</b>     | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| <b>HA</b>      | Hectare   |
| <b>HH</b>      | Household   |
| <b>KII</b>     | Key Informant Interview                                 |
| <b>MoE</b>     | Ministry of Environment                                 |
| <b>NGO</b>     | Non-Governmental Organization                           |
| <b>NRM</b>     | Natural Resource Management                             |
| <b>NTFP-EP</b> | Non-Timber Forest product – Exchange programme          |
| <b>NTFPs</b>   | Non-Timber Forest Products                              |
| <b>PA</b>      | Protected Area  |
| <b>PKNP</b>    | Phnom Kulen National Park                               |
| <b>RGC</b>     | Royal Government of Cambodia                            |
| <b>SWOT</b>    | Strengths, Weaknesses, Opportunities and Threats        |
| <b>USD</b>     | US Dollar (\$)  |
| <b>VC</b>      | Value Chain   |
| <b>VCA</b>     | Value Chain Analysis                                    |
| <b>USAID</b>   | United States Agency for International Development      |
| <b>WWF</b>     | World Wildlife Fund for Nature/World Wildlife Fund      |

## EXECUTIVE SUMMARY

Phnom Kulen National Park (PKNP) has been selected by MOE as the site to implement the BBP Project in Cambodia. The BBP project, implemented in Cambodia, Lao PDR and Vietnam with a 4 year-duration from March 2015 to February 2019, is one of three modules of the German – ACB Cooperation Program “Protection of Biological Diversity in the ASEAN Member States.

The main task of this assessment is to conduct a VCA Gap Analysis for selecting NTFP commodities in PKNP by using the **GIZ Value Links methodology** on promoting pro-poor green value chains as a main tool in order to develop BBP value chains.

Although currently forest degradation takes place in PKNP due to the conversion of forest areas into agricultural plantations by illegal logging activities, the remaining 20%-23% of forest cover in PKNP is still rich in biodiversity and contributes to the improvement of watershed management. Therefore it is a fair to conclude that the main purpose will be to save these last remaining forest areas in PKNP. Based on Value Chain Assessment (VCA), there are three main commodities from NTFP products of PKNP which are given the highest priority for VCA implementation: *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*), bamboo handicraft, and wild honey products. These commodities have already played a paramount important role for supporting home consumption and trading activities and can contribute as either compliment or substitute products, compared to agricultural crops grown by the majority of the local communities, causing forest degradation. Specifically, by expanding and up scaling such BBP-VC from these potential commodities, the BBP-Project will contribute to improve livelihood and food security of almost 1000 households which corresponds to almost 5,000 persons of which about 50% are women. 23% from the total potential beneficiaries belong to the poor socio-economic segment.

The main recommendations for BBP Cambodia in relation to the VCA Gap Analysis for the selected three BBP commodities in PKNP site are

- To conduct a resource assessment for all 5 CPAs in PKNP
- To support the formation of producer group/association for each selected BBP commodity, to ensure a larger-scale production and assure the local communities a better bargaining power in order to negotiate with different key stakeholders for improving their benefits
- To support sustainable harvesting methods for selected BBP commodities, especially honey and bamboo handicraft.

- To support capacity building to producer groups to operate business in a sustainable manner, of which business planning and financial management are the core principles for the engagement and support from the BBP Project.
- To build and develop a market network and market information, including the key private sector and social enterprises in Siem Reap as well as other public sectors, which can support the upgrading of BBP to meet the market demand, which will contribute to add value for product development of local communities in the PKNP site.

## CHAPTER I: BACKGROUND OF THE ASSESSMENT

### 1.1. Background to the BBP Program-Module

The BBP project, implemented in Cambodia, Lao PDR and Vietnam with a 4 year-duration from March 2015 to February 2019, is one of three modules of the German – ACB Cooperation Program “Protection of Biological Diversity in the ASEAN Member States”. The project contributes to the overall *Program Objective*, but also has its specific *Project Objective* and respective impact indicators. The specific *Project Objective* of the BBP is: The ASEAN member countries (AMS) are supported by the ASEAN Centre for Biodiversity (ACB) in the promotion of biodiversity-based products (BBP) for the improvement of livelihoods and biodiversity protection, according to their needs. The Outputs of the BBP Project are to be:

- A strategy to support BBP Value Chains as well as policies for AMS / ASEAN are implemented
- The central Information Platform of ACB-Biodiversity Information Management (BIM) provides information for the development of BBP Value Chains for the public, private and civil sector in the AMS.
- Selected BBP Value Chains contribute to the improvement of livelihoods and protection of Biodiversity.
- Competences in the development of BBP Value Chains in the private sector of AMS are improved.

On behalf of the German Government via the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the BBP Project is implemented in cooperation with the ACB (ASEAN Centre for Biodiversity/ Los Banos, Philippines) by GFA Consulting Group GmbH.

### 1.2. Background to the BBP Value Chain

ASEAN’s rich natural resources and biodiversity offer significant potential for the region’s socio-economic development. Now more than ever, it is vital to understand and acknowledge the value of biodiversity.

The ASEAN Member States (AMS: Brunei, **Cambodia**, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam) accommodate about 18% of the species of the Earth; 3 of the 18 mega biodiversity countries; about 35% of the global man-grove forests; and 30% of the coral reefs. This wealth in biodiversity poses

opportunities for the economic development of the region.

**The AMS want to use this economic potential by further developing trade relations for bio-products (organic trade) nationally, regionally and possibly globally.**

However, the potential of Biodiversity-based Products (BBP), especially for the local indigenous population in buffer zones of protected areas (AHP & NPA) in the region, is not yet sufficiently analysed, their market potential often unknown. In the promotion of BBP for the improvement of livelihoods and the conservation of biodiversity, the AMS do not get sufficient support.

As part of the BBP project, the **GIZ ValueLinks methodology** on promoting pro-poor green value chains, will be utilized in cooperation with other biodiversity-related projects around the world, to develop a specific module on Biodiversity-based Products.

### **1.3. Objective of the assignment**

**The overall objective is to undertake prioritization of the BBP sectors & sub-sectors and pre-analyse the most promising value chains (VC) of BBP products in the buffer zones of Phnom Kulen National Park** The analysis will identify the different products and actors in the chain, the systemic constraints, and value shares accrued at different stages in the chains.

**The main activities of the consultant are grouped around three main steps of analysis:**

#### **VC Description:**

- **Evaluate existing BBP value chains and project experiences in Phnom Kulen NPA**, based on actual livelihood activities of individuals or groups dependent on the natural resources in the buffer zones (e.g. by SWOT analyses);
- **Analyze strategies, legal and institutional frameworks, national rules & regulations** for the development of BBP value chains in Phnom Kulen NPA, **always keeping biodiversity conservation practices in mind**;
- **Collect all relevant data on local production and production systems**, including types, quantities, varieties, prices and value-added of the BBP sub-sectors and VC segments;
- Establish the **potential market sizes (local, regional & potentially international markets)**, and investigate the actual & potential extent of market penetration by local producers;

- Investigate the existing **linkages between collectors/producers, traders, processors and market outlets** and undertake **value chain mapping and analysis**;
- Map out the value chains and collect the data around the actual and potential workforce in different VC segments, assess numbers of **women who are involved and could be actively employed/self-employed**;
- Investigate the **local quality standards/market requirements and preferences of BBP** that reach the local market;
- Investigate **value addition around primary and secondary processing**;

### **VC Analysis:**

- Determine barriers and options for a future BBP value chain promotion (**gap analysis for local, regional & potentially international markets**)
- Conduct a **training needs assessment** among all BBP-VC-stakeholders, to form a basis for capacity building (this will be a rough assessment deriving from assessing the gaps and actors);
- **Identify gaps on meso and macro levels** that can potentially enhance the functioning of the chain actors at the micro level;
- **Prioritize value chains within the BBP sub-sectors** on the basis of objective economic, social and environmental criteria (such as value-added, production volumes, market growth, employment and income generation potential, opportunities for income generation and employment for poorer population, women and youth, potential for biodiversity protection and sustainable use of resources etc.)
- **Investigate and assess any other aspect** that has bearing on the performance of BBP value chains in Phnom Kulen NPA.

### **VC Options:**

- Assess options to **develop production and marketing associations for producers**, including insufficient financial and institutional mechanisms;
- Assess options for **in and ex-situ measures to conserve biodiversity**;
- Develop options for enterprise development relating to **organizational issues and trade practices** on consolidation and **compliance to market standards and safety** as well as to the **biodiversity conservation measures**;
- Suggest improvements in the value chain system to **ensure direct linkages & infrastructural access of the producers with/ to the major markets to create increased incomes from their products**;

- Assess the **options for improving market efficiency**(e.g. through collective marketing) and propose ways of achieving this;
- **Identify the key opportunities and constraints** that limit market growth and/or production expansion;
- Give recommendations on **how the proposed BBPvalue chains should be upgraded and could be supported.**

## CHAPTER II: METHODOLOGY AND APPROACH

### 2.1. General Assessment of VCA Gap Analysis

The VCA assessment has adapted the ValueLinks approach, which once has been developed and framed by GIZ. This analysis framework provides a comprehensive basis for VCA and especially helps to render a positive impact to sectors and sub-sectors as well as improving local economic development *per se*. Specifically, based on the ValueLinks of GIZ, a Value Chain Analysis (VCA) is logically framed and defined in detail as follows:

- *A sequence of related business activities (functions) from the provision of specific inputs for a particular product to primary production, transformation, marketing, and up to the final sale of the particular product to consumers (the functional view on a value chain).*
- *The set of enterprises (operators) performing these functions i.e. producers, processors, traders and distributors of a particular product. Enterprises are linked by a series of business transactions in which the product is passed on from primary producers to end consumers. Meanwhile, according to the sequence of functions and operators, value chains consist of a series of chain links (or stages).*
- *Equally important, based on the perspective of development projects and or programs, **Value chain Promotion** means supporting its development by externally facilitating a value chain upgrading strategy.*

### 2.2. Tools and Approach

The data collection for this assessment started from Early September to October, 2015. Two main tools were used for this Gap Analysis for VCA assessment in Phnom Kulen National Park (PKNP) for BBP-Cambodia Project, which are described in detail as follows:

#### 2.2.1. Desk review

The secondary data have been collected and accounted for review in order to understand the holistic contextual analysis of VCA Gap in PKNP. Primarily, it includes: 1) Law and regulations for Protected Area (PA) in Cambodia under the jurisdiction of Ministry of Environment (MoE) and other Government Institutions; 2) Archeological Development Foundation (ADF) Project Document and Annual Report, Lidar Satellite Report Assessment of PKNP; 3) Biodiversity Assessment and Taxonomy in PKNP; 4) other relevant study and assessment which have been done by various projects in relation to PKNP; and 5) Commune database.



- 1) North Range Village: 4 villages under CPA, APA, and village with no CPA were selected for conducting the assessment.
- 2) 2 Villages located on the Middle of PKNP were selected for conducting the assessment.
- 3) 1 village from the South Range of PKNP was selected for conducting the GAP Analysis.

Equally important, there are two tools used for the GAP Analysis in PKNP in order to identify the potential BBPs for project intervention and implementation: Focus Group Discussion (FGD) and Key Informant Interviews.

- ***Focus Group Discussion (FGD)***

The Focus Group Discussion (FGD) was used as the main tool and approach in order to get information from CPA committees and community members, and local villagers. The Focus Group Discussions (FGDs) used different tools, such as livelihood analysis, Venn diagram, and timeline, aimed at assessing the performance and organizational management, training need assessment. Specifically, this FGD approach was used to deepen the understanding of the overall livelihood context of forest-dependent communities and their change overtime in relation to forest use, protection, sustainable forest management, biodiversity conservation, conflict resolutions, village infrastructure support, external source of support for villages and community forests, gender mainstreaming, existing challenges and opportunities for NRM in the concerned communities.

More importantly, the FGD was used to rate and score the selection of the BBP for home consumption and trading activities, based mainly on different criteria which are described as follows (subject to change during the course of fieldwork):

- a) Annual income for local villagers
- b) A significant volume of products
- c) Availability of input materials
- d) Poor people participation
- e) Applicable Technology and sample processing facility
- f) Products with no harm to environment and sustainable forest management
- g) Gender participation

In addition, the range of participants was between 10 to 15 persons, while the time spending for each FGD would be one to two hours. Of particular concern, to ensure gender perspective and gender sensitive analysis, some sections of FGD were split into two small groups. As the result, at least 8 FGDs were assessed from those randomly selected from PKNP. Interestingly, during the course of the FGD, in addition to the thematic focus above, the community needs and training needs assessment have been deepened by the analysis.

Consequently, a total of 134 persons have participated in 8 FGDs, with almost 50% of women participants.

- ***Key Informant Interview (KII)/Individual Interview***

Key Informant Interviews were used to capture the different perceptions and perspectives of local context in relation to natural resource management and trading activities, local infrastructure development, socio-economic data, and external sources of support. In relation this contextual analysis, the semi-structured interview guide and KII target lists were developed to interview all of these key stakeholders in the study sites. Thus, the key stakeholders which have been accounted for KII study consisted of:

- 1) PKNP/MoE Officials
- 2) Village Leaders and Commune Councils, APSARA Authority
- 3) NGOs working in the target sites (ADF), CFCL (NGO) and GIZ/GreenBelt, and others

Equally important, for the village profile interviews were conducted with village leaders, also to assess the local market survey. The main reason was to collect and validate village statistics and profile in relation to change overtime in terms of livelihood development, village infrastructure development, and village business development profile, and the current prices of goods and services in the target villages and others.

Likewise, as far as the NTFP Gap Analysis is concerned, the target lists for interviewed Key Informants included stakeholders from different layers of the NTFP supply chain in the target sites of PKNP, District, and provincial Siem Reap, National, and regional and International trader/agent, market-end consumers. These included traders and wholesalers of medicinal plants, honey and other NTFP, processors, and others. The theme and/or thematic focus included:

- 1) Profile of business
- 2) Organizational structure
- 3) Trade Route, Cost and Benefit Analysis for Business
- 4) Technology/processing
- 5) Challenges and Opportunity for Business of NTFPs
- 6) Others

Thus, in total the interviewed key stakeholder - both direct and indirect actors - consisted of 52 persons.

**Table 2.1: Stakeholders Accounted for Interview**

| Type of Stakeholder                          | Collector | Village/district trader | Wholesaler/ Processor | Market-end Actor           | Other Indirect Actor   | Total     |
|--|-----------|-------------------------|-----------------------|----------------------------|--|-----------|
| NTFPs ( Medicinal plants, Honey, Handicraft) | 5         | 7                       | 5                     | 2 (AHA & Artisan D'Angkor) | n/a  | 19        |
| Agriculture Products from PKNP               | 6         | 5                       | 3                     | 2                          | n/a  | 16        |
| Local Authority and CPA committees           | n/a       | n/a                     | n/a                   | n/a                        | n/a  | 10        |
| Others                                       | n/a       | n/a                     | n/a                   | n/a                        | 7 ( Apsara Authority, ADF, MoE, PKNP/MoE,, and CFCL, GiZ/Green Belt) | 7         |
| <b>Total</b>                                 | <b>11</b> | <b>12</b>               | <b>8</b>              | <b>4</b>                   | <b>7</b>   | <b>52</b> |

### 2.2.3. Community Workshop

Community workshop was conducted one day, and the main purpose were to verify rating and scoring which once was done by local community through FGDs, and to identify the community need and training need assessment through SWOT Analysis tool. There were at least 17 participants from local authority and CPA committees as well as PKNPs have been invited to participate in the workshop, especially for those local authority and CPA committees where the consultants had never visited and discussed during the course of fieldwork, and by doing so, these key stakeholders could have a chance to contribute and provide necessary information and data from their villages to compliment with this Gap Analysis exercise., for instance, Popel village and CPA, and Phum Thmei village.



***Picture 1 and 2: Community Workshop***

**2.3. Data Analysis**

The data entry and analysis was done using Statistical Package for Social Science (SPSS) program and Excel spreadsheet. To ensure the quality of data, all forms of questionnaires interviewed were cleaned and given feedback within a working day or before leaving village site and leaving the interview area of different key stakeholders, include wholesaler, trader, retail market, and other institutions associate with NTFPs business.

## CHAPTER III: GENERAL FINDINGS

### 3.1. Policy Development and Implementation for SFM and NTFP Products Biodiversity

The recent policy development and implementation is developed by National Forestry Programme<sup>1</sup> (2010-2029) which the standing forests are managed by various agencies. The Forestry Administration (FA), of the Ministry of Agriculture, Forestry and Fisheries (MAFF), manages the Permanent Forest Estate (PFE), while mangroves and inundated forests are managed by the Fisheries Administration under the same Ministry. Equally important, The Ministry of Environment (MoE) manages Protected Areas (PAs) and Ramsar sites. Of particular concern, in relation to sustainable forest management (SFM), there are three core principals identified for policy implementation, which include:

- SFM and the use of forests to improve the livelihoods of people living in rural areas and contribute to economic growth.
- PA system to protect biodiversity and endangered species
- The establishment of a Community Forestry (CF) Programme.

In term of PA system, the National Biodiversity Strategy and Action Plan had been established and the main goal is to ensure that the benefits of sustainable biological resource use contribute to poverty reduction and the improved quality of life for all Cambodians. Specifically, the goal and action plan developed ensuring the sustainable protection, use and management of all wild plant, tree species and woodlands”; and “improve the efficiency and sustainability of extraction, processing and use of forest products (NFP, 2010-2029& MoE, Draft 2015).

Non-Timber Forest products (NTFPs) are considered for BBP- Produced Based project development and implementation in PKNP in close cooperation and collaboration with Ministry of Environment. Although NTFPs pay paramount important role to support food security and income generation of Cambodia’s rural forest dependents, however, those sub-sectors in the past decade have been marginalized and/or overlooked by Government and other key stakeholders. Although recently, trading activity of NTFPs have been constraint by certain regulation which has been significantly imposed on NTFPs trading activity at small and medium scale business – License and Transport

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<sup>1</sup> NFP (2010-2029), Cambodia’s National Forest Programme Background Document ( NFP: Royal Government of Cambodia)

Permit<sup>2</sup>. This law and regulation is extremely difficult to compliance with for those local communities and other small-scale trader whose are trading NTFPs product because of time consuming and trade cost inefficiency. Thus, the following Table indicates the formal fees<sup>3</sup> imposed, and is being effective recently, on NTFPs whenever NTFPs traders have already compliance with license and transport permit.

**Table 3.1. Formal Fees Charge for NTFP Products in Cambodia**

|    | Type of Non-Timber Forest Products         | Unit    | Fee Rate (KHR) |
|----|--|---------|----------------|
| I  | Secondary construction wood                |         |                |
| 1  | Protuberance of luxury wood ( hard wood)   | tonne   | 6,000,000.00   |
| 2  | Stump and root of luxury wood (hard wood)  | tonne   | 6,000,000.00   |
| 3  | Protuberance of non-luxury wood            | tonne   | 1,000,000.00   |
| 4  | Stump and root of non-luxury wood          | tonne   | 300,000.00     |
| 5  | “Chheu Daikhla”                            | tonne   | 300,000.00     |
| 6  | “Chheu Bakdang”                            | tonne   | 300,000.00     |
| 7  | Paddle and oar                             |         |                |
|    | - First category                           | 1m long | 12,000.00      |
|    | - Other category                           | 1m long | 8,000.00       |
| 8  | “Changkot”                                 | set     | 40,000.00      |
| 9  | Pole with stem diameter between 0.15-0.19m | pole    | 6,000.00       |
| 10 | Pole with stem diameter between 0.10-0.15m | pole    | 3,000.00       |
| 11 | Pole with stem diameter less than 0.10m    | pole    | 1,000.00       |
| II | <b>Fuelwood and charcoal production</b>    |         |                |
| 12 | - Fuelwood of all kinds                    | stere   | 10,000.00      |
| 13 | - charcoal                                 | 60kg    | 6,000.00       |

<sup>2</sup> NTFP-EP (2009), Market Chain Analysis for Resin Trade product: *Beyond Subsistence*, (Phnom Penh: Non-Timber Forest product – Exchange Programme)

<sup>3</sup>MAFF (2001), Ministry of Agriculture Forestry, and Fisheries: *Circular on the Formal Fee Rate Determination for Non-Timber Forest Products, No. 430 Administration* (MAFF: Royal Government of Cambodia)

|     |  |       |            |
|-----|--|-------|------------|
| III | Secondary Non-Timber Forest Products   |       |            |
| 14  | - Bamboo of more than 5cm in stem diameter   | tonne | 15,000.00  |
| 15  | - Bamboo of less than 5cm in stem diameter   | tonne | 10,000.00  |
| 16  | - Rattan of all kinds  | tonne | 250,000.00 |
| 17  | - Bark of "Popoul bay"   | tonne | 30,000.00  |
| 18  | - Bark of "Smach" ( <i>Jambolifera resinosa</i> or <i>Melaleuca leucadendra</i> )                                    | tonne | 10,000.00  |
| 19  | - Bark of mangrove   | tonne | 10,000.00  |
| 20  | - Bark of "Smer" ( <i>Cerriops species</i> )   | tonne | 10,000.00  |
| 21  | - Bark of "Khmot"  | tonne | 10,000.00  |
| 22  | - Bark of "Prohout" ( <i>Cambogia gutta</i> )  | tonne | 10,000.00  |
| 23  | - Bark of "Tepirou" ( <i>Liriopa spicata</i> or <i>Nardus indica</i> )   | tonne | 30,000.00  |
| 24  | - "Kantuy Ve"  | tonne | 10,000.00  |
| 25  | - Bark for paper production  | tonne | 10,000.00  |
| 26  | - Bark of "Preal"  | tonne | 10,000.00  |
| 27  | - Bark of "Samrong"  | tonne | 10,000.00  |
| 28  | - Bark of Licorice tree ( <i>Glycyrrhiza glabra</i> )  | tonne | 10,000.00  |
| 29  | - Bark of all kinds for dyeing   | tonne | 10,000.00  |
| 30  | - Aromatic bark of all kinds   | tonne | 10,000.00  |
| 31  | - Fruit of cardamom ( <i>Amomum cardamomum</i> Linn.)  | 60kg  | 18,000.00  |
| 32  | - Flower of cardamom ( <i>Amomum cardamomum</i> Linn.)   | 60kg  | 18,000.00  |
| 33  | - "Krakor" ( <i>Amomum villosum</i> ) with round fruit type  | 60kg  | 18,000.00  |
| 34  | - "Krakor" ( <i>Amomum villosum</i> ) with oval fruit type   | 60kg  | 18,000.00  |
| 35  | - "Krakor" ( <i>Amomum villosum</i> ) with none bark   | 60kg  | 18,000.00  |
| 36  | - Seed of Strychnine ( <i>Strychnos nux-vomica</i> )   | 60kg  | 9,600.00   |
| 37  | - Seed of "Krabao" ( <i>Hydnocarpus species</i> )  | 60kg  | 9,600.00   |
| 38  | - Seed of "Samrong"  | 60kg  | 9,600.00   |
| 39  | - Seed of "Samrang" ( <i>Nauclea cordifolia</i> )  | 60kg  | 9,600.00   |
| 40  | - Seed of "Chambak" ( <i>Buchanania fastigiata</i> , <i>Amygdaliceria stipulata</i> , or <i>Irvingia harmandii</i> ) | 60kg  | 9,600.00   |

|    |  |            |               |
|----|--|------------|---------------|
| 41 | - Wild bamboo shoot  | 60kg       | 6,000.00      |
| 42 | - Root of “Kbeas”  | 60kg       | 9,600.00      |
| 43 | - “Thavhok” or Chinese medicine rhizome  | 60kg       | 9,600.00      |
| 44 | - Root of “Kamnhan”  | 60kg       | 9,600.00      |
| 45 | - Resin of all kinds   | 60kg       | 18,000.00     |
| 46 | - Wax  | 1kg        | 2,000.00      |
| 47 | - Liana of all kinds   | 60kg       | 60,000.00     |
| 48 | - Torch big size of more than 4cm in diameter  | 100 units  | 10,000.00     |
| 49 | - Torch small size of less than 4cm in diameter  | 100 units  | 5,000.00      |
| 50 | - “Slek Phochoul” ( <i>Pandanus laevis</i> or <i>Rhapis flabelli formis</i> )                  | 100 sheets | 10,000.00     |
| 51 | - “Slek Rotaing” ( <i>Homalium brevidens</i> )   | 100 sheets | 10,000.00     |
| 52 | - “Slek Rith”( <i>Pandanus laevis</i> or <i>Rhapis flabelli formis</i> )                       | 100 sheets | 10,000.00     |
| 53 | - “Marak” ( <i>Melanorrhea laccifera</i> , <i>M. glabra</i> or <i>Augia sinensis</i> )         | 18 litre   | 36,000.00     |
| 54 | - Powder extract from “Vor Romeat”   | kg         | 1,000,000.00  |
|    | <b>Aloe-wood (<i>Aquilaria agallocha</i>)</b>  |            |               |
| 55 | - Oil extracted from aloe-wood   | litre      | 5,000,000.00  |
| 56 | - Special ken  | kg         | 2,000,000.00  |
| 57 | - Ken quality No.1   | kg         | 1,500,000.00  |
| 58 | - Lam quality No.1   | kg         | 1,000,000.00  |
| 59 | - Lam quality No.2   | kg         | 800,000.00    |
| 60 | - Old “Pakhwan” with upper circle  | kg         | 500,000.00    |
| 61 | - New “Pakhwan”  | kg         | 300,000.00    |
| 62 | - “Tok”  | kg         | 60,000.00     |
| 63 | - Waste products from aloe-wood  | kg         | 600.00        |
| IV | <b>Skin, horn, bone, ivory, “products from hunting” (Hunting of wild animals is forbidden)</b> |            |               |
| 64 | Sambar antler  | 1 animal   | 300,000.00    |
| 65 | Tiger skin of all kinds  | 1 animal   | 10,000,000.00 |

|    |                                    |          |               |
|----|------------------------------------|----------|---------------|
| 66 | Python skin of more than 2.5m long | 1 animal | 500,000.00    |
| 67 | Python skin of less than 2.5m long | 1 animal | 300,000.00    |
| 68 | Tiger bone                         | kg       | 100,000.00    |
| 69 | Ivory weighing 4-10kg              | kg       | 500,000.00    |
| 70 | Ivory weighing 10-20kg             | kg       | 8,000,000.00  |
| 71 | Ivory weighing more than 20kg      | kg       | 10,000,000.00 |

(Source: Ministry of Agriculture, Forestry, and Fisheries (MAFF, 2001))

## 2.4. Background of PKNP

Phnom Kulen National Park (PKNP) was designated in 1993 by a Royal Degree of King Norodom Sihanouk. Interestingly, PKNP is named after the evergreen *lychee* tree species (*Litchi chinensis*), which is known from this park. It is officially managed under the jurisdiction of the Ministry of Environment (MoE), but it is a co-management by different key institutions. Thus, the certain areas of archaeological value<sup>4</sup> are managed by the APSARA authorities. Moreover, there is one private tourist concession is operating in the park, while at the same time one military unit is also presented over there. Within MoE mandate, there are 5 Community Protected Areas (CPAs) which have been established and managed by local villagers but under supervision and support from MoE. Of particular concern, PKNP is 37,373 ha protected area in North-western Cambodia, and it lies approximately 50km north of Siem Reap town and the world heritage's famous complex temples of Angkor Wat. Geographically, PKNP with an elevation of up to 500 m is a unique predominantly sandstone geographical feature in the largely flat lowland landscape of northern Cambodia. The park is divided into two distinct plateaus and is the source of the Siem Reap River and a critical part of the upper water shed catchment for Siem Reap Province. PKNP is not only Cambodia's most sacred mountain and of immense spiritual, cultural and historical value, but also rich in biodiversity. Recently, it is attempted by Royal Government of Cambodia to apply for World Heritage Status for PKNP (*Per commu.* with ADF and MoE staff).

## 2.5. Biodiversity Assessment of PKNP and its Threat

The majority of the forest cover in PKNP consists of evergreen and semi evergreen forest, combined with small patches of deciduous dipterocarp forest where there is a diverse and complex mosaic of habitats dominant, although the study conducted by ADF (LIDAR Satellite, 2014) estimates that only 20%-23% of remaining forest covers PKNP. The prime reason may be caused by the conversion of forest land for cashew and others crop plantations, illegal logging activities, and other form of land encroachment. Although the significant destruction of deforestation is at high rate, PKNP still plays a paramount important role for the stock of rich biodiversity, in addition to archeological value and

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<sup>4</sup>It was an old city which was founded in 802 by king Jayavarman II in a city called Mahandraparvata, on Phnom Kulen.

cultural and spiritual belief for most of Cambodian people, and also watershed management. Based on Hay *et al* (2013)<sup>5</sup> indicating a significant number of botanical record for PKNP include 775 wild species (native and pioneer species), and 35 *prateal* species. These may include fish, amphibians and reptiles, birds, and mammals. Interestingly, seven species of those amphibians and reptiles species are at listed on the IUCN Red List of Threatened Species, such as, the most severely threatened species known to occur at PKNP being the Mekong snail-eating turtle (*Malayemys subtrijuga*), the Burmese Python (*Python bivittatus*) and the Elongated Tortoise (*Indotestudo elongata*). Equally important, for mammals, there were 8 Key Species of international concern were confirmed for the PKNP, the most significant of which are including Pileated Gibbon, Indochinese Silver Langur, Bengal Slow Loris and Binturong.

**Table 3.2: Different Species Existence in PKNP**

| English Name  | No. of species |
|---------------|----------------|
| Bamboo        | 8              |
| Fern          | 2              |
| Fungi         | 2              |
| Hemi-epiphyte | 111            |
| Herb          | 115            |
| Liana         | 4              |
| Palm          | 4              |
| Pandan        | 1              |
| Parasite      | 1              |
| Epiphyte      | 15             |
| Shrub         | 23             |
| Sub-shrub     | 2              |
| Tree          | 263            |
| Treelet       | 132            |
| Vine          | 85             |
| <b>Total</b>  | <b>768</b>     |

(Source: Hay *et al*,(2013))

Of particular concern, based on the School for Field Studies<sup>6</sup> (2015) have listed medicinal plants which were found near PKNP site. Most interestingly, the study found that 52 species have been used for treatment during pregnancy and the postpartum

<sup>5</sup>Hayes B., Alistair M., Eang Hourt K., Timo H., Kha H., Thomas C., Katherine B., Tony Y.(2013), A Biodiversity Assessment of Phnom Kulen National Park: *with Recommendations for Management*.

<sup>6</sup> Kayla N. Deur & Arensen L.,(2015),Traditional Medicine Usage and the Transmission of Traditional Ecological Knowledge in Three Villages Near Phnom Kulen National Park, ( Hollins University: Roanoke, VA, United States)

period, while other common medicinal purposes include treatment of cold or flu symptoms, or of stomach ache or diarrhea.

## 2.6. Socio-Economic Performance of PKNP

### 2.6.1. Population Census

PKNP administrative boundary is situated within three districts of Siem Reap Province, namely: Svay Leu, Banteay Srey, and Kulen District, but the most populated area is located in Knang Phnom Commune of Svay Leu District. Specifically, Knang Phnom commune consisted of 9 villages of which two of them (Tahan and Thmei Village) have yet to be officially recognized as the administrative boundary village from Ministry of Interior (Mol).

Table 3.2 indicates that a total population of 4056 persons live in Knang Phnom commune which is equivalent to 929 families and/or households, of which 51% of them are women. Based on recent data from Ministry of Planning (MoP) report that 13% and 20% of total households belong to Poor I (Poor segment) and Poor II (Destitute segment), respectively. It is worthy to note that the poverty rating<sup>7</sup> and/or ID Poor exercise to identify the poverty segment (Non-Poor and Poor I and Poor II) is done every three years, operated by Ministry of Planning in collaboration with GIZ and other donors. Thus, all household respondents were asked to answer about their poverty status which was rated by ID Poor exercise

**Table 3.2: Population Status of PNKP**

| Name of Village   | No. Family | No. Female | No. Male | Total No. People | Poor I       |             | Poor II       |             |
|-------------------|------------|------------|----------|------------------|--------------|-------------|---------------|-------------|
|                   |            |            |          |                  | Poor I (No.) | Percent (%) | Poor II (No.) | Percent (%) |
| 1) Anlong Thom    | 186        | 404        | 426      | 830              | 19           | 10%         | 14            | 8%          |
| 2) Thmor Jrunch   | 69         | 168        | 155      | 323              | 6            | 9%          | 24            | 35%         |
| 3) Ta Penh        | 115        | 278        | 257      | 535              | 12           | 10%         | 22            | 19%         |
| 4) Sangkae Lak    | 86         | 196        | 189      | 385              | 11           | 13%         | 37            | 43%         |
| 5) Kla Khmom      | 58         | 152        | 141      | 293              | 10           | 17%         | 20            | 34%         |
| 6) Popel          | 86         | 193        | 164      | 357              | 46           | 53%         | 13            | 15%         |
| 7) Preah Ang Thom | 224        | 456        | 406      | 862              | 6            | 3%          | 34            | 15%         |
| 8) Thmey          | 52         | 127        | 123      | 250              | 10           | 19%         | 13            | 25%         |

<sup>7</sup>The Ministry of Planning in collaboration with the GIZ and other donors have conducted a project on identification of poor households in target provinces in which poor households will be classified as either poor level I (very poor) or poor level II (poor). All households identified as poor will be issued with Priority Access Card (PACs) which will enable households to prove their poverty status in order to receive services for free or at reduced costs. This program has certainly the potential to mitigate or reduce the poverty in the target villages (Ministry of Planning, 2014).

|              |             |             |             |             |            |            |            |            |
|--------------|-------------|-------------|-------------|-------------|------------|------------|------------|------------|
| 9) Tahan     | 53          | 113         | 108         | 221         | 3          | 6%         | 12         | 23%        |
| <b>Total</b> | <b>1029</b> | <b>2087</b> | <b>1969</b> | <b>4056</b> | <b>123</b> | <b>13%</b> | <b>189</b> | <b>20%</b> |

*(Commune Database, 2015(Working Draft and Unpublished))*

## **2.6.2. Major Project Development and Support**

### **1) Decentralisation & Deconcentration Programme**

Knang Phnom commune have been regularly accessed concerning resources and support from Decentralisation & Deconcentration (D& D), in which Government and Development Partners are channeling financial support to commune councils for a variety of activities and planning, such as, hard infrastructure development and some soft infrastructure development which contribute to improving food security and reducing poverty. Specifically, a 3-Year Commune development Plan is done through District Integration Workshop of which various key stakeholders including local representatives have worked out together in order to identify the priority support programme and activities. It is worthy to note that KII Interview with commune councils revealed that the annual budget support (Yearly Investment Plan) has limitations which is estimated to be at UDS 5000 and a majority proportion of this is allocated for hard infrastructure development, such as, road and canal rehabilitation which leads to marginalization of the major important issues, such as, increasing agricultural yield and natural resource management, and others.

### **2) Archeology & Development Foundation (ADF) and Others**

ADF<sup>8</sup> ( Annual Report, 2014) is an International NGO which has been working on a maintenance and conservation programme since 2003, especially to support APSARA National Authority and MoE to manage the heritage in Phnom Kulen which comprise of at least 40 sites which require to maintain regularly basis, and including demining for certain area under archeological site. Meanwhile, ADF also works on livelihood programme , and nutrition and hygiene in collaboration with Commune Health Centre. Specifically, for livelihood programme, there are various income generation activities which have been introduced and promoted aimed at complimenting and substitution of the existing unsustainable agricultural practices, for instance, cashew plantation, slash and burn agricultural practice. Thus, the certain commodities have been promoted including handicraft development, honey produced from the wild, rice bank, livestock raising, vegetable and mushroom farming, and ecotourism development.

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<sup>8</sup>ADF (2014), Annual report 2014: ADF Phnom Kulen Program, (Archeology & Development Foundation: Cambodia)

During the course of the piloting programme, there are some activities still continued to be adopted and adapted by target villagers although limitations exist in terms of up-scaling the project, such as, mushroom farming and handicraft, as well as vegetable cultivation. However, a wild honey programme, which once was conducted by an expert from Bee Unlimited including the sustainable harvesting method, has been fairly marginalized due to labor constraints for local communities and the resource competition by outsiders, who travelled from elsewhere to come to collect wild honey for commercial purposes within CPA sites.

### **3) Other Key Development Partners and NGO Support**

There are various development partners and NGOs which have been working at PKNP, including UNDP/MoE and GIZ/Green Belt, who work on climate change and resilience, promoting NTFPs, Good Agricultural Practice and Value Chain, and tree planting inside CPAs.

### **2.6.3. Main Livelihood Development**

The main livelihood of local communities in PKNP is mainly depended on cashew plantation, rice farming practice and other cash crops, the collection of Non-Timber Forest products for both home consumption and trading activities, and some of them are involved in tourism sector to generate income. It is worthy to note that all of this information below is analyzed and synthesized from FGDs and KIIs during the course of fieldwork.

#### **1) Shifting cultivation (*Chamkar* or *Chamkar Vil Chum*)**

Shifting cultivation practice. *Chamkar* is a common agricultural practice in the Kulen mountainous area. Practically, It involves the intermixing of rice and other cash crops, such as vegetable, bean and other perennial 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 (One hectare per plot on average land size). Based on FGDs five study villages report that each household can own, on average, from 4 to 5 plots of *Chamkar* land which corresponds to 4 to 5 hectares. Each plot has been cultivated only a few years, then moved to other plot, therefore, it may be rotated about 15 years from the last to the first plot. This is indicating a sustainable land use since several studies reveal that this shifting cultivation practice has minimal negative impact on forest covers. Moreover, all *chamkar* land has locally recognized boundaries where there are customary user rights rather than official land titles and it inherits from one to another generation. However, since 2008 up to recently, these type of land use have drastically changed of which the majority of *chamkar* land were converted into

cashew plantation, at least 2 to 3 plots or equivalent to 2 to 3 hectares of *chamkar* land were replaced by cashew plantation. Thus, this led to shifting cultivation practices which has been adopted from one to another generation is longer existed in PKNP up to now, and it would be caused to forest degradation. Based on FGDs across five study villages indicates that only 1 to 2 plot has been planting *chamkar*, and majority of crop growth is upland rice and cash crop, such as, pineapple, bananas, black pea, taros and others. In term of rice crop which considers as the main food security, only 0.5 to 1 tonne can be produced from *Chamkar* land. Thus, most of households purchased rice from market for ensuring their food shortage, in addition to their own rice produce. Interestingly, income earned from cashew nut has been used for purchasing rice for home consumption.

## 2) Cashew Plantation

Most of the local villages in PKNP have converted a large parcel of shifting cultivation land into cashew plantation since 2008 which affected NKPN biodiversity and forest covers. FGDs across five study villages indicate that the cash revenue earned from cashew nut ranges between USD 400 to 10,000, however on average it is estimated USD 3000-5000 per household per year. Anecdotal evidence from fieldwork suggests that some farmers encroached CPA forest land and archeological value area<sup>9</sup> under APSARA National Authority to plant cashew crops, some local villagers have sold out cashew trees to outsider from different provinces (e.g. outsiders from Kampong Thom).

Cashew nut is harvested and sold to local traders from different provinces, including Siem Reap, Kampong Thom and others. There are more than 10 traders collecting and aggregating cashew nut production at farms and transport by either motorbike or truck which can accommodate 500kg to 2000-3000 kg per trip. Meanwhile, the farm gate price of cashew nut is between USD 0.75 to 1.00 per Kg.

## 3) Poultry and Livestock

Local villagers from PKNP often raise poultry and livestock in a traditional way: free range and without vaccination. Most livestock consists of either pigs, cows, or buffalo—the latter two raised mainly for sale but also utilized as transportation and draft animals.

- *Poultry*: Most poultry is raised free range on residential land. chickens are the main commodity, raised mainly for home consumption and also to celebrate traditional ceremonies. Despite challenges with veterinary services, the majority of household respondents were able to raise chickens for sale in addition to home consumption. Local traders from Preah Ang Thom village where locates in tourist zone have

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<sup>9</sup>It is worthy to note that Archeological area is found when cashew crop is already grown by local villagers. ADF and APSARA Authority has introduced tree planting within the cashew planting area so that local villagers can have benefit from tree planting in the future when cashew crop will be finished their economical life.

travelled by motorbike to collect and aggregate chicken at farmgate and sold out to different restaurant. Specifically, on average, each household was raised 10-20 chickens per year. The total average amount of income earned from chicken per household is about 5-10 heads which corresponding to USD10-20/Year. The second sources are common ducks; however, these are considered a minor commodity in the target study.

- *Pigs*: Pigs are raised mainly for sale to earn income for supporting livelihoods. Although most pig farmers find it extremely difficult to access vaccination and treatment, across PKNP study site, the average pigs per household is estimated at 1-2 heads, and only better off socio-economic segment who were able to raise pigs. Similar to poultry commodity, pig raises and sold out to local traders from tourist village of Pra Ang Thom. Anecdotal evidence indicates that some pig in PKNP is likely breed with wild pig.
- *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). Though cows and buffalo are commonly utilized as draft animals for land preparation and transportation, therefore, most of beef supply in the tourist zone is mainly imported from Siem Reap town. Anecdotal evidence suggested that the majority of cows and buffalo are free range, especially during the course of the dry season. It is worthy to note that only those whose are better off household socio-economic segment can own from 1-3 heads, otherwise.

#### 4) NTFP Products

Based on FGDs and community workshop as well as KII interview, and also field transect and the existing studies indicating the main NTFP products which is available in the PKNP sites include **1) Different species of medicinal plant; 2) Kulen fruit ( wild lychee), 3) Wild honey; 4) Different species of bamboo; 5) Different species of rattan 5) Wild mushroom.**

NTFPs availability is based mainly on season, geography and/or distance, and accessibility. In PKNP study areas reveals that 80 to 90 % of households are actively engaged in NTFP products collection for home consumption and trade. FGDs, however, indicate that the trend of collecting forest products for trade is declining each year due to scarcity of resources and/or resource depletion, and therefore, most of products are heavily collected from CPAs.

The key factors driving for forest product collection for those local communities in PKNP are described in the following.

- *Labour availability in household* – During the wet and dry season, villagers often allocate their household labour force for both agriculture and collecting NTFPs. More importantly, as village roads have been improved and market networks built, each household maximizes its labour opportunities. As a result, men are allocated to collect

forest products for sale, while women are often assigned to work on the farm.

- *Poverty level of local villagers* –Based on FGDs in the study areas, the collection of forest products for sale depends entirely on the poverty level of each household. Most of Poor I and Poor II are still considered the NTFPs as the safety net, therefore, they regularly collected NTFP products for not only home consumption but for sale to earn income to support their livelihood and food security.
- *Supply of resources* – Some products are only available seasonally and/or yearly basis. For instance, wild fruits are collected only during two months (April to May) of the dry season. Particularly, a good quality of wild honey is only collected during the course of dry season. And due to differences in forest resources, some products may be available in some particular areas while they are not found in other areas, for instance, most of fruit tree products are merely available in Popel and Khla Khmom CPA. Interestingly, wild lychee is only available only certain year- usually it is available for only three year per harvesting time. Meanwhile, mushroom is only available during the course of wet season. Of particular concern for bamboo and rattan as well as vine is available for entire year, but with a certain geographical areas of PKNP. Likewise, most of medicinal plants are available for both wet and dry season, but it mainly depends on certain area, accessible, and person who has knowledge about them.
- **Market demand**– For many NTFP products, market factors play the greatest role in dictating how collection occurs. If there is no demand among traders in the area to transport products to semi-urban provincial markets, many products, which may exist in abundance, are simply not collected. For example, in the study areas, although there is a substantial reserve of bamboo and rattan as well as vines, and people can collect them for trade; it does not happen. **Instead, traders target only some NTFPs products that are in high demand in urban areas, for instance, various species of medicinal plants in the target areas have been widely collected** for sale in Prah Ang Thom village where wholesalers and processor and traditional healer (*Krou Khmer*) resettled over there.
- *Household demand*– For certain NTFP products even though there is no wider market demand, there is often strong need for certain households for NTFP products, such as, wild fruit and vegetable, rattan and bamboos, and other NTFPs for housing materials, which these can be used for home consumption and utilization.

- **Other Crops**

There are several crops have been mainly planting for trading activities and home consumption in PKNP sites. These are included as follow:

- **Bananas ( two indigenous species)**

Those two indigenous varieties one is red and another is yellow color skin have been well-known in PKNP site. There are only four to five villages who grows these bananas for selling not only at tourist site of Preah Ang thom village but also export to Siem Reap market town, those villages namely: Thmei, Tahan, and . These varieties are mainly grown in *Chamkar* land on a steep slope of PKNP mountainous site, and this lead to difficult to transport from farm to village. Moreover, in addition to sell out at the tourist site, farmers may need to carry on feet from village down from mountain to village close to market nearby mountain. Local traders near market downside of the mountain aggregate banana and wait for transporter to transport bananas produce from local market to Siem Reap town or urban market near Siem Reap ( Dom Dek market). the farm gate price is estimated at USD0.5/Kg and the market-end price is USD 1.0-1.25/Kg. It is worthy to note that although BBP Product includes these indigenous varieties, but banana tend to contribute to forest clearance, as the result, this may not be recommended.

Similar to above crop, taro, pineapple, black bean, and jack fruit have been growing in *Chamkar* land and due to road connection from farm to local market is extremely difficult to access, therefore, farmers may need to carry out by themselves from the top of mountain to market, and also these produce is a strong competitive commodities, as compared to those farmers at lowland village, as the resulted, famers often received a low margin of profit. For instance, in 2014 majority of taro were received a low price which most of farmers at Sangke Lak were lost their profit. However, it is worthy to noet that vegetable produce were reported to earn a higher income because farmers can grow and sell out to tourist site and neighbouring villagers.

## CHAPER IV: SPECIFIC FINDINGS

### 4.1. Potential NTFP Candidate for Selection

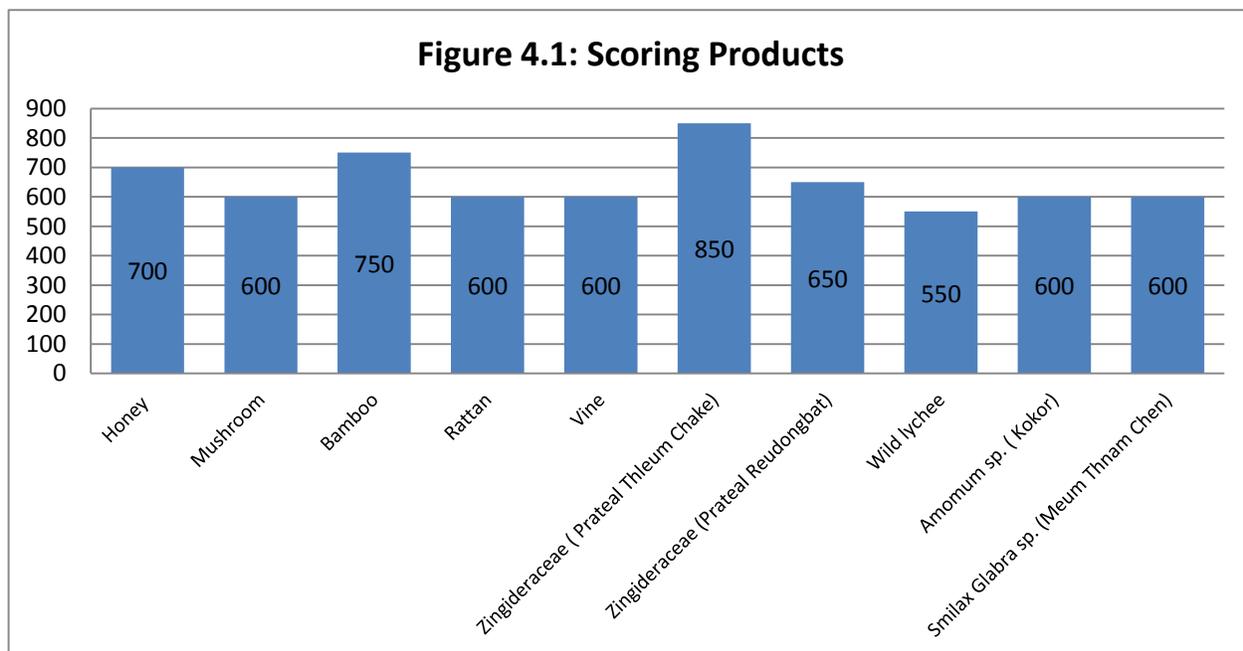
There are several NTFP products that have been highlighted during scoring and rating. However, based on scoring and rating by various key stakeholders including local communities, there are only 10 important NTFPs products which have been used for scanning the top three products for BBP Cambodia Project implementation and intervention ( See detail in Figure 4.1). Although some indigenous species which are considered to BBP products promotion, such as bananas, however, these are not included for the potential products due to these crop would be cause more forest area conversion which affects the forest cover in PKNP.

### 4.2. Value Chain Selected

As previously discussed in methodology section, the scoring NTPFs produces to identify the top three highest scoring for potential product selection for BBP intervention programme for the next three and half year, is based on FGDs and community workshop, as well as key informant interview. Thus, the criteria are detail as follow:

- 1) Annual income for local villagers
- 2) A significantly volume of products
- 3) Available of input materials
- 4) Poor people participation
- 5) Technology applicable and sample processing facility
- 6) Products with no harm to environment and sustainable forest management
- 7) Gender participation

Figure below indicate the top three scoring products which has been selected based namely: **1) Zingideraceae (Prateal Thleum Chake),3) Bamboo handicraft, and 3) Honey**



## 4.2.1. Medicinal Plant

### 1) Volume and Trade of Medicinal Plant in Cambodia

- **Collection of Medicinal Plant**

Collecting a species of plant that destined to use for medicinal plants for home consumption as a primary health care is based mainly on gaining knowledge about the plant from their parent ancestor who is transferred from one to the next generation. Medicinal plant is collected or harvest in form of root, small plant, leave, flowers, fruit and seed. In a common practice, local villagers collected medicinal plant from ricefield adjacent forest area where locates close to their house, primarily for home consumption and some for sale. Whilst, for those collect and harvest medicinal plant for commercial purpose need to travel long distant and time where located in the open-access forest and National Park. **Moreover, collecting medicinal plant for trade is demand-driven from traders and/or wholesaler in Phnom Penh City**, although local collectors do not know the medicinal plant species; the traders/wholesalers always present a sample plant to the collectors for collecting the species from the wild. Unfortunately, it is common that the collection method of medicinal plant for commercial purpose is fairly less adopted in a sustainable harvesting manner, especially for those species of tree plants with stem and wood, which can lead to severe head injuries.

- **Volume of Production of Medicinal Plant**

Despite some studies assessed the potentially substantial production availability in Cambodia, but total amount production capacity of medicinal plant in the wild is unknown. Forest Administration (FA) of Ministry of Agriculture, Forestry and Fisheries (MAFF) has identified medicinal plant is grown in all province in Cambodia. In other word, of 60% of total land in Cambodia contain forest coverage and medicinal plant. More specifically the assessment has identified the areas of 48 districts/areas which are richest in medicinal plants.

**Table 4.1: Medicinal Plant Areas in Cambodia**

| No. | Provinces With Medicinal Herbs Growing | Forest Coverage and Medicinal Herbs Compared with the Total Land Area of Each Province and Town | Districts or Areas Which Are Rich in Medicinal Herbs | No. of Districts /Areas with Rich in Medicinal Plant |
|-----|--|---|--|--|
| 1   | Stung Treng                            | 92%   | Virak Chey   | 1  |
| 2   | Prah Vihear                            | 88%   | Prah Vihear  | 1  |
| 3   | Koh Kong                               | 86%   | Botumsakor, Peam Krosab, Phnom Somkoh, Dang Peng     | 4  |

|    |                           |            |   |           |
|----|---------------------------|------------|---|-----------|
| 4  | Rattanakiry               | 84%        | Virak Chey, Lompath   | 2         |
| 5  | Mondulkiry                | 82%        | Mondulkiry, Lompath, Phnom Prich                                      | 3         |
| 6  | Kratie                    | 78%        | Snoul, Phnom Prich  | 2         |
| 7  | Pur Sat                   | 70%        | Phnom Kravanh, Phnom Tonsay, Phnom Bath Khtah, Phnom Dork Prah        | 4         |
| 8  | Oddor Meanchey            | 67%        | Osmach  | 1         |
| 9  | Sihanoukville             | 62%        | Khbal Chhay, Ream/ Coastal areas                                      | 2         |
| 10 | Kompong Thom              | 52%        | Phnom Santuk  | 1         |
| 11 | Siem Reap                 | 40%        | Phnom Kulen   | 1         |
| 12 | Kampot                    | 40%        | Phnom Bokko, Phnom Komchay, Phnom Noreay                              | 3         |
| 13 | Kompong Speu              | 40%        | Kirirom, Phnom Srouch, phnom Oral, Phnom Dey Krahor, Phnom Prey Khmer | 5         |
| 14 | Battambang                | 37%        | Rorneam Daunsar, Samlot   | 2         |
| 15 | Kompong Chhnag            | 34%        | Teuk Phos district, Boribo district, Kompong Leng district            | 3         |
| 16 | Kompong Cham              | 29%        | Chamkar Leu, Krek, Memot  | 3         |
| 17 | Banteay Meanchey          | 27%        | Trapaing Thmor  | 1         |
| 18 | Kep town                  | 24%        | Kep   | 1         |
| 19 | Kandal                    | 7%         | Toul Prich, Phnom Attareus  | 2         |
| 20 | Phnom Penh                | 4%         | Phom Penh   | 1         |
| 21 | Svay Rieng                | 3%         | Romeas Hek, Krorsaing   | 2         |
| 22 | Prey Veng                 | 3%         | Komchay Mear  | 1         |
| 23 | Takeo                     | 3%         | Phnom Tamao, Phnom Chiso  | 2         |
|    | <b>Total for Cambodia</b> | <b>60%</b> |   | <b>48</b> |

(Source: Forest Administration, 2009)

Regardless on Cambodia's total production of medicinal plant in the wild, a rough estimate of production supply in local market can be feasible by this study. Currently, there are almost 15 wholesalers of medicinal plant in Phnom Penh, of which at least 10 of them located in O'Reussey Local Market and other local market in Phnom Penh. Each wholesaler could have a stock of 5-15 tonnes of hundred species of medicinal plant, while it would be sold out, on average, within a week period. With this figure we could estimated the annually production supply of medical plant for local consumption may range from 5,000 to 10,000 tonnes.

In addition, official figure for export from General Directorate of Kamcontrol of Ministry of Commerce indicates that high value of medicinal plant is annually export to regional and international market is about 200 to 300 tonnes; it is mainly to South Korea, Hong Kong, China, and USA, and other countries. As the result, a total volume of supply of medicinal plant in Cambodia to meet demand locally and internationally is roughly estimated to be at 5,200 to 13,000 tonnes per year. However, it is worthy to note that this figure should be treated as a conservative number because anecdotal evidence suggest that the Cambodia's majority of medicinal plant have been informally exported to its neighboring countries, such as, Vietnam and Thailand which cannot be quantified.

- ***Zingideraceae ( Prateal Thleum Chake) Cultivatiiona and Utilization for Traditional Medicine***

*Zingideraceae ( Prateal Thleum Chake)* is a plant that can grow from June of early wet season and harvest on April next following year. The plant can continue re-growing although local farmer harvest it, i.e. local farmer harvest root and replant the stem back to the soil. The root is blackish color. The taste of its root is bitter with a gentle spice and aroma. According to the interview with different traditional healers and local farmers who trade and grow *Zingideraceae ( Prateal Thleum Chake)* in PKNP sites it reveals, that this plant can be used<sup>10</sup> as follows:

- 1) To cure liver problems & loss of appetite: The root plant is mixed with other species of traditional medicine.
- 2) To produce traditional balm: The root of *Zingideraceae* is used as raw material for extracting essential oil and infuse with other traditional medicine species for making traditional balm which made by Khmer Traditional Healer.

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<sup>10</sup> This information is based entirely on interview with FGDs, trader, and traditional healer (Krou Khmer), but consultant cannot have other source to verify it.

3) Most commonly it is used for digestive stomach disorders

Specifically, the detailed method to use *Zingideraceae* root as a traditional medicine for digestive disorder for stomach include as follow:

- ❖ The patient can consume the root directly in fresh form but needs to be cautious because if people consume more it may create side effects.
- ❖ The root plant can be infused with rice wine. The common formula is 1 Kg of fresh root mix with 10 litres of rice wine. The consumption per time is only limited to 0.03 Liter/person/time.
- ❖ Drinking like a tea: First, root used to dry on the sun for one or two days and package in the close box or close plastic to ensure that it maintains its quality. When needed, 50 g (Gramme) of the dry product can be mixed and boiled with 1 liter of water. But each time can only consume 0. 250 to 0.300 Liter/person/time

- **Value Chain Mapping of Medicinal Plants**

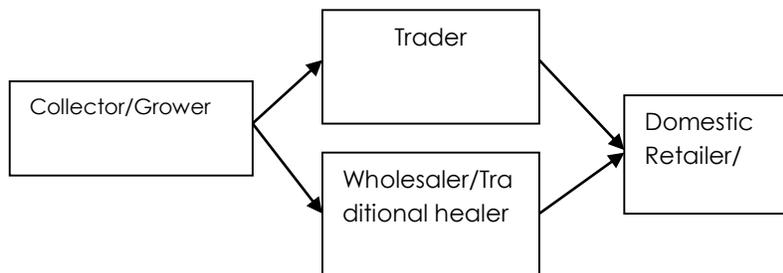
*Zingideraceae* (Khmer Name: *Prateal Thleum Chake*) is one of most dominant medicinal plant, having the highest score and rating among other NTFP products and also other few species of medicinal plants where have been cultivated and collected from the wild forest. Thus, *Zingideraceae*(Khmer Name: *Prateal Thleum Chake*) have been cultivated as the homestead production for trading activity. Trade involves the sale of medicinal plant's collectors/grower to a marketing chain that includes traders, wholesalers/traditional healers, and domestic retailers.

Moreover, mapping this market structure in all its complexity is a significant challenge due to the many forest areas in PKNP providing different sources of medicinal plant, collectors, traders, and others active in the trade, the range of trade relationships, and the variety of different trade routes. However, based on the medicinal plant trade routes studied, it is possible to identify a generalised market structure (Figure 4.1). A detailed description of each actor in this market structure is provided below, followed by specific information on medicinal plant marketing approaches for trade routes.



Picture 3, 4, 5 and 6: *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*) farming

Figure 4. 1: Generalised Market Structure for *Zingideraceae* and Other Medicinal Plant Trade in PKNP



❖ **Grower/Collector:** Majority of local villagers travel to forest areas to collect medicinal plants with different species for home consumption, and some of them

are targeting for trading activity. The collection of medicinal plant for trading activity is based mainly on the purchased order from traders from outsider or from wholesalers who are traditional healer in Prah Ang Thom village. Each village, there is at least three to five village medicinal collectors who collect different species of medicinal plants. Usually, each collector is able to collect medicinal plant with amount of 100 to 300 Kg. Before selling to traders and wholesalers, the processing of medicinal plants was done in the village, it includes chopping and drying. Gender plays a major role in processing of medicinal plants. Women chopping trees into pieces and dry out on the sun between three to five days, then package in bag and sell to traders. It is worthy to note that one village site at least one collector is traditional healer ( *Krou Khmer*). Equally important, Table 4.2 indicates that one species of medicinal plant have been widely grown in homestead namely *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*). 10% to 20% of households from few villages, such as, Thmar Jrung, Popel, Preah Ang Thom and others, have been actively grown this medicinal plant, once it was only grown in the wild, based on the purchased order from trader and wholesalers. Each household can grow *Zingideraceae* from 50 to 100 m<sup>2</sup> in the wet season, while the harvesting time is in dry season (November to January). The production per household estimates to be at 50 to 300 Kg per year. Meanwhile, the farm gate price is USD 0.5/Kg, so that each household can earn from USD 25 to 150 per yearly basis. Consequently, almost 100 households who are actively cultivated *Zingideraceae*, while a total production has been estimated to be at 9,700 Kg which corresponds to USD 4,850 per annum for those villagers who cultivated this medicinal plant species. It is interesting to note that almost no input cost are associated with this plant cultivation, except the 10-15 man-day per household used for cultivation and harvest.

**Table 4.2: Production and Revenue from Growing *Zingideraceae***

| Name of Village   | No. Family | Total No. People | Growing <i>Zingideraceae</i> |                  |                       |                    |
|-------------------|------------|------------------|------------------------------|------------------|-----------------------|--------------------|
|                   |            |                  | Percent (%)                  | No. family (No.) | Total production (Kg) | Revenue (USD/year) |
| 1) Anlong Thom    | 186        | 830              | 20%                          | 37.2             | 3720                  | 1860               |
| 2) Thmor Jrunh    | 69         | 323              | 20%                          | 13.8             | 1380                  | 690                |
| 3) Ta Penh        | 115        | 535              | 20%                          | 23               | 2300                  | 1150               |
| 4) Sangkae Lak    | 86         | 385              | 10%                          | 8.6              | 860                   | 430                |
| 5) Kla Khmom      | 58         | 293              | 10%                          | 5.8              | 580                   | 290                |
| 6) Popel          | 86         | 357              | 10%                          | 8.6              | 860                   | 430                |
| 7) Preah Ang Thom | 224        | 862              | 0                            | 0                | 0                     | 0                  |
| 8) Phum Thmey     | 52         | 250              | 0                            | 0                | 0                     | 0                  |
| 9) Tahan          | 53         | 221              | 0                            | 0                | 0                     | 0                  |
| <b>Total</b>      | <b>929</b> | <b>4056</b>      |                              | <b>97</b>        | <b>9,700</b>          | <b>4,850</b>       |

(Source: Consultant Estimated Based on FGD and Community Workshop)

- ❖ **Traders** purchase medicinal plants from collectors and growers at collectors' villages, some of which may be in remote areas. From five to 10 traders are traveling by motorbike or truck ( in rare case) either hiring or owned, traders can carry about 200 to 300 Kg to few tonnes of different species of medicinal plant including *Zingideraceae* ( Khmer Name: *Prateal Thleum Chake*) per trip.

Specifically, the trader purchase *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*) and sell on to provincial wholesaler/traditional healer at Siem Reap town and other province who used to process this medicinal plant to mixed with others order to produce different types of traditional medicine.

❖ **Wholesaler/Traditional Healer (*Krou Khmer*):** The traditional healer is operating in PKNP, especially locates in Preah Ang Thom village of tourist zone are operating on formal and informal business. There are only three to five *Krou Khmers* in PKNP site to have an authorization from Ministry of Health, including certificate and license, however, there are 10 to 20 other informal *Krou Khmers* who did not have any authorization from Ministry of Health are also being operated their business in PKNP sites. Of particular concern, all traditional heathers for both formal and informal business are aggregated and purchased different species of traditional medicines from local villagers/collectors and including the growers of *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*). The formal traditional healers often play a key role to process traditional medicine with certain advance equipment to produce different types of traditional medicine which can treat various diseases. The processing is taking place at home, meanwhile, the final products process consisted of powder, liquid, and dryer from which have been well packaged in box and bottle with a labeling in their brand name, then sell to local tourist and distribute to retail market from three to seven different provinces in Cambodia. For informal traditional healers in PKNP have been aggregated medicinal plant products including *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*) from grower/collector and use a simple processing technique to make traditional medicine ( but only dry and mixed with different species of medicinal plant based on their knowledge and package in 50 to 100 kg in a bag) and sell on to different provinces, especially to various pagoda where monk would use this traditional medicine to treat patients, as the traditional medicine from PKNP is having a strong spiritual belief.

• **SWOT Analysis for *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*)**

The following are the SWOT analysis to indicate the *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*) which associate with low risk investment, and it is potentially to replicate to wider local villagers within PKNP due to high demand from market-end which leads to contribute to improve rural economic and job employment opportunity as well as low harm and reduce pressure on forest area.

**Table 4.3: SWOT Analysis for Medicinal Plant**

| Strengths  | Weakness  |
|--|---|
| <ul style="list-style-type: none"> <li>Indigenous species from the wild, therefore, it is practicable and feasible to</li> </ul> | <ul style="list-style-type: none"> <li>Small plot size ( 10 x 5 m)</li> </ul> |

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>expand and up-scale to other target villagers within PKNP</li> <li>Sustainable harvest and self-growing for next season.</li> <li>A high market demand</li> <li>Seed is widely available from local farm and in the wild.</li> <li>Available local labor force because most of target villagers did not migrate</li> <li>Low input cost</li> </ul> | <ul style="list-style-type: none"> <li>Grower are Price takers, lack of bargaining power to negotiate the price with traders/wholesalers.</li> <li>Lack of widely spread market network to other national markets, like Phnom Penh and Siem Reap market</li> <li>Road access is limited in PKNP</li> </ul> |
| <b>Opportunities</b>  | <b>Threats</b>   |
| <ul style="list-style-type: none"> <li>High demand in market-end</li> <li>Extremely low cost for storage, as it is a root crop.</li> <li>Possibly increase of jobs in PKNP</li> <li>Project to support the improved planting technique and demo-farm model</li> </ul>   | <ul style="list-style-type: none"> <li>Drought</li> <li>Some outsiders have collected from the wild</li> </ul>   |

*(Source: FGD and KII Interview, and Community Workshop)*

• **Strategic Planning for Medicinal Plant**

A majority of medicinal plants collected in PKNP is, to some extent, affected on sustainable production, collection and harvesting. However, **Zingideraceae grown in homestead have indicated that sustainable harvesting contributes to the reduction of pressure on forests as well as improving the village economy.** Hence, the challenge is how to expand and up-scaling it to wider households who live in PKNP site. Thus, the following is used to propose the action plan, activity, and key resources which BBP Cambodia can support to improve for livelihood development and ensure environmental friendly growth which can save the 20% -23% remaining PKNP’s forest areas. Therefore, the specific strategic planning includes:

- 1) Develop a demonstration farm as the key extension tool to disseminate the technical improvement of Zingideraceae specis.
- 2) Curriculum development for developing planting technique through class lesson, poster, study tour, and others; those materials would include IEC materials which is effective for those beneficiaries who are illiterate
- 3) Development of producer groups and/or associations which will contribute to aggregate production and to have better bargaining power for the price with wholesalers
- 4) Capacity development for producer group and/or association on market network and business planning , and marking product, book keeping and basic accounting

- 5) Help to conduct study tour to Siem Reap and Phnom Penh for product & market scanning
- 6) M &E process

**Table 4.4: Strategic Planning for Medicinal Plant**

| Recommendations/Actions  | Timeframe                        | Implement Agency   | Supporting Agency                  | Resource Support   |                         |
|--|----------------------------------|--|------------------------------------|--|-------------------------|
|  |                                  |  |                                    | No. of Person-Day  | Budget estimation (USD) |
| 1) Develop a demonstration farm as the key extension tools to disseminate the technical improvement of Zingideraceae species   | January (2016) to January (2017) | BBP Cambodia and MoE   |                                    |  |                         |
| a) Select target site for Demo farm  | January to February (2016)       | BBP Cambodia and MoE; to select at least 3 demo farm on the main road which will be accessible to target villagers; and local authority ( chief of village and commune councils) |                                    | 30   | 450                     |
| b) Material and other construction ( 3 demo sites)   | February to April (2016)         |  | Local available private contractor |  | 9,000                   |
| 2) Curriculum development for developing planting technique through class lesson, poster, study tour, and others which those materials would include IEC materials which is effective for those beneficiaries who are illiterate | January to April (2016)          |  |                                    |  |                         |
| a) Curriculum development  | January to February (2016)       | BBP Cambodia and MoE, and other partners ( ADF, Local authority)   | Agronomist/forestry firm           | 20   | 2,000                   |
| b) Extension materials ( Services and products development)  | February to April                | BBP Cambodia and MoE, and other partners ( ADF, Local authority)   | Marketing firm ( e.g. Media One)   | 100 posters and other materials, and 20 man-day services for product development | 5,000                   |
| 3) Development of producer group and/or association which will contribute to aggregate production and to have better bargaining power for the price with wholesalers   | January to April (2016)          |  |                                    |  |                         |
| a) Selection of beneficiaries and interested group of people   | January to May (2016)            | BBP Cambodia and MoE, and other partners ( ADF, Local authority)   |                                    |  |                         |

|  |                             |   |   |  |       |
|--|-----------------------------|---|---|--|-------|
| b) Selection of group leader/committees  | January to May (2016)       | January to May (2016)                           |   | Village meeting for project presentation and forming a producer group/leader ( 8 to 9 villages; and each meeting is at least 50% of villagers) | 1,125 |
| c) Producer group registered at commune  | May (2016)                  | Local authority and BBP Cambodia, and MoE       |   |  | 0     |
| 4) Capacity development for producer group and/or association on market network and business planning , and marketing product, book keeping and basic accountant |                             |   |   |  |       |
| a) Business planning and process   | May to June (2016)          | BBP Cambodia and MoE                            |   |  | 4,500 |
| b) Capacity building for group leader/committees ( e.g. the formation of association/producer group, financial statement and other administrative matter)        | June ( 2016) to June (2017) | BBP Cambodia and MoE                            | Private consulting firm ( e.g. ACTIS <sup>11</sup> and others): 5 working days and two times including refreshment training | 10   | 1,000 |
| c) M & E process   | August (2016)               | BBP Cambodia and MoE, and ADF                   | Private consulting firm ( e.g. ACTIS and others): 5 working days per villages and 9 villages                                | 10   | 1,000 |
| 5) Help to conduct study tour to Siem Reap and Phnom Penh for market scanning product  | January (2017)              | BBP Cambodia, MoE, and other partner (e.g. ADF) |   | Selecting one person as the group leader and 9 villages; 4 days field visit in market end  | 2,520 |
| 6) Mid-Term review   | August (2017)               |   | Consulting services   | 7  | 1,050 |

<sup>11</sup> ACTIS ( Agriculture Cooperative Trade and Investment Solution Co. LTD), is a local service provider firm

|                     |  |  |  |  |               |
|---------------------|--|--|--|--|---------------|
| <b>Total Budget</b> |  |  |  |  | <b>27,645</b> |
|---------------------|--|--|--|--|---------------|

*(Source: Consultant Interview with different private firm)*

## 4.2.2. Handicraft Products

- **General Development of Handicraft Products**

Bamboo and rattan handicraft production in Cambodia is characterized by a large variety of traditional products with specific uses. Interestingly, crafting products is generally undertaken by women who are actively involved with this sub-sector, in addition to reproductive work, housewife, and other housework (e.g. cooking and taking care children). Based on GRET<sup>12</sup> studies (2009) indicating the handicraft income earned from bamboo production are relatively low wage and income, as compared to other employment opportunity, thus on average the income earned is estimated to be at lower than USD0.75 per working days. Moreover, the processing products have been done manually and do not upgrade any advance technical improvement which led to produce a low productive rate. Likewise, although a significant labour input, however, handicraft producers is generally receive a small part of value add, whilst the traders and wholesalers are taking a substantially margin of benefits along the value chain. Of similar effect, the raw materials from the wild are now becoming scarcity, such as, rattan and bamboo, therefore, thus this made craft producers have become marginalized from their work.

However, the handicraft development in tourist zone and the establishment of social enterprise and association in Cambodia have relatively changed the course of craft sub-sector. For instance, In Phnom Penh, The Artisans' Association of Cambodia (AAC) has been helped its members for both private sectors and associations to aggregate production for targeting tourist zone and export, although the volume of sale are still marginalized. Specifically, In Siem Reap province, there is various development partners have helped to develop and promoted handicraft sub-sector, for instance, Angkor Handicraft Association (AHA) which have been supported by GiZ, Ministry of Commerce, and other key stakeholders.

Angkor Handicraft Association consists of 39 members that produce handicrafts in the Siem Reap province, and the main goal of the association are to strengthen the handicraft development which contribute to improve livelihood of thousands of local artisans in the Siem Reap province. To increase value add handicraft development, AHA have been formed the Seal of Authenticity which is attached to products that qualify with the standards defined by the Angkor Handicraft Association. Specifically the Seal is

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<sup>12</sup>GRET (2009); Bamboo handicraft production and value chain analysis in Kampot and Kampong Chhnang, Cambodia ( GRET: Cambodia)

available to Siem Reap based handicraft producers who create their products within the Siem Reap province with at least 50% of the raw materials also being sourced from within the Siem Reap province. Secondly, the Wholesale Trade Center is designed to promote local handicraft products and also to facilitate commercial network between local and international market/traders which those can participate through purchased order to local handicraft development. It is worthy to note that this wholesale centre is supported by the Siem Reap Provincial Administration and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Another interesting service is that AHA has currently planned to expand and support different handicraft producer groups from different villages in Siem Reap. Thus, through the local institutions, handicraft sub-sector can be added value to handicraft producers, especially to improve the margin of benefits from their products sold.

- **Value Chain Mapping of Handicraft in PKNP Site**

Bamboo and rattan handicraft development and processing had been long practiced by local villagers for local consumption. However, recently, the processing of bamboo handicraft is mainly not only used for home consumption, but also for trading within and outside villages to earn income for supporting their food security. The main raw materials for handicraft are from bamboo and rattan which have been collected from the wild, especially CPAs and other abundant forest areas, on the North Range of the PKNP site.

- **Bamboo Species for Trading Activity and Handicraft Development**

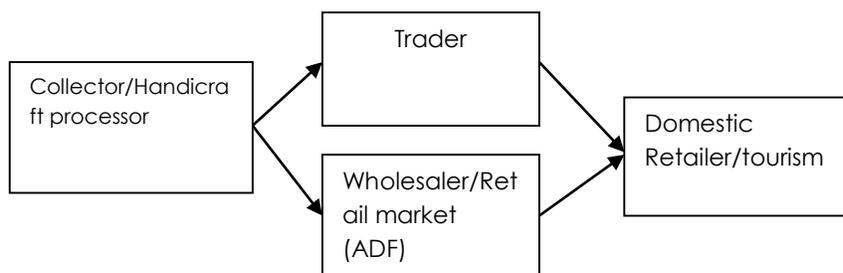
In PKNP sites, there were two main wild species collected from the local communities for trading activity: *B.bambos* (Russey Roleak) and *Gigantochloa albociliata* (Russey Khley). *Khley* is grown in CPA and other abundant forest areas of the PKNP site, however, a small volume has been harvested for trading due to low value in the market-end, as compared to Roleak. More importantly, *B.bambos* (*Roleak Roleak*) is found to grow in the majority of PKNP sites. Equally important, Roleak has been traded more widely in the provincial town of Siem Reap, and most of these products have been used for fishing gear in Tonle Sap Lake. Moreover, based on the volume of production among those two types of wild bamboo, it is clear that Roleak has been traded within Siem Reap province, and involves a significant number of households from KPNP collected them for making bamboo handicraft.

- **Market Value Chain Mapping for Wild Bamboo (*B.bambos*) Handicraft**

In general, the value chain of wild bamboo handicraft (*B.bambos*) is not complex, due to the commodity being produced with low quality within the traditional craft development in the village sites. Based on the value chain assessment, it is suggested that the market actors of wild bamboo handicraft are mainly classified into (1): collector/processor, (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 handicraft trade structure. A detailed description of each actor in this market structure is provided below.

**Figure 4. 2: Generalised Market Structure for Bamboo Handicraft Trade in PKNP**



❖ **Collector/Processor for Handicraft**

Based on FGDs and KII interview across five study villages indicates that each village at least three to five persons who made handicraft from bamboo and rattan for home utilization and sold onto other neighbors within village and across villages as well as traders from outside. The collection of raw materials from the CPAs and abundant forest areas have been done by men, and both women and men are actively engaged in bamboo or rattan processing for making handicraft, such as, baskets, souvenir products, and mat. Each household spends half day in the forest for collecting raw materials. Meanwhile, the handicraft products are transferred the skills and expertise from one to another generation, it is usually traditional handicraft made. To produce one piece of handicraft, for instance, mat is done at least three to four working days which this can be made USD 4-7 per piece. Each person can made from three to four handicrafts per monthly basis. 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 at the forest gate then selected only a few good stalks of marketable size.

**Table 4.5: Handicraft Processor and Benefit**

| Name of Village | No. Family | Total No. People |                  |                         |                    |
|-----------------|------------|------------------|------------------|-------------------------|--------------------|
|                 |            |                  | No. family (No.) | Total Products per Year | Revenue (USD/year) |
| 1) Anlong Thom  | 186        | 830              | 0                | 0                       | 0                  |
| 2) Thmor Jrunh  | 69         | 323              | 5                | 60                      | 240                |
| 3) Ta Penh      | 115        | 535              | 7                | 84                      | 336                |
| 4) Sangkae Lak  | 86         | 385              | 7                | 84                      | 336                |
| 5) Kla Khmom    | 58         | 293              | 6                | 72                      | 288                |

|                   |            |             |           |            |             |
|-------------------|------------|-------------|-----------|------------|-------------|
| 6) Popel          | 86         | 357         | 5         | 60         | 240         |
| 7) Preah Ang Thom | 224        | 862         | 0         | 0          | 0           |
| 8) Phum Thmey     | 52         | 250         | 3         | 36         | 144         |
| 9) Tahan          | 53         | 221         | 4         | 48         | 192         |
| <b>Total</b>      | <b>929</b> | <b>4056</b> | <b>37</b> | <b>444</b> | <b>1776</b> |

(Source: Consultant Estimated Based on FGD and KII)

#### ❖ **Trader**

There are a few handicraft traders who purchased handicraft from handicraft processors and sell onto district market. It is worthy to note that they do not only purchase the craft but also to buy other NTFPs and agricultural produce from PKNP village sites. It is commonly that those traders sold out the handicraft to district market nearby and some in Prah Ang Thom Tourist village nearby. It is no evidence to conclude that the handicraft were sold out to Siem Reap market, it may due to the fact that the products is a strong competitive with other handicraft from Vietnam and Thailand.

#### ❖ **Wholesaler/Retail Market**

ADF is an international NGO to help support handicraft development in PKNP sites. The Community Centre for Handicraft has been built close to tourist village of which most of handicraft from different village have been fairly aggregated and sold out to local and foreign tourist. It is worthy to note that the villagers who once have been trained by ADF to produce handicraft is being purchased most of these products with comparative price, as compared to trader, but ADF have collected from different target villages, thus it is fair to conclude that the transportation cost is borne by the project.

#### • **SWOT Analysis for Handicraft**

The SWOT analysis indicates a high value-add for handicraft development through market networking with AHA which contributes to increase income generation activities and village employment opportunities. However, the main challenges are mainly related to unsustainable harvesting method from both villagers and outsiders which pose a threat to forest resources.

**Table 4.6: SWOT Analysis for Handicraft**

| <b>Strengths</b>  | <b>Weakness</b>  |
|---|--|
| <ul style="list-style-type: none"> <li>Traditional handicraft is good as tourist souvenir, feasible to expand and up-scale within villages and with other target villagers in PKNP.</li> <li>A good market demand in the local area and in Siem Reap ( e.g. through AHA market development and seal)</li> </ul> | <ul style="list-style-type: none"> <li>Labour intensive</li> <li>Lack of bargaining power to negotiate the price with traders.</li> <li>Lack of widely market network to other Siem Reap tourist market</li> <li>Road access is limited in PKNP</li> </ul> |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Available local labor force because most of target villagers have not migrated</li> <li>• Low input cost</li> </ul>                         | <ul style="list-style-type: none"> <li>• Low and/or lack of marketing strategy and network</li> </ul>  |
| <b>Opportunities</b>   | <b>Threats</b>   |
| <ul style="list-style-type: none"> <li>• Good demand on the market-end of Siem Reap town with collaboration form AHA</li> <li>• Possibly increase of job creation in PKNP</li> </ul> | <ul style="list-style-type: none"> <li>• Insecure harvest</li> <li>• Significant number of outsiders has collected from the wild which increased pressure on forest area.</li> <li>• Strong product competition from Vietnam and Thailand</li> </ul> |

*(Source: FGD and KII Interview, and Community Workshop)*

- **Strategic Planning for Handicraft Development**

The main recommendations and strategic planning are to:

- 1) build market network for both demand and supply side for handicraft products
- 2) improve the sustainable harvesting method, product development
- 3) form the producer group/association with support to aggregate products at larger-scale to meet a certain market-end and to have better bargaining power for pricing products. The specific strategic planning and action plan for the next step are discussed in detail as follows:

**Table 4.7: Strategic Planning for Handicraft**

| Recommendations/Actions   | Timeframe               | Implement Agency  | Supporting Agency   | Resource Support  |                         |
|---|-------------------------|---|---|---|-------------------------|
|   |                         |   |   | No. of Person-Day   | Budget estimation (USD) |
| 1) Resource Assessment  | January to March (2016) | BBP Cambodia and MoE; local authority and CPA committees and members                      | Service providers (consulting firm) to provide the resource assessment within 5 CPA sites (Bamboo and rattan and others), and developing management plan for local communities. Each CPA should be done for 5 working days. | 35  | 3,500                   |
| 2) Development of producer group and/or association for handicraft products             | January to June (2016)  |   |   |   |                         |
| a) Selection of beneficiaries and interested group of people for handicraft development | January to May (2016)   | BBP Cambodia and MoE, and, ADF, and local authority in collaboration with consulting firm | Service providers, for instance, AHA <sup>13</sup> and other  | 10  | 1,000                   |
| b) Selection of group leader/committees   | January to May (2016)   | BBP Cambodia and MoE, and, ADF, and local authority in collaboration with consulting firm | Service providers (AHA) and others  | Village meeting for project presentation and forming a producer group/leader ( 5 CPAs and at least 50% of villagers); | 500                     |

<sup>13</sup> AHA ( Angkor Handicraft Association). Address: Road 60, Trang Village, Sangkat Slorkram, Siem Reap, Cambodia. It is an association craft.

|   |                             |   |  |   |       |
|---|-----------------------------|---|--|---|-------|
|   |                             |   |  | and one consulting firm                               |       |
| c) Handicraft producer group registered at commune  | June (2016)                 | Local authority and BBP Cambodia, and MoE |  |   | -     |
| 3) Capacity development for producer group and/or association on market network and business planning, and marketing product, book keeping, basic accounting and others | May (2016) to August (2017) |   |  |   |       |
| a) Business planning and process  | May to June (2016)          | BBP Cambodia and MoE                      | AHA  | All 5 CPAs, and each CPA will be spent 5 working days | 2,500 |
| b) Capacity building for group leader/committees ( e.g. the formation of association/producer group, financial statement and other administrative matter)               | June ( 2016) to June (2017) | BBP Cambodia and MoE                      | Private consulting firm ( e.g. ACTIS and others): 5 working days and two times including refreshment training                      | 10  | 2,500 |
| c) Training on sustainable method for bamboo and others ( ToT Training)   | June to July                | BBP and MoE                               | Service providers (consulting firm) within 5 CPA sites (Bamboo and rattan and others). Each CPA should be done for 3 working days. |   | 2,500 |
| d) Product Development Training   | May to June (2016)          |   | AHA  | 10  | 1,000 |
| e) M & E process  | August (2016)               | BBP Cambodia and MoE, and ADF             | E.g. AHA and others with 10 working days for 5 CPAs  |   | 1,000 |

|   |                |                      |                     |   |               |
|---|----------------|----------------------|---------------------|---|---------------|
| 5) Help to conduct study tour to Siem Reap for market & product scanning and building network | January (2017) | BBP Cambodia and MoE |                     | Selecting two persons as the group leaders from each CPAs, and 5 CPAs; 2 days field visit to Siem Reap town | 1,200         |
| 6) Mid-Term review  | August (2017)  |                      | Consulting services | 7 working days  | 1,050         |
| <b>Total Budget</b>   |                |                      |                     |   | <b>16,750</b> |

*(Source: Consultant Interview with Various Service providers)*

### 4.2.3. Honey Products

#### 1) Volume and Trade of Honey in Cambodia

In Cambodia, many rural remote communities depend for their livelihoods on the products of biodiversity rich forest areas, notably wild honey among several other items, such as, bamboo rattan, mushroom and other NTFP products. Because of the seasonal nature of honey hunting and the informality of the supply chains, wild honey is often overlooked in rural livelihood, however, wild honey is an important cash income for many forest dependent communities. In some locations the bee colonies are harvested under some form of traditional management. Artificial nesting sites (“rafters”) are sometimes used to attract and access the migrant honeybee populations. In other locations the colonies are taken by anyone who finds them, and often destroyed in the harvesting procedure.

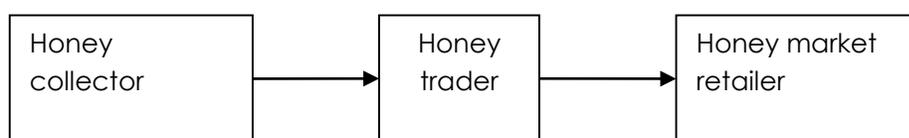
No comprehensive data exists to give a reliable estimate of Cambodia’s actual honey production. However, MSME study (2009) in some part of biodiversity rich areas of Koh Kong, Prey Lang, and others report that the potential volume of quality honey from sustainably managed sources could be estimated to be at 500,000 kg per year which is equivalent to, USD4 million at farmgate price. Specifically, this figure represents a USD750/ per year income for more than 5,000 families, based on seasonal work. Commonly, Wild honey production in Cambodia is village based, with very low standards of quality and hygiene. The product is often diluted/adulterated with sugar water, and usually contaminated when processed by hand in the village. Supply chain linkages are informal and lack information flow back to producers. Although the regulations exist, however, they are neither appropriately designed nor consistently applied. Recently, Cambodia Honey Federation Network has been initiated by WWF and NTFP-EP, which the advance technique for improvement of honey standard quality including good packaging have been taken place at community level. The honey products is found in some super market in Phnom Penh and tourist restaurant, however, a total production is estimated to be at 1,200 to 1,500 liters per year.

#### 2) Market Value Chain Mapping for Wild Honey Products

Similar to national level, the collection of honey in PKNP is not necessary to follow the sustainable harvest method, although few years ago ADF have been provided and supported capacity building to local communities on sustainable harvest, however, local people are marginalized practiced it, because partly they viewed that the collection of honey is very competitive with outsiders of which community alone cannot comply with it.

In general, the value chain of honey products is not complex in the village sites. Based on the value chain assessment, it is suggested that the market actors of wild honey are mainly classified into (1): collector, (2) trader, (3) Retail market. Equally important, based on the trade routes studied, it is possible to identify a generalized market flow for honey products trade structure at the PKNP site. A detailed description of each actor in this market structure is provided below.

**Figure 4. 3: Generalised Market Structure for Honey Trade in PKNP**



#### ❖ Honey Collector

Although recently claimed by local villagers in PKNP about the reduction of honey production in the forest and outsiders compete to collect honey products from CPAs, however, Table 4.8 reports that majority of local communities from different study village sites still collect honey from the wild for both home consumption and trading activity. The honey hunter/collector collects honey from the CPA forest primarily from December to April. On average, each household can collect honey about 20 to 25 litre per month which is corresponding to 100 litre per year. The average price of wild honey per litre is estimated to be as high as USD 8-9/L. Commonly, majority of honey collectors are collected honey without respect the sustainable harvest method, they collected by local villagers and outsiders is also included beehive. It is worthy to note that most of honey products have been used for direct consumption and sell onto traders or Tourist village at Preah Ang Thom with no simple filtering method which is posed a question on hygiene and food safety matter. Table 4.8 reveals that 154 households are collecting honey from CPAs which is correspondent to gross total revenue at USD1,3145 per year.

**Table 4.8: Honey Production and Benefit**

| Name of Village | No. Family | Total No. People | Production and Revenue |                  |                       |                    |
|-----------------|------------|------------------|------------------------|------------------|-----------------------|--------------------|
|                 |            |                  | Percent (%)            | No. family (No.) | Total production (Kg) | Revenue (USD/year) |
| 1) Anlong Thom  | 186        | 830              | 20%                    | 37.2             | 3720                  | 3162               |
| 2) Thmor Jrunch | 69         | 323              | 15%                    | 10.35            | 1035                  | 879.75             |

|                   |            |             |     |               |              |                 |
|-------------------|------------|-------------|-----|---------------|--------------|-----------------|
| 3) Ta Penh        | 115        | 535         | 20% | 23            | 2300         | 1955            |
| 4) Sangkae Lak    | 86         | 385         | 20% | 17.2          | 1720         | 1462            |
| 5) Kla Khmom      | 58         | 293         | 20% | 11.6          | 1160         | 986             |
| 6) Popel          | 86         | 357         | 20% | 17.2          | 1720         | 1462            |
| 7) Preah Ang Thom | 224        | 862         | 10% | 22.4          | 2240         | 1904            |
| 8) Phum Thmey     | 52         | 250         | 20% | 10.4          | 1040         | 884             |
| 9) Tahan          | 53         | 221         | 10% | 5.3           | 530          | 450.5           |
| <b>Total</b>      | <b>929</b> | <b>4056</b> |     | <b>154.65</b> | <b>15465</b> | <b>13145.25</b> |

(Source: Consultant Estimated Based on FGD and KII)

### ❖ Honey Trader

Honey traders are either locally-based or from lowland areas nearby PKNP sites. They not only purchase honey from the local villagers, but buy also other NTFPs and agricultural products from the PKNP village sites. They can carry out 50 to 100 liters of honey by motorbike from the study villages to tourist village at Preah Ang Thom or sell to Siem Reap local market. The majority of honey products have been simply treated towards different qualities of honey products and waste products before selling them to the local market-end. The make-up selling price by including the transpiration cost is between USD 10-11/Liter

### ❖ Honey Retail Market

On the local retail market in Preah Ang Thom village and Siem Reap market honey from village sites is sold to local tourists and local consumers. The final price of honey is USD 12 to 15 per liter of honey.

## 3) SWOT Analysis for Wild Honey

The SWOT analysis (Table 4.9) indicates that wild honey collection contributes to add value for the products, especially to increase income of local communities which led to increase incentive for sustainable forest management. However, the forest degradation and unsustainable honey collection would attribute reduction of honey production and reduce crop yield due to low level of pollination function from wild honey bees.

**Table 4.9: SWOT Analysis for Wild Honey Collection from PKNP Site**

| <b>Strengths</b>  | <b>Weakness</b>   |
|---|---|
| <ul style="list-style-type: none"> <li>• All CPAs in PKNP are available for honey collection for alternative livelihood, although the majority of PKNP areas are degraded.</li> <li>• The evergreen forest does still exist in PKNP which is home to wild honey bees</li> </ul> | <ul style="list-style-type: none"> <li>• The significant reduction of forest areas led to the reduction of wild honey bee populations</li> <li>• Unsustainable honey collection for both local villagers and outsiders</li> <li>• Lack of strong law enforcement; the forest areas will be converted to cashew plantations and other agricultural crops, instead. Thus, this will affect honey collection.</li> </ul> |
| <b>Opportunities</b>  | <b>Threats</b>  |
| <ul style="list-style-type: none"> <li>• Good market demand for wild honey in Siem Reap and other urban areas, including super markets and cosmetic produces.</li> <li>• The increased income from honey would provide a strong incentive for CPA forest management.</li> </ul> | <ul style="list-style-type: none"> <li>• Increase of a significant number of outsiders to collect honey from PKNP sites, especially within CPA areas.</li> <li>• Increase of deforestation, which is attributed to low production of honey and will consequently reduce flower pollination because of low density of wild honey bees.</li> </ul>  |

(Source: FGD and KII Interview, and Community Workshop)

**4) Strategic Planning for Wild Honey Collection in PKNP**

The main recommendations and actions for the planning process for honey products are to upgrade the existing VCA, mainly by training on sustainable harvesting methods, the formation of producer groups/associations, which helps to aggregate honey production, improves processing facilities at community level through the Honey Enterprise Development and increases capacity development for the producer groups including technical and financial management. Equally important is the market network development from the forest to market-end, including product development and packaging, and an integrated PKNP honey enterprise development into a Cambodia Wild Honey Network. This has been initiated and supported by WFF and NTFP-EP as well as USAID/SFB Project in the Eastern Plain Landscape and Prey Lang Landscape of Cambodia. Principally this network helps to strengthen the bargaining power of honey collector groups, and also allows more honey collectors to learn and understand about sustainable honey harvesting, and thus helps for more areas of forest to be protected. The specific strategic planning process and actions are described as follows:

**Table 4.10: Strategic Planning for Wild Honey Products**

| Recommendations/Actions   | Timeframe                  | Implement Agency  | Supporting Agency  | Resource Support  |                         |
|---|----------------------------|---|--|---|-------------------------|
|   |                            |   |  | No. of Person-day   | Budget estimation (USD) |
| 1) Resource Assessment  | January to February (2016) | BBP Cambodia and MoE; local authority and CPA committees and members                      | Service providers (consulting firm: ACTIS Firm) to provide the resource assessment within 5 CPA sites, and developing management plan for local communities. Each CPA should be done for 5 working days. | 35  | 3,500                   |
| 2) Development of producer group and/or association for honey products                  | January to March (2016)    |   |  |   |                         |
| a) Selection of beneficiaries and interested group of people for handicraft development | January to February (2016) | BBP Cambodia and MoE, and, ADF, and local authority in collaboration with consulting firm | Service providers, for instance, ACTIS   | 10  | 1,000                   |
| b) Selection of group leader/committees   | January to February (2016) | BBP Cambodia and MoE, and, ADF, and local authority in collaboration with consulting firm | Service providers (ACTIS) and others   | Village meeting for project presentation and forming a producer group/leader ( 5 CPAs and at least 50% of villagers); and one consulting firm | 500                     |
| c) Honey producer group registered at commune   | March (2016)               | Local authority and BBP Cambodia, and MoE   | BBP Coordinator and MoE  |   | -                       |

|   |                               |                               |  |  |       |
|---|-------------------------------|-------------------------------|--|--|-------|
| 3) Capacity development for producer group and/or association   | March (2016) to August (2017) |                               |  |  |       |
| a) Business planning and process for honey product  | May to June (2016)            | BBP Cambodia and MoE          | Consulting firm ( e.g. ACTIS)  | All 5 CPAs, and each CPA will be spent 5 worling days                              | 2,500 |
| b) Capacity building for group leader/committees ( e.g. the formation of association/producer group, financial statement and other administrative matter) | June ( 2016) to June (2017)   | BBP Cambodia and MoE          | Private consulting firm ( e.g. ACTIS and others): 5 working days and two times including refreshment training  | 25   | 2,500 |
| c) Training on sustainable method for honey collection  | January (2016)                | BBP and MoE                   | Service providers, BEE Unlimited <sup>14</sup> . To train within 5 CPA sites. Each training should be 7 working days, and one is refreshment training and follow up would consume 5 working days |  | 3,000 |
| d) Advance product development ( Packaging, filtering and others)   | May to June (2016)            | BBP and MoE                   | Cambodia Nature Wild   | 7  | 800   |
| e) M & E process  | August (2016)                 | BBP Cambodia and MoE, and ADF | E.g. AHA and others with 10 working days for 5 CPAs  |  | 1,000 |
| 5) Market networking through study tour and exposure visit to Siem Reap ( Artisan   | January (2017)                | BBP Cambodia and MoE          |  | Selecting two person as the group leaders from each CPAs, and 5 CPAs; 4 days field | 2,000 |

<sup>14</sup> BEES UNLIMITED. Director: Danis Jump, [dani@beesunlimited.com](mailto:dani@beesunlimited.com); Service Provider for Honey Sustainable Harverst; Siem Reap Town

|   |                  |  |                     |                                      |               |
|---|------------------|--|---------------------|--------------------------------------|---------------|
| Dángkor) and<br>Phnom Penh ( Nature Wild and<br>other Super Market) |                  |  |                     | visit in Siem Reap and<br>Phnom Penh |               |
| 6) Mid-Term review  | August<br>(2017) |  | Consulting services | 7                                    | 1,050         |
| <b>Total Budget</b>   |                  |  |                     |                                      | <b>17,850</b> |

### **4.3. Potential Beneficiaries**

In PKNP Site, the BBP-Project can contribute to improve livelihood and food security of almost all households in the PKNP site of which about 50% are women. 23% from the total potential beneficiaries belong to the poor socio-economic segment. Table 4.11 estimates the total beneficiaries based entirely on the FGD conducted across the study villages, which figures were verified within the community workshop. The number of beneficiaries (Household or population) is slightly below the number of households or the population in each village, however, each potential household can benefit from more than one product through the intervention of the BBP Project. Table 4.11 also includes the existing people who currently benefit from the three NTFP/BBP products.

**Table 4.11: Total Potential Beneficiaries for Three Potential Value Chains from the BBP Project**

| Name of Village   | Total No. Family | Total No. People | Medicinal Plant      |                          | Bamboo Handicraft    |                          | Honey                |                          | Potential Grand Total Beneficiaries for 3 Value Chain |                                |
|-------------------|------------------|------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|---|--------------------------------|
|                   |                  |                  | Total Family Benefit | Total Population Benefit | Total Family Benefit | Total Population Benefit | Total Family Benefit | Total Population Benefit | Grand Total Family Benefit                            | Grand Total Population Benefit |
| 1) Anlong Thom    | 186              | 830              | 112                  | 498                      | 37                   | 166                      | 56                   | 249                      | 205   | 913                            |
| 2) Thmor Jrunh    | 69               | 323              | 48                   | 226                      | 14                   | 65                       | 21                   | 97                       | 83  | 388                            |
| 3) Ta Penh        | 115              | 535              | 81                   | 375                      | 23                   | 107                      | 46                   | 214                      | 150   | 696                            |
| 4) Sangkae Lak    | 86               | 385              | 52                   | 231                      | 17                   | 77                       | 34                   | 154                      | 103   | 462                            |
| 5) Kla Khmom      | 58               | 293              | 35                   | 176                      | 12                   | 59                       | 35                   | 176                      | 81  | 410                            |
| 6) Popel          | 86               | 357              | 52                   | 214                      | 17                   | 71                       | 34                   | 143                      | 103   | 428                            |
| 7) Preah Ang Thom | 224              | 862              | 67                   | 259                      | 11                   | 43                       | 22                   | 86                       | 101   | 388                            |
| 8) Phum Thmey     | 52               | 250              | 26                   | 125                      | 10                   | 50                       | 10                   | 50                       | 47  | 225                            |
| 9) Tahan          | 53               | 221              | 27                   | 111                      | 11                   | 44                       | 11                   | 44                       | 48  | 199                            |

|              |            |             |            |             |            |            |            |             |            |             |
|--------------|------------|-------------|------------|-------------|------------|------------|------------|-------------|------------|-------------|
| <b>Total</b> | <b>929</b> | <b>4056</b> | <b>498</b> | <b>2214</b> | <b>152</b> | <b>682</b> | <b>270</b> | <b>1213</b> | <b>920</b> | <b>4109</b> |
|--------------|------------|-------------|------------|-------------|------------|------------|------------|-------------|------------|-------------|

## CHAPTER V: Conclusion Remarks and Recommendations

Based on Value Chain Assessment (VCA) comprehensive assessment by using scoring and rating, with a participatory process and through the consultation with community workshop, therefore three main commodities from NTFP products of PKNP which are given the highest priority for VCA implementation: *Zingideraceae* (Khmer Name: *Prateal Thleum Chake*), bamboo handicraft, and wild honey products. Equally important, these three main products has been actively collecting and trading activites for majority of local communities. Moreover, this NTFP products development can be compliment and/or substitute products which contribute to improving rural village economy of PKNP community. Of particular concern, by expanding and up scaling such these potential NTFPs, the BBP-Project would contribute to improve livelihood and food security of almost 1000 households which corresponds to almost 5,000 persons of which about 50% are women, and a total 23% from the total potential beneficiaries belong to the poor socio-economic segment.

The main recommendations for BBP Cambodia in relation to the three commodities selected for VCA Gap Analysis are:

- To conduct a resource assessment for all 5 CPAs in PKNP
- To support the formation of producer group/association for each selected BBP commodity, to ensure a larger-scale production and assure the local communities a better bargaining power in order to negotiate with different key stakeholders for improving their benefits
- To support sustainable harvesting methods for selected BBP commodities, especially honey and bamboo handicraft.
- To support capacity building to producer groups to operate business in a sustainable manner, of which business planning and financial management are the core principles for the engagement and support from the BBP Project.
- To build and develop a market network and market information, including the key private sector and social enterprises in Siem Reap as well as other public sectors, which can support the upgrading of BBP to meet the market demand, which will contribute to add value for product development of local communities in the PKNP site.

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## ANNEX A: NTFP TRADER QUESTIONNAIRE

### 1. **Background:**

1.1. Name:....., Age:..., Sex:....., Marital Status.....H/P:.....

1.2. No. of household members:.....

1.3. Address:.....

1.4. Main occupation:.....

1.5. Minor occupation.....

1.6. How long have been you a NTFP ( Species Name:....) trader?.....Years

1.7. What products do you produce and sell out of NTFP (Species Name:....)?

1.8. In your village/commune, how many traders do you think are also buying and selling NTFP (Species Name:....) like you?

1.9. Compared with these other traders, are you a smaller or bigger trader than them?.....

1.10. How many villages do you serve with your NTFP (Species Name :....) trade business?

| Name of Village | Total production purchased<br>(unit/year) | Means of transportation |
|-----------------|---|-------------------------|
| 1.              |   |                         |
| 2.              |   |                         |
| 3.              |   |                         |
| 4.              |   |                         |

1.11. To whom/where do you sell your NTFP (Species Name:....) products?

| Name of wholesalers or others | Address | Hours to transport from your house to wholesalers | Means of transportation |
|-------------------------------|---------|---|-------------------------|
| 1.                            |         |   |                         |
| 2.                            |         |   |                         |
| 3.                            |         |   |                         |

## 2. NTFP ( Species Name:....) Pricing

2.1. What is the trend for NTFP (Species Name:....) production over the past few years?

- Are villagers providing more or less NTFP ( Species Name:....)?.....
- Are there more or less traders in the NTFP (Species Name:....) business?.....
- Is the NTFP (Species Name :....) price is higher or lower?.....

2.2. Why does the price that you offer NTFP (Species Name :....) producers/collectors fluctuate (change) during the course of the year?

- Change in transport costs
- Quality of NTFP ( Species Name:....) change
- Demand-driven shift (such as more demand by consumers at some time of the year).
- Supply-driven shift (such as greater NTFP ( Species Name:....) production at some time of the year)
- Other reason

2.3. Why does the price at which you sell NTFP (Species Name:....) to the wholesaler fluctuate (change) during the course of the year?

- Change in transport costs
- Quality of NTFP ( Species Name:....) changes
- Demand-driven shift (such as more demand by consumers at some time of the year).
- Supply-driven shift (such as greater NTFP ( Species Name:....) production at some time of the year)
- Other reason

2.4. Do you offer loans to NTFP (Species Name:....) collectors as part of your NTFP ( Species Name:....) trade business? If yes, how many collectors do you make loans to?

| Name of village | Number of collectors | No. collector loan credit |
|-----------------|----------------------|---------------------------|
|                 |                      |                           |

|    |  |  |
|----|--|--|
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |
| 4. |  |  |
| 5. |  |  |

2.5. What is the typical structure of these loan arrangements?

.....

2.6. When do you typically offer loans?

.....

2.7. How much time do borrowers have to pay back the loan (with cash,NTFP (Species Name:.....),others)?

.....

2.8. Do you charge an interest rate? What happens if people cannot pay back the loan?

.....

### 3. *Fee associated with business*

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

| Kind of formal fee | <i>Amount of fees paid (2015)</i> |                              |
|--------------------|-----------------------------------|------------------------------|
|                    | <i>Wet season (KHR/Unit)</i>      | <i>Dry season (KHR/Unit)</i> |
| 1. License         |                                   |                              |
| 2. Local authority |                                   |                              |
| 3. Checkpoints     |                                   |                              |
| 4.Others           |                                   |                              |

### 4. *Economic analysis of NTFP Business*

| Items                     | Variable  | Annual Production in 2015 |            |
|---------------------------|---|---------------------------|------------|
|                           |   | Wet season                | Dry season |
| <b>Purchasing expense</b> | Number of trips to village  |                           |            |
|                           | Number of units purchased per trip                                |                           |            |
|                           | Price paid to villager for NTFP (Species Name:....) (KHR/Unit)    |                           |            |
| <b>Operating cost</b>     | Distance from villages to main road (km)                          |                           |            |
|                           | Distance along main road to selling point (wholesaler, market)    |                           |            |
|                           | Number of hours total travel time                                 |                           |            |
|                           | Wage of next best alternative job (KHR/day)                       |                           |            |
|                           | Estimated labor cost per trip (KHR)                               |                           |            |
|                           | Means of transportation   |                           |            |
|                           | Liters of gasoline used for trip to/from village to selling point |                           |            |
|                           | Cost of gasoline per liter in that area                           |                           |            |
| <b>Capital cost</b>       | How many years has the trader owned the transport?                |                           |            |
|                           | Annual repairing cost   |                           |            |
|                           | How many years until it will likely need to be replaced?          |                           |            |
|                           | Capital costs (purchasing price of moto, car, truck) (US\$)       |                           |            |
|                           | Other capital equipment   |                           |            |

|  |  |  |  |
|--|--|--|--|
|  | How often does equipment need to be replaced (years) |  |  |
|  | How much does equipment cost to replace              |  |  |
|  | <b>Selling price to wholesaler/trader</b>            |  |  |

**5. Processing**

5.1. What do consumers use NTFP (Species Name:.....) for?

.....

5.2. Is processing needed to make different NTFP (Species Name:.....)-based products?

.....

5.3. Do you process NTFP (Species Name :.....)? If not, why?

.....

5.4. Do you know anyone who processes NTFP (Species Name :.....) in the area? What are the products?

.....

5.5. Why is processing not done in your working area or your warehouse?

.....

**6. What are the main constraints/challenges you face in the NTFP (Species Name :.....) trade business?**

- 1.
- 2.
- 3.

**7. How do you manage/overcome these constraints?**

- 1.
- 2.
- 3.

**8. What types of changes would you like to see in your NTFPs trade business in the future?**

1.

2.

3.

**ANNEXT B: WHOSALER/ PROCESSOR QUESTIONNAIRE**

**1. Background:**

- 1.1. Name:....., Age....., Sex:....., Marital Status.....H/P:.....
- 1.2. No. of members in Household:.....
- 1.3. Address:.....
- 1.4. Main occupation:.....
- 1.5. Minor occupation.....
- 1.6. How long have been you a NTFPs wholesaler/Association/processor (district/province)?.....Years
- 1.7. What products do you produce and sell out of NTFPs (Name of species:....)?
- 1.8. In your district/province, how many wholesalers do you think are also buying and selling NTFPs (Name of species:....) like you?
- 1.9. Compared with these other wholesalers, are you a smaller or bigger producer than them?
- 1.10. How many wholesalers in this district/province?
- 1.11. How would you observe the trend of the value of your NTFPs ( Name of species:....) collection in the last 3 years? Increasing? Decreasing? Same?

|  |   |  |
|--|---|--|
| 1.12. Name of trader/villagers/member of association | Average amount purchased in dry season (Unit) | Average amount purchased in wet season(Unit) |
|--|---|--|

|    |  |  |
|----|--|--|
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |
| 4. |  |  |
| 5. |  |  |
| 6. |  |  |

1.13. To whom/where do you sell your NTFPs ( Name of species:....) products?

| Name of trader/Final market end/retailers | Address | Hours from your wholesale business to traders | Transportation means |
|---|---------|---|----------------------|
| 1.  |         |   |                      |
| 2.  |         |   |                      |
| 3.  |         |   |                      |

**2. NTFPs ( Name of species:....) Pricing**

2.1. What is the trend for NTFPs (Name of species:....) production over the last few years?

- a. Are villagers providing more or less NTFPs ( Name of species:....)?.....
- b. Are there more or less traders in the NTFPs ( Name of species:....) business?.....
- c. Is the NTFPs ( Name of species:....) price is higher or lower?.....

2.2. Why does the price that you offer NTFPs (Name of species:....) traders/villagers fluctuate (change) during the course of the year?

- a. Change in transport costs
- b. Quality of NTFPs ( Name of species:....) changes
- c. Demand-driven shift (such as more demand by consumers at some time of the year).
- d. Supply-driven shift (such as greater NTFPs ( Name of species:....) production at some time of the year)
- e. Other reason

- 2.3. Why does the price at which you sell NTFPs ( Name of species:....) to the wholesaler fluctuate (change) during the course of the year?
- a. Change in transport costs
  - b. Quality of NTFPs ( Name of species:....) changes
  - c. Demand-driven shift (such as more demand by consumers at some time of the year).
  - d. Supply-driven shift (such as greater NTFPs ( Name of species:....) production at some time of the year)
  - e. Other reason.
- 2.4. Do you offer loans to NTFPs (Name of species:....) traders/villagers as part of your NTFPs ( Name of species:....) trade business? If yes, how many tappers do you make loans to?

| Name of village/traders | Number of villagers/traders | No. villagers/traders loan credit |
|-------------------------|-----------------------------|-----------------------------------|
| 1.                      |                             |                                   |
| 2.                      |                             |                                   |
| 3.                      |                             |                                   |
| 4.                      |                             |                                   |

2.5. What is the typical structure of these loan arrangements?  
 .....

2.6. When do you typically offer loans?  
 .....

2.7. How much time do borrowers have to pay back the loan (with cash, NTFPs ( Name of species:....), others)?  
 .....

2.8. Do you charge an interest rate? What happens if people cannot pay back the loan?  
 .....

**3. Fee associated with business**

3.1. What kinds of formal and informal fees do you pay for trip from your warehouse to the place of sale (formal fee are fees for which you receive a receipt)?

| Kind of formal fee | <i>Amount of fees paid (2015)</i> |                              |
|--------------------|-----------------------------------|------------------------------|
|                    | <i>Wet season (KHR/Unit)</i>      | <i>Dry season (KHR/Unit)</i> |
| 1. License         |                                   |                              |
| 2. Local authority |                                   |                              |
| 3. Checkpoints     |                                   |                              |
| 4. Others          |                                   |                              |

4. Economic analysis of NTFPs ( Name of species:....) business (Raw material purchased from traders/villagers)

| Items                     | Variable  | Annual Production in 2015 |            |
|---------------------------|---|---------------------------|------------|
|                           |   | Wet season                | Dry season |
| <b>Purchasing expense</b> | Number of trips to village  |                           |            |
|                           | Number of units purchased per trip                                  |                           |            |
|                           | Price paid to villager for NTFPs ( Name of species:....) (KHR/Unit) |                           |            |
| <b>Operating cost</b>     | Distance from villages to main road (km)                            |                           |            |
|                           | Distance along main road to selling point (wholesaler, market)      |                           |            |
|                           | Number of hours total travel time                                   |                           |            |
|                           | Wage of next best alternative job (KHR/day)                         |                           |            |

|                     |   |  |  |
|---------------------|---|--|--|
|                     | Estimated labor costs per trip (KHR)                              |  |  |
|                     | Means of transportation   |  |  |
|                     | Liters of gasoline used for trip to/from village to selling point |  |  |
|                     | Cost of gasoline per liter in that area                           |  |  |
|                     | Number of staff (#)   |  |  |
|                     | Staff salary (USD)  |  |  |
| <b>Capital cost</b> | How many years have you owned the transport?                      |  |  |
|                     | Annual repairing cost   |  |  |
|                     | How many years until it will likely need to be replaced?          |  |  |
|                     | Capital costs (purchasing price of moto, car, truck) (US\$)       |  |  |
|                     | Other capital equipment   |  |  |
|                     | How often does equipment need to be replaced (years)              |  |  |
|                     | Warehouse construction (USD)                                      |  |  |
|                     | No. of years used for the warehouse                               |  |  |
|                     | Maintenance cost for the warehouse                                |  |  |
|                     | <b>Selling price to other wholesaler/retailer/consumer</b>        |  |  |

**5. Economic analysis of NTFPs ( Name of species:....) business (Processed Products purchased from traders/villagers)**

| Items | Variable | Annual Production in 2015 |
|-------|----------|---------------------------|
|-------|----------|---------------------------|

|                           |   | Wet season | Dry season |
|---------------------------|---|------------|------------|
| <b>Purchasing expense</b> | Number of trips to village  |            |            |
|                           | Number of unit purchased per trip                                   |            |            |
|                           | Price paid to villager for NTFPs ( Name of species:....) (KHR/Unit) |            |            |
| <b>Operating cost</b>     | Distance from villages to main road (km)                            |            |            |
|                           | Distance along main road to selling point (wholesaler, market)      |            |            |
|                           | Number of hours total travel time                                   |            |            |
|                           | Wage of next best alternative job (KHR/day)                         |            |            |
|                           | Estimated labor costs per trip (KHR)                                |            |            |
|                           | Means of transportation   |            |            |
|                           | Liters of gasoline used for trip to/from village to selling point   |            |            |
|                           | Cost of gasoline per liter in that area                             |            |            |
|                           | Number of staff (#)   |            |            |
|                           | Staff salary (USD)  |            |            |
| <b>Capital cost</b>       | How many years have you owned the transport?                        |            |            |
|                           | Annual repairing cost   |            |            |
|                           | How many years until it will likely need to be replaced?            |            |            |
|                           | Capital costs (purchasing price of moto, car, truck) (US\$)         |            |            |

|  |  |  |  |
|--|--|--|--|
|  | Other capital equipment                                    |  |  |
|  | How often does equipment need to be replaced (years)       |  |  |
|  | Warehouse construction (USD)                               |  |  |
|  | No. of years used for the warehouse                        |  |  |
|  | Maintenance cost for the warehouse                         |  |  |
|  | <b>Selling price to other wholesaler/retailer/consumer</b> |  |  |

**6. Processing ( Additional information)**

6.1. What do NTFPs ( Name of species:....) consumers use it for?

.....

6.2. Is processing needed to make different NTFPs-based products?

.....

6.3. Do you process NTFPs (Name of species:....)? If not, why?

.....

6.4. Do you know anyone who processes NTFPs in the area? What are the products?

.....

6.5. Why is processing not done in your working area or your warehouse?

.....

**7. Alternative Business**

7.1. What would you do if the NTFPs ( Name of species:.....) trade business did not exist ( Only for wholesaler/processor)?  
.....

7.2. What could you earn daily from that alternative job( Only for wholesaler/processor)?  
.....

**8. What are the main constraints/challenges you face in the NTFPs (Name of species:.....) trade business?**

- 1.
- 2.
- 3.

**9. How do you manage/overcome these constraints?**

- 1.
- 2.
- 3.

**10. What types of change would you like to see in your NTFPs (Name of species :.....) business in the future?**

- 1.
- 2.
- 3.

## ANNEX C: KEY INFORMANT INTERVIEW

1. Name:..... Age:..... Sex:..... Position:.....
2. Address:.....
3. How long have been you working in this post?.....
4. How many technical staff are working in Kulen PA, Is it sufficient Resources?.....
5. What are the main non-timber forest products in PA Kulen and CPA?.....
6. Who and how many people are collecting NTFPs products?.....
7. Please describe your main NTFPs products in PA Kulen? Including the main specifies for trading Activities?
8. What form of permits, rights or concessions do they need to harvest and transport this NTFPs in PA Kulen and CPA?
9. What are the regulations and quotas imposed by the Kueln PA and MoE for trading NTFPs?
10. For how many types of forest products were licenses and transport permits requested from the MoE/Kulen PA? How were taxes collected for the products?

| Types of products   | 2015     |               |
|---------------------|----------|---------------|
|                     | Quantity | Amount<br>(R) |
| 1. Rattan           |          |               |
| 2. Bamboo           |          |               |
| 3. Honey            |          |               |
| 4. Medicinal plants |          |               |
| 5. Other            |          |               |

11. What is the main purpose of formal collection?

.....

12. What percentage of local revenue is derived from collection of fees or taxes from extracting NTFPs products?

.....

13. Is NTFPs being trading as raw materials or are there processing SMEs in local market or in Siem Reap twon? If so, where are those SMEsin your province?

.....

14. How would you describe the trend of your NTFPs tax collection in the last five years? Increasing? Decreasing? Same?

.....

15. What are capacity building need for your staff in order to improve the BTFPs in your areas?

16. What are the main constraints/challenges you face in forest product management and trade in PA Kulen ?

- 1)
- 2)
- 3)
- 4)

17. How do you manage/overcome these constraints?

- 1)
- 2)
- 3)
- 4)

18. What changes would you like to see NTFPs trade in future for PA Kulen?

- 1)

- 2)
- 3)
- 4)

**ANNEX D: FOCUS GROUP DISCUSSION**

**(CPA Community Committees, Members, and Local Villagers)**

**I. General Information**

|                          |  |
|--------------------------|--|
| 1.1. Questionnaire No.   |  |
| 1.2. Date (dd/mm/yy)     |  |
| 1.3. Name of interviewer |  |
| 1.4. CPA                 |  |
| 1.5. APA                 |  |
| 1.6.. Village            |  |
| 1.7. Commune             |  |
| 1.8. District            |  |
| 1.9. Province            |  |

9. Participants in Focus Group Discussion:.....

10. Number of men participating in Focus Group Discussion.....

11. Number of women participating in Focus Group Discussion.....

12. Please describes your main livelihood activities in your village:.....

**II. Background of Forestry Dependent Livelihoods**

1. Year of establishment:.....

2. Size of CPA:.....

3. Name of CPA

4. How many villages were members of the CPA/village at the creation date and how many are now? And how many are men members to women members, men committees to women committees of CPA at the creation and now?

| Villages               | At creation of CPA | In 2015 |
|------------------------|--------------------|---------|
| Number of villages     |                    |         |
| Number of men member   |                    |         |
| Number of women number |                    |         |
| Men CPA committee      |                    |         |
| Women CPA committee    |                    |         |

### III. Effectiveness, functions and governance of CPA

1. What are the criteria used for selecting candidates to be members of the CPA?

- Education
- Commitment
- Integrity
- Honesty
- Other (please specify):.....

2. What are the benefits from being a member of the CPA?

- Access to credit
- Access to resources
- Gaining social status
- Access to information of different type (market, development opportunities, and technology)
- Other (specify):.....

3. What are the criteria and requirements to be a member of the CPA?  
 .....

4. Is there any reason for excluding village households or village people from being a member of CPA (e.g. gender, ethnicity, lack of assets, etc.)

| Type of people excluded<br>(1) | Yes or no<br>(2) | Reason of exclusions (specify)<br>(3) |
|--------------------------------|------------------|---------------------------------------|
| Non-khmer person/household     |                  |                                       |
| Poor household                 |                  |                                       |
| Women heads of households      |                  |                                       |
| Young women                    |                  |                                       |
| Young men                      |                  |                                       |

*Instructions for the table:*

*In column # 2 please use the following code: yes=1; no=2*

5. What is the frequency of meetings for all CPA members?

| <b>Frequency of meetings</b> | <b>In 2015</b> |
|------------------------------|----------------|
| Once per month               |                |
| Twice per month              |                |
| Once every two months        |                |
| Once every three months      |                |
| Once every six months        |                |
| Other                        |                |

#### **IV. Resource Availability and Mapping**

1. What types of NTFPs are available in your areas? (Please list them all and rating and scoring them base on volume, income participation, technology, harmless to forest/sustainable harvest, and others)

.....

2. What are the conditions of NTFPs in your areas?

.....

3. Please draw the mapping resources of your available NTFPs in your CPA?

.....

4. How many households collect NTFPs for home consumption and sale? What is the size of NTFPs within CPA?

.....

5. What is total annual production for different NTFPs collected from your CPA and from Core zone of PA Kulen?

.....

6. Are tree nursery farming and replanting for NTFPs important for community members when the resources are scarce? If so, why and how?

.....

7. Were you experienced in processing/trading NTFPs products in your village? When? Who and/or which organizations supported your skills and expertise in terms of processing NTFPs products? And did you apply it? and Where your village sell out there products? Did they know the price of NTFPs products somewhere else during the course of selling their NTFPs products to local trader?

.....

8. Did you have experience in marketing skills? When? If so, who and/or which organization trained you? And did you apply it?

.....

9. What capacities are needed for the local community for NTFPs and access to market? (please discuss in detail)

- a) book keeping and accounting
- b) product development

- c) processing
- d) enterprise development
- e) market access, market information and networks
- f) business planning
- g) other

*Note: The consultant(s) used flip charts to facilitate during the course of the FGD with the community people.*

10. To facilitate the action planning for the community people. In this exercise, the consultant(s) will help to facilitate the action planning market and value chain from the local community/local villagers ( If they have no CPA): short, medium and long term. The items of the action plan may include the Table format as follows:

| Need assessment/recommendations | Activity | Timing | Participant | The level of participation | Resources needs | Risk assumptions |
|---------------------------------|----------|--------|-------------|----------------------------|-----------------|------------------|
|                                 |          |        |             |                            |                 |                  |
|                                 |          |        |             |                            |                 |                  |
|                                 |          |        |             |                            |                 |                  |
|                                 |          |        |             |                            |                 |                  |

11. Of the various problems you face, which are the biggest constraints/challenges you face in running your CPA?  
 .....

12. What opportunities are there for your CPA in term of sustainable NTFPs harvesting?  
 .....

13. How do you manage/overcome them?  
 .....

14. What types of changes would you like to see in your CPA and PA Kulen in the future?  
 .....

15. To conduct field visit to CPAs site (If necessary)?