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Japan International Cooperation Agency (JICA)

Ministry of Agriculture and Forestry (MAF)
Lao PDR

THE BASIC STUDY
FOR
THE FOREST MANAGEMENT AND COMMUNITY SUPPORT PROJECT
IN
LAO PDR

DATA BOOK 1

SEPTEMBER 2004

NIPPON KOEI CO., LTD.

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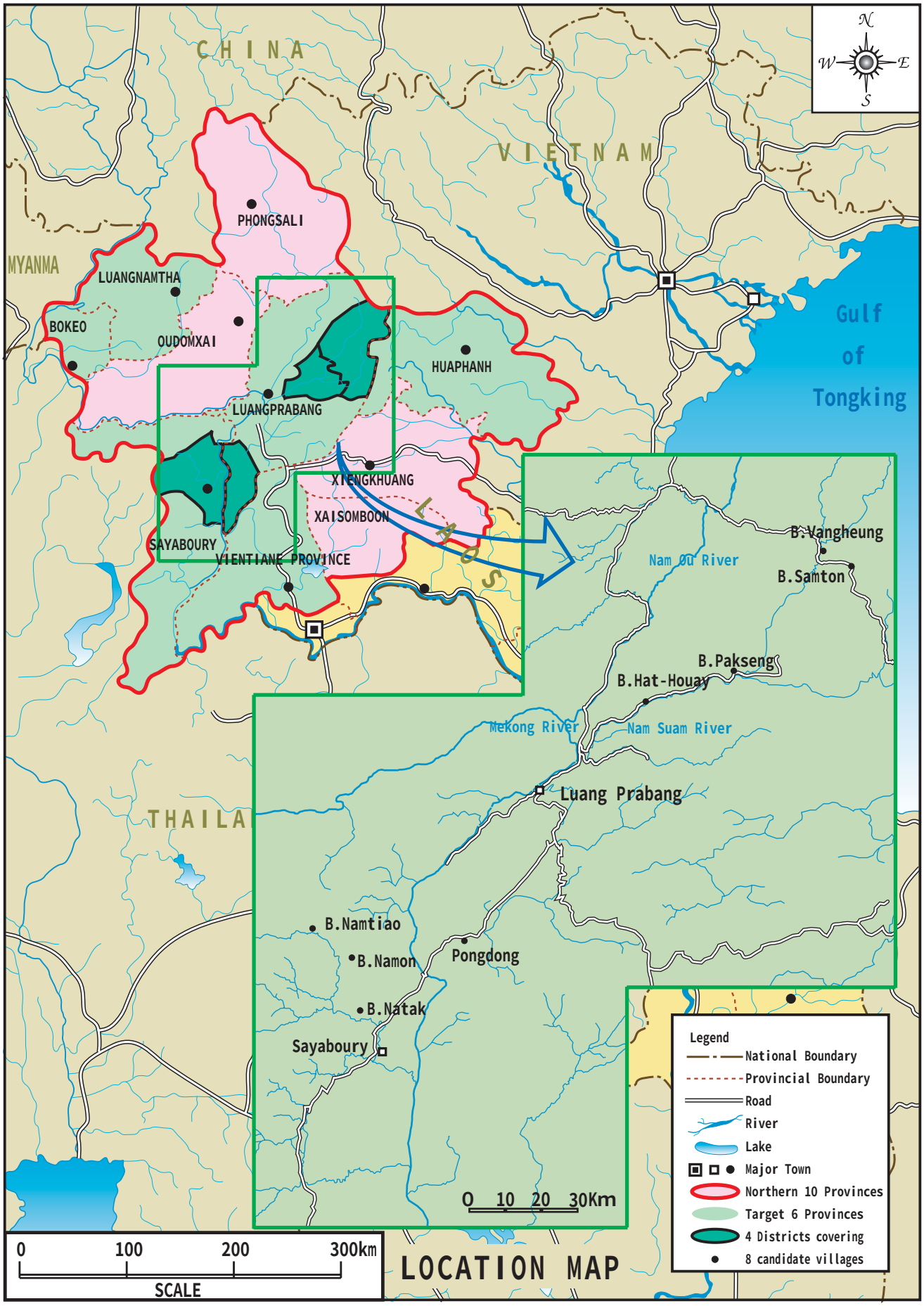
Part I

Socio-Economic Survey

of the Eight (8) Candidate Villages


CHINA
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PART-I

SOCIO-ECONOMIC SURVEY OF THE EIGHT (8) CANDIDATE VILLAGES

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SOCIO-ECONOMIC SURVEY OF EIGHT (8) CANDIDATE VILLAGES

1. Background and Objective of the Survey

1.1 Background of the Survey

The Basic Study for the Forest Management and Community Support Project (FORCOM) has started its field work on 30 March 2004 in accordance with the contract with Japan International Cooperation Agency (JICA). The principle objective of the basic study is to gather the information/data related to the study area as well as the organizations (as defined in the contract document) so that the FORCOM can define the target/focus of the project by using the data gathered by the basic study.

The basic study will produce the following information by the end of the study.

a. Socio-economic condition of the eight (8) candidate villages
b. Village profiles of the eight (8) candidate villages
c. Present use of land and natural resources in the eight (8) candidate villages
d. Market condition of agricultural and non-timber forest products in the six (6) provinces and the eight (8) candidate villages
e. Present land use and vegetation cover of 10 provinces in the northern region and the four (4) priority villages
f. Inventory of the staff of National Agriculture and Forestry Extension Service (NAFES), Provincial Agricultural and Forestry Offices (PAFOs) and District Agriculture and Forestry Offices (DAFO) of six (6) provinces
g. Training needs of PAFO staff of the six (6) provinces and DAFO staff of four (4) districts which have jurisdiction over the candidate villages
h. Inventory of on-going and implemented training courses/modules
i. Inventory of available trainers/resource persons and materials for training.

This study report describes the results of the field survey on eight (8) candidate villages, which focused on clarifying the items of **(a), (b) and (c)** in the aforementioned list.

1.2 Objective of the Survey

The information/data related to the following eight (8) candidate villages are requisites for selection of model villages where FORCOM will provide its intensive support initially.

i) Pakseng (Pakseng district)
ii) Hat Houay (Pakseng district)
iii) Samton (Viengkham district)
iv) Vangheung (Viengkham district)
v) Pongdong (Nan district)
vi) Namtiao (Sayaboury district)
vii) Namon (Sayaboury district)
viii) Natak (Sayaboury district)

Further, some information/data above will be also utilized as benchmark dada for the impact assessment after five (5) years implementation of the Project.

2. Scope of the Survey

2.1 Village Profile Survey

The objectives of the village profile survey are to clarify general features and socio-economic as well as natural conditions of the candidate villages. This survey was undertaken through a semi-structured interview with key informants, the major items/outputs clarified through which are summarized below.

Village Profile Survey

Items	Outputs
1) General Information	- Name, area and location of village (distance from major city etc.); - History of village; - Organizational structure for administrative control; - Name of village chairman and other commission member; - Demography; - Ethnic structure (total population by ethnicity, sex and age distribution) - Food security; - Educational level and literacy rate; - Diseases; - Traditional custom, culture and events that may affect the project implementation
2) Livelihood and Natural Resource Management	- Topography; - Meteorological data; - Land classification and distribution of each land use category including forest land, agricultural land, residential area, etc. - Farming activity and production of major crops of the area; - Forestry activity; - Other livelihood activity; - Collective activities by the village for forest conservation
3) Infrastructure	- Location, current condition of social infrastructure (water supply, school, clinic, road, etc.); - Location, current condition of agricultural infrastructure (irrigation, post-harvest etc.); - Infrastructure development plan
4) Organization related to the Project Activities	- Organizations available in the village (person in-charge, number of members, etc.); - Any on-going/implemented rural development project in the area; - International organizations and/or local NGOs working in the area; - Informal organizations related to the livelihood activities

2.2 Participatory Village Survey

The objectives of the participatory village survey are to clarify i) the present use of lands and other resources, ii) major agricultural and forest products in the village, iii) processing and marketing of activities, and iv) customs and rules for land and forest use. The survey was conducted using the Participatory Rural Appraisal (PRA) tools to gather such information. The outputs of this survey are summarized below.

Participatory Village Survey

Items	Outputs
1) Present use of land and natural resources	- Social status in the village and the extent of use of natural resources per social status; - Difference in the use of forest resources between male and female; - Customary rules on the management/use of land and forest resource; - Any changes of customary rules; - Any troubled cases on the management/use of resources and solutions taken; - Any problems and issues on land allocation program.
2) Marketing condition of products	- Venn diagram of markets of products (agricultural and timber and non-timber forestry products) in and around village;; - Important products (agriculture, timber and non-timber forest products) from the view point of livelihood development; - Present use of agricultural and non-timber forest products.

2.3 Household Interview Survey

The objective of the household interview survey is to clarify the socio-economic condition of households in the candidate villages quantitatively so as to provide some insights of the villages for livelihood development and establish a set of baseline data to measure the effects of long-term assistance being provided by the FORCOM.

The household interview survey is composed of “Interview to household head” and “Interview to household members”. The former is an interview survey using a set of questionnaire formats which covers household profile, agricultural production, income and expenditure, resource use, livelihood activities, etc. On the other hand, the latter will interview household members who belong to the economically active population (15~55-year old) to know their roles in day-to-day work and their concerns related to livelihood activities.

The households were sampled at random but to maintain 90% probability with 10% confidence. The numbers of sampled households at each village are shown below.

Numbers of Sampled HHs for Household Interview Survey

Village	Total HHs	Sampled HH.
1. Pakseng	129	45
2. Hat Houay	90	39
3. Samton	77	35
4. Vangheung	54	30
5. Pongdong	102	41
6. Namtiao	59	32
7. Namon	247	54
8. Natak	227	52

The major items to be clarified in both surveys are summarized below and sample questionnaires for both i) Household Interview Survey, and ii) Household Member Survey are presented in **Attachment-1 and 2.**

Interview to Household Head

Items	Outputs
1) General Information	- Name of household members, ethnicity, age, sex, education, occupation, organization to which he/she is belonging, resident period in the village, etc.;
2) Living Condition	- Drinking water; - Fuel; - Food condition/food availability; - Major diseases.
3) Crop Production	- Growing crops, cropping pattern; - Cropped area, production, production sold, etc.; - Land holding; - Farm inputs.
4) Income and Expenditure	- Major sources of cash income of the household and their annual amounts by source; - Major expenditure for production; - Major expenditure for consumption; - Investment for other productive and fixed assets.
5) Livestock/ Fish	- Types of livestock raised; - Types of fish caught/raised; - Livestock/fish sold
6) Fruits/Tree crops	- Fruits/tree crops owned
7) Non-timber forest products	- Major non-timber forest products; - Production/harvested NTFPs
8) Utilization of Credit/Loan	- Use of credit - Difficulty in utilization of credit
9) Saving	- Saving situation

Interview to Household Member

Items	Outputs
1) Participation/ engagement of household members	- Home activities (fetching of drinking water, cooking, washing, sweeping the house, house repair, child/elderly care, kitchen gardening, sewing and knitting, shopping market); - Farming activities (plowing, seeding/transplanting, weeding, application of chemical fertilizers, harvesting, repairing of farm); - Slash and burn activities (slashing, burning, clearing, fencing, seeding, weeding, harvesting); - Livestock and poultry raising (grazing control, feeding, watering,

	collecting/production of fodder, sweeping of livestock and poultry stall); - Fishing activities (fish catching, fish production in pond, maintenance of pond) ; - Forest activities (collection of fuel wood, collection of forest vegetable/crops, timber harvest, charcoal production); - Post-harvest and marketing activities (threshing of cereals, processing livestock and poultry products, processing fish, processing of forest vegetables/crops, selling crops, selling livestock and poultry products, selling fish and fishery products, selling forest vegetables/crops, selling of fuel wood/charcoal); - Domestic business (rice mil, trading, shop keeping, handicraft); - Communication (attending community meetings, resolving in-village conflicts, getting information from TV, getting information from radio, political discussion with others, official letter writing); - Religious/cultural activities (dance party, picnic, worship ceremony, sport events, playing music, drawing)
2) Activities to make easy	- Selecting 5 activities with priority, in which the interviewee is normally engaging.

2.4 Methodology and Schedule of the Survey

2.4.1 Methodology of the survey

The three (3) surveys described above were consolidated as a 3-day workshop. Considering the acceptability in participants, efficiency of the surveys and easiness of participants' understanding/involvement, the 3-day workshop was conducted through the following agenda/steps.

Agenda of the 3-day Workshop

Day	Time	Mode	Activities
Day 1	AM	Plenary session	<u>Preparation of a resource map and social map</u> 1) Divide participants into two (2) groups 2) Ask one group to make a resource map and other to make a social map (Resource and Social mapping) 3) Ask them to present the results to each other 4) Ask them to classify themselves based on the well-being perceived by themselves (Well-being ranking) 5) Put the result of the well-being ranking into the social map
	PM	Group session for participatory village survey	<u>Ranking and Venn Diagram</u> 1) Separate male and female and make two (2) groups 2) Ask each group to list major products / resources and to rank / score the listed products / resources 3) Ask them to list individuals / organizations related to the marketing of the listed products 4) Ask them to depict how the individuals / organizations relate to the marketing 5) Arrange the separate interviews to individuals / organizations identified in the session
		Group session for village profile	<u>Key informants interview</u> 1) Conduct a semi-structured interview to key informants 2) Ask them to appoint some persons for transect walking in Day 2
	All day	Household interview	1) Interview household heads and household members of sampled households
Day 2	AM	Transect walking in village profile	<u>Transect walking with appointed followers</u> 1) Draw a transect

Day	Time	Mode	Activities
		survey	2) Measure latitude and longitude data of the village by using a GPS
	PM	Separate session for participatory village survey	Discussions with each social status classified in Day 1 1) Have group discussions with the groups to clarify the present use of and dependence on resources by the group and grasp seasonal trends / changes of resources in terms of production, marketability, etc.
	All day	Household interview	1) Interview household heads and household members of sampled households
Day 3	AM	Plenary session	Discussion with all the participants about present use of lands and resources as follows: - Present rules on the management/use of land and forest resources; - Any changes of customary rules; - Any cases on the management/use of resources and solutions taken; - Any problems and issues on land allocation program.
	PM		(Reserve/supplementary survey)

2.4.2 Schedule of the survey

Prior to the commencement of the 3-day workshop above, the study team together with some FORCOM members conducted a half-day session at each candidate village from 19 to 21 April 2004 in order to give some guidance on FORCOM as well as this 3-day workshop village survey. The following was explained in a half-day session.

a. objectives and outline of FORCOM
b. objectives and agenda of the 3-day workshop
c. necessary arrangements requested by the study team such as i) selection of participants (20 to 30 persons, basically representatives of each village administrative unit *"Nouay"*) for group sessions of the village profile survey and the participatory village survey; and ii) selection of key informants (4 to 5 persons from the village authority) for a separate session of village profile.
d. selection process of sampled households for the household interview survey.

Following the half-day guidance sessions, the 3-day workshop village survey was undertaken between 22 April and 19 May 2004 as summarized below.

Schedule of 3-day Work Shop Village Survey

Date	Surveyed Village
22 to 24 April 2004	Pakseng
26 to 28 April 2004	Hat Houay
29 April to 01 May 2004	Samton
03 to 05 May 2004	Vangheung
06 to 08 May 2004	Pongdong
10 to 12 May 2004	Namtiao
13 to 15 May 2004	Namon
17 to 19 May 2004	Natak

3. Summary of Result of the Survey

3.1 Village Profile Survey

Summary of village profiles of the candidate villages are presented in **Table 1.**

3.1.1 Demography

Demographic data, such as numbers of household, population and composition of ethnic groups of the candidate villages are summarized below.

Population and No. of Household

Village	Nos. of HH.	Population	Ethnic Composition
1. Pakseng	129	715	Lao Loum (49%), Lao Theung (51%)
2. Hat Houay	90	493	Lao Loum (23%), Lao Theung (77%)
3. Samton	77	471	Lao Theung (99.9%)
4. Vangheung	54	292	Lao Loum (81%), Lao Theung (19%)
5. Pongdong	102	526	Lao Loum (100%)
6. Namtiao	59	417	Lao Sung (100%)
7. Namon	247	1,553	Lao Loum (93%)
8. Natak	227	1,275	Lao Loum (94.4%)

Source: Study Report on Socio-Economic Survey of Eight Candidate Villages (JICA)

In three (3) villages, the population of village are composed of two (2) ethnic groups, Lao Loum and Lao Theung, while the rest mainly consist of one (1) ethnic group, which is either Lao Loum or Lao Sung.

3.1.2 Land

The areas of agricultural land and forest land, and the village total area of the eight candidate villages are as follows:

Areas of Agricultural and Forest Lands

Village	Total Village Area (ha)	Agricultural Land (ha)	Forest Land (ha)	Source
1. Pakseng	1,890	400	1,480	PAFO
2. Hat Houay, */	2,912	250	2,652	PAFO
a) Hat Houay	(1,779)	(119)	(1,650)	PAFO
b) Houay Ouang	(1,133)	(131)	(1,002)	PAFO
3. Samton	1,335	223	1,012	PAFO
4. Vangheung	494	138	356	PAFO
5. Pongdong	1,302	223	1,079	PAFO
6. Namtiao	n.a.	70	n.a.	DAFO
7. Namon	2,775	293	2,482	DAFO
8. Natak	6,372	266	6,061	DAFO

Source: Study Report on Socio-Economic Survey of Eight Candidate Villages (JICA)
Note: */ Houay Ouang village was merged with Hat Houay village in 2001.

3.1.3 Infrastructure

(1) Water supply

Among the 8 villages, six (6) villages other than Samton and Vangheung have a gravity-fed water supply system with several faucets, respectively. However, some of the systems can be used only during the rainy season due to the shortage of water. Therefore, the villagers usually fetch water from the rivers in the dry season. Samton village does not have such water supply system because the village is located on the top of a mountain range along National Road No.1 and the villagers use five (5) streams running near the residential area for water sources. In Vangheung village, a gravity-fed water supply system is now under construction.

(2) Accessibility

Distance and time to each village from Luang Prabang, and its road condition are summarized below.

Distance from Luang Prabang and Road Condition

Village	Distance (km)	Time	Road Condition
1. Pakseng	85	2:00	Gravel road, upgraded in 2002 by EU
2. Hat Houay	52	1:00	Gravel road, upgraded in 2002 by EU
3. Samton	202	4:00	National Road No.1 (paved), rehabilitated in 2004
4. Vangheung	190	3:40	National Road No.1 (paved), rehabilitated in 2004
5. Pongdong	63	1:20	No.4-A, paved and gravel, not in good
6. Namtiao	148	4:20	Gravel, bad condition
7. Namon	135	3:50	Gravel, bad condition
8. Natak	113	3:10	Gravel, bad condition

Source: Study Report on Socio-Economic Survey of Eight Candidate Villages (JICA)

Roads to three (3) villages in Xayaboury district are in poor condition, especially in rainy season, while those for Vangheung and Samton are in relatively good condition although they are far distant from Luangprabang.

(3) Electricity

Public electricity is available in Pongdong (installed in 2004) and Natak (installed in 2003) all the day. In Vanheung, it is only 19:00 to 21:00 (PM 7:00 – PM 9:00) that the public electricity supply is available. The other five (5) villages have no public electricity supply at present.

3.1.4 Livelihood

The sources for livelihood are almost similar among the candidate villages. Major products derived from the villages are as follows:

Major Products derived from the Villages

Categories	Products
Crops	rice, sesame, Job's tear, corn, cassava, banana, chili, etc.
Livestock	buffalo, cattle, pig, poultry and goat
NTFPs	paper mulberry, tree bark, tiger grass, bamboo shoot, mushroom, rattan shoot, resin, cardamom, bamboo larvae "Me Nomai", natural fruits, etc.

3.2 Participatory Village Survey

3.2.1 Resource utilization and major products

A resource map was prepared by villagers at each village to clarify the present use of lands and other resources. Based on the resource map, a transect walk was conducted together with some village key informants to validate the present land and resource uses through field observation. The resource maps show types of land use in addition to major land marks, such as roads, rivers and streams, and houses in the villages. On the other hand, the transect gives cross-sectional view of the area and comparative information on different topographic conditions.

As a result of the survey, it was found that villagers much depend on various resources available in the village for their livelihood. The survey results further reveals that there are few differences among the 8 candidate villages in major products derived from each land category such as forest, agricultural land, river, and river sides, as summarized in **Table 2.** Some findings are highlighted as follows:

- Four (4) villages of Hat Houay, Pongdong, Namon and Natak have lowland paddy fields.
- Four (4) villages of Pakseng, Samton, Vangheung and Namtiao have no lowland paddy fields at present and the people much depend on slash and burn cultivation as well as forest resources.
- Among the 8 villages, Namtiao village has a huge area (the total village area is officially not available at present) with rich natural resources.
- On the other hand, Vangheung has limited area (a total village area is 494 ha) compared with the other villages and its natural resources are rapidly being depleted in these days.
- Due to decreasing the amount of natural resources by over-exploitation, the people started shifting from collecting natural paper mulberry in the forests to planting them in the gardens as seen in Hat Houay and Natak.

3.2.2 Venn diagram and major products for marketing

Villagers discussed major products/resources for marketing and their importance, and they made a Venn diagram of commodities. **Table 3** presents major products/ resources for marketing in each village, and its summary is as follows:

Major Products/resources for Marketing

Category	Priority Products/Resources
A. Annual Crop	Rice (8), Sesame (5), Job's tear (5), Dry season vegetables (2), Wet season vegetables (1), Corn (wet season) (1)
B. Tree Crop	Orange (1)
C. NTFPs	Paper mulberry (6), Tiger grass (4), Tree bark (2), Sugar palm (2), Bamboo shoot (1), Rattan shoot (1)
D. Livestock	Pig (6), Poultry (5), Buffalo (3), Cattle (2), Fish (2), Goat (1)
E. Others	Weaving (1)

Note: The number in a parenthesis shows the number of the villages in which the crops rank as best 5.

The listed products/resources were claimed by the participants in one or more than two villages during the discussions. However, some products/resources were not claimed in either Venn diagram preparation or village profile survey. This does not always mean that such plants/crops/animals are not found in the village, but some of them actually exist in the village.

Rice is the most important crop for the villagers for consumption and also as a cash crop. Particularly, the villagers who own their lowland paddy fields can produce surplus rice and sell it to the local markets. Almost all the participants put high priorities on cash crops/NTFPs of "sesame", "Job's tear", "paper mulberry", "tree bark" and "tiger grass" because of their marketability. "Pig and poultry" were ranked as high priorities since such small animals were regarded as marketable commodities with a rather short raising period. Buffalo and cattle are also attractive for the villagers who can afford to raise them. Those large animals are usually sold in the time with a household need, a large amount of expenditures like constructing a house, wedding, buying a hand-tractor or motorcycle, etc.

3.2.3 Social status in the village and dependence on resources

During the social map preparation process, the study team asked participants to clarify themselves based on the well-being perceived in the village. It is very common in this region to classify the wealthiness into three levels like i) "high" or "over sufficient", ii) "medium" or "sufficient", and iii) "low" or "under sufficient". Since such classification was also commonly used in the candidate villages, they classified themselves into the following three levels.

<u>"High" or "Over sufficient" level</u>

In case of villages of Hat Houay, Pongdong, Namon and Natak, villagers grouped into this level have surplus of rice to sell, because of the possession of lowland paddy field. In the villages of Pakseng, Vangheung, Samton and Namtiao (where there is

no lowland paddy field), the people of this level are those who can afford to buy rice by other sources of income. In general, they can earn income by selling cash crops (sesame and Job's tear, etc.), NTFPs (paper mulberry, tree bark, etc.) and livestock (pigs and poultry, etc.). Among others, large animals (buffalos and cattle) are very important for the people of this level. Some of them engage in trading of the village products.

"Medium" or "Sufficient" level

Majority of the people of this level grow upland rice under slash and burn cultivation. Most of them don't own lowland rice field or grow lowland rice in very limited area. They sometimes face rice shortage between July and September but food shortage is not so severe because they can harvest such substitutes for rice as bamboo shoots, corn, cassava and fishes in these periods. Some of them can also buy rice from incomes earned by selling other cash crops, NTFPs and livestock such as sesame, Job's tear, paper mulberry, tree bark, pigs and poultry. They normally cannot afford to buy large animals for raising.

"Low" or "Under sufficient" level

The people of this level often face rice shortage for 5 to 6 months. Major reasons for food shortage include:

- limited land for agricultural production;
- limited family labor;
- young married couple family;
- newly migrated family;
- too many children, etc.

Therefore, they collect as many resources as possible from forests such as bamboo shoots, mushrooms, paper mulberry, and tree bark, and grow cassava and corn as substitutes for rice. Further, they earn money by labor in weeding, felling trees in slash and burn farms, and sawing lumber in sawmills. They normally cannot afford the money for raising even small animals like pigs and poultry. It is true that the poor people more depend on selling labor and NTFPs for food security.

The numbers of household and the composition of each level in the 8 villages are summarized as follows:

Numbers of HH and the Composition of Each Level

Village	Total HHs	Well-being Level		
		Over Sufficient (High)	Sufficient (Medium)	Under Sufficient (Low)
1. Pakseng	129	10 HHs (8%)	44 HHs (34%)	75 HHs (58%)
2. Hat Houay	90	6 HHs (6.7%)	15 HHs (16.7%)	69 HHs (76.6%)
3. Samton	77	13 HHs (16.7%)	18 HHs (23.1%)	47 HHs (60.2%)

4. Vangheung	54	7 HHs (12.7%)	28 HHs (50.9%)	20 HHs (36.4%)
5. Pongdong	102	26 HHs (25.5%)	33 HHs (32.3%)	43 HHs (42.2%)
6. Namtiao	59	4 HHs (6.8%)	52 HHs (88.1%)	3 HHs (5.1%)
7. Namon	247	46 HHs (18.6%)	181 HHs (73.3%)	22 HHs (8.1%)
8. Natak	227	51 HHs (22.55)	129 HHs (56.8%)	47 HHs (20.7%)

Source: Study Report on Socio-Economic Survey of Eight Candidate Villages (JICA)

3.2.4 Present rules on the management/use of lands and resources

"Land zoning" program had been undertaken in each village by PAFO and DAFO between 1993 and 1997. The staff of PAFO and DAFO together with villagers categorized forests into different forest types such as conservation forest, production forest and protection forest, and their use and management. Some parts of the production forest (*"Pa Phalith"*) were also designated as agricultural production area (*"Din Phalith"*), which can be used for slash and burn cultivation. Normally, a household could get three (3) plots of agricultural production area and was instructed to cultivate those areas under 3-year rotation system.

In terms of management of the lands and resources, the villagers gave through the survey the study team how the management style has changed.

Comparison of Management Style of the Past and Present

Past management style	Present management style
- There were dense forests with big trees. - They were free to select any places for slash and burn cultivation. They used to select big trees to cut in lower percent of slope. - They were free to practice any size of slash and burn cultivation. - Average size was about 0.5 ha for small households and 1.0 ha for large families. - They could get a good production even from planting in small area. - With 50 kg of rice seeds for 1.0 ha, normal yield was 1.5 ton of paddy. - Fallow period was at least 7 years.	- There are no more big and good trees found at present. - All the farming lands were allocated to households with an average size of about 1.0 ha if two labors are available in the household. - Comparing with 10 years ago, weeding work is much harder. On average, 3 to 4 times per season is necessary. - Normal yield at present is about 0.7 to 0.8 ton of paddy per 50 kg of rice seeds for 1.0 ha. - Fallow period is 3 years.

In addition, the following basic rules related to major two forest categories of i) Community Production Forest *"Pa Somsai"* and ii) Conservation Forest *"Pa SaNgouan"* or Watershed Protection Forest *"Pa Ponkanh Len Nam"* were observed through the discussion.

Community Production Forest *"Pa Somsai"*:

- This forest is used for collecting lumber for house construction, materials, fuel woods, NTFPs such as resin, herbal medical root, bamboo shoot, mushroom, tiger grass, cardamom, rattan shoot, tree bark, and paper mulberry, etc.
- Felling of a big tee for house construction has to be authorized by the village authority.

- Large-scaled logging is not allowed unless it is licensed by DAFO through the village authority.

Conservation Forest *"Pa Sa Ngouan"* or Watershed Protection Forest *"Pa Pongkanh Len Nam"*

- These forest are located on the slopes of rivers between two hills.
- No logging, no felling of any trees, no forms of any agriculture, and no livestock raising should be taken place in these areas.
- The village is responsible for preventing these areas from a forest fire.

3.3 Household Interview Survey

3.3.1 General Information

(1) Number of household member and household age structure

The average numbers of household vary from 5.2 persons in Pongdong to 8.2 persons in Namtiao with an average of 6.4 persons per HH. The percentages of available labour force, whose ages are between 12 and 45 years old, vary from 41.2% in Namtiao to 65.4% in Pongdong. Namtiao seems to have a small percentage of available labour force comparing with those of the other villages. This is because of a high percentage (51.2%) of young people's population (less than 12 years old) in Namtiao.

(2) Education background

The average percentages of "primary school graduated level" including i) drop out of primary school, ii) primary school graduated/attending, and iii) drop out of secondary vary from 41% in Namtiao to 68% in Namon with an average of 56%. The average percentages of "more than secondary graduated level" vary from 5% in Namon to 21% in Pongdong with an average of 14%.

(3) Education background

The average percentages of "primary school graduated level" including i) drop out of primary school, ii) primary school graduated/attending, and iii) drop out of secondary vary from 41% in Namtiao to 68% in Namon with an average of 56%. The average percentages of "more than secondary graduated level" vary from 5% in Namon to 21% in Pongdong with an average of 14%.

(4) Engaging in farming

The percentages of the people who are engaging in farming vary from 45% in Vangheung to 64% in Namon with an average of 54%.

(5) Occupation

In terms of occupation, almost household members are which ever “farmer” or “student/below school age/no job including housework”. Very limited people are “wage worker”, “salary worker” or “private business person”. The percentages of “farmer” vary from 35% in Vangheung to 53% in Pongdong with an average of 43%.

As for the percentages of the group of “student/below school age/no job including house worker” vary from 44% in Pongdong to 58% in Namtiao with an average of 50%.

(6) Member of organization

Seventy-six percent (76%) to 94% of household members do not belong to any organizations and 5% of household members in Namtiao to 17% in Samton are the members of whichever Women’s Union, Youth Organization or Elders Group.

3.3.2 Living Condition

(1) Drinking water

All the villages except for Samton have gravity piped water supply systems on which most of the villagers rely for drinking water. However, due to limited water source availability or distances to the community taps, etc. those who can enjoy sufficient water vary from 50% in Natak to 100% in Pongdong. Since the water supply system in Vangheung is under construction, only 17% of the villagers can use the system at present. Other people including Samton use streams, rivers or dug wells for drinking water.

(2) Fuel for cooking

All the villages mainly use fuel wood for cooking and generally do not have difficulty for collecting such fuel wood. However, about 30% of the villagers of Pakseng, Samton and Vangheung have difficulty for collecting such fuel wood. About 30% of the villagers of Samton, Namon and Natak use Kerosene as a supplementary measure for cooking.

(3) Rice availability and annual paddy production

Rice availability varies among the 8 villages. Samton has the most households who face rice shortage. About 50% of the villagers of Samton reply that they have rice shortage for 5.6 months. On the other hand no villagers in Natak have rice shortage and only 2% of the villagers in Namon have rice shortage for 1.0 month.

(4) Availability of major food other than rice

As for the availability of other cereals, root and tube crops, and vegetables, there are no serious shortage problems. As for meat availability, 29% of Pakseng villagers and

18% of Hat Houay villagers reply that they have meat shortage for about 3.0 months. On the other hand the villagers of Namtiao, Namon and Natak do not claim any meat shortage.

As for fish availability, 20% of Pakseng villagers reply that they have fish shortage for about 2.4 months and 10% of Hat Houay villagers for about 1.5 months. On the other hand the villagers of Vangheung, Namtiao, Namon and Natak do not claim any fish shortage.

(5) Availability of facilities

Averages of availability of major facilities in the 8 villages are 52% for radio, 46% for toilet, 42% for bicycle, 23% for VCD, 17% for motorcycle, 15% for sewing machine, 7% for TV in order of high percentage of availability. Samton has the smallest availability of facilities such as 34% for radio, 0% for toilet, 20% for bicycle, 3% for VCD, 3% for motorcycle, 0% for sewing machine, and 3% for TV. On the other hand, Natak has the highest availability of facilities such as 60% for radio, 85% for toilet, 65% for bicycle, 19% for VCD, 21% for motorcycle, 19% for sewing machine, and 17% for TV.

(6) Major diseases

Major diseases for both children and adults are i) cold, ii) dysentery, and iii) malaria in order of importance and high frequency.

(7) Treatment for diseases

For slight diseases, the people generally try to get over a disease by taking medicine and secondary go to see the village health workers. On the other hand, for severe diseases, the people normally go to the provincial hospital and secondary go to the district hospital or to the village health worker depend on the distance/ or availability of those facilities.

3.3.3 Agriculture and Forestry Production

(1) Farmland owned per HH

Average areas of each farmland category owned per HH are 1.18 ha for “Hai-A”, 0.6 ha for “Hai-B”, 0.26 ha for lowland paddy field, and 0.11 ha for orchard/tree plantation respectively with an average area of 2.14 ha per HH. Among these, Namon has the smallest total farmland of 1.39 ha per HH in total, including the largest lowland paddy field of 0.66 ha per HH.

(2) Time required to “Hai” areas

Average walking hours required to “Hai” area vary from 45 minutes in Pongdong and Namtiao to 90 minutes in Pakseng, Hat Houay, Samton and Vangheung, with an average of 75 minutes.

(3) Repeated use of “Hai” area

Almost “Hai-A and Hai-B” areas will be used repeatedly within 1 to 3 or 4 years for slash and burn cultivation except for the Hai-A areas of Hat Houay and Pongdong. The people of Hat Houay and Pongdong reply that about 30% of Hai-A areas will be left as fallow lands even after 4 years.

(4) Used area of “Hai-A and B”

The used areas of “Hai-A and B per HH per year vary from 0.43 ha in Namon to 1.31 ha in Hat Houay with an average of 0.90 ha. The smallest used areas of 0.43 ha in Namon and 0.68 ha in Natak seem to be reasonable due to some available areas of lowland paddy field. However, the largest used area of 1.31 ha in Hat Houay seems to be a little bit too large comparing with 0.33 ha of available lowland paddy field per HH.

(5) Major crops in “Hai”

Major crops in “Hai” are i) upland rice, ii) Job’s tear, and iii) sesame in order of production quantity. The average production of upland rice per HH in the 8 villages varies from 682 kg/HH in Hat Houay to 2,459 kg/HH in Namon. The average production of Job’s tear in the 6 villages (Job’s tear is not a major crop in Vangheung and Natak.) varies from 35 kg/HH in Samton to 922 kg/HH in Pongdong. The average production of sesame in the 6 villages (Sesame is not a major crop in Pakseng and Pongdong.) varies from 2 kg/HH in Namon to 258 kg/HH in Hat Houay.

(6) Major crops in lowland area

Major crops in lowland paddy field are mainly rice. There are four villages, Hat Houay, Pongdong, Namon and Natak, that have lowland paddy fields. In addition, there are very small paddy fields in Namtiao, the villagers of which are now developing such lowland paddy fields. Average production of lowland rice varies from 922 kg/HH in Hat Houay to 1,805 kg/HH in Namon.

(7) Annual paddy production and consumption

In terms of average balance of annual paddy production and consumption per HH, four villages of Pakseng, Hat Houay, Samton and Vangheung have shortage of rice and the other 4 villages of Pongdong, Namtiao, Namon and Natak have surplus of rice. The average balances in each village vary from shortage of 1,061 kg/HH in Vangheung to surplus of 1,073 kg/HH in Namon.

(8) Bearing fruit crop/ fruit tree/ industrial tree

Major bearing fruit crops, fruit trees, and industrial trees are i) pineapple, ii) banana, iii) mango, iv) paper mulberry, and v) teak in order of popularity. The average

numbers of those corps/trees are 65 plants/HH of pineapple, 15 plants/HH of banana, 4 trees/HH of mango, 19 trees/HH of teak, and 48 trees/HH of paper mulberry.

In terms of crop or kind of trees by village, there are some findings. As for pineapple, Hat Houay and Pondong produce a lot of pine apple comparing with other villages, such as 133 plants/HH in Hat Houay and 292 plants/HH in Pongdong. As for paper mulberry, the villages of Samton, Vangheung, Namon and Natak plant a lot of paper mulberry trees like 72 trees/HH in Samton, 73 trees/HH in Vangheung, 128 trees/HH in Namon and 115 trees/HH in Natak. As for teak plantation, Vangheung and Natak plant a lot of teak trees comparing with other villages, such as 68 trees/HH in Vangheung and 74 trees/HH in Natak.

In addition, orange tree plantation (17 trees/HH) in Pongdong and eagle wood plantation (18 trees/HH) in Namon are remarkable activities comparing with the other villages.

(9) Major NTFPs

Major NTFPs are i) paper mulberry, ii) tree bark, iii) tiger grass, and iv) bamboo shoot in order of production quantity. The average production of paper mulberry per HH in the 8 villages varies from 15 kg/HH in Vangheung to 187 kg/HH in Samton. The average production of tree bark in the 6 villages (Tree bark is not a major NTFP in Namtiao and Natak.) varies from 2 kg/HH in Vangheung to 177 kg/HH in Hat Houay. The average production of tiger grass in the 7 villages (Tiger grass is not a major NTFP in Namon.) varies from 7 kg/HH in Natak to 147 kg/HH in Hat Houay. The average production of bamboo shoot in the 6 villages (Bamboo shoot is not a major NTFPs in Samton and Namtiao.) varies 4 kg/HH in Hat Houay to 117 kg/HH in Natak.

In addition, palm fruit production of 365 kg/HH in Namtiao and 600 kg/HH in Namon, and eagle wood production (32 kg/HH) in Hat Houay are remarkable activities comparing with the other villages.

(10) Major livestock raised

Average numbers of major livestock raised per HH are 0.7 head/HH of cattle, 1.3 head/HH of buffalo, 1.2 head/HH of goat, 3.3 heads/HH of pig, 25.5 heads/HH of chicken, 5.4 heads/HH of duck.

Comparing with those average numbers, the following numbers show remarkable activities for livestock raising like 3.4 heads/HH of cattle in Namtiao, 2.7 heads/HH of buffalo in both Namon and Natak, 6.4 heads/HH of goat in Samton, 5.9 heads/HH of pig in Samton, 34.4 heads of chicken in Namon, 36.7 heads/HH of chicken in Natak, 9.3 heads/HH of duck in Pongdong, and 9.0 heads/HH of duck in Natak.

(11) Major livestock/fish sold

Average numbers/quantities of major livestock/fish sold per HH per year are 0.1 head/HH of cattle, 0.3 head/HH of buffalo, 0.2 head/HH of goat, 0.6 head/HH of pig, 7.7 heads/HH of chicken, 3.5 heads/HH of duck, and 10.1 kg/HH of fish.

Comparing with those average numbers, the following numbers show remarkable activities for livestock/fish selling like 0.7 head/HH of cattle in Namtiao, 1.4 heads/HH of goat in Samton, 26.9 heads/HH of chicken in Natak, 8.6 heads/HH of duck in Natak, 8.0 heads/HH of duck in Vangheung, and 41 kg/HH of fish in Hat Houay.

3.3.4 Estimated Marketed Volumes of Major Products by Village

Based on the results of the household interview survey, the total marketed volumes of major products from the village were estimated as summarized in the following table.

Estimated Marketed Volumes of Major Products by Village

Major Products sold outside the village (estimated)	(unit)	8 Villages							
		Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak
1) Rice	kg	5,557	6,612	673	-	30,863	11,394	69,956	38,459
2) Job's tear	kg	9,021	15,801	2,191	-	93,522	20,722	9,107	-
3) Sesame	kg	-	23,185	1,740	445	-	2,194	521	6,989
4) Paper mulberry	kg	4,552	7,163	14,430	835	3,670	1,859	20,803	13,611
5) Tree bark	kg	3,535	15,976	7,946	90	873	-	6,138	-
6) Tiger grass	kg	1,563	13,237	1,756	495	896	867	-	1,602
7) Bamboo shoot	kg	1,118	-	-	-	9,088	-	8,489	26,607
8) Palm fruit	kg	-	-	-	-	-	21,507	148,314	-
9) Eagle wood	kg	-	346	227	-	-	203	-	-
10) Mushroom	kg	244	-	-	-	1,488	-	-	2,218
11) Wild vegetables,*/	kg	-	-	-	-	-	675	8,416	2,899
12) Cattle	head	-	2	18	-	-	42	41	9
13) Buffalo	head	17	21	33	-	35	13	142	105
14) Goat	head	4	14	75	15	-	-	-	13
15) Pig	head	33	65	42	23	68	22	224	314
16) Chicken	head	424	796	207	138	183	4	1,418	6,116
17) Duck	head	229	335	9	77	131	-	316	1,951
18) Fish, **/	kg	(1,992)	(3,674)	(9)	(626)	-	24	(439)	(2,576)

Source: JICA Study team

Note: */ Including rattan shoots.

**/ Figures in a parenthesis are products sold within/near the village including district markets.

3.3.5 Income and Expenditure

(1) Source of major income

The interviewees were asked to enumerate major income sources no more than 5, and their annual amounts. Major income sources enumerated by the interviewees were i) livestock, ii) private business, iii) NTFPs, iv) field crops, v) salary, vi)

temporary job, vii) remittance, viii) fruit tree, ix) rice, and x) handicraft, in order of average amount of income per HH/year among the 8 villages. However, as shown in the following table, the amounts from each income source vary in each village depending on the village situation. For example, in Pongdong, "field corps" is also one of the major income sources in addition to "livestock" and "private business". On the other hand, "private business" and "salary" are major income sources in Pakseng and "livestock" is the 3rd major income source. Further, NTFPs are also one of the major income sources in Hat Houay, Namtiao and Namon.

Major Income Sources (Unit: '000 Kip/year/HH)

Major Income	8 Villages								Aver-age
	Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak	
1) Livestock	511	1,427	2,216	1,105	1,872	2,276	2,759	3,230	1,925
2) Private business	2,500	2,489	223	589	1,076	340	616	1,164	1,125
3) NTFPs	265	1,224	812	-	-	1,021	1,218	441	623
4) Field crops	250	490	197	-	1,421	957	379	-	462
5) Salary	1,055	-	182	829	-	-	-	926	374
6) Temporary job	-	-	-	843	-	-	-	394	155
7) Remittance	-	456	-	-	-	704	-	-	145
8) Fruit tree	-	367	-	-	704	-	-	-	134
9) Rice	-	-	-	-	443	-	168	-	76
10) Handicraft	-	-	-	258	-	-	-	-	32

(2) Major cash income

Average annual amounts of major cash income per household among the 8 villages vary from 4,347,000 Kip/year/HH in Vangheung to 7,035,000 Kip/year/HH in Natak with an average of 4,959,000 Kip/year/HH, as shown below.

Major Cash Income per HH (Unit: '000 Kip/year/HH)

Major Income	8 Villages							
	Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak
1) Max.	60,000	34,820	53,800	13,480	28,000	36,900	45,100	26,500
2) Min.	550	208	490	395	500	46,000	935	650
3) Average in the village	5,271	5,132	5,137	4,347	6,898	5,925	6,083	7,035

(3) Items of major expenditure

The interviewees were asked to enumerate items of major expenditure no more than 5, and their annual amounts. Items of major expenditure enumerated by the interviewees were i) food, ii) health, iii) clothes, iv) education, v) social activities, vi) transportation, vii) tax, and viii) fuel/electricity, in order of average amount of expenditure per HH/year among the 8 villages. However, as shown in the following table, the amounts for each expenditure item vary in each village depending on the village situation. For example, in the villages of Namtiao and Namon, which have

rather rich natural resources for food production, the expenditure for "health" is higher than that for "food". On the other hand, Vangheung villagers use a big amount of money for food compared with other 7 villages. It suggests that Vangheung people can produce less food using their resources than other 7 villages.

Items of Major Expenditure (Unit: '000 Kipyear/HH)

Major Expenditure	8 Villages								Aver-age
	Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak	
1) Food	1,549	1,257	1,333	2,681	982	423	625	777	1,203
2) Health	505	1,044	569	929	377	706	1,072	503	713
3) Clothes	434	570	377	229	426	472	510	390	426
4) Education	158	352	326	212	234	492	221	381	297
5) Social activities	187	97	230	108	212	-	-	-	104
6) Transportation	-	-	-	-	-	109	-	-	14
7) Tax	-	-	-	-	-	-	80	-	10
8) Fuel/electricity	-	-	-	-	-	-	-	88	11

(4) Major expenditure

Average annual amounts of major expenditure per household among the 8 villages vary from 2,256,000 Kip/year/HH in Natak to 4,320,000 Kip/year/HH in Vangheung with an average of 2,958,000 Kip/year/HH, as shown below.

Major Expenditure per HH (Unit: '000 Kip/year/HH)

Major Expenditure	8 Villages							
	Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak
1) Max.	8,884	14,640	14,400	14,504	23,980	9,700	14,520	10,750
2) Min.	245	270	408	298	573	255	280	200
3) Average in the village	2,888	3,432	2,993	4,320	2,802	2,361	2,609	2,256

(5) Major investment of productive and fixed assets

The interviewees were asked to enumerate major investments of productive and fixed assets in the last year no more than 3, and their annual amounts. Major investments enumerated by the interviewees were i) housing, ii) private business, iii) livestock, iv) transportation means, v) household appliance, and vi) farm machine, in order of average amount of investment per year/HH. Average investment amount among the 8 villages is 1,095,000 Kip/HH and the maximum investment amount of 2,153,000 Kip/HH in Pongdong and the minimum investment amount of 381,000 Kip/HH in Hat Houay as shown below.

Major Investment in the Last Year (Unit: '000 Kip/year/HH)

Major Investment	8 Villages								Aver-age
	Pak-seng	Hat Houay	Sam-ton	Vang-heung	Pong-dong	Nam-tiao	Na-mon	Na-tak	
1) Housing	550	-	-	-	847	-	1,073	818	411

2) Private business	442	1,000	257	223	951	144	528	-	331
3) Livestock	136	183	225	250	355	164	300	200	227
4) Transportation means	-	-				469	-	-	59
5) Household appliance	-	-	118	84	-	-	-	241	55
6) Farm machine	-	98	-	-	-	-	-	-	12
Total	1,128	381	600	557	2,153	777	1,901	1,259	1,095

3.3.6 Utilization of Credit/ Loan

The interviewees, if needed, borrow some money normally from a bank or their relatives. Sometimes they borrow from their friends, neighbours or other systems such as a mutual aid group, trader's credit, a project fund, etc. Major purposes of borrowing money are for i) buying livestock, ii) private business, and iii) medical treatment.

Status of Credit/Loan

Lender / Village	Bank		Relatives		Neighbours/friends		Others, */	
	No.of borro-wers	Average borrowing amount ('000Kip)	No.of borro-wers	Average borrowing amount ('000Kip)	No.of borro-wers	Average borrowing amount ('000Kip)	No.of borro-wers	Average borrowing amount ('000Kip)
1. Pakseng	8	1,725	2	265	-	-	-	-
2. Hat Houay	4	1,125	-	-	1	200	6	380
3. Samton	-	-	8	195	1	50	-	-
4. Vangheung	12	1,275	8	1,273	-	-	1	500
5. Pongdong	1	16,000	9	1,224	1	200	-	-
6. Namtiao	-	-	7	671	-	-	1	1,000
7. Namon	-	-	5	628	-	-	1	732
8. Natak	1	200	3	500	-	-	6	666

Note: */mutual aid groups, trader's credit, project funds, etc.

3.3.7 Extension

Times of visit by the extension staff are one of the indicators for the DAFO staff extension activities. According to the interviewees of the 8 villages, 37 % (of Namtiao) to 77% (of Samton) of the villagers have never received any training or technical advice from DAFO extension staff. The others have received training or technical advice one to four times before.

3.3.8 Participation/ Engagement of Household Members

(1) Home activities

Normally, females are responsible for almost home activities such as fetching drinking water, cooking, washing, sweeping the house, child/elderly care, except for house repair and kitchen gardening, for which males are normally responsible. Namtiao seems to be an exception. Both of male and female are responsible for "child and elderly care".

(2) Farming activities (lowland rice cultivation)

This questionnaires were made concerning lowland rice cultivation. Thus, only the villagers of Hat Houay, Pongdong, Namon and Natak answered the questions. In Hat Houay and Pongdong, males are responsible for almost farming activities. However, transplanting and harvesting are mainly done by females. On the other hand, in Namon and Natak, both male and female are responsible for transplanting, weeding and harvesting.

(3) Slash and burn cultivation activities

Except for Namtiao, males are responsible for almost slash and bur cultivation activities such as slashing, burning, clearing and fencing. On the other hand, in Namtiao, if anything, females (sometimes both of male and female) are responsible for such slash and burn cultivation activities.

(4) Livestock and poultry raising activities

Mostly females are responsible for livestock and poultry raising activities. However, Namtiao is an exception. Both of males and females, if anything, males are responsible for such animal raising activities.

(5) Fishing activities

Mostly males are responsible for fishing activities. However, Namtiao is an exception. Females are responsible for catching fish in the river.

(6) Forestry activities

For collecting fuel wood, in the 4 villages of Pakseng, Hat Houay, Namtiao and Natak, both of males and females are responsible. However, in the other 4 villages of Samton, Vangheung, Pongdong and Namon, females are mainly responsible for collecting fuel wood.

For collecting NTFPs, in all the villages except for Namtiao, females are mainly responsible. In Namtiao, both of males and females are responsible for collecting NTFPs.

(7) Post-harvest and marketing activities

Post-harvest and marketing activities are mainly responsible by females or both of males and females. However, in the 4 villages of Hat Houay, Pongdong, Namon and Natak, which have lowland paddy fields, threshing activities are responsible by males.

(8) Domestic business activities

Rice mill operation seems to be responsible by males. Trading and shop keeping are handled by both of males and females. However, handicraft business is handled by females.

(9) Communication activities

According to the interviewees, males are responsible for attending village meetings and resolving in-village conflicts, except for Namtiao, where females are responsible for such communication activities. On the other hand, for the political discussion with others, both of males and females are responsible in all the 8 villages including Namtiao.

(10) Religious/ cultural activities

Normally both of males and females are responsible for religious/ cultural activities, except for Namtiao, where females are responsible for such activities.

3.3.9 Activities Wanted to Make Easy

The interviewees were asked to choose up to 5 activities which they want to make easy. There are differences between male and female about works which they want to make easy. Males chose i) slashing, ii) harvest, iii) weeding, iv) plowing, and v) fencing. On the other hand, females chose i) collecting fuel wood, ii) weeding, iii) harvest, iv) child/elderly care, and v) fetching water.

Chapter 4 Result of the Survey by the Village

Village-1: Pakseng

STUDY REPORT

ON

SOCIO-ECONOMIC SURVEY OF EIGHT (8) CANDIDATE VILLAGES

Village 1: Pakseng Village

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Feature of the Village (Pakseng)

(Total HH: 129, Population: 715)

(1)Composition of the ethnic group:

The composition of the ethnic group is 50% of Lao Loum and 50% of Lao Theung.

(2) Farmland owned per HH:

Among the 4 villages of Pakseng, Samton, Vangheung and Namtiao, which do not have lowland paddy fields (Lowland paddy fields in Namtiao are very small.) the farmland owned per HH in Pakseng is the smallest (1.42 ha/HH) compared with 2.54 ha/HH in Samton, 2.64 ha/HH in Vangheung and 2.36 ha/HH in Namtiao, respectively.

(3) Rice availability:

It is estimated that 14.7% of households (19 households among a total of 129 households) face rice shortage for about 4.7 months.

(4) Balance of annual paddy production and consumption in the village:

Total rice production and consumption in the village is estimated at 145,900 kg/year and 202,600 kg/year, respectively. The balance of annual paddy production and consumption is negative, about 56,700 kg of rice shortage. On the other hand, as shown in Item (6), the marketed volume of rice outside the village is estimated at about 5,600 kg/year.

(5) Sources of major income:

Sources of major income are i) private business (2,500,000 Kip/HH) and ii) salary (1,055,000 Kip/HH), amounts of which are very differ from other sources of income like livestock (511,000 Kip/HH), NTFPs (265,000 Kip/HH) and field crops (250,000 Kip/HH).

(6) Estimated marketed volumes of major products:

Marketed volumes of major products in the whole village are estimated as shown below.

Estimated Marketed Volumes of Major Products by Village

Major Products	(unit)	Marketed Volume	Livestock/fish	(unit)	Marketed Volume
1) Rice	kg	5,557	12) Cattle	head	-
2) Job's tear	kg	9,021	13) Buffalo	head	17
3) Sesame	kg	-	14) Goat	head	4
4) Paper mulberry	kg	4,552	15) Pig	head	33
5) Tree bark	kg	3,535	16) Chicken	head	424
6) Tiger grass	kg	1,563	17) Duck	head	229
7) Bamboo shoot	kg	1,118	18) Fish, **/	kg	(1,992)
8) Palm fruit	kg	-			
9) Eagle wood	kg	-			
10) Mushroom	kg	244			
11) Wild vegetables,*/	kg	-			

Note: */ Including rattan shoots. **/ Figure in a parenthesis is product sold within/near the village including Pakseng district market.

PART 1 VILLAGE PROFILE SURVEY

Survey Period: 22 to 24 April 2004
Main Information Source: Village head, 2 deputy heads and some village authority members.

1. General Information

1.1 Location

Pakseng village is located in Pakseng district 85 km from Luang Prabang (2 hrs. by car) and 64 km from Pak Suang (1 hr. 40 min.) at National Road No.13.

1.2 History of the village

History of Pakseng village dates back more than 100 years. Most of the villagers are Lao Loum until 2nd Indochina war. During the war, many of the villagers escaped to Luang Prabang city. And many Lao Theung people living along Nam Seng and Nam Suang rivers flowed into Pak Seng village. So now populations of Lao Loum and Lao Theung are almost even.

Pakseng village consists of 2 habitat areas (north village and south village). The two villages were separated before 1975.

1.3 Demography

The village has 129 households and a population of 715 habitants as of November 2003. Available labor population (16~49) occupies 48 % of total population. Female represents 56 % of the population as shown below.

Age Structure (as of November 2003)

Age	Female	Male	Total	(%)
0 ~ 1	31	23	54	(7.6)
2 ~ 5	55	43	98	(13.7)
6 ~ 15	76	48	124	(17.4)
16 ~ 30	61	53	114	(15.9)
31 ~ 49	128	108	236	(33.0)
50 and above	51	38	89	(12.4)
Total	402	313	715	(100)

Source: Village head (22 April 2004)

There is another population data by ethnicity, indicating that the village population comprises two ethnic groups, Lao Loum and Lao Theung with an almost even ratio each other as follows.

Ethnic Structure

	Female	Male	Total	(%)
Lao Loum	150	160	310	49.0
Lao Theung	142	181	323	51.0
Lao Sung	0	0	0	(0)
Total	292	341	633	(100)

Source: Village head (22 April 2004)

Note: Comparing both data above, there are some discrepancies. However, due to limited survey period, the survey team could not clarify them and would like to understand that the latter data about the ethnic structure show that Lao Loum and Lao Theung have an almost even ratio of population.

1.4 Organizational structure for administrative control

The village is administrated by a village head and two deputies. Pakseng village has 9 administrative units (or *"Nouays"*). The chiefs of each *"Nouay"* assist the village head in administrating *"Nouays"*. The village head is responsible for disseminating the government information/or notification to the villagers through this administrating mechanism.

The first deputy village head is responsible for all the economic development activities in the village. He is directly responsible for controlling/supervising two units of treasurer and tax collection, as well as improving villagers' living situation through promoting productive units' activities. In other words, the "Nouays" have both roles like administrating and productive units.

The second deputy village head is responsible for all the social and cultural development activities in the village. Under the control of the second deputy village head, there are a unit of culture, and two volunteer units of teachers and health.

The village organization under the village head, there are 3 formal mass organizations, a village military unit, and a village police unit. The three mass organizations such as Lao Women's Union (LWU), Lao National Front and Youth Association are playing as non-profit organizations and assisting the village head in grouping people for specific works. A council of elders is an independent voluntary unit as an adviser group of the village. In addition to the above village administration structure, a Village Party Secretariat is established by the party. The Village Arbitration Committee is composed of i) Village Head, ii) Village Police, iii) Lao Women's Union, vi) Lao National Front, and v) Youth Association, and responsible for solving all the cases of social conflicts in the village. The village organization structure of Pakseng is presented in **Figure 1** and the names of the village organizational key members are as follows.

Village Organizational Key Members

Position	Name
1) Village Head	Mr. Somlit
2) Deputy Village Head (1)	Mr. Thongwan
3) Deputy Village Head (2)	Mr. Bouakham
4) Head of Lao National Front (Neo Hom)	Mr. Xiengkham
5) Head of Women's Union	Ms. Saengchanh
6) Head of Youth Association	Mr. Thaomai
7) Head of Council of Elder's	Mr. Khamphaeng
8) Head of Village Police	Mr. Beunbang
9) Head of Village Army	Mr. Thaophuphi
10) Village Secretary of the party	Mr. Xieng Khamchanh

1.5 Informal (ethnic) organization for administration, agriculture and/or religion

Lao Theun people have its own religious organization in the village.

1.6 Food security

According to the village key informants, about 30 ~ 50 households (depends on the previous year's harvest) are in short of rice between July and September. But except July, food shortage is not so severe because they can eat such substitutes for rice as bamboo shoots, corns, cassava and fishes in the other 2 months. Recently, food shortage is getting more serious than before because of soil deterioration in the shifting cultivation area. Food availability at markets was improved than before, but this has little meaning to some villagers who have no money to buy. The poor earn money by labor like transport of paddy, weeding, collecting fire woods and so on for foods. But the pay is only 7,000-8,000 Kip per day and hiring period is relatively short.

1.7 Illiteracy rate

According to the key persons of each ethnic group, the illiteracy rate of Lao Lum people in the village is estimated at 5% and that of Lao Theun people is 30%. Big difference in the figures may show differences of culture, social and economic situations, etc. between ethnic groups. Most of illiterate people are found in the elder. During the war, they had little chance to have formal education.

1.8 Major diseases

In March and April, burning forest cause red eyes. About 10% of the villagers suffered from this disease last year (2003). According to a nurse in the provincial hospital of Luang Prabang, red eyes in the season are widely seen in the northern provinces. Malaria is prevalent during the rainy season from June to September. According to a doctor working in the district hospital of Pakseng, deterioration of water quality during the rainy season and drinking un-boiled water cause diarrhea. The doctor also pointed out a high ratio of cholelithiasis (gallstone) in the village.

1.9 Traditional custom, culture, event, cooperative works in the village

i) Cooperative works

Mutual assistance in shifting cultivation and cooperative works in building houses are common for both Lao Loum and Lao Theun people.

ii) Traditional custom and culture

Lao Loum people normally use Lao calendar (one month difference from public calendar). Lao Theun people use public calendar but sometimes answer in Lao calendar. Forest along Nam Suang river just downstream of Ban Tai (South village) is used as a cemetery for both ethnic groups and thought as a holy place.

iii) Event

Lao New Year is in April and Lao Theun New Year in January in public calendar. Lao Loum enjoy Lao Theun New Year and vice versa.

2. Livelihood and Natural Resource Management

2.1 Topography

Pakseng village is located at the confluence of Nam Seng and Nam Suang rivers. The elevation of the habitat area is around 350 m. The habitat area is surrounded by a mountain range of 500~700 m. Flat area is so limited as no lowland paddy fields exist in the village. The village boundary extends from the confluence of the above two rivers westward for about 3 km at the both banks along Nam Suang river. Several streams flow into Nam Suang river. The water level of Nam Suang river is up-and-down with a difference of 8 to 12 meters between the lowest level in March-April and the highest level in August-September. As for seasonal natural disasters, floods are the only disaster in the village. The villagers remember the floods in 1989 and 1995, but the damages were very limited.

2.2 Meteorological data

Annual rainfall records at Luang Prabang station in last 10 years (1993-2002) vary from 1,136 mm in 1998 to 1,794 mm in 2001 with an average of 1,451 mm. Detailed meteorological data including i) monthly rainfall records at Luang Prabang (1993-2002), ii) monthly rainfall records of Pakseng district (1999-2003), and iii) the maximum, minimum, and mean monthly average temperatures at Luang Prabang station (1999-2003) for recent 5 years are presented in **Table 1.**

2.3 Land allocation

The government has been making efforts to reduce shifting cultivation in the village since 1989. In 1995, the government allocated 3 plots (1 plot is about 1ha) to each household in production forest. However the measurement or field survey for each plot has not yet done until now. Most of the household use 1 plot for slash and burn cultivation every year with 3-year rotation system.

According to DAFO staff, the next step for land allocation should be the preparation of the documents, which consist of i) Temporary Certificate for the use of each plot, signed by Land Allocation Committee at village level, the village head, and villagers concerned, and ii) Temporary Agreement for the use of each plot, signed by DAFO, the village head, and the villagers. In the documents, there should be a section for drawing a sketch of the plot with its measurements. However, this procedure is not undertaken in this village.

2.4 Land classification and distribution of each land use category

2.4.1 Data of PAFO

There were some unclear understanding of the land use categories between the government and villagers. Further, the areas of each category were mostly estimated using 1/50,000~1/100,000 topographical maps through simple site investigation. According to the data from Provincial Agricultural and Forestry Office (PAFO) of Luang Prabang, the areas of each category of Pakseng village is as shown below.

Area by Land Classification (as of 1997)

Land Classification	Area (ha)
A. Agricultural Land	400
B. Forest Land	
1) Conservation Forest *"Pa SaNgouan"*	600
2) Protection Forest *"Pa Pongkanh"*	300
3) Production Forest *"Pa Phalith"*	200
4) Rehabilitated Forest *"Pa Feumfu"*	300
5) Degrated Forest *"Pa Sutsom"*	80
Total Village Area	1,890 ,*/

Source: PAFO of Luang Prabang (obtained during the survey)
Note: */ There seem to be some discrepancies among the figures above. However, they are just presented as officially recorded.

2.4.2 Information from the village

The village profile survey team obtained the following information through the interview with the village head.

Area by Land Classification by the Village

Land Classification	Area (ha) ,*/
A. Agricultural Land	
1) Low land paddy	0
2) Upland rice field *"Hai"*	78
3) Upland crop field other than rice *"Suan"*	11
4) Teak Plantation *"Pa Maisak"*	12
B. Forest Land	
1) Conservation Forest *"Pa SaNgouan"*	40
2) Community Production Forest *"Pa Somsai"*	6.5
3) Production Forest *"Pa Phalith"*	234
4) Degrated Forest *"Pa Sutsom"*	little
C. Residential area	3

Source: Village head (22 April 2004)
Note: */The areas obtained from the village are not accurate figures based on the actual topographical survey.

The land use categories by the villagers are as follows.

(A) Agricultural land: (78 ha + 11 ha)

(1) "Hai" + "Suan"

Pakseng village has no lowland paddy field and each household is allocated three plots of upland area, which is called "Pa Palith" by the villagers. The allocated upland fields are divided into two categories, i) "Hai", where mainly upland rice is grown with some mixed upland crops like cucumber and corn, and ii) "Suan", where mainly cash crops such as sesame, Job's tear, and corn are planted.

(2) Teak Plantation: (12 ha)

As for the teak plantation areas, the villagers call them "Pa Maisak", where mainly located along the "Paksuan-Pakseng" road. With the government promotion in the beginning of 1980s, villagers began to grow teak trees. Some of the villagers began to sell teak trees since 1992. There is no problem on teak plantation. About 80% of households plant teak trees.

(B) Forest land:

(1) *"Pa SaNgouan"* (Conservation Forest): (40 ha)
"Pa SaNgouan" is the category for forest reserve regulated by DAFO in 1995. Hunting wild animals are prohibited as well as cutting trees in the area. So villagers use trap to catch birds including wild chicken. Bamboo shoots and mushrooms are also collected for house consumption. The first deputy of the village is in charge of the management of all the forest in the village. If troubles in *"Pa SaNgouan"* cannot be solved in the village, it will be brought to district level.

(2) *"Pa Somsai"* (Community Production Forest): (6.5 ha = 3 ha + 2 ha + 1.5 ha)
"Pa Somsai" is so called 'community forest'. Village authority regulates *"Pa Somsai"* since 1980s. There are three (3) *"Pa Somsai"* areas in the village. In *"Pa Somsai"*, villagers hunt wild animals and collect NTFPs like bamboo shoots, mushrooms, wild chickens, deer and so on. Cutting trees in *"Pa Somsai"* needs permission from the village. Fallow in *"Pa Phalit"* is also called *"Pa Somsai"* by the villagers. The former one is sometimes called *"Pa Somsai kon Baan"* (Community Production Forest) to distinguish them.

(3) *"Pa Phalit"* (Production Forest): (234 ha)
"Pa Phalit" is the area where villagers use for slash and burn cultivation. Each household is allocated three plots of land in the area. It seems that among the allocated plots, the area where they grow crops this year is called *"Hai"* or *"Suan"* and the fallow areas are called *"Pa Phalit"*. Deterioration of the soil is severe these couple of years. They grow Job's tear, corn and sesame in deteriorated land instead of rice.

(4) *"Pa Sutsom"* (Degraded forest): (very little along the road)

(C) Residential area: (3 ha)

2.5 Farming activity and production of major crops and livestock in the area

2.5.1 Farming activity

Each household is allocated three (3) plots of land (about 1.0 ha per plot) so that they cultivate one plot every year with 3-year rotation system. Practically they cultivate several hectares as one block (zone) of slash and burn cultivation area together with 4 to 6 households, which are further divided into each household plot. In each household plot, they grow various kinds of crops like rice, sesame, Job's tear and corn. Cassava, taro, pumpkin, chili, egg plant and cucumber are mainly planted in *"Suan"* along the river or near habitation area. Among these, sesame and Job's tear are major cash crops and corn, taro and cassava are also important as substitutes for rice for the people during rice deficit period from August to October as well as for feeding animals.

All those crops are planted just before the rainy season in end April and May. Firstly, rice is planted in the main area (sometimes together with cucumber, corn and other vegetable crops) followed by sesame, Job's tear, and others. Sesame, Job's tear and

corn are normally planted around the rice plantation area as a boundary and also in small plots, or in fenced gardens, so called as *"Suan"*. For growing those crops, the farmers do not use any fertilizers and only practice 3 times of weeding for rice and 2 times weeding for sesame, Job's tear and corn.

2.5.2 Major crops

(1) Upland rice:
They sow both glutinous rice and ordinary rice in May and harvest in November. Sticky rice (95%) is preferred to grow. They don't grow any crops in the field after harvest. The most serious problem is deterioration of soil. Yield of upland rice is 1.0~1.5 ton/ha. If soil is not fertile for upland rice, they grow sesame, corn and Job's tear. Another problem is rats and wild pigs. Large number of rats led serious damage once a decade. Villagers hunt and eat rats and wild pigs in the upland rice field. Despite of its low price, villagers prefer to grow upland rice as a staple food.
Seasonal change of sticky rice's price (milled rice) in Pakseng village in 2003 is 2,800 Kip/kg in July, 3,000 Kip in August, 3,500 Kip in September, 3,200 Kip in October, and 1,500 Kip in November and December.

(2) Sesame:
Most of the household who engage in slash and burn cultivation plant sesame. Total area of sesame is 9 ha. Yield of sesame is 5~600 kg/ha and the price is 6,000 Kip/kg.

(3) Job's tear:
About 20 % of the households in the village planted 3 ha of Job's tear in 2003. Harvest of Job's tear is 700 kg/ha and the price is 1,200 Kip/kg.
In 2002, a private company based in Luang Prabang contracted to buy Job's tear at 1,000 Kip/kg in wide area of Luang Prabang province. But too much harvest caused sharp decline of the price as low as 200 Kip/kg. The company did not buy Job's tear and many villagers in the province are suffered from serious food deficiency. Villagers are still afraid of sharp drops of the price and not willing to grow it.

(4) Corn:
Most of the household who engage in slash and burn cultivation also plant corn. Total area of corn is 18 ha. Many of them grow corn and upland rice in the same field. They grow corn for house consumption as well as for feeding pigs and poultry.

(5) Others:
They grow pineapple, banana and chili for house consumption.

2.5.3 Livestock

They used to grow a large number of livestock until the beginning of 1990s. However due to animal diseases, lots of large animals died and since then the number of livestock in the village decreased. The numbers of each livestock are summarized below.

Number of Livestock

Livestock	Heads
1) Buffalo	20
2) Cattle	10
3) Pig	300
4) Poultry	1,174
5) Turkey	50
6) Goat	35

2.6 Collecting NTFPs[1]

Major NTFPs collected in the village are as follows.

NTFPs collected in the Village

Major NTFPs	Description
1) Paper mulberry	Villagers grow paper mulberry (50 % of production) as well as collecting wild one (50 %). Wild and planted paper mulberry can be found near streams of Houay Pae. Paper mulberry can be collected from October to June.
2)Tree bark	Tree bark is collected in Production forest after slash and burn cultivation throughout the year. Tree bark can be harvested in the third year from germination. The price is 4,800 Kip/kg.
3) Tiger grass	Tiger grass is collected in degraded forest from February to April.
4) Benzoin	Not exist in the village.
5) *"Lac"*:	Selling price is 6,000 Kip/kg.
6) Worm in bamboo *"Me Nomai"*	*"Me Nomai"* is sold to China in November and December. Selling price is 28,000 Kip/kg in 2003 and 2004.
7) Bamboo shoots	Several kinds of bamboo shoots *"Nomai Hok"*, *"Nomai Saan"*, *"Nomai Lai"*, *"Nomai Hia"* are collected in June and July.
8) Mushrooms	Several kinds of mushrooms, e.g. Jew's year, *"Het Bee"*, *"Het Khao"*(Lentinus), *"Het Khon"*(Hiatula sp., Lepiota sp.), *"Het Puak"*(Terimitomycetes species, Agaricus integer Loureiro), are collected in June-August.
9) Natural fruits	Wild mango, *"Mak Fai"*, *"Mak Faen"*, *"Mak Kha"*, *"Mak Kok"*, *"Mak Kuu"*, *"Mak Ko"*
10) Medical plants	About 20~30 kinds of plants are used as medical purpose. But the wide spread of chemical medicine gradually prevent villagers from using medical plants.
11) Bee honey/nest/egg	They eat bee nest/eggs if it is available. But it's very rare in the village. Honey is also too little to find.
12) Hunting and trapping	Villagers shoot wild pig, deer and wild chicken in community production forest.

[1] Italics are Lao names of NTFPs obtained from the village key informants. Only identified common/or genus/or family names are described in the following parentheses.

13) Bat	Bats live in caves of southern mountain range. Villagers catch bats for their house consumption.

2.7 Use of water products

(1) Fish[2]

Big fishes are caught with big nets in Nam Seng and Nam Suang rivers by men. Small fishes are caught in small streams by women. Selling price of big fishes (e.g. *"Pa Nang"*: (Kryptopterus apogon) is 18,000 Kip/kg, and small fishes (e.g. *"Pa Ket"*: (Bagarius yarelli) is 12,000 Kip/kg. They catch fishes throughout the year.

(2) Others

Frogs are caught from May to July. River shrimps are caught from June to August. Number of turtle is too small to find. River weed is not collected.

2.8 Other activities

(1) Weaving

Villagers made their cloths by hand-made textile until around 1980. Now, about 50 percents of the Lao Loum and a small number of Lao Theun households weave for sales. Weaving is a job for women and they work when they have time throughout the year. They weave longer time during dry season as they have little agricultural works to do. During the dry season, they weave 10 textiles a month (Some weave 20 textiles a month). Selling price is around 35,000-45,000 Kip per textile. Materials are factory-made thread.

(2) Embroidery

Traders in Luangprabang bring materials and samples and hire the villagers to embroider. Pay for a sheet is 30,000 Kip. This commercial embroidery has just begun this year. Now about 4~5 households engage in this kind of embroidery.

(3) Spinning

Three (3) households practice spinning cotton into thread. Thread is used for ceremonial use *"Mat Kean"* and making clothes. All of the spinners are elder women. Spinning is practiced throughout the year, especially from October to January.

(4) Bamboo handcrafts

Lao Theun have an excellent skill of making bamboo handcrafts. They make bamboo basket, table, and so on for both house use and sale.

(5) Rice wine

Rice wine (*"Lao Hai"* and *"Lao Lao"*) is made throughout the year. Prices of *"Lao Hai"* are 15,000 Kip for a big jar and 8,000 Kip for a small jar.

(6) Blacksmith

They only repair agricultural tools and knife.

(7) Furniture factory

[2] Italics are Lao names of fish. Genus/species are described in the following parentheses.

A furniture factory was built in 2001.

2.9 Collective activities by the village for forest conservation

Conservation forest *"Pa SaNgouan"* is the category for forest reserve regulated by DAFO in 1995. The villagers follow the rule in this area that i) no logging is allowed, ii) any hard woods are forbidden to fell, and iii) no slash and burn practice is allowed.

2.10 Seasonal calendar

Seasonal calendar, which shows various activities/issues/ events related to livelihood and natural resource management is presented in **Figure 2.**

3. Infrastructure

3.1 Location, current condition of social infrastructure

(1) Water supply
There is a gravity water supply at the district hospital and some of the villagers use it especially during the rainy season. Most villagers use water of Nam Suang river. Houay inn stream is also used for daily use.

(2) School
There is no school in the village. Children in the village attend schools in nearby villages. Elementary school is located in Donsai village (15-20 minutes on foot), Junior High School is located in Tana village (30 minutes on foot), and Senior High School is located in Sop Chek village 15 km far from Pakseng village, the students of Pakseng, who attend the senior high school have to move and live in Sop Chek village. The attendance of students from the village are 69 persons in the elementary school, 19 persons in the junior high school, and 7 persons in the senior high school.
Persons who are in the ages of elementary school attendance but not attend are 59 persons.

(3) Clinic/Hospital
The district hospital is located in the village. They have 10 beds and 21 doctors. This hospital was built with the assistance of EU in 1995.

(4) Road
The road connecting Pakseng and Paksuang (64 km) was upgraded with the assistance of EU in 2002 (Construction in 2000-2002). Improvement of the road has a great impact on the local economy. Importance of the river transportation between Pakseng and Luang Prabang has reduced. But this road is still unpaved and is not in a good condition during the rainy season. The road between Pakseng to Viengkham is still not good. During the rainy season, Nam Seng river plays a very important role for transportation between these two district capitals.

(5) Market
One periodical market *"Talaat Nat"* is held at the bus stop. This market moved from

the confluence of Nam Seng and Nam Suang rivers.

(6) Electricity
There is no public electricity in the village. 3 households have gasoline generators and supply electricity to 50~60 households. There is no generator using rivers flow.

3.2 Agricultural infrastructure

(1) Irrigation:
There is no irrigation in the village.

(2) Rice mill:
There are 2 rice mills in the village.

(3) Vehicle/Agricultural machine/Tractor:
According to the village head, there is no tractor in the village.

3.3 Infrastructure development plan

At present, there is no infrastructure development plan.

4. Organization related to the Project Activities

4.1 Organizations available in the village

There is no village organization such as Water management unit and Forest management unit.

4.2 Any on-going/ implemented rural development project in the area

EU's rural development project was implemented from 1998 to 2002. In addition to the road construction from Paksuan to Pakseng (64 km), the EU project implemented various small activities of agriculture and livestock in the selected villages among the 29 villages along the road except Pakseng village.

4.3 International organizations and/or local NGOs working in the area

There is no information about any international organization and/or local NGOs working in the village.

4.4 Any agricultural promotion activities

Not exist.

4.5 Availability of agricultural technicians

There are no villagers in the village except officials studied agriculture or forestry at university/college (including the Luang Prabang Agriculture and Forest College in Paksuang).

5. Others

5.1 DAFO extension staff activities to the village

They visit three times a year. But DAFO staffs just come to do his job and there is no promotion activity.

5.2 Any migration project in the future

Not exist

5.3 Situation of tax collection (land tax etc.)

Total tax revenue of the village was 4,630,000 Kip in 2003. The usage of the revenue is 90 % of amount (4,167,000 Kip) to district government, 10 % of that (463,000 Kip) was to the village. This 10% is used as following.

- 60% (278,000 Kip): salary for the village head and 2 deputy heads
- 10% (46,000 Kip): salary for village secretary of the party
- 30% (139,000 Kip): to village treasury

PART 2 PARTICIPATORY VILLAGE SURVEY

- Survey period : 22 to 24 April 2004
- Resource map and social map : 22 April 2004
- Venn diagram for marketing products : 22 April 2004
- Dependence on resources by well-being level : 23 April 2004
- Present rules on the use of resources : 24 April 2004

1. Resource Map and Transect

In order to clarify the present use of lands and other resources, a resource map was drawn by the villagers through a participatory process. A total of 12 villagers (one each from 9 *"Nouays"* and 3 key informants) participated in this session in the morning on 22 April 2004. Based on the resource map, a transect walk was conducted in the morning on 23 April 2004 together with some village key informants. During the transect walk, the present use of lands and other resources were clarified by observing actual conditions of the sites. The resource map shows the different land types, in addition to roads, rivers, streams and habitation and the transect shows cross-sectional view of the different zones and provides comparative information such as main activities and problems for each land category as presented in Figure **3 and 4.**

2. Resources Utilization and Major Products

Major products in each resource are summarized in the following table, the information of which were obtained through Transect Walk, Venn Diagram preparation and some informal discussions.

Major Products by each Land Category

No.	Resources	Products
1	Conservation Forests: *"Pa SaNgouan"*	Bamboo
		Bamboo shoot
		Small animals (birds, rats, snakes and insects)
		Honey
2	Community Production Forests: *" Pa Somsai"*	Lumber for construction
		Bamboo
		Roofing thatch
		Tree bark
		Tiger grass
		Paper mulberry
		Bamboo shoot
		Wild fruit
		Wild vegetables
		Mush room
3	Agricultural Land for upland cultivation: *"Hai"* and *"Suan"* (3 places per household, 1	Rice
		Sesame
		Job's tear
		Corn

	ha for place/piece)	Mush room
		Buffalo (in fallow land)
		Cattle (in fallow land)
		Goat (in fallow land)
		Pig (in fallow land)
4	Rivers (Suang & Seng)	Fish
		Shrimp
		(For transportation)
5	Streams (Houay In, Hor, Phanhong, Thon, Deua, Phae, Xang thao, Nok & Mock)	Shell and small crabs Small fish Water vegetables
6	River sides	Paper mulberry
		Tiger grass
		Tree bark
		Bamboo shoot
		Bamboo
		Dry seasonal vegetable
7	Other products	Pigs
		Poultry
		Weaving

3. Venn Diagram

3.1 Importance of major products/resources

In order to clarify major products/resources in the village, the survey team organized group discussions through Venn Diagram preparation process in the afternoon on 22 April 2004. Twenty-four (24) participants (2 persons each from 9 *"Nouays"* and 6 key informants) were divided into two groups, namely a male group (12 persons) and a female group (12 persons) and were asked about major products/resources for each group, their importance and its reason, and their market situation as well.

Regarding importance of the major products/resources, there were no remarkable differences between male and female. They are, in order of importance, 1) rice, 2) sesame, 3) Job's tear, 4) paper mulberry, 5) corn, 6) tiger grass, 7) tree bark, 8) bamboo shoot, 9) kitchen vegetables (chili, tomato, cucumber, etc.), 10) pig, 11) poultry, and 12) weaving (handicrafts).

The reasons of importance for those products are mainly for their high marketability as well as for their house consumption. Rice, bamboo shoot, vegetables are grown/or collected mainly for house consumption, but they can be sold as well. On the other hand, sesame and Job's tear are grown only as cash crops. In addition, paper mulberry, tiger grass and tree bark are also very important NTFPs for earning money for the villagers. Corn plays triple roles for home consumption, for sale, and for feeding animals. Pigs are raised basically for sale, and sometimes for ceremony. Poultry are kept for both sale and home consumption. The importance of weaving is not so high in this village. It may be because weaving is normally practiced by Lao Loum people but this village is composed of two ethnic groups, Lao Loum and Lao Theun and the ratio of both groups is almost even. Difference of major

products/resources between male and female, and their priority and reasons are summarized in the following table.

Difference of Major Products/Resources between Male and Female, and their Priority and Reasons

Major Products	Male		Female		Reasons
	Claimed	Priority	Claimed	Priority	
1. Cultivated crops					
- Rice	O	1	O	1	Households consumption (and sale)
- Sesame	O	2	O	2	Sale (and households medicine: very little)
- Job's tear	O	4	O	3	Sale (and reserving a little for seeds)
- Corn	-	-	O	4	Households consumption, feeding animal (and sale)
2. NTFPs					
- Paper mulberry	O	3	O	5	Sale
- Tiger grass	O	5	O	6	Sale
- Tree bark	O	6	O	7	Sale
- Bamboo shoot	-	-	O	8	Households consumption (and sale)
- Kitchen vegetable	-	-	O	9	Households consumption (and sale)
3. Livestock					
- Pig	O	7	O	10	Sale (and ceremony)
- Poultry	-	-	O	10	Sale (and household consumption)
4. Others					
- Weaving	O	8	O	11	Sale (and household use)

Note: Activities in parenthesis mean secondary/minor purposes.

3.2 Marketing situation of major products

(1) Licensed middlemen group by district

Major marketing products such as sesame, Job's tear, paper mulberry, tiger grass, and tree bark, buffalo, cattle, pig, poultry and goat can be handled by licensed middlemen/group in Pakseng district. The district office issues business licenses for such major marketing products through a bidding system every year. There are five (5) licensed middlemen/groups in Pakseng district in 2004.

(2) A licensed middlemen group of cash crops and NTFPs

A middlemen group has a business license to handle such cash crops as sesame, Job's tear, paper mulberry, tiger grass and tree bark in Pakseng district. The warehouse of this trader group is located in Pakseng village. Pakseng villagers can sell all the products of such cash crops and NTFPs at the warehouse. The middlemen group sells those products to companies like Houg Hueng Development Co., Ltd. and Agricultural Development Co., Ltd. in Luang Prabang.

The basic prices of those cash crops and NTFPs in 2003 are 8,500 Kip/kg for sesame, 1,500 Kip/kg for Job's tear, 4,500 Kip/kg for tree bark, 2,500 Kip/kg for tiger grass,

and 2,500 Kip/kg for paper mulberry. However, actual buying prices by the trader group change depending on the quality of products as well the market situation. The Pakseng villagers can also sell those products/animals directly to any persons and restaurants in Pakseng district town.

(3) Weaving trader

There are three (3) individual female traders often come to buy weaving products in Pakseng village. They periodically come to the villages in this area and provide the villagers with raw materials for weaving as a contract basis. When they receive weaving products from the villagers, they pay only the contacted amount of labor cost. Traders sell those weaving products in Luang Prabang, Sayaboury and Oudomxay markets.

(4) Rice supplier at village level

Rice is forbidden to sell out of the district on a business basis. If there are some surplus, the rice is supposed to be stocked within the village. The village committee authorized three (3) villagers, Mr. Lek, Mr. Chanton, and Mr. Bounmee to handle rice products.

(5) 10-days market up and down streams of Nam Seng and Suan rivers

Markets are being operated at 10 villages up and down streams of Seng and Suan rivers every 10 days. The 10 are Pakseng, Sopcho, Hatkhaem, Soppheuak, Hatsam, Vann Ngeun, Hat Phuan, Nong, Hat Chang, Hat Warn villages. The transportation to those villages are mainly by boats.

(6) Venn Diagram of major products

Destinations of major products were clarified through a Venn Diagram preparation as summarized in the following table. Venn Diagrams in Pakseng village by male group and female group are presented in **Figure 5 and 6**, respectively.

Destination of Major Products

Products	Sell/Consume in the village	Sell to other markets, */	Sell to middlemen, **/
1. Cultivated Crops			
- Rice	O		
- Sesame			O
- Job's tear			O
- Corn	O		
2. NTFPs			
- Paper mulberry			O
- Tiger grass			O
- Tree bark			O
- Bamboo shoot	O		
- Kitchen vegetable	O	O	
3. Livestock			
- Pig	(O)		O
- Poultry	O	O	O
4. Others			
- Weaving products	(O)	(O)	O

Note: O = major destination, (O) = minor destination

*/ to other near markets by farmers themselves, or other far markets by non-licensed middlemen;

**/ to licensed middlemen by the district office.

4. Social Map

4.1 Well-being ranking

A social map was drawn by the villagers through a participatory process. A total of 12 villagers (9 persons from each *"Nouay"* and 3 key informants) participated in this session in the morning on 22 April 2004. The participants were asked to clarify themselves based on the well-being perceived by themselves, then they classified the well-being rank into three levels like i) over sufficient, ii) sufficient, and iii) under sufficient. According to the participants, among the total of 129 households of the village, 10 households (8 %) were classified into "over sufficient level", 44 (34 %) were "sufficient level", and the other 75 (58 %) were "under sufficient level", respectively. These figures are mostly coincident with the figure obtained from the village key informants described in Chapter 1.6, "about 30 ~ 50 households (depends on the previous year's harvest) are in short of rice between July and September".

These three (3) categories are distinguished in the social map, as presented in **Figure 7.** It can be simply said that major indicators affecting on the living situation in this village are if they have some other income from small business, government salary, etc. in addition to practicing upland slash and burn agriculture and NTFPs collection. Living situation of each level clarified by the participants is summarized in the following table.

Living Situation by Each Level

Level	Living Situation
"Over Sufficient" 10 HHs (8 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Have a bit more than enough to eat; - Tend to move from producing with existing resources to trading the products; - Hiring necessary labors; - Still live in bamboo houses with tin roofing; - Have surplus income and start buying tin roofing sheets to replacing thatch roofing, or to start rebuilding new houses.
"Sufficient" 44 HHs (34 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Have just enough to eat; - A mixture of farmers and government officers (for example, a husband is a government officer and his wife is a small scale trader, or a husband is a government officer and his wife is a farmer, or vise versa; - Have social access such as school, hospital and markets.
"Under Sufficient" 75 HHs (58 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Not enough to eat all year round; - Live in small houses with temporary materials; - Have no income security (no savings, nothing to sell like livestock).

4.2 Dependence on various resources by well-being level

The group discussions were organized in the afternoon on 23 April 2004 by each well-being level to clarify the present use of and dependence on resources by the group and to grasp seasonal trends/changes of resources in terms of production and marketability. Six (6) participants for each group were selected by the villagers during social map preparation.

Participatory discussions gave us two major suggestions like i) "over sufficient" group occupy only 8 % of the whole villagers and mainly engage in trading rather than producing and ii) most dominant group are "under sufficient" situation, who depend on working in their own fields as well as working in other persons fields since they can not get enough products from their own fields. This may be because that a) too many family members compared with available labor, b) too small agricultural fields, c) too poor productive fields, d) crop failures by drought, and e) animal diseases, etc. The dependence on resources by each level is summarized below.

Dependence on Resource by Each Level

Level	Dependence on Resources by Each Level
"Over Sufficient" 10 HHs (8 %)	- Engaging in trading rather than producing; - Some own their paper mulberry and sesame fields but hiring those of "under sufficient" to do their field works.
"Sufficient" 44 HHs (34 %)	- They work allocated lands; - They collect NTFPs for sale; - They raise animals for sale; - They grow vegetables in the dry season on the river side; - They utilize/produce their resources most such as rice, paper mulberry, sesame, Job's tear, corn, tiger grass, tree bark, and pigs, and weaving products.
"Under Sufficient" 75 HHs (58 %)	- They work hard but achieve less products due to draught; - They tend to sell labor more than to work in their own fields; - They want to raise pigs for cash income but no budget for investment.

5. Present Rules on the Management/Use of Lands and Resources

A plenary discussion with a total of 22 participants was organized in the morning on 24 April 2004 to clarify i) present rules on the management/use of lands and resources, and any changes or cases of them, and ii) any problems and issues on land allocation program.

5.1 Land allocation program

According to the villagers, *"Pa Phalith"* (Production Forest) is the area where villagers use for slash and burn cultivation. It is so called *"Din Phalith"* (Agricultural Production Land). In 1995, the government allocated 3 plots (1 plot is about 1 ha) to each household in production forest.

5.2 Present rules on the management/use of lands and resources

Major land/forest categories understood by the Pakseng villagers are i) Conservation Forest *"Pa Sagouan"* or Protection Forest *"Pa Pongkanh"*, ii) Community Production Forest *"Pa Somsai"*, and iii) Production Forest *"Pa Phalith"="Din Phalith"* (Agricultural Production Land).

(1) *"Pa SaNgouan"* (Conservation Forest) and *"Pa Pongkanh"*(Protection Forest)
The villagers could not tell the difference between the two categories of *"Pa SaNgouan"* (Conservation Forest) and *"Pa Pongkanh"* (Protection Forest). This area is located along Houay Inn, the drinking water resource of the village. The present rules on this area understood by the villagers are as follows. And according to the participants, any cases or problems on the management/use of this land have not occurred.

- Trapping small animals (rats, snake, insects) is allowed;
- Collection of bee honey is allowed;
- Collection of mushrooms, bamboo shoot, and wild vegetable is allowed;
- No logging practice of any forms is allowed;
- Any hard woods are forbidden to fell;
- No slash and burn practice is allowed; and
- No hunting of any forms are allowed.

(2) *"Pa Somsai"*(Community Production Forest)
"Pa Somsai" is so called 'community forest'. Village authority regulates *"Pa Somsai"* (Community Production Forest) since 1980s. There are three *"Pa Somsai"* areas in the village. The present rules on this area understood by the villagers are as follows.

- Felling of a timber lower than 20 cm of diameter is allowed;
- No slash and burn agriculture is allowed;
- Felling of a timber over 20 cm of diameter is requested to get the permission from the village authority and DAFO;
- No hard woods of any species are allowed to fell;
- The first reserving person will be always approved to have the wood;
- No rules of replanting for the felled woods have been instructed;
- No plans of reforestation have been disseminated; and
- Border is always referred to natural features such as mountains and rivers.

According the participants, the villagers of Ban Hat Phaot have ever logged and practiced slash and burn cultivation in Community Production Forest of Pakseng village. The invaded Ban Hat Phaot villagers were called to meet the DAFO officers

and were fined according to the price of the volume of woods they have felled.

(3) *"Pa Phalit"= "Din Phalit"* (Agricultural productive land)

Among the allocated plots, the area where they grow crops this year is called *"Hai"* or *"Suan"* and the fallow areas are called *"Pa Phalith"*.

The present rules on this area understood by the villagers are as follows.

- Each household is allocated 3 plots of land (1 plot is about 1.0 ha) for upland agriculture;
- They are obliged to pay the land tax of 1.0 ha;
- The tax is for land use right, not for any forms of certificate;
- The land cannot be sold out but it can be transferred to their relatives, who have no lands;
- The lands, which are now being used individually, are having been used by their parents or grand parents for many years;
- Any pieces of allocated lands have not been used for more than 3 years, the users would lose his/her land use right; and
- No rules exist regarding methods of cultivation techniques.

PART 3 HOUSEHOLD INTERVIEW SURVEY

Survey period: 22 to 24 April 2004
Total Household: 129 HHs
Total Number of Sampled HHs: 45 HHs

A. HOUSEHOLD INTERVIEW SURVEY

1. General Information

1.1 Interviewees

Total number of interviewees is 45 persons, among which 22 are Lao Theung and 23 are Lao Loum, and 38 are male and 7 are female. Among those interviewees, the youngest one is 21 years old and the oldest is 66, as summarized below.

Summary of Interviewees

Total No.of	Ethnic group			Sex		Age	
interviewees	Lao Sung	Lao Theung	Lao Loum	Male	Female	Min	Max
45	0	22	23	38	7	21	66

1.2 Households members

Total number of households members surveyed is 263 persons, among which 136 (51.7%) are male and 127 (48.3%) are female, and 13 are temporarily absentees.

1.3 Household age structure

As per household, the average number of household is 5.8 persons, among which 2.2 (37.9%) are less than 12 years old, 2.9 (50.0%) are between 12 and 45 years old, and 0.7 (12.1%) are more than 45 years old, as summarized below.

Summary of Household Age Structure

Age Structure	Total			Average per HH	
	Number	Male	Female	Family Member	(%)
1. Less than 12 years old	101	50	51	2.2	37.9
2. 12 to 45 years old	131	70	61	2.9	50.0
3. More than 45 years old	31	16	15	0.7	12.1
Total	263	136	127	5.8	100

1.4 Living period

Among all the 45 interviewed households, 32 households (71%) have lived for more than 10 years in the present location, as summarized below.

Living Period

Period	Number of HH interviewed	%
1. Within the last 10 years	13	28.9
2. From 10 to 20 years ago	7	15.5
3. From 20 to 30 years ago	13	28.9
4. More than 30 years ago	12	26.7
Total	45	100

1.5 Educational background

Among all the 263 household members, 123 persons (46.8%) are primary school graduated/or attending, or drop out of primary school level, 37 (14%) are more than secondary school graduated/or attending level, and the remaining 103 (39.2%) are below school age or have not received formal education, as summarized below.

Summary of Educational Background

Educational Level	Male	Female	Total	(%)
1. No formal education	53	50	103	39.2
2. Drop out of primary school	19	34	53	20.2
3. Primary school graduated/ Attending	32	30	62	23.6
4. Drop out of secondary	5	3	8	3.0
5. Secondary school graduated/ Attending	11	6	17	6.5
6. Drop out of high school	0	0	0	-
7. High school graduated/ Attending	9	4	13	4.9
8. Graduate of professional high school/ Attending	2	1	3	1.1
9. More than high school/ Attending	3	1	4	1.5
Total	134	129	263	100

1.6 Farming

Among all the 263 household members, 120 persons (45.6%) are engaging in farming.

1.7 Occupation

Among all the 263 household members, 97 persons (36.9%) are farmers, 4 persons (1.5%) are salary workers, 18 persons (6.9%) are private business workers, 51 (19.4%) are pupils/students, 45 (17.1%) are below school age children, and 24 (9.1%) have no job (including housework), and 24 (9.1%) are others, as summarized below.

Summary of Occupation

Occupation	Number	(%)
1. Farmer	97	36.9
2. Wage labor	0	0
3. Salary worker	4	1.5
4. Private business	18	6.9
5. Pupil/Student	51	19.4
6. Child (below school age children)	45	17.1
7. No job (including house work)	24	9.1
8. Others	24	9.1
Total	263	100

1.8 Organization

Among all the 263 household members, more than 81% of people do not belong to any specific organizations, but 33 persons (12.5%) are members of Women's union, Youth organization, Elder's group, or Village committee. In addition, 15 persons are members/ or staff belonging to "Others" like i) government offices, ii) party, and iii) voluntary village vigilante corps, etc. The villager's membership of organizations is summarizes below.

Villager's Membership of Organizations

Organization	Number	%
1. Member of Women's Union	7	2.7
2. Member of Youth Organization	18	6.8
3. Member of Elder's Group	4	1.5
4. Member of Water Users Group	0	-
5. Member of Village Committee	4	1.5
6. Member of Ethnic Organization	0	-
7. Member of religious Organization	0	-
8. Others (government, party, vigilante, etc.)	15	5.7
9. No member	215	81.8
Total	263	100

2. Living Condition

2.1 Drinking water

Among all the 45 interviewed households, 32~35 households (71.1~77.8%) use a gravity piped water system and the other 10~13 households (22.2~28.9%) use rivers for getting drinking water. These water sources are located within one to 20 minutes walking distance. However, among 32~35 households who use a piped water system,18 households (51.4%) in the wet season and 27 households (84.4%) in the dry season feel that water is not enough, as summarized below.

Drinking Water

Season	Main Source	Household		Distance		No.of HH sufficiency			
		No.	(%)	Min. (min.)	Max. (min.)	Sufficient	Just enough	Short	Very short
Dry	a. Piped gravity water	32	71	1	20	2	3	22	5
	b. River	13	29	1	20	6	2	5	-
Wet	a. Piped gravity water	35	78	2	20	8	9	16	2
	b. River	10	22	2	20	4	4	2	-

2.2 Fuel for cooking/heating

All the 45 interviewed households answer that they use only fuel wood for cooking/heating. Among which, the 33 households (73.3%) reply that they can collect fuel wood easily, and 12 households (16.7%) feel difficult or very difficult to obtain fuel wood, as summarized below.

Fuel for Cooking/Heating

Sources of fuel	No of HH	%	Availability	No of HH	%
Fuel wood	45	100	a. Easy to obtain	33	73.3
			b. Difficult to obtain	11	24.4
			c. Very difficult to obtain	1	2.3
Total	45	100		45	100

2.3 Food availability

2.3.1 Rice

Among all the 45 interviewed households, 9 households (20.0%) can produce rice more than the household demand and 9 households (20.0%) can produce rice just enough to meet the household demand. However, 12 households (26.7%) cannot produce rice to meet the household demand, among which 6 households reply that they purchase (or exchange) rice to meet the household demand, but the other 6 households face difficulty to obtain rice enough to meet the household demand. The average shortage months for those 6 households is calculated to be 4.3 months.

Further, there are 15 households (33.3%) who do not produce rice, who may grow other crops than rice, or may be engaging in trading business or government officers, etc. Among the 15 households above, only 2 households reply that they face difficulty to obtain rice to meet the household demand. They may be most serious in terms of food availability and the average shortage months for those 2 households are calculated to be 6.0 months.

Totally, it is estimated that among 45 households, 8 households (14.7%) face rice shortage for about 4.7 months, as summarized below.

Rice Availability

Rice Production Situation	No. of HH	(%)	No.of HH of Rice Shortage	(%)	Total Shortage (months)	Average Shortage (months)
1. Product exceeds the HH demand	9	20.0	-	-	-	-
2. Product is just enough to meet the HH demand	9	20.0	-	-	-	-
3. Product is not enough to meet the HH demand	12	26.7	6	13.3	26	4.3
4. No product	15	33.3	2	4.5	12	6.0
Total	45	100	8	17.8	38	4.7

2.3.2 Other than rice

<u>Other cereals, root and tube crops, and vegetables:</u>
Products other than paddy such as other cereals, root and tube crops and vegetables are generally not serious like rice for the farmers because they can try to manage with their products, and a large part of interviewed households (about 80%) feel that such products are enough to meet the household demand or exceed the household demand. Further, there are some households who do not produce such other products

than rice, 7 households (15.6%) for other cereals, 9 households (20.0%) for root and tube crops, 8 households (17.8%) for vegetables. They reply that they purchase or exchange such products depending on their needs but only one household for root crops faces a shortage of root crops for 3 months, and 2 households face a shortage of vegetables for one month.

Meat:
Only thirteen (13) households (28.9%) reply that the product of meat is enough to meet the household demand or exceed the household demand. However, another 13 households reply that the product of meat is not enough to meet the household demand. Further, there are 19 households who do not produce any meat. Among those 32 households who cannot produce sufficient meat (13) or do not produce any meat (19), 13 households reply that they face a shortage of meat for about 3.1 months.

Fish:
Twenty-one (21) households (46.7%) reply that the product of fish is enough to meet the household demand or exceed the household demand. However, 5 households (11.1%) reply that the product of fish is not enough to meet the household demand. Further, there are 19 households who do not produce/ catch any fish. Among those 24 households who cannot produce/ catch sufficient fish (5) or do not produce/ catch any fish (19), 9 households reply that they face a shortage of fish for about 2.4 months.

Food availability other than rice is summarized below.

Food Availability other than Rice

Rice Production Situation	No.of HH for production of				
	Other Cereals	Root, Tube Crops	Vege-tables	Meat	Fish
1. Product exceeds the HH demand	5	4	8	3	9
2. Product is just enough to meet the HH demand	33	31	27	10	12
3. Product is not enough to meet the HH demand	0	1	2	13	5
4. No product	7	9	8	19	19
(Total)	45	45	45	45	45
5. No.of HHs having a shortage of each product	0	1	2	13	9
6. Average shortage period per HH above (month)	0	3	1	3.1	2.4

2.4 Availability of facilities

Availability of major facilities in each household is summarized below.

Major Available Facilities in Each Household

Available Facilities	Nos.of Unit	(%)
1. Radio/radio cassette	27	60.0
2. VCD	4	8.9
3. TV	0	-
4. Bicycle	8	17.8
5. Motorcycle	7	15.6
6. Car	1	2.2

7. Refrigerator	0	-
8. Electric fan	0	-
9. Sewing machine	8	17.8
10. Gas stove	0	-
11. Toilet	28	62.2
12. Hand tractor	0	-
13. Rice mill	1	2.2

2.5 Health situation

2.5.1 Major diseases

The interviewees were asked to enumerate 2 major diseases for children and adults, respectively. Major diseases for children under 15 years old are i) cold, ii) malaria, iii) dengue fever, and those for adults are i) malaria, ii) headaches, iii) cold, as summarized below.

Major Diseases

Children under 15 years old			Adults		
Major diseases	No.of HH	%	Major diseases	No.of HH	%
1. Cold	11	24.4	1. Malaria	8	17.8
2. Malaria	6	13.3	2. Head aches	7	15.6
3. Dengue fever	5	11.1	3. Cold	6	13.3
4. …….	…	…	4. ……..	…	…

2.5.2 Treatment for diseases

Major treatments for slight diseases are i) buy medicine and ii) go to the district hospital, and those for severe diseases are i) go to the district hospital and ii) go to the provincial hospital, as summarized below.

Treatment of Diseases

Slight diseases			Severe diseases		
Major treatment	No.of HH	%	Major treatment	No.of HH	%
1. Buy medicine	29	64.4	1. Go to the district hospital	30	66.7
2. Go to the district hospital	12	26.7	2. Go to the provincial hospital	5	11.1
3. …….	…	….	3. ……	…	…

3 Agriculture and Forestry Production

3.1 Land tenure

3.1.1 Farm land operated

In this survey, the farm lands are categorized into four (4), i) “Hai-A” (upland slash and burn field, mainly for paddy), ii) “Hai-B” (upland slash and burn field, mainly for other crops than paddy), iii) “Na” (lowland paddy field), and iv) “Fruits/Vegetable”.

"Hai-A":
Among all the 45 households, 27 households have ownership for "Hai-A". Total area of "Hai-A" is 42.91 ha with a total of 50 plots and an average area of 0.86 ha/plot and 0.95 ha/HH. Further, there are 2.90 ha of lands rented from others and 1.25 ha of lands leased to other farmers, thus the average operated land is 0.99 ha/HH.

"Hai-B":
Among all the 45 households, 22 households have ownership for "Hai-B". Total area of "Hai-B" is 18.88 ha with a total of 35 plots and an average area of 0.54 ha/plot and 0.42 ha/HH. Further, there are 1.90 ha of land rented from others, thus the average operated land is 0.46 ha/HH.

"Fruits/ vegetables" field:
Among all the 45 households, 5 households have ownership for "Fruits/ vegetables" field. Total area of "Fruits/ vegetables" field is 2.10 ha with a total of 5 plots and an average area of 0.42 ha/plot and 0.05 ha/HH. Since there are no rented lands of "Fruits/ vegetables" field, the average operated land of "Fruits/ vegetables" fields is the same as that of owned land, 0.05 ha/HH.
The feature of farm land holding is summarized below.

Farm Land Operated

Land Category	Land Owned by the HH				Land Rent-ed (b) (ha)	Land Lea-sed (c) (ha)	Land Ope-rated (d) (ha)= (a)+(b) -(c)	Average Area per HH	
	No. of HH	No. of Plots	Total Area (a) (ha)	Average area per Plot (ha/plot)				Land Owned (ha) (a)/45	Land Operated (ha (d)/45
1. Hai-A, 1/	27	50	42.91	0.86	2.90	1.25	44.56	0.95	0.99
2. Hai-B, 2/	22	35	18.88	0.54	1.90	0	20.78	0.42	0.46
3. Na (Lowland paddy)	-	-	-	-	-	-	-	-	-
4. Fruit/Vegetable, 3/	5	5	2.10	0.42	0	0	2.10	0.05	0.05
Total/Average	-	90	63.89	0.71	4.80	1.25	67.44	1.42	1.51

Note: 1/ Upland slash and burn cultivation field, mainly for rice.
2/ Upland slash and bun cultivation field, mainly for other crops than rice.
3/ Except home garden

3.1.2 Land ownership

The answers about the land title of the "owned land" vary by interviewees. It was found that the owned lands were not always privately owned but some are i) government land but they have a right to cultivate traditionally, ii) government land but allocated by the village committee, and iii) they don't know whose land that is, but they cultivate.

Among the "Hai-A" of 27 households, the lands of 16 households (59.3%) are "privately owned", the lands of 6 households (22.2%) are "government land but they have a right to cultivate traditionally", the lands of 4 households (14.8%) are "government land but allocated by the village committee, and the land of one household (3.7%) is "they don't know whose land that is, but they cultivate". In

addition, there are 2 households who rent the lands with a total of 2.90 ha for farming practice in “Hai-A”

Among the “Hai-B” of 22 households, the lands of 14 households (63.6%) are “privately owned”, the lands of 3 households (13.6%) are “government land but they have a right to cultivate traditionally”, the lands of 4 households (18.2%) are “government land but allocated by the village committee, and the land of one household (4.6%) are “they don’t know whose land that is, but they cultivate”. In addition, there are 3 households who rent the lands with a total of 1.90 ha for farming practice in “Hai-B”

Among the “Fruits/ vegetables” fields of 5 households, the lands of 4 households (80%) are “privately owned”, the land of one households (20%) are “government land but they have a right to cultivate traditionally”. There are no households who rent “Fruits/ vegetables” fields from others.

The feature of the land ownership of the “owned land” is summarized below.

Future of the Land Ownership

Land Category	Land Owned by the HH					Others,
	No.of HHs	Private, 4/	Gov.(1), 5/	Gov.(2), 6/	Unclear, 7/	8/
1. Hai-A, 1/	27	16	6	4	1	2
2. Hai-B, 2/	22	14	3	4	1	3
3. Na (Lowland paddy)	0	0	0	0	0	0
4. Fruit/Vegetable, 3/	5	4	1	0	0	0

Note: 1/ Upland slash and burn cultivation field, mainly for rice.
2/ Upland slash and bun cultivation field, mainly for other crops than rice.
3/ Except home garden.
4/ Privately owned (they can sell it when ever you want).
5/ Government land but they have a right to cultivate traditionally.
6/ Government land but allocated by the village committee.
7/They don’t know whose land that is, but they cultivate.
8/ Others (households, who rent farmlands from others, like their relatives)

3.2 “Hai” area (upland slash and burn field)

3.2.1 Time required

Among all the 45 households, 22 households have replied to the times required to go to their “Hai”area, which vary from 45 min. to 180 min. with an average of 90 minutes.

3.2.2 Repeated use of “Hai” area

“Hai-A”: Among 28 households who cultivated Hai-A in 2003, all of them answered that they would use the same lands within 1 to 3 years for cropping upland rice, and no households answered that they would not use those lands in near future. Among 28 households above, 18 households used the same lands in 2001 and 16 households

used the same land in 2002.

"Hai-B": Among 29 households who cultivated Hai-B in 2003, all of them answered that they would use the same lands within 1 to 3 years for cropping sesame and Job's tear, and no households answered that they would not use the same lands in near future. Among 29 households above, 12 households used the same land in 2001 and 10 households used the same land in 2002.

The future of the repeated use of "Hai" area is summarized below.

Repeated Use of "Hai" Area

"Hai" Category	Repeated Use			Don't Use		Used in	
	No. of HH	How many years later	For what crops	No. of HH	Purpose/reason	Year 2002 (HH)	Year 2001 (HH)
"Hai-A"	28	1 to 3	Rice	0	-	16	18
"Hai-B"	29	1 to 3	Sesame, Job's tear	0	-	10	12

3.2.3 Total "Hai" (A+B) areas used per HH in last 4 years

Total "Hai" (A+B) areas used per HH in last 4 years vary from 0.61 ha/HH in 2002 to 0.82 ha/HH in 2003, with an average of 0.70 ha/HH, as summarized below.

Total "Hai" (A+B) Used Area

Year	Total Used Area (ha)	Used Area per HH (ha)
2000	30.75	0.68
2001	30.25	0.67
2002	27.50	0.61
2003	36.80	0.82
Average	31.33	0.70

3.2.4 Staying "Hai" area

Among the 45 households, 10 households reply that they stay in the field continuously from "slash and burn" to "harvest", whose living and working bases are basically in the field, including raising animals. On the other hand, 20 households do not stay in the field but go there based on requirements. In addition to those who stay in the field continuously, 4 households answered that they stayed in the field during the season for slash and burn. The future of staying "Hai" area is summarized below.

Staying "Hai" Area

Situation	Number of HH
1. Stay during the season for slash and burn	4
2. Stay during the season for seeding	0
3. Stay during the season for harvesting	0
4. Stay continuously from slash &burn to harvest	10
5. Not stay, go there based on requirement	20

3.2.5 Decision maker for the "Hai" area selection

Among all the 45 households, 33 households (73.3%) answered that the head of household was a decision maker for the "Hai" area selection, as summarized below.

Decision Maker for the "Hai" Area Selection

Decision Maker	Number of HH
1. Head of household	33
2. Other household member(s)	1
3. Village committee	1
4. Relatives	2
5. No comments	8

3.3 Crop production in "Hai"(slash and burn) area

(excluding crops grown in home garden)

3.3.1 Major crops

Major crops grown in "Hai" area in the wet season are i) rice (29 households), ii) Job's tear (26 households) and iii) maize (13 households). As for crops in the dry season, maize or other vegetables were grown by 3 households in very limited areas due to limited water or soil moisture conditions.

3.3.1 Production of 3 major crops in "Hai" area

Rice:
Total production area of rice by all the 45 interviewees is 21.63 ha with a total production of 48,800 kg, among which, 6,462 kg (13.2% of the total production) were sold for cash. As for per household, it is estimated that the production of rice is 1,084 kg/HH with an average planted area of 0.48 ha, among which 144 kg were sold for cash, with a value of 169,396 Kip.

Job's tear:
Total production area of Job's tear is 10.51 ha with a total production of 3,202 kg, among which 3,147 kg (98.3% of the total production) were sold for cash. As for per household, it is estimated that the production of Job's tear is 71 kg/HH with an average planted area of 0.23 ha, among which 70 kg were sold for cash with a value of 404,444 Kip.

Maze:
Total production area of Maze is 2.36 ha with a total production of 1,750 kg, among which 400 kg (22.9% of the total production) were sold for cash. As for per household, it is estimated that the production of maze is 39 kg/HH with an average planted area of 0.05 ha, among which 9 kg were sold for cash, with a vale of 5,556 Kip.

No households used any chemical fertilizer or pesticide for the above crops. Major crop damages are pests, insects, rats, wild pigs and birds. Since there were no questions about agricultural chemicals, pesticide or insecticide in the questionnaires, such information was not obtained in this survey. The future of 3 major crop production is summarized below.

Production of 3 Major Crops by the 45 Interviewee Households

Items	Major Crops		
1. Name of crops	Rice	Job's tear	Maize
2. Planted area : (ha)	21.63	10.51	2.35
: (kg seed)	1,245	195	66
3. Total production (kg)	48,800	3,202	1,750
4. Form of Products	Paddy	Grain (unhusked)	Green
5. Production sold (kg)	6,462	3,147	400
6. Price at sold (Kip / kg)	1,966	5.783	625
7. Total sales (Kip)	7,622,800	18,200,000	250,000
8. Production given to others (exchanged or lent to others) (kg)	No given to others		
9. Chemical fertilizer used (kg)	No chemical fertilizer / Pesticide used		
10. Major crop damage, if any	Pests, insects, rats, wild pigs and birds		

Production of 3 Major Crops per HH

Production Volume per HH			
Items	Crop 1 (a)/45	Crop 2(b)/45	Crop 3(c)/45
1. Name of crops	Rice	Job's tear	Maize
2. Planted area : (ha)	0.48	0.23	0.05
: (kg seed)	28	4	1
3. Total production (kg)	1,084	71	39
4. Form of Products	Paddy	Grain (unhusked)	Green
5. Production sold (kg)	144	70	9
6. Price at sold (Kip / kg)	1,180	5,783	625
7. Total sales (Kip)	169,396	404,444	5,556

3.4 Crop production in "Na"

There are no lowland paddy fields in this village.

3.5 Annual paddy production and consumption per HH

The interviewees were asked their annual paddy production and consumption in their households. Some slight difference between the results of questions of the paddy production in Section 3.3.1 (48,800 kg) and Section 3.5 (50,900 kg) is found but it is judged to be within an allowance for this survey.

Annual paddy production and consumption, and their balance are as shown below.

Annual Paddy Production and Consumption

Paddy Production and Consumption	Quantity (a)	Typical volume per HH (a)/45
1. Paddy production in paddy land "Kao Na"	0 kg/year	0 kg/year
2. Paddy production in slash and burn area "Kao Hai"	50,900 kg/year	1,122 kg/year
3. Total paddy production (3 = 1 + 2)	50,900 kg/year	1,122 kg/year
4. Total paddy consumption in a month (average)	6,528 kg/month	145 kg/month
5. Total paddy consumption in a year (average)	70,671 kg/year	1,570 kg/year
6. Balance of paddy in household (6 = 3 – 5)	- 19,771 kg/year	- 439 kg/year

The survey result suggests that in average each household faces about 439 kg of rice shortage per year. On the other hand, as seen in Section 2.3.1, it is estimated that among 45 households, only 8 households (14.7%) face rice shortage for about 4.7 months. It is understood that some can produce rice to meet their demand and the other can purchase rice based on their requirements, and such food availability much depends on the land availability and their family labor availability, etc.

3.6 Fruits/Tree crops

Most 5 major fruits/tree crops among the 45 households are i) pine apple, ii) banana, iii) mango, iv) Jackfruit, and v) papaya in order of number, and the average numbers of those bearing trees per HH are i) 18 trees, ii) 16 trees, iii) 1.7 trees, iv) 0.4 trees, and v) 0.4 trees, respectively, as summarized below.

Fruits/ Tree Crops

Type	Numbers of trees		Numbers of trees per HH	
	Bearing trees (a)	Non-bearing trees (b)	Bearing trees (a)/45	Non-bearing trees (b)/45
1. Orange	0	0	-	-
2. Lemon	10	10	0.2	0.2
3. Lime	0	3	0	-
4. Longan	2	30	-	0.6
5. Jackfruit	20	13	0.4	0.2
6. Tamarind	10	0	0.2	-
7. Guava	0	37	-	0.8
8. Papaya	0	19	0.4	-
9. Banana	712	25	15.8	0.5
10. Coconut	27	22	0.6	0.4
11. Coffee	0	0	-	-
12. Tea	0	0	-	-
13. Mangoes	75	175	1.6	3.8
14. Pine Apple	800	500	17.7	11.1

3.7 Non-timber forest products

3.7.1 Major NTFPs

Most 5 major NTFPs among the 45 households are i) paper mulberry, ii) tree bark, iii) tiger grass, iv) bamboo shoot, and v) mushroom in order of cash income available, as summarized below.

Major Non-Timber Forest Products

Items	Priority order of cash income available up to 5					
	1	2	3	4	5	Total
1. Cardamon	0	0	0	0	0	0
2. Rattan seed	0	1	0	0	0	1
3. Rattan	0	0	0	0	0	0
4. Benzoin	0	0	0	0	0	0
5. Tree bark	18	4	0	0	0	22
6. Paper mulberry	8	17	2	0	0	27

7. Wild ginger	0	0	0	0	0	0
8. Bamboo shoot	4	0	1	0	0	5
9. Tiger grass	0	4	9	0	0	13
10 Eagle wood	0	0	0	0	0	0
11. Sa pan (a kind of tea)	0	0	2	0	1	3
12. Others (Mushroom)	1	2	1	1	0	5

3.7.2 Production and sale

The harvest season, volume of harvest in 2003, price at sold in 2003 and total sale of major NTFPs are presented as follows.

Production and Sale of Major NTFPs by the 45 Interviewee Households

Items	NTFP 1(a)	NTFP 2(b)	NTFP 3 (c)	NTFP 4 (d)	NTFP 5 (e)
1. Name of NTFPs	Paper mulberry	Tree bark	Tiger grass	Bamboo shoot	Mushroom
2. Harvest season	3-6	3-4	5-8	4-8	5-8
3. Volume of harvest in 2003 (kg)	1,588	1,233	546	780	170
5. Price at sold in 2003 (Kip/kg)	2,288	3,935	1,812	1,269	2,662
6. Total sales (Kip)	3,633,100	4,852,000	989,500	990,000	452,500

Production and Sale of Major NTFPs per HH

Items	NTFP 1(a)/45	NTFP 2(b)/45	NTFP 3 (c)/45	NTFP 4 (d)/45	NTFP 5 (e)/45
1. Name of NTFPs	Paper mulberry	Tree bark	Tiger grass	Bamboo shoot	Mushroom
2. Harvest season	3-6	3-4	5-8	4-8	5-8
3. Volume of harvest in 2003 (kg)	35.2	27.4	12.1	17.3	3.7
5. Price at sold in 2003 (Kip/kg)	2,288	3,935	1,812	1,269	2,662
6. Total sales (Kip)	80,736	107,822	21,989	22,000	10,056

3.8 Livestock and fish

3.8.1 Livestock

The average numbers of livestock raised per household are i) buffalo (0.3 head), ii) goat (0.8 head), iii) pig (1.6 head), iv) chicken (16.9 heads), v) duck (6.7 heads), respectively, as summarized below.

Livestock Raising

Type	No. (a)	No. of HH	Feeding				Typical livestock per HH (a)/45
			Wet Season		Dry Season		
			Main feed	Sufficiency	Main feed	Sufficiency	
1. Cattle	0	-	-	-	-	-	-
2. Buffalo	14	4	Grass	Sufficient	Grass	Sufficient	0.3
3. Goat	37	4	Grass	Sufficient	Grass	Sufficient	0.8
4. Pig	74	16	Crop residue	Sufficient	Crop residue	Sufficient	1.6
5. Chicken	764	27	Crop residue	Sufficient	Crop residue	Sufficient	16.9
6. Duck	301	20	Crop residue	Sufficient	Crop residue	Sufficient	6.7

3.8.2 Catch of fishes

Main types of fishes caught are: “Pa Sakang”(Puntiolites proctozysron), “Pa Kheung”(Mystus wyckii), “Pa King”(Onychostoma sp.; carp), “Pa Chat”(Acrossocheilus deauratus), “Pa Nang” (Kryptopterus apogon), “Pa Keng”(Osteochilus prosemion fowler, Cirrhinus molitorella), “Pa Mom” (Scaphoodontichtys sp.: carp), “Pa Hieng”(Tor sinensis; carp), “Pa Park”(Puntius gonionothus), “Pa Lad”(Mastacembelus armatus Hora), “Pa Pe”(Achiroides sp.; flat fish), “Pa Ket”(Bagarius yarelli), “Pa Nam”(Mystacoleucus greenwayi; small carp) and “Pa Noi” (small fish). Season of fishing is all the year. Average catch of fishes per week per HH is estimated at 4 kg/week/HH.

3.8.3 Fish raising

Among the 45 households, two households have their fish ponds raising cat fish and carp.

3.8.4 Livestock/fishes sold in the last 12 months

The average numbers of livestock sold per household in last 12 months are i) buffalo (0.1 head), ii) pig (0.5 head), iii) chicken (6.5 heads), iv) duck (3.5 heads), respectively. As for fishes, 15 kg/HH of fishes were sold in the last 12 months, as summarized below.

Livestock/Fishes Sold in the Last 12 Months

Type	No.of heads sold		No.of HH sold	No.of heads sold per HH	
	Adult (a)	Young (b)		Adult (a)	Young (b)
1. Cattle	0	0	0	-	-
2. Buffalo	6	0	3	0.1	-
3. Goat	3	0	1	-	-
4. Pig	23	3	11	0.5	-
5. Chicken	296	31	18	6.5	0.6
6. Duck	160	14	17	3.5	0.3
7. Fish	695 kg (weight of fishes)		10	15 kg (weight of fishes)	

4. Estimated Marketed Volumes of Major Products by Village

Based on the results of the household interview survey, the total marketed volumes of major products from the village were estimated as shown in the following table.

Total major crops sold outside the village are 5,557 kg of rice, 9,021 kg of Job's tear, and 573 kg of maze. Total major NTFPs sold outside the village are 4,552 kg of paper mulberry, 3,535 kg of tree bark, 1,565 kg of tiger grass, 1,118 kg of bamboo shoot, and 244 kg of mushroom. Total major livestock and fish sold outside the village are 17 heads of buffalo, 4 heads of goat, 33 heads of pig, 424 heads of chicken, and 229 heads of duck.

Estimated Marketed Volumes of Major Products (Pakseng)

Description		3 Major Crops			5 NTFPs				
		Upland Rice	Job's tear	Maize	Paper mulberry	Tree bark	Tiger grass	Bamboo shoot	Mush-room
I.	Total of Sampled 45 HHs								
-	Volume harvested in 2003	48,800	3,202	1,750	1,588	1,233	546	-	-
-	Volume sold in 2003	6,462	3,147	400	1,588	1,233	546	780	170
-	Average price at sold in 2003 (Kip/kg)	1,966	5,783	625	2,288	3,935	1,812	1,269	2,662
-	Form of products	paddy	grain	green	dry bark	dry bark	dry grass	raw	raw
-	Unit	kg	kg	kg	kg	kg	kg	kg	kg
II.	Total of the Village (129 HHs)								
-	Total volume sold	18,524	9,021	1,147	4,552	3,535	1,565	2,236	487
-	Sold within the village,*/ (estimated,**/)	12,967	0	573	0	0	0	1,118	244
-	Sold outside the village (estimated,**/)	**5,557**	**9,021**	**573**	**4,552**	**3,535**	**1,565**	**1,118**	**244**

(continued)

Description		Livestock/Fish						
		Cattle	Buffalo	Goat	Pig	Chicken	Duck	Fish
I.	Total of Sampled 45 HHs							
-	Volume harvested in 2003	-	-	-	-	-	-	-
-	Volume sold in 2003	0	6	3	23	296	160	695
-	Average price at sold in 2003 (Kip/kg)	-	-	-	-	-	-	-
-	Form of products/adult head	head	head	head	head	head	head	head
-	Unit	head	head	head	head	head	head	kg
II.	Total of the Village (129 HHs)							
-	Total volume sold	0	17	9	66	849	459	1,992
-	Sold within the village,*/ (estimated,**/)	0	0	4	33	424	229	1,992
-	Sold outside the village (estimated,**/)	**0**	**17**	**4**	**33**	**424**	**229**	**0**

Note: */ including Pakseng district market, **/estimated based on the results of the Venn Diagram Preparation

5. Income and Expenditure

5.1 Sources of major income

The interviewees were asked to enumerate major income sources no more than 5, and their annual amounts. Major income sources enumerated by the interviewees were i) private business (11 households), ii) salary from permanent job (11 households), iii) selling livestock/poultry (19 households), iv) selling NTFPs (32 households), and v) selling field crops/vegetables (20 households), in order of amount of income. Average amounts of major income sources per household are presented as shown below.

Average Amount of Major Income Sources per HH

Income Sources	No.of HHs	Amount of Annual Major Income (Kip/year) (a)	Average per HH (a)/45 (Kip/year/HH)
1. Private business	11	112,000,000	2,488,889
2. Salary from permanent job	11	47,500,000	1,055,556
3. Selling livestock/ poultry/ products	19	22,988,000	510,844
4. Selling NTFPs	32	11,931,100	265,136
5. Selling field crops/ vegetables	20	11,239,000	249,756

5.2 Major income per HH

Annual amounts of major income per household vary from 550,000 Kip/year to 60,000,000 Kip/year with an average of 5,271,131 Kip/year/HH (a total of 237,200,900 Kip/year by the 45 households).

Major Cash Income per HH

Range of Cash Income	Kip/year/HH
1. Maximum	60,000,000
2. Minimum	550,000
3. Average	5,271,131

5.3 Major income of sample households

The interviewee whose annual amount of major income was 550,000 Kip/year earned such income only from selling NTFPs. The interviewee whose annual amount of major income was 60,000,000 Kip/year earned such income only from private business. Except such special cases, three typical samples (high, medium and low levels) of major income per household are presented below.

Major Income of Typical Sample Household (High Level)

Income Sources	Kip/year/HH
1. Private business (trading, shop, etc.)	18,000,000
2. Selling livestock and poultry products	500,000
3. -	-
4. -	-
5. -	-
Total	18,500,000

Major Income of Typical Sample Household (Medium Level)

Income Sources	Kip/year/HH
1. Selling fruits	800,000
2. Salary from permanent job	744,000
3. Selling field crops/ vegetables	400,000
4. Selling fishes	400,000
5. Selling NTFPs	400,000
Total	2,744,000

Major Income of Typical Sample Household (Low Level)

Income Sources	Kip/year/HH
1. Selling field crops/ vegetables	315,000
2. Selling fruits	150,000
3. Selling NTFPs	250,000
4. -	-
5. -	-
Total	715,000

5.4 Items of major expenditure

The interviewees were asked to enumerate major expenditure no more than 5, and their annual amounts. Major expenditures enumerated by the interviewees were those for i) food (42 households) ii) health (29 households), iii) clothes (23 households), iv) social activities (festivals, ceremonies, religious events, etc.) (15 households) and v) education (21 households), in order of amount of expenditure. Average amount of major expenditure item per household are shown below.

Average Amounts per Expenditure Item per HH

Expenditure Item	No.of HHs	Amount of Annual Major Expenditure (Kip/year) (a)	Average per HH (a)/45 (Kip/year/HH)
1. Food	42	69,686,000	1,548,578
2. Health	29	22,720,000	504,889
3. Clothes	23	19,539,000	434,200
4. Social activities/events	15	8,400,000	186,667
5. Education	21	7,108,000	157,956

5.5 Major expenditure per HH

Annual amounts of major expenditure per household vary from 245,000 Kip/year to 8,884,000 Kip/year with an average of 2,887,788 Kip/year/HH (a total of 129,950,500 Kip/year by the 45 households).

Major Expenditure per HH

Range of Expenditure Amount	Kip/year/HH
1. Maximum	8,884,000
2. Minimum	245,000
3. Average	2,887,778

5.6 Major expenditure of sample households

In order to grasp the general future of expenditures per household, three levels (high, medium, and low) of major expenditure of typical sample households are selected as shown below.

Major Expenditure of Typical Sample Household (High Level)

Expenditure Items	Kip/year/HH
1. Food	3,000,000
2. Social activities/events	3,000,000
3. Clothes	2,500,000
4. Health	3,000,000
5. Fuel wood	84,000
Total	8,884,000

Major Expenditure of Typical Sample Household (Medium Level)

Expenditure Items	Kip/year/HH
1. Food	2,400,000
2. Clothes	600,000
3. Education	200,000
4. Social activities/events	70,000
5. Tax payment	36,500
Total	3,306,500

Major Expenditure of Typical Sample Household (Low Level)

Expenditure Items	Kip/year/HH
1. Clothes	400,000
2. Education	120,000
3. Social activities/events	120,000
4. -	-
5. -	-
Total	640,000

5.7 Major investment of productive and fixed assets

The interviewees were asked to enumerate major investments of productive and fixed assets in the last year no more than 3, and their annual amounts. Major investments enumerated by the interviewees were those for i) housing (improvement) (10 households) ii) private business (6 households), and iii) livestock (11 households), in order of amount of investment. On the other hand, 19 households did not invest any money last year. Average amounts per investment item per household are shown below.

Average Amounts per Investment Item per HH

Investment Item	No.of HHs	Amount of Last Year Major Investments (Kip/year)	Average per HH (Kip/year/HH)
1. Housing (improvement)	10	24,730,000	549,556
2. Private business	6	19,900,000	442,222
3. Livestock	11	6,107,000	135,771

5.8 Major investment per HH

Annual amounts of major investment per household vary from 59,000 Kip/year (excluding 19 households, who did not invest any money last year) to 10,500,000 Kip/year with an average of 2,440,519 Kip/year/HH (a total of 63,453,500 Kip/year by the 45 households).

Major Investment per HH

Range of Investment Amount	Kip/year/HH
1. Maximum	10,500,000
2. Minimum (excluding the 19 households)	59,000
3. Average	2,440,519

5.9 Major investment of sample households

In order to grasp the general future of investment per household, three levels (high, medium, and low) of major investments of typical sample households are selected as shown below, excluding 19 households, who did not invest any money last year.

Major Investment of Typical Sample Household (High Level)

Investment Items	Kip/year/HH
1. Housing (improvement)	7,000,000
2. Household appliance	300,000
3. Land	71,000
Total	7,371,000

Major Investment of Typical Sample Household (Medium Level)

Investment Items	Kip/year/HH
1. Household appliance	1,500,000
2. Livestock	300,000
3. Housing (improvement)	100,000
Total	1,900,000

Major Investment of Typical Sample Household (Low Level)

Investment Items	Kip/year/HH
1. Household appliance	74,000
2. Land	50,000
3. Farm machinery/tools	34,000
Total	158,000

6. Utilization of Credit/Loan

Among all the 45 interviewees, 8 households have borrowed money from Bank, of which 6 households have already paid off the loan and the other 2 have still the remaining to be returned with amounts of 1,500,000 Kip and 1,000,000 Kip,

respectively. As for the borrower's name, 2 borrowers were the household heads and the other 6 were the wives. The purposes for borrowing money are for purchasing livestock, private business and weaving. The borrowing amounts vary from 800,000 Kip to 3,000,000 Kip with an average of 1,725,000 Kip, with a monthly interest of 1.3 to 2.75%.

In addition to the loan above, there are 2 borrowers who borrowed money from their relatives. The one borrowed 800,000 Kip for the purchase of assets, of which 500,000 Kip is still remaining to be returned. The other borrowed 30,000 Kip for medical treatment and already returned all the borrowed money.

The future of the utilization of credit/loan is summarized below.

Utilization of Credit/Loan

Possible Source	Number of Borrower	Purpose of Loan	Amount of Loan (Kip)	Monthly Interest (%)	Status of Loan	
					Paid off (Kip)	Remaining (Kip)
1. Bank	8	Livestock, Private business and weaving	13,800,000	1.3-2.75		2,500,000
2. Cooperative	-	-	-	-	-	-
3. Relative	2	Medical, Asset purchase	830,000	0		500,000
4. Neighbor / Friend	-	-	-	-	-	-
5. Trader / Dealer	-	-	-	-	-	-
6. Mutual aid group	-	-	-	-	-	-
7. Others	-	-	-	-	-	-

7. Extension

Among the 45 interviewees, 32 (71%) have never received any training or technical advice from DAFO extension staff. The other 13 have received training or technical advice one to three times before, like 1 time (3 households), 2 times (8 households) and 3 times (2 households), respectively, as summarized below.

Total HH interviewed	Have not received any training (HH)	Received training and technical advice				
		Total HH	Times of visit by the extension staff			
			1 time	2 times	3 times	4 times
45	32	13	3 HHs	8 HHs	2 HHs	0 HHs

B. HOUSEHOLD MEMBER SURVEY

Among the sampled 45 households for Household Interview Survey, a half of households (23 households) were further selected for Household Member Survey (HMS) (23 males and 23 females) for clarifying i) participation/ engagement of household members and ii) activities to make easy, the results of the HMS are summarized below.

8. Participation/ Engagement of Household Members

The participation of the household members in each activity can be defined as follows.

(1) Home activities:
Females especially wives are responsible for almost home activities such as fetching of drinking water, cooking, washing, sweeping the house, child / elderly care, except house repair, for which males or the heads of the household seem to be responsible.

(2) Farming activities (concerned low land rice cultivation):
The farmers in this village don't have low land rice fields, therefore the farming activities concerned lowland rice cultivation are not practiced yet in their society.

(3) Slash and burn activities:
Males especially the heads of the household are responsible for all the slash and burn activities with important assistance from females or their wives.

(4) Livestock and poultry raising activities:
Females, especially wives are responsible for all of the activities of livestock and poultry raising activities such as feeding, watering and other activities on this field.

(5) Fishing activities:
Males are responsible for all of fishing activities.

(6) Forestry activities:
Females are responsible for collection of forest vegetables/ crops, and both of males and females are responsible for collection of fuel wood, while timber harvest and charcoal production are not being practiced among the interviewees.

(7) Post-harvest & marketing activities:
Females are responsible for post-harvest and marketing activities such as processing products for selling with the assistance from males.

(8) Domestic business activities:
Females are responsible for the domestic business activities.

(9) Communication activities:

Males and females are responsible for attending community meeting, getting information from media and discussions among villagers, but the resolving in-village conflicts is in charge of males.

(10) Religious / cultural activities:

Both of males and females are responsible for religious / cultural activities.

Summary of Participation/Engagement of Household Member Survey (HMS) is presented below.

Summary of Participation/ Engagement of Household Member Survey

Activities	Usually, responsible		Usually, assistant		Sometimes		None		Total	
Home activities	M	F	M	F	M	F	M	F	M	F
1. Fetching of drinking water	5	16	5	3	11	3	2	1	23	23
2. Cooking	4	19	8	1	5	3	6	0	23	23
3. Washing	5	19	1	1	8	3	9	0	23	23
4. Sweeping the house	5	19	1	1	11	3	6	0	23	23
5. House repair	12	1	0	3	11	8	0	11	23	23
6. Child / elderly care	4	19	8	1	7	2	4	1	23	23
7. Kitchen gardening	8	5	4	7	7	8	4	3	23	23
8. Sewing and knitting	0	4	0	0	0	3	23	16	23	23
9. Shopping in market	4	12	2	2	9	7	8	2	23	23
Total	47	114	29	19	69	40	62	34	207	207
Farming activities										
10. Plowing	1	0	0	1	0	0	22	22	23	23
11. Seeding/ transplanting	0	0	0	1	1	0	22	22	23	23
12. Weeding	0	0	0	1	1	0	22	22	23	23
13. Application of chemical fertilizers	0	0	0	1	1	0	22	22	23	23
14. Harvesting	0	0	0	1	1	0	22	22	23	23
15. Repairing of farm	1	0	0	1	0	0	22	22	23	23
Total	2	0	0	6	4	0	132	132	138	138
Slash & burn activities										
16. Slashing	13	6	2	7	2	2	6	8	23	23
17. Burning	14	5	1	4	2	4	6	10	23	23
18. Clearing	13	6	2	7	1	2	7	8	23	23
19. Fencing	8	4	0	1	1	2	14	16	23	23
20. Seeding	12	7	1	2	1	5	9	9	23	23
21. Weeding	11	7	3	6	1	2	8	8	23	23
22. Harvesting	12	7	2	6	1	3	8	7	23	23
Total	83	42	11	33	9	20	58	68	161	161
Livestock & poultry raising activities										
23. Grazing control	0	3	0	0	4	2	19	18	23	23
24. Feeding	0	10	4	1	10	6	9	6	23	23
25. Watering	0	7	4	2	10	8	9	6	23	23
26. Collection/ production of fodder	0	1	0	0	1	1	22	21	23	23
27. Sweeping of livestock & poultry stall	2	3	1	0	8	10	12	10	23	23
Total	2	24	9	3	33	27	71	61	115	115
Fishing activities										
28. Fish catching in dam reservoir	2	0	0	0	3	0	18	23	23	23
29. Fish catching in river	12	0	0	0	5	4	6	19	23	23
30. Fish production in pond	2	0	0	1	0	0	21	22	23	23
31. Maintenance of boat / engine	7	0	0	0	1	1	15	22	23	23

32. Maintenance of pond	1	0	0	0	0	0	22	23	23	23
Total	24	0	0	1	9	5	82	109	115	115
Forestry activities										
33. Collection of fuel wood	10	8	3	3	5	9	5	3	23	23
34. Collection of forest vegetable/crops	2	14	3	0	12	5	6	4	23	23
35. Timber harvest	0	0	0	0	0	0	13	23	23	23
36. Charcoal production	0	0	0	0	1	0	22	23	23	23
Total	12	22	6	3	18	14	46	53	92	92
Post-harvest & marketing activities										
37. Threshing of cereals	5	5	3	4	3	3	12	11	23	23
38. Processing livestock & poultry products	3	5	0	1	5	6	15	11	23	23
39. Processing fishes	2	6	0	1	5	6	18	10	23	23
40. Processing of forest vegetables/crops	2	6	1	0	5	6	15	11	23	23
41. Selling crops	1	6	0	0	4	6	18	11	23	23
42. Selling livestock & poultry products	1	5	2	1	6	4	14	13	23	23
43. Selling fishes & fishery products	0	4	0	0	3	4	20	15	23	23
44. Selling forest vegetables/crops	1	5	2	0	4	4	16	14	23	23
45. Selling of fuel wood/charcoal	1	1	0	0	0	1	21	21	22	23
Total	16	33	8	7	35	40	149	95	206	207
Domestic business activities										
46. Rice mill	2	1	0	0	0	0	20	20	22	21
47. Trading	2	4	0	1	6	5	14	12	22	22
48. Shop keeping	0	4	2	0	3	1	18	18	23	23
49. Handicraft	1	3	0	0	0	1	22	19	23	23
Total	5	12	2	1	9	7	74	69	90	89
Communication activities										
50. Attending community meetings	17	9	1	1	5	13	0	0	23	23
51. Resolving in-village conflicts	10	0	0	0	5	4	8	19	23	23
52. Getting information from TV	2	3	1	0	5	5	15	15	23	23
53. Getting information from Radio	7	4	1	0	6	10	9	9	23	23
54. Political discussion with others	5	4	1	0	14	10	3	9	23	23
55. Official letter writing	3	1	0	0	3	0	17	22	23	23
Total	44	21	4	1	38	42	52	74	138	138
Religious / cultural activities										
56. Dance party	6	6	1	0	10	6	6	11	23	23
57. Picnic	5	2	0	0	11	9	7	12	23	23
58. Worship ceremony	5	6	2	0	13	9	3	8	23	23
59. Sport events	2	0	0	0	7	2	14	21	23	23
60. Playing music	2	2	0	0	3	2	18	19	23	23
61. Drawing	2	1	0	0	4	2	17	20	23	23
Total	22	17	3	0	48	30	65	91	138	138

9. Activities Wanted to Make Easy

The interviewees were asked to choose up to 5 activities with priority which they want to make easy. The results of this question are summarized below.

Five Prioritized Activities to Make Easy

Male	Female
1. Slashing	1. Fetching of drinking water
2. Fetching of drinking water	2. Collection of fuel wood
3. Burning	3. Burning
4. Clearing	4. Washing
5. Harvesting	5. Seeding
6. Fish cashing in the river	

Summary of Priorities to Make Easy

Activities	Priorities wanted to make easy											
	1st		2nd		3rd		4th		5th		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
Home activities												
1. Fetching of drinking water	6	10		1		2					6	13
2. Cooking			1	2	2					1	3	3
3. Washing		2		1				2	1	2	1	7
4. Sweeping the house	1							2	1		2	2
5. House repair	1					1	1		1		2	2
6. Child / elderly care		1	2			1		2			2	4
7. Kitchen gardening											0	0
8. Sewing and knitting		1									0	1
9. Shopping in market				2							0	2
Farming activities												
10. Plowing	1										1	0
11. Seeding/ transplanting						1					0	1
12. Weeding											0	0
13. Application of chemical fertilizers										1	0	1
14. Harvesting		4									0	4
15. Repairing of farm			1								1	0
Slash & burn activities						2					0	2
16. Slashing	8		3	3			1				12	3
17. Burning	1		4	3		4			1	1	6	8
18. Clearing			2		2		2				6	0
19. Fencing											0	0
20. Seeding				1	3	2		1	1	2	4	6
21. Weeding			1	2	1		1	1	1		4	3
22. Harvesting				1	2		3	1	1	2	6	4
Livestock & poultry raising												
23. Grazing control						1					0	1
24. Feeding							1	2	1		2	2
25. Watering											0	0
26. Collection/ production of fodder											0	0
27. Sweeping of livestock & poultry											0	0

stall												
Fishing activities												
28. Fish catching in dam reservoir	1		1								2	0
29. Fish catching in river	1		2		3						6	0
30. Fish production in pond			1								1	0
31. Maintenance of boat / engine							1				1	0
32. Maintenance of pond											0	0
Forestry activities												
33. Collection of fuel wood	3	1	1	4		2		1	1	1	5	9
34. Collection of forest vegetable/crops		3	1								1	3
35. Timber harvest											0	0
36. Charcoal production											0	0
Post-harvest & marketing activities												
37. Threshing of cereals								1			0	1
38. Processing livestock & poultry products											0	0
39. Processing fishes											0	0
40. Processing of forest vegetables/crops											0	0
41. Selling crops											0	0
42. Selling livestock & poultry products				1							0	1
43. Selling fishes & fishery products											0	0
44. Selling forest vegetables/crops											0	0
45. Selling of fuel wood/charcoal											0	0
Domestic business												
46. Rice mill									1		1	0
47. Trading		1									0	1
48. Shop keeping											0	0
49. Handicraft												
Total	23	23	20	21	13	16	11	13	10	12		

Table & Figures

Table V1-1 Meteorological Data (Pakseng)

Rainfall at Luang Prabang Station, */ (unit: mm)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1993	0.0	0.0	76.8	80.7	146.1	212.5	263.5	189.5	100.6	118.6	0.0	1.0	1,189.3
1994	0.0	5.4	110.7	29.1	170.2	243.6	202.5	361.6	143.6	31.6	18.5	81.6	1,398.4
1995	7.5	4.8	8.7	49.0	201.5	230.4	332.4	541.5	134.4	190.4	70.6	0.7	1,771.9
1996	0.0	12.6	38.9	147.2	151.6	219.9	291.8	302.4	185.5	168.0	67.2	0.0	1,585.1
1997	1.5	0.4	56.9	105.7	144.3	147.7	311.6	258.5	128.4	40.1	2.4	0.0	1,197.5
1998	27.0	2.2	13.0	178.1	160.9	138.2	179.4	265.4	99.4	47.1	25.5	0.0	1,136.2
1999	9.0	0.0	44.1	60.3	203.5	281.1	73.9	285.0	197.5	97.9	54.9	44.5	1,351.7
2000	0.0	35.3	11.5	68.0	243.5	269.1	274.4	233.9	228.4	115.6	0.0	7.0	1,486.7
2001	8.1	0.0	155.9	53.0	191.9	155.8	393.1	395.7	246.2	192.3	2.0	0.0	1,794.0
2002	48.5	1.1	24.0	55.5	268.8	155.6	384.4	258.9	161.4	71.0	75.7	96.9	1,601.8

Rainfall at Pakseng District Station, **/ (unit: mm)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1999	0.7	0.0	12.3	65.7	152.2	126.9	81.2	134.4	192.6	38.1	77.9	0.0	882.0
2000	0.0	0.0	5.3	27.9	182.4	118.5	204.5	139.4	196.7	49.2	23.3	0.0	947.2
2001	0.0	0.0	128.0	42.3	226.5	145.3	373.5	361.7	196.5	130.0	8.8	0.0	1,612.6
2002	38.4	0.0	19.0	27.8	262.2	160.0	633.8	66.0	145.7	56.4	36.2	0.0	1,445.5
2003	0.0	0.0	5.6	92.4	69.6	92.3	87.5	214.1	271.2	0.0	0.0	0.0	832.7

Maximum Temperature at Luang Prabang (Monthly Average), */ (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	28.2	33.1	36.2	35.4	32.7	32.7	33.1	30.9	32.1	31.7	29.4	23.9
2000	29.5	29.9	33.5	35.0	32.0	31.7	31.7	32.1	31.2	31.3	29.7	29.3
2001	31.1	33.0	31.5	36.2	32.2	33.7	30.3	32.6	32.2	31.2	27.4	27.1
2002	26.3	31.1	33.2	35.8	33.5	32.1	29.9	30.8	31.8	31.4	27.8	27.0
2003	25.8	30.3	32.3	34.5	36.0	33.0	33.8	32.8	33.1	33.0	31.0	28.5

Minimum Temperature at Luang Prabang (Monthly Average), */ (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	14.7	16.9	17.4	23.1	22.8	23.6	24.2	23.6	22.9	22.8	19.3	12.2
2000	14.8	15.0	17.5	22.5	23.1	24.5	24.2	24.1	22.7	21.5	16.4	16.0
2001	16.3	16.3	20.3	22.9	23.5	23.6	23.6	23.7	23.1	22.5	15.9	15.5
2002	14.8	16.9	18.4	20.8	23.8	24.2	23.5	23.2	23.0	20.7	18.7	17.9
2003	15.1	16.3	18.4	21.7	22.7	24.0	23.4	23.7	23.1	21.2	17.0	12.7

Mean Temperature at Luang Prabang (Monthly Average), * (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	20.4	23.7	26.0	28.6	26.8	27.4	27.7	26.5	26.6	26.9	23.2	17.2
2000	20.8	21.6	25.0	28.6	27.0	27.8	27.6	27.6	26.3	25.6	21.9	21.1
2001	22.2	23.6	25.4	28.7	26.9	27.7	25.7	27.4	26.8	26.0	20.3	20.1
2002	19.1	22.6	24.5	27.5	27.9	27.5	26.1	26.3	26.4	24.7	22.0	21.0
2003	18.7	21.4	23.9	27.2	27.9	27.6	27.8	27.2	26.7	25.7	22.2	18.8

Source: */ Department of Meteorology, Ministry of Agriculture and Forestry, **/ Dividion of Meteorology, PAFO of Luang Prabang

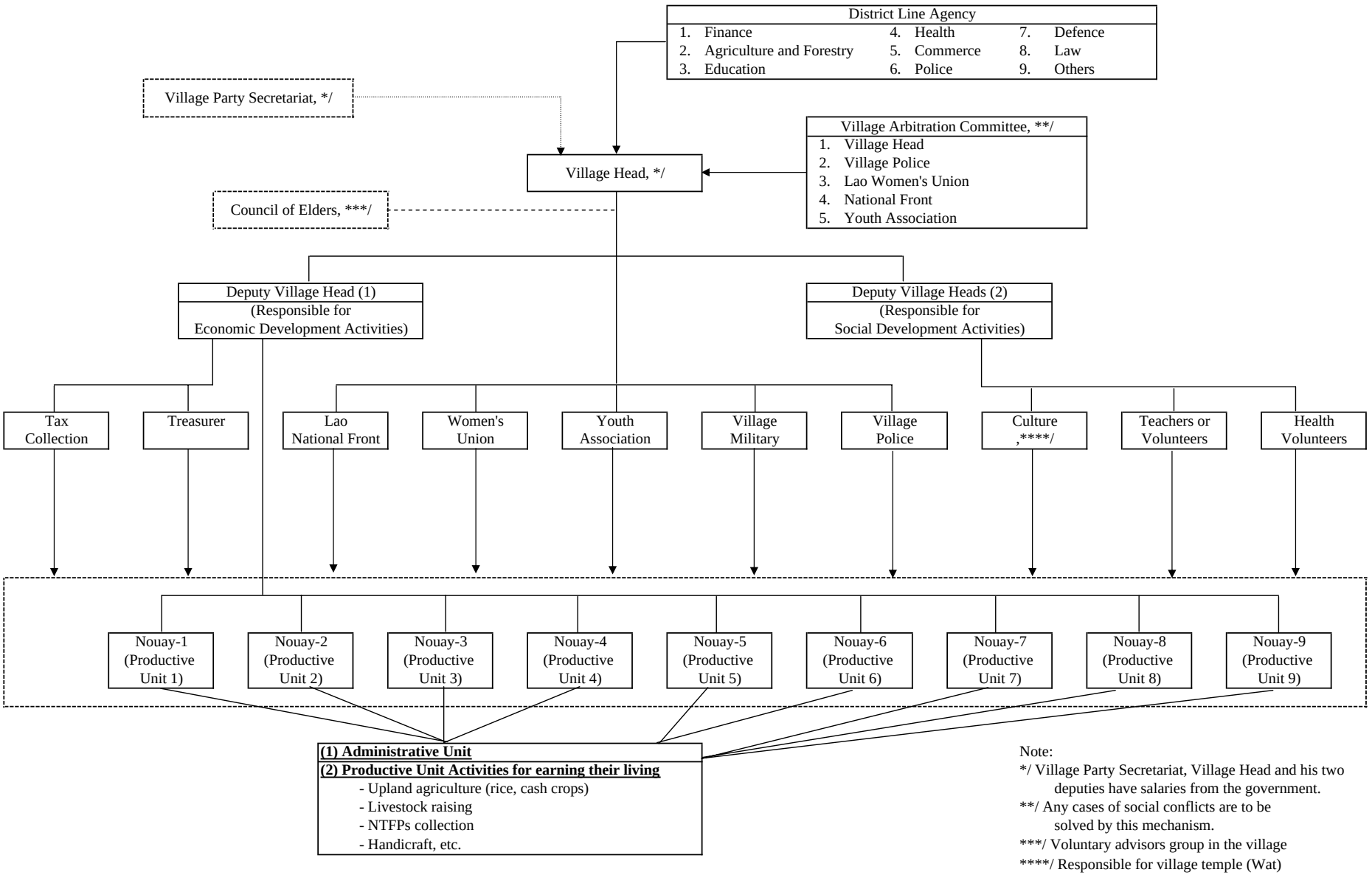


Figure V1-1 Village Organization (Pakseng)

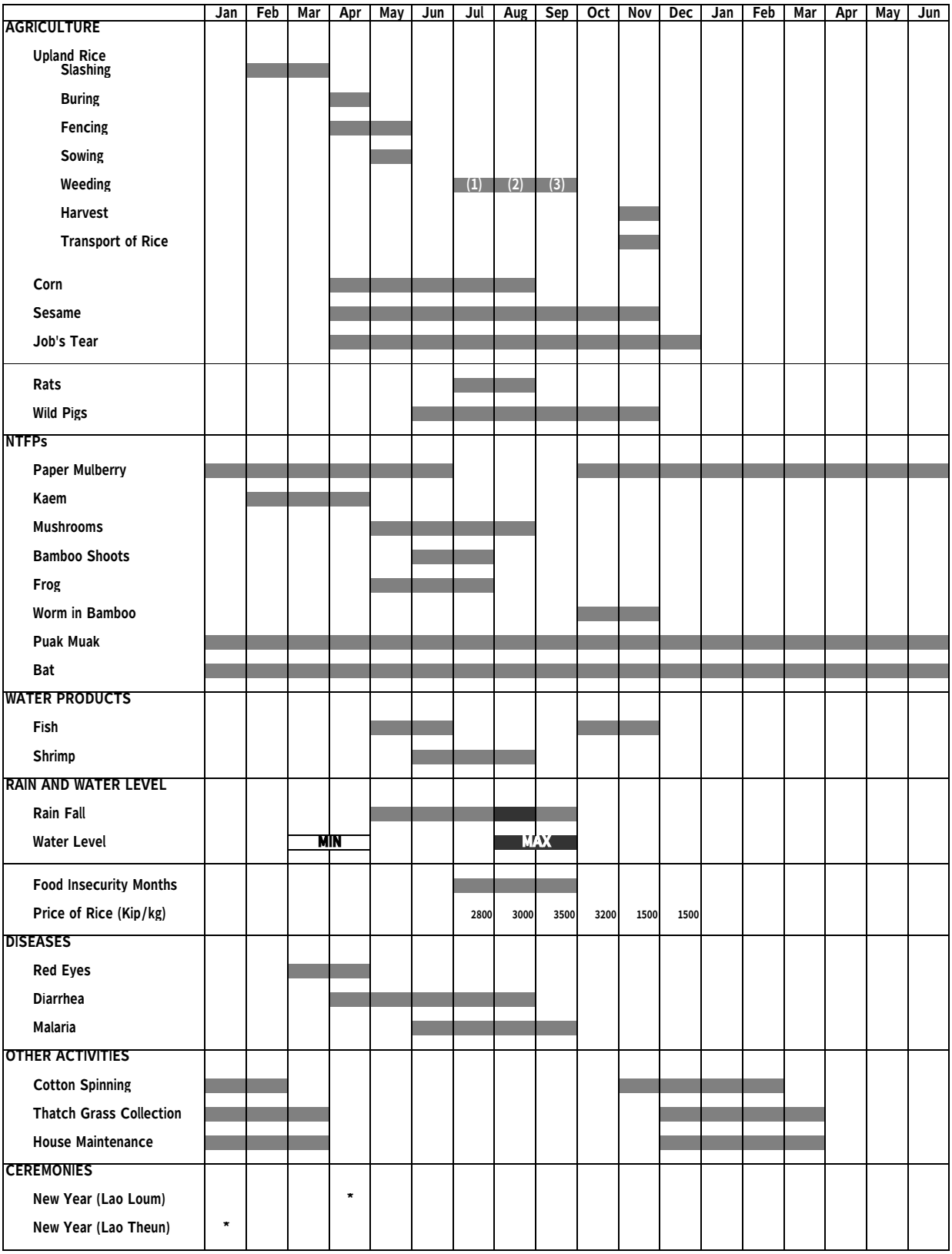


Figure V1-2 Seasonal Calendar (Pakseng)

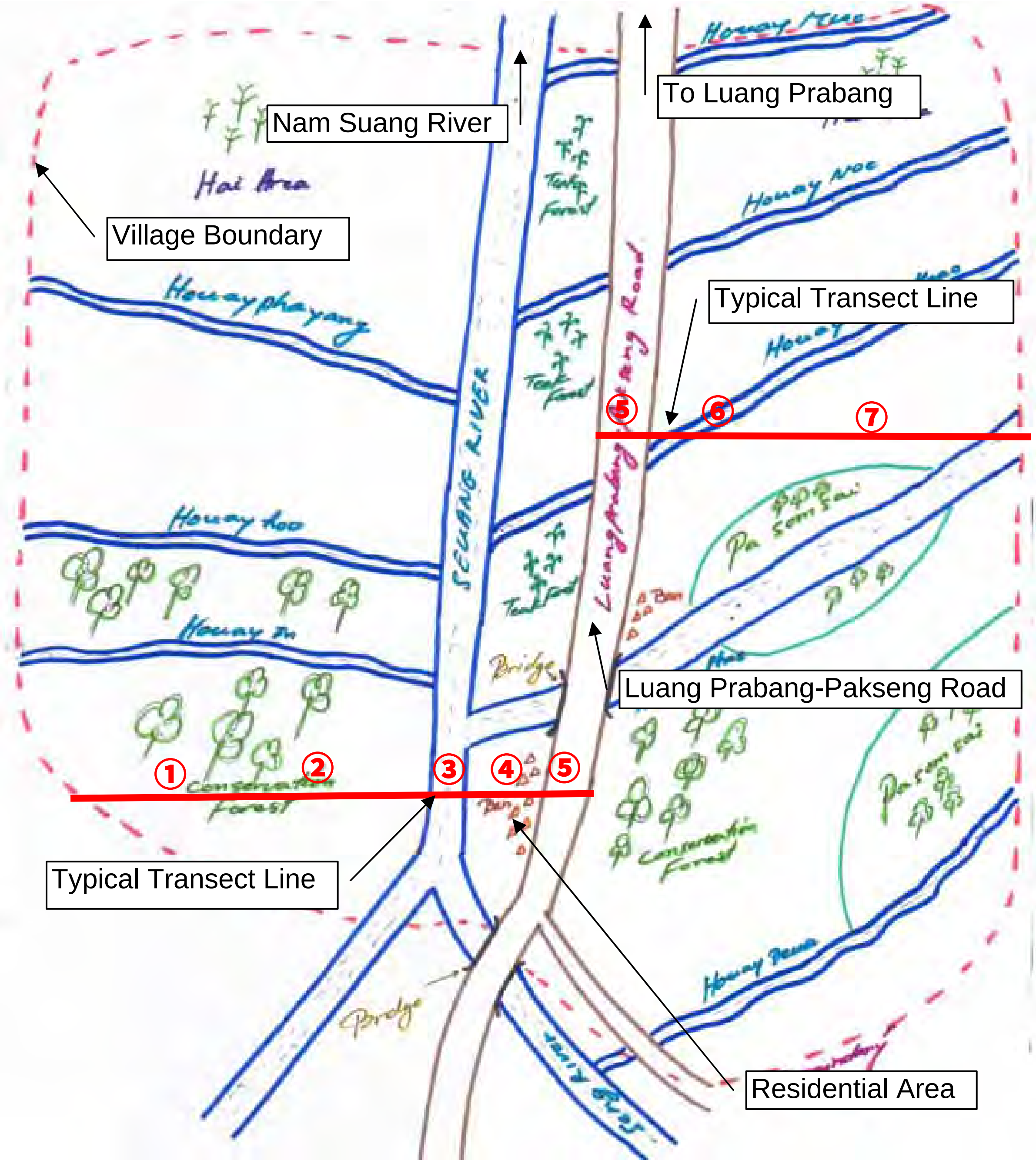
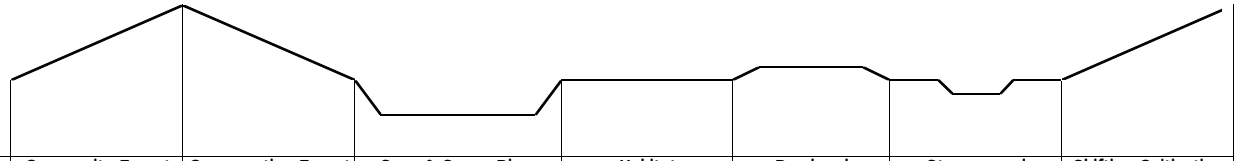


Figure V1-3 Resource Map (Pakseng)



Category	Community Forest	Conservation Forest	Seng & Suang River & its circumference	Habitat	Road and its circumference	Streams and ts circumference	Shifting Cultivation Production Forest
(in Lao)	Pa Somsai Baan	Pa Sa Ngoan	Nam Seng/Suang			Houay	Hai / Suan *Pa Phalit*
Transect Line on Resource Map	①	②	③	④	⑤	⑥	⑦
Activity	Hunting lizard *(laen)* snake birds wild pig wild chicken Collecting bamboo shoots mushrooms Cutting Trees *mai san* (house material) *mai peuai* (house material) *midu* (dipterocapus macrocapus) *mai een* *mai ka* *mai piu* (house material) *mai sangkam* (a kind of bamboo)	Trapping wild hen small birds Collecting bamboo shoots mushrooms Trees (Cutting trees is prohibited) *mai san* *mai peuai* *midu* (dipterocapus macrocapus) *mai een* *mai ka* *mai piu* *mai sangkam* (a kind of bamboo) *mai lai* (a kind of bamboo)	Fishing *pa kun* *pa nang* carp *pa pak* *pa king* *pa mom* *pa chaat* *pa phao* Collecting river weed crab shell shrimp small stones for construction Trade paper mulberry *kaem* sesame *puak muak*	Commerce Small Restaurants Livestock pig chicken turkey duck Fruits mango tamarind coconut jackfruit jujube (*mak tan noi)* Weaving Bamboo Handcraft Rice Wine	Teak Plantation	Fishing *pa hian* Collecting crab shell shrimp (riverside) paper mulberry wild vegetables *kaem* bamboo shoots Planting paper mulberry ground nuts corn pineapple sugar cane banana cotton carriflower sesame	Shifting Cultivation upland rice corn sesame job's tear
Problems			Fishes in rivers are decreaseing.	Number of fruit trees are limited.		Water level is decreasing Fishes in streams are declining in number.	Land allocation acceralates deterioration of soil.
Others	Cutting "mai doo" and "mai ka" trees is prohibited.	Cutting trees are prohibited. Hunting is prohibited.	Between Pakseng and Viengkham, river is still important trade route. There are storage houses for NTFPs at the confluence	Pakseng is a district capital and trade/ commercial center. Rich class engage in commercial activity.			engage in upland rice cultivation.

Figure V1-4 Transect (Pakseng)

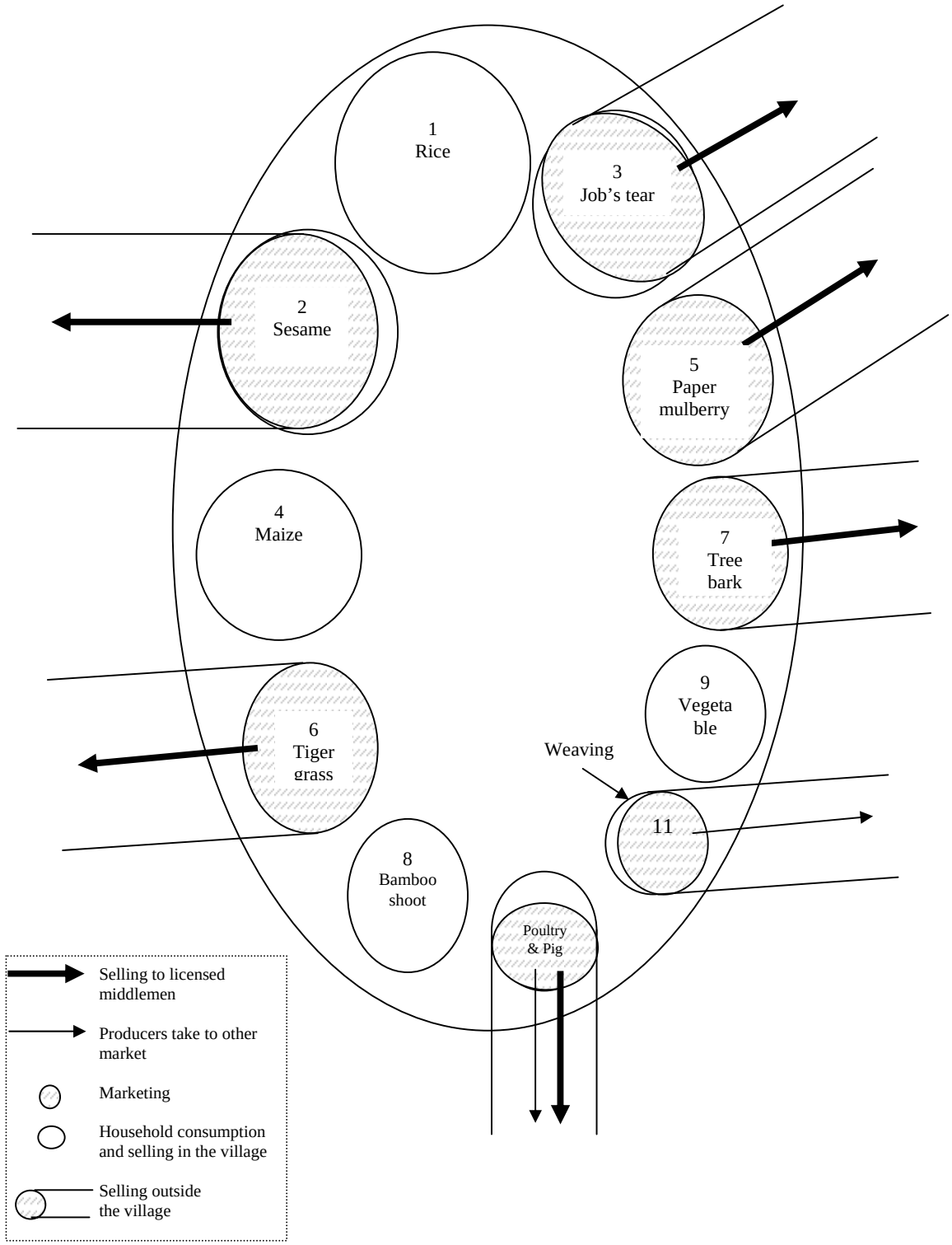


Figure V1-6 Venn Diagram of Major Products by Female Group (Pakseng)

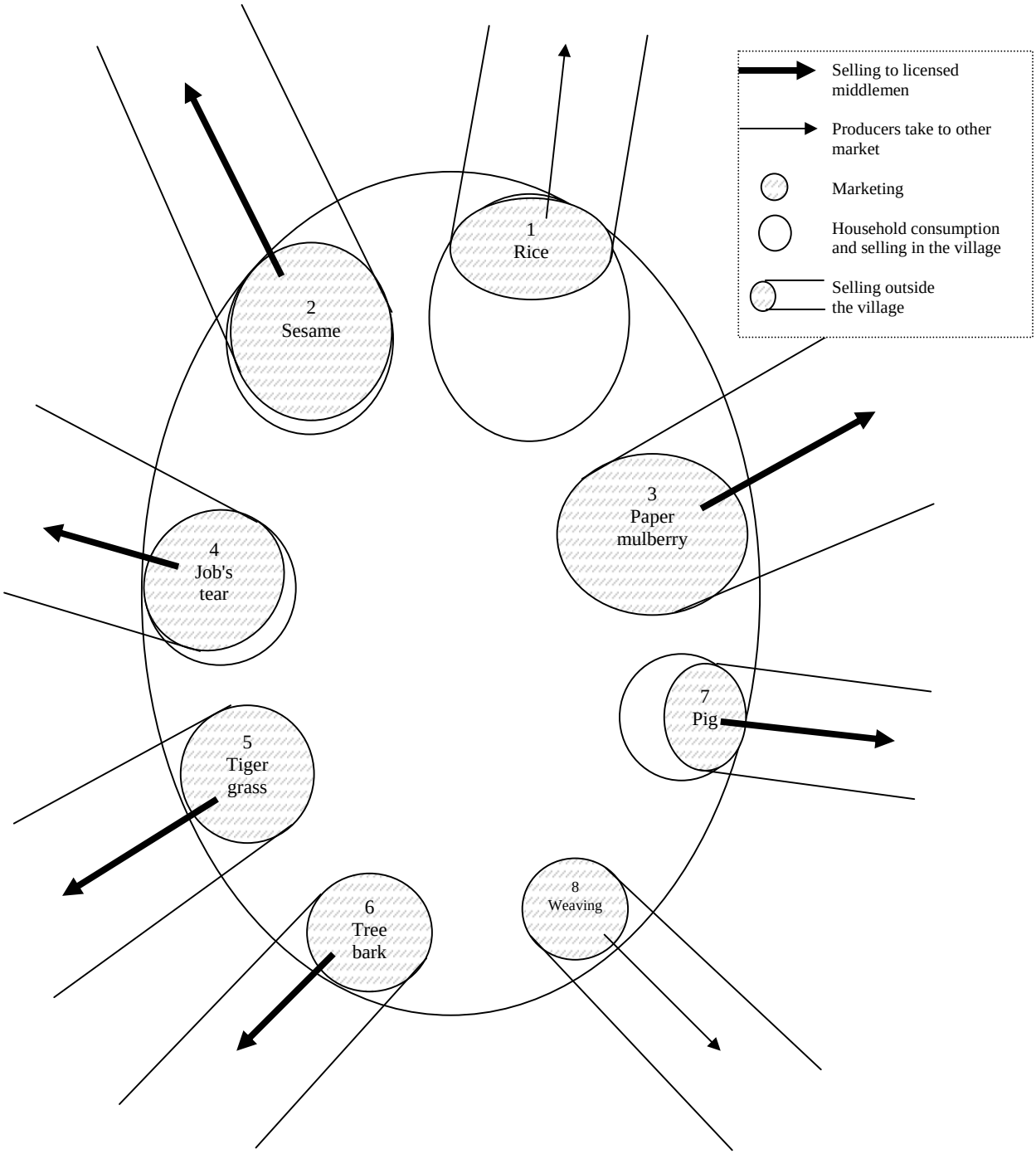


Figure V1-5 Venn Diagram of Major Products by Male Group (Pakseng)

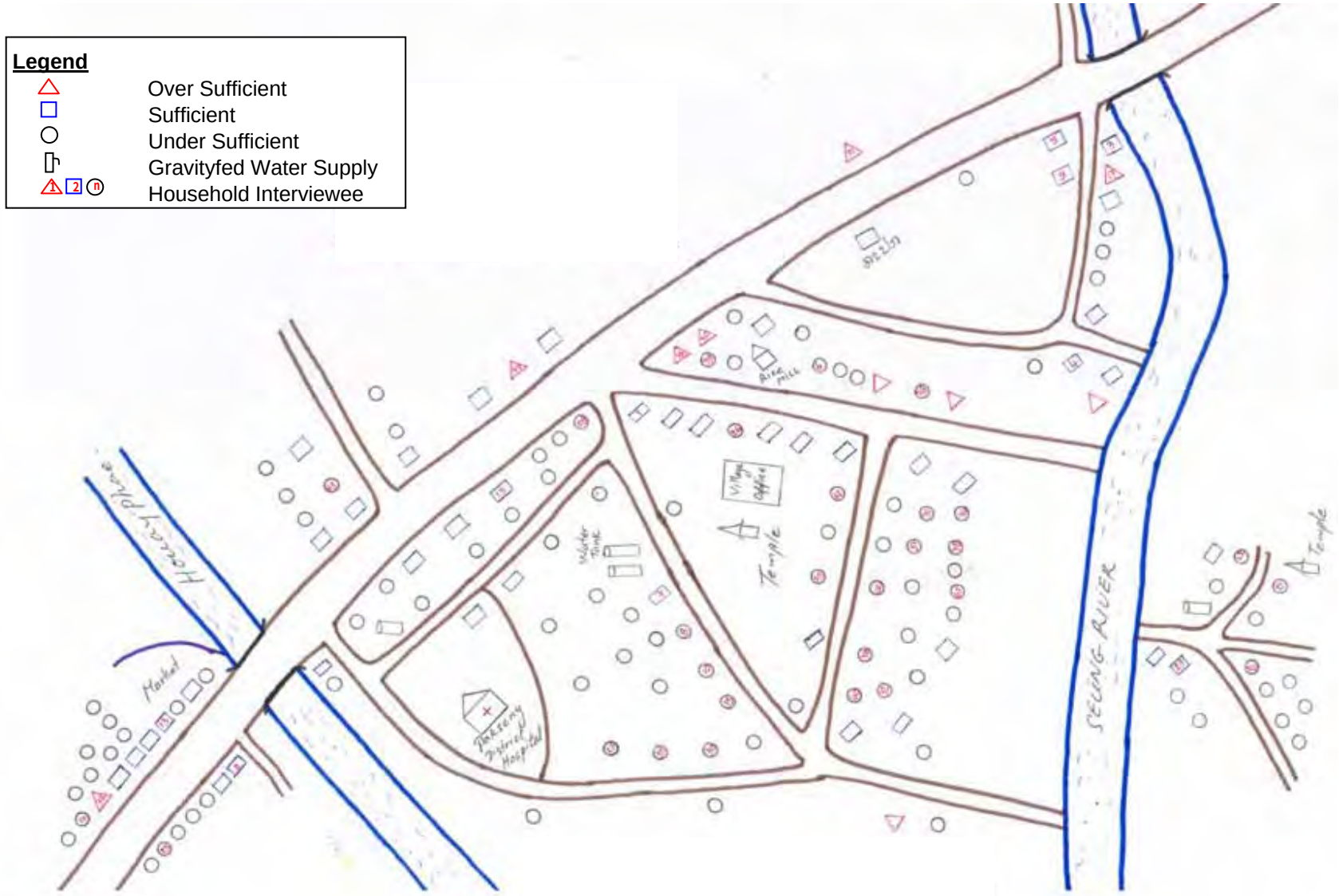


Figure V1-7 Social Map (Pakseng)

Village-2: Hat Houay

STUDY REPORT

ON

SOCIO-ECONOMIC SURVEY OF EIGHT (8) CANDIDATE VILLAGES

Village 2: Hat Houay Village

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Feature of the Village (Hat Houay)

(Total HH: 90, Population: 493)

(1) Composition of the ethnic group:

In 2001, Houay Ouang village merged into Hat Houay village. The composition of the ethnic group is 23% of Lao Loum and 77% of Lao Theung.

(2) Farmland owned per HH:

Among the 8 villages, the farmland owned per HH in Hat Houay is the largest (2.77 ha/HH; 0.98 ha of Hai-A, 1.32 ha of Hai-B, 0.33 ha of lowland paddy field, and 0.15 ha of orchard/tree crop area) compared with the average of 2.14 ha/HH in the 8 villages.

(3) Rice availability:

It is estimated that 28.2% of households (25 households among a total of 90 households) face rice shortage for about 4.9 months.

(4) Balance of annual paddy production and consumption in the village:

Total rice production and consumption in the village is estimated at 151,100 kg/year and 156,100 kg/year, respectively. The balance of annual paddy production and consumption is negative, about 5,000 kg of rice shortage.

(5) Sources of major income:

Sources of major income are i) private business (2,489,000 Kip/HH), ii) livestock (1,427,000 Kip/HH), and iii) NTFPs (1,224,000 Kip/HH), amounts of which are very differ from other sources of income like field crops (490,000 Kip/HH), remittance from relatives (456,000 Kip/HH) and fruit/tree crops (367,000 Kip/HH).

(6) Estimated marketed volumes of major products:

The marketed volumes of sesame, tree bark and tiger grass are the largest among the 8 villages. Marketed volumes of major products in the whole village are estimated as shown below.

Estimated Marketed Volumes of Major Products by Village

Major Products	(unit)	Marketed Volume	Livestock/fish	(unit)	Marketed Volume
1) Rice	kg	6,612	12) Cattle	head	2
2) Job's tear	kg	15,801	13) Buffalo	head	21
3) Sesame	kg	**23,185**	14) Goat	head	14
4) Paper mulberry	kg	7,163	15) Pig	head	65
5) Tree bark	kg	**15,976**	16) Chicken	head	796
6) Tiger grass	kg	**13,237**	17) Duck	head	335
7) Bamboo shoot	kg	-	18) Fish, **/	kg	(3,674)
8) Palm fruit	kg	-			
9) Eagle wood	kg	346			
10) Mushroom	kg	-			
11) Wild vegetables,*/	kg	-			

Note: */ Including rattan shoots. **/ Figure in a parenthesis is product sold within/near the village.

PART 1 VILLAGE PROFILE SURVEY

Survey Period: 25 to 27 April 2004
Main Information Source: Village head, 2 deputy heads and some village authority members.

1. General Information

1.1 Location

Hat Houay village is located in Pakseng district 52 km from Luang Prabang (1 hr. 15 min. by car) and 31 km from Pak Suang (45 min.) at National Road No.13.

1.2 History of the village

Hat Houay village was built in 1846. First settlers came from Muang Et area in Houaphanh province. During the 2nd Indochina war, villagers fled to Luang Prabang city in 1968 and came back to the village in 1973.

This village experienced two severe food shortages in 1978 and in 1986. In 1978, rats propagated and ate all crops in the field. In 1986, they cannot get any harvest due to severe drought during rainy season.

In 2001, Houay Ouang village merged into Hat Houay village and Houay Ouang villagers moved into Hat Houay village. Their new habitation is called Ban Neua (North village). Former Houay Ouang area is now called Ban Kao (Old village).

1.3 Demography

The village has 90 households and a population of 493 habitants as of March 2003. Available labor population (16~45) occupies 41.2 % of total population, and 44.2 % when included the population of 46 ~ 60. Female represents 50.7 % of the population as shown below.

Age Structure (as of March 2003)

Age	Female	Male	Total	(%)
Under 1	5	9	14	(2.8)
1 ~ 5	45	58	103	(20.4)
6 ~ 10	44	32	76	(15.1)
11 ~ 15	32	35	67	(13.3)
16 ~ 45	105	102	207	(41.2)
46 ~ 60	9	6	15	(3.0)
61 ~ 75	8	3	11	(2.2)
76 and more	7	3	10	(2.0)
Total	255	248	503	(100)

Source: Village head (25 April 2004)

The village population comprises two ethnic groups, Lao Loum and Lao Theung with a ratio of 1 to 3 as follows.

Ethnic Structure

	Female	Male	Total	HH	(%)
Lao Loum	62	53	115	21	(23.3)
Lao Theung	188	190	378	69	(76.7)
Lao Sung	0	0	0	0	(0)
Total	250	243	493	90	(100)

Source: Village head (25 April 2004)

Note: Comparing both data above, there are some discrepancies. However, due to limited survey period, the survey team could not clarify them and would like to understand that the latter data about the ethnic structure show that the ratio of Lao Loum to Lao Theung is 1 to 3.

1.4 Organizational structure for administrative control

The village is administrated by a village head and two deputies. Hat Houay village has 7 administrative units (or *"Nouays"*). The chiefs of each *"Nouay"* assist the village head in administrating *"Nouays"*. The village head is responsible for disseminating the government information/or notification to the villagers through this administrating mechanism.

The first deputy village head is responsible for all the economic development activities in the village. He is directly responsible for controlling/supervising two units of treasurer and tax collection, as well as improving villagers' living situation through promoting productive units' activities. In other words, the *"Nouays"* have both roles like administrating and productive units.

The second deputy village head is responsible for all the social and cultural development activities in the village. Under the control of the second deputy village head, there are a unit of culture, and two volunteer units of teachers and health.

The village organization under the village head, there are 3 formal mass organizations, a village military unit, and a village police unit. The three mass organizations such as Lao Women's Union (LWU), Lao National Front and Youth Association are playing as non-profit organizations and assisting the village head in grouping people for specific works. A council of elders is an independent voluntary unit as an adviser group of the village. In addition to the above village administration structure, a Village Party Secretariat is established by the party. The Village Arbitration Committee is composed of i) Village Head, ii) Village Police, iii) Village Lao Women's Union, vi) Lao National Front, and v) Youth Association, and responsible for solving all the cases of social conflicts in the village. The village organization structure of Hat Houay is presented in **Figure 1** and the names of the village organizational key members are as follows.

Village Organizational Key Members

Member of Village Committee	Name
1) Village Head	Mr. Thongvanh
2) Deputy Village Head (1)	Mr. Vansy(Economy)
3) Deputy Village Head (2)	Ms. Pinkeo (Social)
4) Head of Lao National Front (Neo Hom)	Mr. Thongvanh
5) Head of Women's Union	Mr. Khamthong
6) Head of Youth Association	Ms.Khamphai
7) Head of Council of Elder's	Mr. Xiengpom
8) Head of Village Police	Mr. Xigengsomchit

9) Head of Village Army	Mr. Khampheng
10) Village Secretary of the party	Mr. Vanthong

1.5 Informal (ethnic) organization for administration, agriculture and/or religion

None.

1.6 Food security

According to the village key informants, food insecurity period is May to August and 6 households face very serious food shortage. The reason is that it is difficult to catch fishes or collect NTFPs in the forest during the rainy season. Normal survival way for such people is to look for bamboo shoots in the forest and/or vegetables beside lowland rice fields. Selling labor is also one of the options during rice deficit period, the pay for which is 6,000 Kip/person/day for weeding and 10,000 Kip/person/day for works in rice fields.

1.7 Illiteracy rate

The illiteracy rate is estimated at 25 % (65 persons at the age of 12 to 45 years old). Illiterate 65 persons now learn 4 months' Lao language course in the village. Provincial government provides this program. This is the second time for the village to take the program.

1.8 Major diseases

In former times, 3~10 persons suffered from malaria between January and May every year. But only one case of malaria was seen this year (2004) because public health advisers visit to this village every three months since 2003. Traditional smoking habit of Lao Theun (80% of men and 50% of women smoke in the village) cause a large number of lung diseases in the village. Red eyes are from March to August due to smoke of shifting cultivation and unclean water. District Family Planning officers come to inform villagers about family planning.

1.9 Traditional custom, culture, event, cooperative works in the village

i) Cooperative works

Labor exchange is widely seen in the works of both slash and burn cultivation in upland areas and rice cultivation in lowland paddy fields.

ii) Traditional custom and culture

Neighbors help disease people without money. Each household donates 1 kg of rice and more (2,000 Kip/adult, and 500 Kip/child) to family with its member die.

iii) Event

Lao New Year is in April and Lao Theun New Year in January in public calendar. Lao Loum enjoy Lao Theun New Year and vice versa.

2. Livelihood and Natural Resource Management

2.1 Topography

This village seems to be rather small when you pass the village by car from Paksuang to Pakseng. But once you get off your car, it will take more than 5 hours to get to the pasture in the northwest. This village has two rice field areas surrounded by mountain range. The elevation of the habitant area is around 320 m. Each area was an independent administrative village until 2001. The main road and Nam Suang river cross southeast of the village. Nam Suang river has never flood as long as villagers remember. The water level goes up to maximum level in August and to minimum level in January to April. Houay Ouang stream dried up from December to May since the middle of 1980. They think that is due to shifting cultivation of Hmong people in the upstream. Houay Thong stream flows on the village boundary with Hat Sam village and has water throughout the year. Small weir for irrigation was constructed in 1991 and downstream of which sometimes dry up. After building the irrigation, fishes in the stream disappeared.

2.2 Meteorological data

Annual rainfall records at Luang Prabang station in last 10 years (1993-2002) vary from 1,136 mm in 1998 to 1,794 mm in 2001 with an average of 1,451 mm. Detailed meteorological data including i) monthly rainfall records at Luang Prabang (1993-2002), ii) monthly rainfall records of Pakseng district (1999-2003), and iii) the maximum, minimum, and mean monthly average temperatures at Luang Prabang station (1999-2003) are presented in **Table 1.**

2.3 Land allocation

In Hat Houay village, each family was allocated 3 plots of 1 ha land in Production Forest in 1995. A villager said his 1 ha plot on the document is much wider than that in the field. In former Houay Ouang village similar land allocation was conducted in 1997.

According to DAFO staff, the next step for land allocation should be the preparation of the documents, which consist of i) Temporary Certificate for the use of each plot, signed by Land Allocation Committee at village level, the village head, and villagers concerned, and ii) Temporary Agreement for the use of each plot, signed by DAFO, the village head, and the villagers. In the documents, there should be a section for drawing a sketch of the plot with its measurements. However, this procedure is not undertaken in this village.

2.4 Land classification and distribution of each land use category

2.4.1 Data of PAFO

There were some unclear understanding of the land use categories between the government and villagers. Further, the areas of each category were mostly estimated using 1/50,000~1/100,000 topographical maps through simple site investigation.

According to the data from Provincial Agricultural and Forestry Office (PAFO) of Luang Prabang, the areas of each category of Hat Houay village are as shown below..

Area by Land Classification (as of 1997)

Land Classification	Area (ha) before merged	
	Hat Houay	H. Ouang
A. Agricultural Land	119	
1) Lowland paddy field	*/	8.82
2) Upland agricultural land	*/	113.49
3) Garden	*/	8.30
B. Forest Land		
1) Conservation Forest *"Pa SaNgouan"*	50	62.80
2) Protected Forest *"Pa Pongkanh"*	350	303.36
3) Production Forest *"Pa Phalith"*	500	87.60
4) Rehabilitated Forest *"Pa Feumfu"*	350	466.68
5) Degraded Forest *"Pa Sutsom"*	400	44.80
6) Reserved area *"Din He"*	0	24.40
7) Others	10	13.52
Total Village Area	1,779	1,133

Source: PAFO of Luang Prabang (obtained during the survey)
Note: */ Breakdown of the agricultural land was not available.

2.4.2 Information from the village

The village profile survey team obtained the following information through the interview with the village chief.

Area by Land Classification by the Village

Land Classification	Area (ha)
A. Agricultural Land	
1) Low land paddy	14.3
2) Upland rice field *"Hai"*	59
3) Upland crop field other than rice *"Suan"*	34.9
4) Teak Plantation *"Pa Maisak"*	n.a.
5) Grazing land	40~50
B. Forest Land	
1) Conservation Forest *"Pa SaNgouan"*	70
2) Community Production Forest *"Pa Somsai"*	15
3) Production Forest *"Pa Phalith"*	300
4) Degraded Forest *"Pa Sutsom"*	n.a.
5) Cemetery *"Pa Sa"*	5
6) Scared forest *"Pa Ho"*	1
C. Residential area	3.5

Source: Village head (25 April 2004)
Note: The areas obtained from the village are not accurate figures based on the actual topographical survey.

The land use categories by the villagers are as follows.

(A) Agricultural land:

(1) Low land paddy, *"Hai"* and *"Suan"*: (14.3 ha + 59 ha + 34.9 ha)

Hat Houay village has lowland paddy fields with a total of 14.3 ha (37 households) and among these 1.5 ha (2 households) are cultivated in the dry season with irrigation. As for allocated upland areas, 59 ha is *"Hai"* (upland rice) and 34.9 ha is *"Suan"* (upland cash crops such as sesame = 12.5 ha, Job's tear = 9.7 ha, corn = 6.0 ha, paper mulberry = 6.7 ha).

(2) Teak plantation:
Villagers plant small number of teak for a long time. After a member of parliament (a representative of Luang Prabang province) visited the village in 1994, DAFO staff came to promote teak tree plantation and villagers widely planted the trees from 1995 to 1999. But villagers found it's difficult to get cash immediately in case of need. So they stop planting new teak trees for last several years. Most of teak tree plantations are located beside the road.

(3) Grazing lands: (40~50 ha)
The village has also large grazing lands with 40~50 ha.

(B) Forest land[1]:

(1) "Pa SaNgouan" (Conservation Forest): (70 ha)
"Pa SaNgouan" (Conservation Forest) was regulated in 2001. Pa Daeng (Red Rock) mountain near the residential area (20ha) and upstream of Houay Kiukan (Kiukan river) (50ha) are protected as Conservation Forest. Villagers usually have cut trees in opposite bank of the habitat area. So the forest of Pa Den is kept in a good condition. Villagers are prohibited cutting trees in Conservation Forest. Typical trees in Conservation Forest are *"Mai Doo"*(Rose wood), *"Mai Kaa"*, *"Mai Saan"* and *"Mai Chin"*. Villagers collect bamboo shoots (e.g. *"Nomai San"*, *"Nomai Lai"*, *"Nomai Hok"* and *"Nomai Sot"*) and mushrooms (e.g. *"Het Khao"*(Lentinus), Jew's ear, *"Het Bee"*) during the rainy season.

(2) *"Pa Phalit"*(Production Forest): (300 ha)
Slash and burn cultivation area. A part of *"Pa Phalit"* was allocated to the villagers. But still they have large un-allocated *"Pa Phalit"* area used for raising buffalo during the rainy season. Two pastures (20ha and 20~30ha) are in parts of *"Pa Phalit"*.

(3) *"Pa Somsai"* (Community Production Forest): (15 ha)
"Pa Somsai" is only one place in the village just on the opposite bank of residential area. Dears don't live in the forest any more. But they hunt *"Len"*, *"Gu"*, birds, wild pigs and wild chicken. Villagers can cut tree except *"Mai Doo"*(Rose wood) and *"Mai Kaa"*. This prohibition was regulated by DAFO.

(4) *"Haksa Len Nam"* (Watershed Protection Forest):
Trees along main streams in the village (Trees located less than 50 meters both sides from stream) are protected as watershed. Villagers go to collect paper mulberry, bamboo shoot and wild vegetables in this protected forest.

[1] Italics are Lao names of trees, NTFPs and animals obtained from the village key informants. Only identified common/or genus/or family names are described in the following parentheses.

(5) *"Pa Sa"* (Cemetery forest): (5 ha)
Even collecting NTFPs (e.g. mushrooms, bamboo shoots) is prohibited in this holy forest. It is believed that eating natural animals or plants in *"Pa Sa"* will bring a curse to the person. They cut trees only for burning death people.

(6) *"Pa Ho"* (Sacred forest): (1 ha)
"Pa Ho" in the village is just next the primary school. "Pa Ho" had been believed to be the holy forest where spirits lives. But most of the villagers now don't believe in it any more. Villagers collect mushrooms and bamboo shoots, catch birds with traps and even graze buffalo or cut trees for building schools. At present, *"Pa Ho"* in the village has a feature of common forest.

(C) Residential area: (3.5 ha)

2.5 Farming activity and production of major crops and livestock in the area

2.5.1 Farming activity

Even though a total area of lowland paddy field is only 14 ha, Hat Houay village has an advantage comparing with other villages which do not have lowland paddy fields. Further, it is clear that the existing irrigation system contributes not only the dry season cultivation but much more to sustainable production of rice in the wet season.

As for the allocated upland fields, each household practice slash and burn cultivation with 3-year rotation system. They further divide the area into several pieces of plot and grow various kinds of crops like rice, sesame, Job's tear, corn, cassava, taro, pumpkin, chili, egg plant and cucumber. Among these, sesame and Job's tear are major cash crops and corn, taro and cassava are also important as substitutes for rice for the people during rice deficit period from August to October as well as for feeding animals.

All those crops are planted just before the rainy season in end April and May. Firstly, rice is planted in the main area (sometimes together with cucumber and other vegetable crops) followed by sesame, corn, Job's tear, and others. Sesame, Job's tear and corn are normally planted around the rice plantation area as a boundary and also in small plots, so called *"Suan"*. For growing those crops, the farmers do not use any fertilizers and only practice 3 times of weeding for rice and 2 times weeding for sesame, Job's tear and corn.

2.5.2 Major crops

(1) Wet season irrigated rice
Roughly saying, there are two rice field areas in the village. North Village (B. Neua) people go back to work and live in Old Village (B. Kao) for rice cultivation during the rainy season. Paddy nursery is prepared in June and transplanted in July. Harvest months are November and December. They harvest 5 ton/ha from well-irrigated rice field. Average is 3 ton/ha.

(2) Dry season irrigated rice

A small part of rice field near the Houay Thong stream is irrigated during the dry season. Only 2 households can plant rice during the season due to availability of water. The irrigation system was made with the assistance of Quaker in 1991. Paddy nursery is prepared in January just after the harvest of wet season rice. Rice transplant is in February and harvest in May. They harvest 5 ton/ha.

(3) Upland rice

Upland rice sowing is in April and its harvest is in November and December. Poor households tend to engage in upland cultivation. They harvest 1.2 ton/ha for the year of good weather. They cannot harvest even 100 kg/ha in drought year.

(4) Sesame

Small amount sesame for house consumption had been planted for long time. But commercial sesame production has just begun in 2000. In 2000, road condition got better and Luang Prabang traders began to come and buy sesame in the village. All of the villagers who engage in agriculture plant sesame now. Fast growing specie has already been introduced. The average yield of sesame is 480 kg/ha. The price in the village is 5,400~7,000 Kip/kg in 2004. Price of sesame went up to 9,000 Kip/kg in the city (6,500~7,000 Kip is the highest price in the village) in February 2004 as a result of price competition between Chinese and Thai traders in the area.

(5) Job's tear

Job's tear has not been planted until 2000 when Luang Prabang traders began to buy. Now several traders in Luang Prabang come to buy Job's tear in the harvest season (December). Middle class villagers don't hesitate to plant Job's tear despite of its unstable price. This is because they raise buffalo as their food security. Average yield of Job's tear is 2 ton/ha and the price is 1,000 Kip/kg.

(6) Paper mulberry

Paper mulberry is mostly planted near streams like Houay Ouang stream. This village began to produce small volume of paper mulberry around 1990 and sold to Luang Prabang. Before the road improved, paper mulberry was carried by small boat. They began to plant paper mulberry widely since 2000 due to the upgraded road. Paper mulberry plantation area is 6.7 ha in 2003.

Planting month for paper mulberry is April, and can harvest after one year. There are two harvest seasons (February~May, November~December). They don't harvest paper mulberry during the rainy season for they cannot dry them, and in January because it's difficult to bark the tree. They produce more paper mulberry from their plantation *"Suan"* (60%) than forest (natural paper mulberry, 40%).

(7) Jackfruit, coconut, mango, tamarind

Luang Prabang traders come to the village to buy jackfruit, coconut, mango and tamarind. These trees are planted only in the habitat area. So the production is small. Sales prices 3,000 Kip/fruit for jackfruit, coconut; 2,000 Kip/fruit for coconut, 2,000 Kip/kg for mango, and 1,500 Kip/kg for tamarind.

2.5.3 Livestock

The numbers of each livestock in the village are summarized below.

Number of Livestock

Livestock	Number (Heads)
1) Buffalo	103
2) Cattle	0
3) Pig	97
4) Goat	47
5) Poultry	1,388

(1) Buffalo: 103 heads (35 households)

Buffalo plays the most important role in the villager's economy. Roughly saying, you can judge a household's social rank in the village by the number of buffalo kept. Typical middle class household is in short of rice for 7 months. So they sell one buffalo a year for 3 million Kip (US$300) and buy 1.5 million Kip (US$150) of rice (1.2~1.3 ton) for family consumption. They spend the other 1.5 million Kip (US$150) to buy two baby buffalo (US$80 for one). They grow the baby buffalo for three years and can sell in the fourth year.

There are two flat highlands for growing buffalo during the rainy season. About 20~30 ha of grazing land (pasture) in the old village (B. Kao) is 5 hours' walk from the main road. This distance discourages villagers with small buffalo to grow in the area. Now only one household grows 20~30 buffalos. The other pasture (about 20 ha) is located in *"Pa Phalit"* (Production forest).

During the dry season, they grow buffalo on rice field (no crops and no water) in daytime (8:00~16:00) and keep them near the house at night. Villagers prefer to have buffalo because of their resistance against diseases and stable price at market. The number of buffalo increases in the village.

(2) Cattle: (none)

Villagers want to raise cattle but two factors discourage them to do so. One is that a small group for raising cattle requires at least 5 heads of cattle and villagers cannot afford it. The other is that cattle suffer from diseases more easily than buffalo.

(3) Pig: 97 heads (50 households)

Each family keeps only 3~5 pigs. If they keep a lot of pigs, they have to spend a lot of time to prepare their feed. They prefer buffalo to pigs as livestock for the same reason. They sell all adult pigs at 8,000 Kip/kg (80kg for 640,000 Kip) and buy baby pigs (150,000 Kip for one) with the money from October to February because of feed shortage (e.g. corn).

(4) Goat: (47 heads)

They grow goats in Ban Kao area (old village).

(5) Poultry: (1,388 chickens)

A lot of poultry died in January and February before. Death number has sharply decreased in 2002 and 2003 because all of the poultry began to get injection (every three months). Despite of injection, many poultry died this year (2004).

2.6 Collecting NTFPs[2]

Major NTFPs collected in the village are as follows.

NTFPs collected in the Village

Major NTFPs	Description
1) Paper mulberry	Villagers prefer paper mulberry to "tree bark" or "tiger grass" in collecting NTFPs because looking for paper mulberry is easier than others. A lot of wild paper mulberry grow along Houay Thong stream.
2) Tree bark	They began to collect and sell "tree bark" in 2000. "Tree bark" grows along Houay Suk, Houay Ouang streams and its tributaries. About 50% of households collect them for sale.
3) Tiger grass	They began to collect and sell "tiger grass" in 1997. "Tiger grass" grows near streams like Houay Ouang. About 50% of households in the village collect them for sale.
4) *"Chandai"*	*"Chandai"* is collected in Conserved Forest of Pa Daeng Mountain. Sales price is 4,000 Kip/kg. Only Chinese traders buy *"Chandai"*.
5) Worm in bamboo *"Me Nomai"*	Season: from July to October DAFO prohibit collecting the worm because villagers cut bamboo trees. Villagers sell and eat the worm.
6) Bamboo shoots	*"Nomai Hok"*, *"Nomai San"*, *"Nomai Lai"*, *"Nomai Hia"*, *"Nomai Soot"* during the rainy season (May~August)
7) Mushrooms	Jew's ear *"Het Sanun"*(Auricularia polytricha Saccardo), *"Het Mii"*, *"Het Khao"*(Lentinus), *"Het Man"*, *"Het Taat"* during the rainy season (May~August)
8) Natural fruits	Wild mangos are found almost everywhere in the village (habitat area, near stream and irrigated rice field, production forest). Wild mangos *"Muan Kai"* and *"Muan Hit"* are harvested in June, *"Mak Ka"* in June, and *"Mak Fai"* in July and August.
9) Medical plants	More than 30 species are used as medical plants. Medical plants can be found almost everywhere.
10) Bee honey/nest/egg	A little
11) Hunting and trapping	They hunt deer, birds, wild chicken and wild pig, and trap bird by *"Neeo"-type* trap, and rat and *"Tun"* by *"Heeo"-type* trap.
12) Bat	They catch bats in caves of Pa Daeng mountain from November to April.
13) Bush shell	They collect bush sell in Conservation Forest. 5,000 Kip/kg.
14) Turtle	All the year

[2] Italics are Lao names of NTFPs obtained from the village key informants. Only identified common/or genus/or family names are described in the following parentheses.

15) Frog	They catch frogs in and around irrigated rice field in July and August.
16) Cardamon	There is a little amount of cardamon along streams and villagers collect them for sale.
17) Benzoin	According to villagers, there is no benzoin in the village.
18) Rattan	They used to collect rattan once a year but Luang Prabang traders don't want to buy any more.

2.7 Use of water products

(1) Fishing[3]

Fish is one of important foods in this village. Villagers usually catch fishes early in the morning and late in the evening. Villagers think fishing is more important than hunting because fishes are easy to catch. Many Luang Prabang traders come to buy fishes every day. Seasonal change for fishing is as summarized below.

- Mar.~May: Fishes go up Suang river. Fishing season.
- Jun.~Sep.: Fishing is difficult due to high water level.
- Oct.~Nov.: Fishes go down Suang River. Fishing season
- Dec.~Jan.: Water level is low and fishes stay in Mekong river.

Price of fish is 25,000 Kip/kg for big fish, and 15,000 Kip/kg for small fish. Main fishes are *"Pa Nang"*(Kryptopterus apogon), *"Pa Keng"*(Osteochilus prosemion fowler), and *"Pa Kang"* (Channa gachua: snaked head) in Nam Suang river and *"Pa Pan"*, *"Pa Dok"*(Catfish), *"Pa Keng"* (Channa gachua: snaked head) and *"Pa Doktong"*(Notopterus chitala) in streams.

(2) Aquaculture (fish)

Now 5 households grow fishes in ponds. In former Houay Ouang village area, 15~16 households used to grow fishes for several years. But all of them have quitted after flood in 2001.

(3) Others

Villagers catch a lot of shrimps in Nam Suang river and streams during the rainy season (June and August). Villagers also catch shells and crabs in Nam Suang river and streams. Villagers collect river weed in Nam Suang river from December to February.

2.8 Other activities

(1) Weaving: Women in 42 households weave textile throughout the year. Average woman weave 50 Lao skirt (sin) a month during the dry season and sell at 25,000 Kip/textile. They use factory-made cotton thread.

(2) Spinning: Only 3 old women spin cotton at home throughout the year because they are too old to work in the field.

[3] Italics are Lao names of fish obtained from the village key informants. Only identified common/or genus/or family names are described in the following parentheses.

(3) Bamboo handcrafts: Men in 50 households make bamboo handcrafts for family use and sales inside the village.

(4) Rice wine: Rice wines *"Lao lao"* and *"Lao hai"* are made in the village by both men and women. Rice wine can be made throughout the year but except July and August because of rice shortage in these months.

(6) Blacksmith: Men in 30 households repair agricultural tools by themselves in February.

2.9 Collective activities by the village for forest conservation

None.

2.10 Seasonal calendar

Seasonal calendar, which shows various activities/issues/ events related to livelihood and natural resource management is presented in **Figure 2.**

3. Infrastructure

3.1 Location, current condition of social infrastructure

(1) Water supply
Hathouay village has enough clean water by a gravity-piped water supply system "Nam Lin" with 15 taps, which was assisted by WHO assisted in 1996. EU project assisted to build water storage in 2001.

(2) School
An elementary school stood just behind the meeting place of the village. EU project provided iron sheets to the village. They built a new school near the village boundary with Hat Sang village in 2002. Now children of both villages attend the school. The elementary school has only Grade 1 to 4 "P1~P4".
Elementary school (P1~P4) is located in Hath Houay village with 5 teachers (2 teachers for P1). Another elementary school is in Pak Keng village having Grade 5. Junior High School (M1-M3) is also located in Pak Keng village, and a senior high school (M4-M6) is in Sop Chek village. (Students live in Sop Chek village to attend school)

(3) Clinic/Hospital
Villagers go to Pak Keng village (40 minutes on foot) to buy medicine for light diseases and to Luang Prabang provincial hospital for serious ones. There are two injection doctors in the village.

(4) Road
The road connecting Pakseng and Paksuang was upgraded in 2002 (Construction: 2000-2002) with the assistance of EU. Since 2000, many traders come from Luang Prabang to buy NTFPs (paper mulberry, tiger grass, tree bark, etc) and agricultural

products (sesame, Job's tear, jack fruit, coconut, tamarind, mango, etc). Improvement of the road has a great impact on the local economy.

(5) Market
No market in the village. Periodical markets are held in Pakseng and Hatsam for every 10 days. But most of the villagers don't go to the markets. They usually go to markets in Luang Prabang to buy cloths and others.

(6) Electricity
No public electricity in the village. But 2 generators in South village (B. Tai) and 1 generator in North village (B. Neua) supply electricity to 33 and 5 households in the respective villages.

(7) Others
Thirty-four (34) units of toilets are made by the assistance of EU's rural development project.

3.2 Agricultural infrastructure

(1) Irrigation
The irrigation system (water from Houay Thong stream) was constructed with assistance of Quaker in 1991. Fourteen (14) households benefit from the irrigation during the rainy season, but only 2 household use it during the dry season.

(2) Rice mill
There are 5 rice mills in the village.

(3) Vehicle/Agricultural machine/Tractor
No tractors in the village. Some of the villagers afford to buy but don't do so because tractors may not be used in small rice fields. Price for borrowing a tractor with man per day is 30,000 Kip.

3.3 Infrastructure development plan

At present, there is no infrastructure development plan.

4. Organization related to the Project Activities

4.1 Organizations available in the village

(1) Water management unit for irrigation
All of the households in the village (90HHs) are members of water management unit. One person is elected for the management of irrigation water every year. Mr. Tao Seng is in the position in 2003 and 2004 (He is a head of household which engage in the dry season rice cultivation).

(2) Forest management unit
Not exist. One of deputy heads of the village is in charge of management of

agriculture and forest.

(3) Farmers' organization *"Nouay kum sao na/hai"*
Hat Houay has 2 *"Nouay kum sao na"* (lowland farming group) and 7 *"Nuay kum sao hai"*(slash and burn farming group) (each "Nouay" in the village has one *"Nouay kum sao hai"*). When villagers cooperate in works of agriculture, head of the organization arrange the schedule. Heads of *"Nouay kum sao hai"* and heads of *"Nouay"* are different person.

(4) Village financial organization *"Kon Tun Ban"*
In 2001, *"Kon Tun Ban"* was built in part of EU project. Villagers thoroughly understand that the purpose of *"Kon Tun Ban"* is to help poor people in the village. One villager went to learn about village financial system in a pilot village of Thailand. Each family pays at least 2,000 Kip every month and pool the money as *"Kon Tun Ban"*. Poor household can borrow money at 2% interest and household in face of unexpected expenditure like diseases at 1.2%. They can borrow three times of their contribution (e.g. They have paid 30,000 Kip then can borrow 90,000 Kip.). Members of *"Kon Tun Ban"* are 47 households now. Villagers, who are not members, now understand its benefit, and all of the households (90HHs) will join the system next year. For the time being, this financial system works very well in the village. Now its capital is more than 2 million Kip.

4.2 Any on-going/ implemented rural development project in the area

EU's rural development project was implemented from 1998 to 2002. In addition to the road construction from Paksuan to Pakseng (64 km), the EU project implemented various small activities of agriculture and livestock in the selected villages among the 29 villages along the road.

4.3 International organizations and/or local NGOs working in the area

None.

4.4 Any agricultural promotion activities

There is one company from Luang Prabang, which started promoting yellow corn plantation in the village this year (2004). Some villagers now join this program.

4.5 Availability of agricultural technicians

Mr. Xieng Kaen Kham: Veterinarian
Mr. Ketsakorn (25): Teacher at Agriculture and Forest College in Paksuang
Ms. Keomanykong (18): Student studying agriculture in Xieng Ngun

5. Others

5.1 DAFO extension staff activities to the village

Mr. Sisamuth, a DAFO staff, visits the village 3~4 times a year.
Promotion of planting Job's tear, sesame, paper mulberry etc.

5.2 Any migration project in the future

Not exist

5.3 Situation of tax collection (land tax etc.)

Total tax revenue of the village was 4,285,500 Kip in 2003. The usage of the revenue is 74.6 % of amount (3,198,500 Kip) to district government, 23.5 % of that (1,005,000 Kip) was to the village treasury, and 82,000 Kip (1.9 %) for salary of the village's implement persons.

PART 2 PARTICIPATORY VILLAGE SURVEY

- Survey period : 25 to 27 April 2004
- Resource map and social map : 25 April 2004
- Venn diagram for marketing products : 25 April 2004
- Dependence on resources by social status : 26 April 2004
- Present rules on the use of resources : 27 April 2004

1. Resource Map and Transect

In order to clarify the present use of lands and other resources, a resource map was drawn by the villagers through a participatory process. A total of 11 villagers participated in this session. Based on the resource map, a transect walk was conducted together with some village key informants. During the transect walk, the present use of lands and other resources were clarified by observing actual conditions of the sites. The resource map shows the different land types, in addition to roads, rivers, streams and habitation and the transect shows cross-sectional view of the different zones and provides comparative information such as main activities and problems for each land category as presented in **Figure 3 and 4.**

2. Resources Utilization and Major Products

Major products in each resource are summarized in the following table, the information of which were obtained through Transect Walk, Venn Diagram preparation and some informal discussions.

Major Products by each Land Category

No.	Resources	Products
1.	Conservation Forests: *"Pa SaNgouan"*	Mushroom
		Bamboo
		Bamboo shoot
		Winding (string) plant
		Herbal medicine
		Small animals (birds, rats, snakes and insects)
2.	Community Production Forests: *" Pa Somsai"*	Lumber for construction
		Bamboo
		Bamboo shoot
		Herbal medicine
		Fuel wood
		Wild vegetable
		Small animals (birds, rats, snakes and insects)
3.	Agricultural Land for upland cultivation: *"Hai"* and *"Suan"* (3 places per household, 1.0 ha for place/piece)	Rice
		Seasonal vegetables
		Bamboo shoot
		Tiger grass
		Sesame
		Job's tear
		Paper mulberry
		Tree bark

		Corn
		Mush room
		Buffalo (in fallow land)
		Cattle (in fallow land)
		Goat (in fallow land)
		Pig (in fallow land)
	Rainfed paddy	Rice
		Frog
		Buffalo (in the dry season)
		Cattle (in the dry season)
	Irrigated paddy	Rice
		Garlic
		Onion
		Lettuce
		Cabbage
		Long beans
		Cucumber
		Wild vegetables
	Grazing land	Buffalo and Goat
4.	Rivers (Nam Suang river)	Fish
		Shrimp
		(For transportation)
5.	Small streams	Shell, crab, small fish
6.	River sides of Nam Suang, Houay Thorng, Seuk, Kio Khon, Ouay, Keneng, Chalong, Kaheu, Maemay, Som, Daen, Kathing, Wat, Hinpoon, Chang, and Fataek.	Paper mulberry
		Herbal medicine
		Wild vegetables
		Bamboo shoot
		Bamboo
		Dry season vegetables
7.	Others	Poultry

3. Venn Diagram

3.1 Importance of major products/resources

In order to clarify major products/resources in the village, the survey team organized group discussions through Venn Diagram preparation process. Twenty-two (22) participants were divided into two groups, namely a male group (11 persons) and a female group (11 persons) and were asked about major products/resources for each group, their importance and its reason, and their market situation as well.

Regarding importance of the major products/resources, there were some differences between male and female. The male group listed “rice” as the 1st priority, then, 2) buffalo, 3) sesame, 4) paper mulberry, and 5) Job’s tear, in order of importance. On the other hand, the female group listed 1) rice, 2) tiger grass, 3) sesame, 4) dry season vegetable, then, 5) Job’s tear. Livestock such as “pig”, “poultry”, “buffalo”, “goat”, and “fish” as well as “weaving” were claimed by female group, but not ranked in high priority.

The reasons of importance for those products are mainly for their high marketability as well as for their house consumption. Rice, bamboo shoot, vegetables are grown/or collected mainly for house consumption, but they can be sold as well. On the other

hand, sesame, Job's tear, dry season corn, dry season vegetables, dry season peanuts are grown only as cash crops. Among these, dry season corn, vegetable and peanuts are grown in irrigated paddy fields. In addition, paper mulberry, tiger grass and "tree bark" are also very important NTFPs for earning money for the villagers. Corn plays triple roles for home consumption, for sale, and for feeding animals. Pigs and poultry are kept for both sale and home consumption. The importance of weaving is not so high in this village. Difference of major products/resources between male and female, and their priority and reasons are summarized in the following table.

Difference of Major Products/Resources between Male and Female, and their Priority and Reasons

Major Products	Male		Female		Reasons
	Claimed	Priority	Claimed	Priority	
1. Cultivated crops					
- Rice	O	1	O	1	Households consumption (and sale)
- Sesame	O	3	O	3	Sale (and households medicine: very little)
- Job's tear	O	5	O	5	Sale (and reserving a little for seeds)
- Wet season corn	-	-	O	*	Households consumption, feeding animal (and sale)
- Dry seasonal vegetables	-	-	O	4	Sale
- Dry season corn	-	-	O	9	Sale
- Peanuts	-	-	O	7	Sale
- Lemon	O	10	O	6	Households consumption and sale
2. NTFPs					
- Paper mulberry	O	4	O	6	Sale
- Tiger grass	O	7	O	2	Sale
- Tree bark	O	9	O	8	Sale
- Bamboo shoot	-	-	O	10	Households consumption (and sale)
3. Livestock					
- Pig	O	6	O	*	Sale (and household consumption)
- Poultry	-	-	O	*	Sale and household consumption
- Buffalo	O	2	O	*	Sale
- Goat	O	8	O	*	Sale (and household consumption)
- Fish	-	-	O	*	Household consumption (and sale)
4. Others					
- Weaving	-	-	O	*	Sale (and household use)

Note: Activities in parenthesis mean secondary/minor purposes.
*/ Claimed but not high priority

3.2 Marketing situation of major products

(1) An individual middleman in Hat Houay village
There is only one middleman (Mr. Signkham), living in Hat Houay village, who handles all agricultural products/NTFPs and livestock from the village.

(2) Venn Diagram of major products
Destinations of major products were clarified through a Venn Diagram preparation as summarized in the following table. Venn Diagrams in Hat Houay village by male

group and female group are presented in **Figure 5 and Figure 6**, respectively.

Destination of Major Products

Products	Sell/Consume in the village	Sell to near other markets, 1/	Sell to Middlemen, 2/
1. Cultivated Crops			
- Rice	O		
- Sesame			O
- Job's tear			O
- Wet season corn	O		
- Dry season vegetables	O		
- Dry corn	(O)		
- Peanut		O	O
- Lemon	O	O	
2. NTFPs			
- Paper mulberry			O
- Broom flower			O
- Tree bark			O
- Bamboo shoot	O		
3. Livestock			
- Pig	(O)		O
- Poultry	O	O	O
- Buffalo			
- Goat	(O)	(O)	O

Note: O = major destination, (O) = minor destination
1/ Carry products by themselves to the markets.
2/ Licensed middlemen through a village middle man.

4. Social Map

4.1 Well-being ranking

A social map was drawn by the villagers through a participatory process. A total of 11 villagers participated in this session. The participants were asked to clarify themselves based on the well-being perceived by themselves, then they classified the well-being rank into three levels like i) over sufficient, ii) sufficient, and iii) under sufficient.

According to the participants, among the total of 90 households of the village, 6 households (6.7 %) were classified into "over sufficient level", 15 (16.7 %) were "sufficient level", and the other 69 (76.6 %) were "under sufficient level", respectively. These figures seem not to be coincident with the figure obtained from the village key informants described in Chapter 1.6, " 6 households face very serious food shortage". The survey team estimates that "rice deficiency doesn't always mean they face a serious food deficiency because other substitutes such as corn and cassava are still available".

These three (3) categories clarified by the participants are distinguished in the social map, as presented in **Figure 7.** It can be simply said that major indicators affecting on the living situation are if they have sufficient lowland paddy fields and livestock. Living situation of each level clarified by the participants is summarized in the following table.

Living Situation by Each Level

Level	Living Situation
"Over Sufficient" 6 HHs (6.7 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Have permanent houses; - Have ways to generate more cash income; - Have adequate rice to eat; - Have buffalos and raise pigs; - Have lowland paddy fields; - Have gardens *"Suan"* of sesame, Job's tear, and paper mulberry.
"Sufficient" 15 HHs (16.7 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Have very limited lowland paddy field; - Most have pigs, and some have buffalos and goats; - Have sesame garden *"Suan"*.
"Under Sufficient" 69 HHs (76.6 %)	- Have allocated 3 plots upland for 3-year rotational shifting cultivation (same as other groups); - Have no lowland paddy fields; - Houses are made of temporary materials; - Lack of health access (no money for medicine, hospital); - Have many children.

4.2 Dependence on various resources by well-being level

The group discussions were organized by each well-being level to clarify the present use of and dependence on resources by the group and to grasp seasonal trends/changes of resources in terms of production and marketability. Six (6) participants for each group were selected by the villagers during the social map preparation.

Participatory discussions gave us two major suggestions like i) "over sufficient" group occupy only 6.7 % of the whole villagers, who have lowland paddy fields and some buffalos and ii) most dominant group are "under sufficient" situation (76.6 %), who have no lowland paddy fields and depend on working in their own upland fields as well as working in other persons fields since they can not get enough products from their own fields. This may be because that a) too many children, b) lack of labor, c) newly married couple, d) no trading activities, e) insecurity of food (looking fro food day after day), f) always have debts due to being sick, and need of food, etc. The dependence on resources by each level is summarized below.

Dependence on Resource by Each Level

Level	Dependence on Resources by Each Level
"Over Sufficient" 6 HHs (6.7 %)	- Engaging in trading of NTFPs, cattle, buffalos, goats, and pigs; - Hiring others for their paddy cultivation and other related works.
"Sufficient" 15 HHs (16.7 %)	- Mainly practicing shifting cultivation; - Growing sesame, Job's tear, and paper mulberry in their gardens *"Suan"*; - Fishing for household consumption and sale;

	- Collecting NTFPs such as "tree bark", tiger grass, and paper mulberry; - Selling pigs and buffalos.
"Under Sufficient" 69 HHs (76.6 %)	- Practicing shifting cultivation in quite limited area; - Collecting NTFPs such as "tree bark", tiger grass, and paper mulberry but very limited; - Selling labor to the over sufficient group or for Lao Sung people near the village in planting rice and weeding in rice field and or gardens.

5. Present Rules on the Management/Use of Lands and Resources

A plenary discussion with a total of 22 participants was organized to clarify i) present rules on the management/use of lands and resources, and any changes or cases of them, and ii) any problems and issues on land allocation program.

5.1 Land allocation program

Land allocation has not yet been conducted in this village because the province ahs a limited budget for these purposes. However, according to the Provincial Forestry staff, the province has a plan to conduct land allocation in this village in 2005. The provincial and district forestry service has been introducing "land zoning" (different forest types such as conservation forest, production forest, protection forest and degraded forest, and uses and their management) since 1998. A number of PAFO and DAFO came to the village and introduced "land zoning" to the villagers. They discussed with the villagers if the village had any of the above forest types and decided which area they would like to designate as which forest types. No inventory and measurement work has been done in the forest. Deputy village leader and a village tax collector are the persons responsible for forest resources. So far, there are four (4) forest types and five (5) land use types are well known in the village as below.

Forest Types:

i) Conservation forest *"Pa SaNgouan"*;
ii) Community Production forest *"Pa Somsai"*
iii) Protection forest *"Pa Pongkanh"*
iv) Degraded forest *"Pa Sotsom"*

Land Use Types:

i) Productive land *"Din Palith"*;
ii) Paddy (field) land *"Na"*
iii) Agricultural land *"Din Suan"*
iv) Cemetery *"Pa Sa"*
v) Residential land

Agricultural lands are the land which have been used for vegetable garden on some river sides, paper mulberry plantation, and teak plantation.

5.2 Present rules on the management/use of lands and resources

(1) *"Pa SaNgouan"* (Conservation Forest) and *"Pa Pongkanh"*(Protection Forest)

The present rules on this area understood by the villagers are as follows. And according to the participants, any cases or problems on the management/use of this land have not occurred.

- Conserve all habitats including plants and large animals;
- Hunting small animals (rats, squirrels) is allowed;
- Collecting string plants, rattan, bamboo shoot and related wild vegetables is allowed;
- Slash and burn practice is forbidden;
- Cultivation is forbidden;
- Logging hard wood is forbidden; and
- Hunting large animals is forbidden.

(2) *"Pa Somsai"* (Community Production Forest)

"Pa Somsai" is so called 'community forest'. *"Pa Somsai"* area is located on the opposite bank of residential area. The present rules on this area understood by the villagers are as follows.

- Logging for construction material is allowed if it has been licensed by the DAFO and village administration;
- Small wood for construction material for minor buildings is allowed;
- Collection of any NTFPs such as paper mulberry, broom flower are allowed;
- Bamboo and bamboo shoot collection is allowed;
- Logging hard wood is forbidden; and
- Any cultivation practice is not allowed.

(3) *"Pa Pongkanh"* (Protection Forest):

According to the understanding of the villagers, there are two types of protection forests: i) watersheds area, and ii) the secondary forests and undergrowth which are scattered in the village managerial areas. The present rules on this area understood by the villagers are as follows.

- Protective area margin is both sides of 50 m from rivers/streams and roads;
- Logging for construction material is allowed if it has been licensed by the DAFO and village administration;
- Any cultivation practice is not allowed; and
- Logging of any hard wood species is not allowed.

(4) *"Pa Sotsom"*(Degraded forest)

Long term industrial tree plantation is not allowed in agricultural lands but in the degraded forests. Foraging is also allowed in this area.

(5) *"Din Phalith"*(Production land)

The productive lands *"Din Palith"* are 3 pieces/places of land allocated to each household for practicing upland cultivation. Each household has to pay 8,000 Kip per piece per year (8,000 Kip x 3 plots = 24,000 Kip per year) and the land tax according to actual land cultivated. The present rules on this area understood by the villagers are as follows.

- Stable rotation of shifting cultivation is allowed;
- Allocated lands is allowed to be transferred to relatives or friends;
- Selling any pieces of allocated lands is forbidden.

(6) *"Din Suan"*(Agricultural land = garden)

Agricultural lands are the land which have been used for vegetable garden on some river sides, paper mulberry plantation, and teak plantation.

PART 3 HOUSEHOLD INTERVIEW SURVEY

Survey period: 25 to 27 April 2004
Total Household: 90 HHs
Total Number of Sampled HHs: 39 HHs

A. HOUSEHOLD INTERVIEW SURVEY

1. General Information

1.1 Interviewees

Total number of interviewees is 39 persons, among which 27 are Lao Theung, 11 are Lao Loum and 1 is Lao Sung, and 36 are male and 3 are female. Among those interviewees, the youngest one is 20 years old and the oldest is 70, as summarized below.

Summary of Interviewees

Total No.of	Ethnic group			Sex		Age	
interviewees	Lao Sung	Lao Theung	Lao Loum	Male	Female	Min	Max
39	1	27	11	36	3	20	70

1.2 Households members

Total number of households members surveyed is 224 persons, among which 110 (49.1%) are male and 114 (50.9%) are female, and 11 are temporarily absentees.

1.3 Household age structure

As per household, the average number of household is 5.7 persons, among which 2.1 (36.8%) are less than 12 years old, 3.1 (54.4%) are between 12 and 45 years old, and 0.5 (8.8%) are more than 45 years old, as summarized below.

Summary of Household Age Structure

Age Structure	Total			Average per HH	
	Number	Male	Female	Family Member	(%)
1. Less than 12 years old	80	39	41	2.1	36.8
2. 12 to 45 years old	123	59	64	3.1	54.4
3. More than 45 years old	21	12	9	0.5	8.8
Total	224	110	114	5.7	100

1.4 Living period

Among all the 39 interviewed households, 17 households (43.6%) have lived for more than 10 years in the present location, as summarized below.

Living Period

Period	Number of HH interviewed	%
1. Within the last 10 years	22	56.4
2. From 10 to 20 years ago	2	5.1
3. From 20 to 30 years ago	11	28.2
4. More than 30 years ago	4	10.3
Total	39	100

1.5 Educational background

Among all the 224 household members, 105 persons (46.9%) are primary school graduated/or attending, or drop out of primary school level, 39 (17.4%) are more than secondary school graduated/or attending level, and the remaining 80 (35.7%) are below school age or have not received formal education, as summarized below.

Summary of Educational Background

Educational Level	Male	Female	Total	(%)
1. No formal education	35	45	80	35.7
2. Drop out of primary school	19	20	39	17.4
3. Primary school graduated/ Attending	37	29	66	29.5
4. Drop out of secondary	3	2	5	2.2
5. Secondary school graduated/ Attending	9	11	20	8.9
6. Drop out of high school	1	0	1	0.5
7. High school graduated/ Attending	3	4	7	3.2
8. Graduate of professional high school/ Attending	2	1	3	1.3
9. More than high school/ Attending	2	1	3	1.3
Total	111	113	224	100

1.6 Farming

Among all the 224 household members, 118 persons (52.7%) are engaging in farming.

1.7 Occupation

Among all the 224 household members, 102 persons (45.5%) are farmers, one person (0.5%) is wage labor, one person (0.5%) is also salary worker, 3 persons (1.3%) are private business workers, 59 (26.3%) are pupils/students, 43 (19.2%) are below school age children, and 9 (4.0%) have no job (including housework), and 6 (2.7%) are others, as summarized below.

Summary of Occupation

Occupation	Number	(%)
1. Farmer	102	45.5
2. Wage labor	1	0.5
3. Salary worker	1	0.5
4. Private business	3	1.3
5. Pupil/Student	59	26.3
6. Child (below school age children)	43	19.2

7. No job (including house work)	9	4.0
8. Others	6	2.7
Total	224	100

1.8 Organization

Among all the 224 household members, more than 82% of people do not belong to any specific organizations, but 27 persons (12.1%) are members of Women's union, Youth organization, Elder's group, Village committee, or Ethnic organization. In addition, 12 persons are members belonging to "Others" like i) security unit and ii) voluntary village vigilante corps, etc. The villager's membership of organizations is summarizes below.

Villager's Membership of Organizations

Organization	Number	%
1. Member of Women's Union	7	3.1
2. Member of Youth Organization	11	4.9
3. Member of Elder's Group	6	2.7
4. Member of Water Users Group	0	0
5. Member of Village Committee	2	0.9
6. Member of Ethnic Organization	1	0.4
7. Member of religious Organization	0	0
8. Others (security unit, vigilante, etc.)	12	5.4
9. No member	185	82.6
Total	224	100

2. Living Condition

2.1 Drinking water

All of the 39 interviewed households use a gravity piped water system for getting drinking water. These water sources are located within 0.5 to 20 minutes walking distance. However, among the 39 households above, 3 households (7.7%) in the wet season and 5 households (12.8%) in the dry season feel that water is not enough, as summarized below.

Drinking Water

Season	Main Source	Household		Distance		No.of HH sufficiency			
		No.	(%)	Min. (min.)	Max. (min.)	Sufficient	Just enough	Short	Very short
Dry	a. Piped gravity water	39	100	0.5	100	24	10	5	0
Wet	a. Piped gravity water	39	100	0.5	100	26	10	3	0

2.2 Fuel for cooking/heating

All the 39 interviewed households answer that they use only fuel wood for cooking/heating and all of them reply that they can collect fuel wood easily, as summarized below.

Fuel for Cooking/Heating

Sources of fuel	No of HH	%	Availability	No of HH	%
Fuel wood	39	100	a. Easy to obtain	39	100
			b. Difficult to obtain	0	0
			c. Very difficult to obtain	0	0
Total	39	100		39	100

2.3 Food availability

2.3.1 Rice

Among all the 39 interviewed households, 12 households (30.8%) can produce rice more than the household demand and 6 households (15.4%) can produce rice just enough to meet the household demand. However, 18 households (46.1%) cannot produce rice to meet the household demand, among which 8 households reply that they purchase (or exchange) rice to meet the household demand, but the other 10 households face difficulty to obtain rice enough to meet the household demand. The average shortage months for those 10 households is calculated to be 4.7 months.

Further, there are 3 households (7.7%) who do not produce rice. Among the 3 households above, only one household reply that they face difficulty to obtain rice to meet the household demand, saying that the average shortage months of them are 2.0 months.

Totally, it is estimated that among 39 households, 11 households (28.2%) face a shortage of rice for about 4.9 months, as summarized below.

Rice Availability

Rice Production Situation	No. of HH	(%)	No.of HH of Rice Shortage	(%)	Total Shortage (months)	Average Shortage (months)
1. Product exceeds the HH demand	12	30.8	-	-	-	-
2. Product is just enough to meet the HH demand	6	15.4	-	-	-	-
3. Product is not enough to meet the HH demand	18	46.1	10	25.6	47	4.7
4. No product	3	7.7	1	2.6	2	2.0
Total	39	100	11	28.2	49	4.9

2.3.2 Other than rice

<u>Other cereals, root and tube crops, and vegetables:</u>
Products other than paddy such as other cereals, root and tube crops and vegetables are generally not serious like rice for the farmers because they can try to manage with their products, and a large part of interviewed households (about 87%) feel that such products are enough to meet the household demand or exceed the household demand. However, there are 2 households who cannot produce sufficient products (one household for other cereals, and the other for vegetables). Further, there are some households who do not produce such other products than rice, 3 households

(7.7%) for other cereals, 5 households (12.8%) for root and tube crops, 3 households (7.7%) for vegetables. They reply that they purchase or exchange such products depending on their needs.

Meat:
Nineteen (19) households (48.7%) reply that the product of meat is enough to meet the household demand or exceed the household demand. However, 14 households (35.9%) reply that the product of meat is not enough to meet the household demand. Further, 6 households do not produce any meat. Among those 20 households who can not produce sufficient meat (14) or do not produce any meat (6), 7 households reply that they face a shortage of meat for about 3 months.

Fish:
Eighteen (18) households (46.2%) reply that the product of fish is enough to meet the household demand or exceed the household demand. However, 8 households (20.5%) reply that the product of fish is not enough to meet the household demand. Further, 13 households do not produce/ catch any fish. Among those 21 households who can not produce sufficient fish (6) or do not produce/ catch any fish (13), 4 households reply that they face a shortage of fish for about 1.5 months.

Food availability other than rice is summarized below.

Food Availability other than Rice

Rice Production Situation	No.of HH for production of				
	Other Cereals	Root, Tube Crops	Vege-tables	Meat	Fish
1. Product exceeds the HH demand	6	3	4	3	8
2. Product is just enough to meet the HH demand	29	31	31	16	10
3. Product is not enough to meet the HH demand	1	0	1	14	8
4. No product	3	5	3	6	13
(Total)	39	39	39	39	39
5. No.of HHs having a shortage of each product	0	0	0	7	4
6. Average shortage period per HH above (month)	0	0	0	3.0	1.5

2.4 Availability of facilities

Availability of major facilities in each household is summarized below in order of available numbers.

Major Available Facilities in Each Household

Available Facilities	Nos.of Unit	(%)
1. Radio/radio cassette	27	69.2
2. VCD	1	2.6
3. TV	1	2.6
4. Bicycle	14	35.9
5. Motorcycle	7	17.9
6. Car	1	2.6
7. Refrigerator	0	0
8. Electric fan	0	0
9. Sewing machine	9	23.1

10. Gas stove	0	-
11. Toilet	21	53.8
12. Hand tractor	0	0
13. Rice mill	1	2.6
14. Wardrobe	2	5.1

2.5 Health situation

2.5.1 Major diseases

The interviewees were asked to enumerate 2 major diseases for children and adults, respectively. Major diseases for children under 15 years old are i) cold, ii) malaria, iii) dysentery, and those for adults are i) cold, ii) aches (body), iii) malaria as summarized below.

Major Diseases

Children under 15 years old			Adults		
Major diseases	No.of HH	%	Major diseases	No.of HH	%
1. Cold	10	25.6	1. Cold	8	20.5
2. Malaria	9	23.1	2. Aches (body)	5	12.8
3. Dysentery	4	10.3	3. Malaria	4	10.3
4. ……..	…	…	4. …….	…	…

2.5.2 Treatment for diseases

Major treatments for slight diseases are i) buy medicine and ii) go to the village's health worker, and those for severe diseases are i) go to the provincial hospital and ii) go to the village's health worker, as summarized below.

Treatment of Diseases

Slight diseases			Severe diseases		
Major treatment	No.of HH	%	Major treatment	No.of HH	%
1. Buy medicine	16	40.0	1. Go to the provincial hospital	27	69.2
2. Go to the village health worker	15	38.5	2. Go to the village health worker	5	12.8
3. …….	…	…	3. …….	…	…

3 Agriculture and Forestry Production

3.1 Land tenure

3.1.1 Farm land operated

In this survey, the farm lands are categorized into four (4), i) "Hai-A" (upland slash and burn field, mainly for paddy), ii) "Hai-B" (upland slash and burn field, mainly for other crops than paddy), iii) "Na" (lowland paddy field), and iv) "Fruits/Vegetable".

"Hai-A":
Among all the 39 households, 21 households have ownership for "Hai-A". Total area of "Hai-A" is 38.4 ha with a total of 45 plots and an average area of 0.85 ha/plot and 0.98 ha/HH. Further, there are 4.0 ha of lands rented from others, thus the average operated land is 1.09 ha/HH.

"Hai-B":
Among all the 39 households, 34 households have ownership for "Hai-B". Total area of "Hai-B" is 51.20 ha with a total of 64 plots and an average area of 0.80 ha/plot and 1.31 ha/HH. Further, there are 2.3 ha of lands rented from others, thus the average operated land is 1.37 ha/HH.

"Na" (Lowland paddy field):
Among all the 39 households, 18 households have ownership for "Na". Total area of "Na" is 12.85 ha with a total of 23 plots and an average area of 0.56 ha/plot and 0.33 ha/HH. Since, the rented lowland paddy field is very small, thus the average operated land is the same as that of owned land, 0.33 ha/HH.

"Fruits/ vegetables" field:
Among all the 39 households, 5 households have ownership for "Fruits/ vegetables" field. Total area of "Fruits/ vegetables" field is 5.7 ha with a total of 7 plots and an average area of 0.81 ha/plot and 0.15 ha/HH. Since there are no rented lands of "Fruits/ vegetables" field, the average operated land of "Fruits/ vegetables" fields is the same as that of owned land, 0.15 ha/HH.

The feature of farm land holding is summarized below.

Farm Land Operated

Land Category	Land Owned by the HH				Land Rent-ed (b) (ha)	Land Lea-sed (c) (ha)	Land Ope-rated (d) (ha)= (a)+(b) -(c)	Average Area per HH	
	No. of HH	No. of Plots	Total Area (a) (ha)	Average area per Plot (ha/plot)				Land Owned (ha) (a)/39	Land Operated (ha (d)/39
1. Hai-A, 1/	21	45	38.40	0.85	4.0	0	42.40	0.98	1.09
2. Hai-B, 2/	34	64	51.20	0.80	2.3	0	53.50	1.31	1.37
3. Na (Lowland paddy)	18	23	12.85	0.56	0.01	0	12.86	0.33	0.33
4. Fruit/Vegetable, 3/	5	7	5.7	0.81	0	0	5.70	0.15	0.15
Total/Average	-	139	108.2	0.78	6.31	0	114.5	2.77	2.94

Note: 1/ Upland slash and burn cultivation field, mainly for rice.
2/ Upland slash and bun cultivation field, mainly for other crops than rice.
3/ Except home garden

3.1.2 Land ownership

The answers about the land title of the "owned land" vary by interviewees. It was found that the owned lands were not always privately owned but some are i) government land but they have a right to cultivate traditionally, ii) government land but allocated by the village committee, and iii) they don't know whose land that is,

but they cultivate.

Among the "Hai-A" of 21 households, that of 13 households (62%) is "privately owned", that of 3 households (14%) is "government land but they have a right to cultivate traditionally", that of 5 households (24%) is "government land but allocated by the village committee. In addition, there are 2 households who rent the lands with a total of 4.0 ha for farming practice in "Hai-A"

Among the "Hai-B" of 34 households, that of 21 households (62%) is "privately owned", that of 4 households (12%) is "government land but they have a right to cultivate traditionally", those of 9 households (26%) is "government land but allocated by the village committee. In addition, there are 2 households who rent the lands with a total of 2.3 ha for farming practice in "Hai-B".

Among the lowland paddy field of 18 households, that of 17 households (94%) is "privately owned", those of one household (6%) is "government land but allocated by the village committee. In addition, one household who rented a small land, which belongs to his relative.

The feature of the land title of the "owned land" is summarized below.

Future of the Land Ownership

Land Category	Land Owned by the HH					Others,
	No.of HHs	Private, 4/	Gov.(1), 5/	Gov.(2), 6/	Unclear, 7/	8/
1. Hai-A, 1/	21	13	3	5	0	2
2. Hai-B, 2/	34	21	4	9	0	2
3. Na (Lowland paddy)	18	17	0	1	0	1
4. Fruit/Vegetable, 3/	5	4	1	0	0	0

Note: 1/ Upland slash and burn cultivation field, mainly for rice.
2/ Upland slash and bun cultivation field, mainly for other crops than rice.
3/ Except home garden.
4/ Privately owned (they can sell it when ever you want).
5/ Government land but they have a right to cultivate traditionally.
6/ Government land but allocated by the village committee.
7/They don't know whose land that is, but they cultivate.
8/ Others (households who rented farm lands from others)

3.2 "Hai" area (upland slash and burn field)

3.2.1 Time required

Among all the 39 households, 37 households have replied to the times required to go to their "Hai"area, which vary from 5 min. to 180 min. with an average of 90 minutes.

3.2.2 Repeated use of "Hai" area

"Hai-A": Among 35 households who cultivated Hai-A in 2003, 26 households answered that they would use the same lands within 1 to 3 years for cropping upland

rice, field crops and tree plantation, and 9 households answered that they would not use those lands in near future but leave as fallow land. Among 26 households above, 16 households used the same lands in 2001 and 14 households used the same land in 2002.

"Hai-B": Among 33 households who cultivated Hai-B in 2003, all of them answered that they would use the same lands within 1 to 3 years for cropping upland field crops, and no households answered that they would not use the same lands in near future. Among 33 households above, 18 households used the same land in 2001 and 17 households used the same land in 2002.
The future of the repeated use of "Hai" area is summarized below.

Repeated Use of "Hai" Area

"Hai" Category	Repeated Use			Don't Use		Used in	
	No. of HH	How many years later	For what crops	No. of HH	Purpose/reason	Year 2002 (HH)	Year 2001 (HH)
"Hai-A"	26	1 to 3	Rice, upland field crops, trees.	9	Fallow	14	16
"Hai-B"	33	1 to 3	Upland crops, trees.	0	-	17	18

3.2.3 Total "Hai" (A+B) areas used per HH in last 4 years

Total "Hai" (A+B) areas used per HH in last 4 years vary from 1.22 ha/HH in 2000 and 2002 to 1.48 ha/HH in 2003, with an average of 1.31 ha/HH, as summarized below.

Total "Hai" (A+B) Used Area

Year	Total Used Area (ha)	Used Area per HH (ha)
2000	47.60	1.22
2001	51.75	1.33
2002	47.45	1.22
2003	57.77	1.48
Average	51.14	1.31

3.2.4 Staying "Hai" area

Among the 39 households, 6 households reply that they stay in the field continuously from "slash and burn" to "harvest", whose living and working bases are basically in the field, including raising animals. On the other hand, 23 households do not stay in the field but go there based on requirements. In addition to those who stay in the field continuously, 4 households answered that they stayed in the field during the season for slash and burn, one household for seeding, and 7 households for harvesting. The future of staying "Hai" area is summarized below.

Staying "Hai" Area

Situation	Number of HH
1. Stay during the season for slash and burn	4
2. Stay during the season for seeding	1
3. Stay during the season for harvesting	7

4. Stay continuously from slash &burn to harvest	6
5. Not stay, go there based on requirement	23

3.2.5 Decision maker for the "Hai" area selection

Among all the 39 households, 35 households (90%) answered that the head of household was a decision maker for the "Hai" area selection, as summarized below.

Decision Maker for the "Hai" Area Selection

Decision Maker	Number of HH
1. Head of household	35
2. Other household member(s)	1
3. Village committee	1
4. Relatives	0
5. No comments	2

3.3 Crop production in "Hai"(slash and burn) area

(excluding crops grown in home garden)

3.3.1 Major crops

Major crops grown in "Hai" area in the wet season are i) rice (24 households), ii) sesame (21 households), iii) Job's tear (15 households) and iv) maize (14 households).

3.3.1 Production of 3 major crops in "Hai" area

Rice:
Total production area of rice by all the 39 interviewees is 20.30 ha with a total production of 26,610 kg, among which, 4,050 kg (15.2% of the total production) were sold for cash. As for per household, it is estimated that the production of rice is 682 kg/HH with an average planted area of 0.52 ha, among which 104 kg were sold for cash, with a value of 94,008 Kip.

Job's tear:
Total production area of Job's tear is 8.08 ha with a total production of 7,232 kg, among which 6,847 kg (94.7% of the total production) were sold for cash. As for per household, it is estimated that the production of Job's tear is 185 kg/HH with an average planted area of 0.21 ha, among which 176 kg were sold for cash with a value of 348,564 Kip.

Sesame:
Total production area of sesame is 15.20 ha with a total production of 10,047 kg, among which 10,047 kg (100% of the total production) were sold for cash. As for per household, it is estimated that the production of sesame is 258 kg/HH with an average planted area of 0.39 ha, all of which were sold for cash, with a vale of 570,964 Kip.

No households used any chemical fertilizer or pesticide for the above crops. Major

crop damages are pests, insects, rats, wild pigs and birds. Since there were no questions about agricultural chemicals, pesticide or insecticide in the questionnaires, such information was not obtained in this survey. The future of 3 major crop production is summarized below.

Production of 3 Major Crops in "Hai" area by the 45 Interviewee Households

Items	Major Crops		
1. Name of crops	Rice	Job's tear	Sesame
2. Planted area : (ha)	20.30	8.08	15.20
: (kg seed)	1,218	162	76
3. Total production (kg)	26,610	7,232	10,047
4. Form of Products	Paddy	Grain (unhusked)	Seed
5. Production sold (kg)	4,050	6,847	10,047
6. Price at sold (Kip / kg)	1,225	3,163	6,764
7. Total sales (Kip)	3,666,300	13,594,000	22,267,600
8. Production given to others (exchanged or lent to others) (kg)	180	No given to others	3
9. Chemical fertilizer used (kg)	No chemical fertilizer / Pesticide used		
10. Major crop damage, if any	Pests, diseases, insects, rats, wild pigs and birds		

Production of 3 Major Crops in "Hai" area per HH

Production Volume per HH			
Items	Crop 1 (a)/39	Crop 2(b)/39	Crop 3(c)/39
1. Name of crops	Rice	Job's tear	Sesame
2. Planted area : (ha)	0.52	0.21	0.39
: (kg seed)	31.2	4.2	1.95
3. Total production (kg)	682	185	258
4. Form of Products	Paddy	Grain (unhusked)	Seed
5. Production sold (kg)	104	176	258
6. Price at sold (Kip / kg)	1,225	3,163	6,764
7. Total sales (Kip)	94,008	348,564	570,964

3.4 Crop production in "Na" (lowland paddy field)

3.4.1 Major crops

Major crops grown in the lowland paddy field in the wet season are i) rice (19 households), ii) maize (1 household), and iii) cassava (1 household). As for the dry season, major crops are i) rice (2 households) and ii) vegetables (1 household) such as garlic, onion and lettuce.

3.4.2 Production of 3 major crops in "Na" area

Rice:

Among 39 households, 19 households grow rice in "Na" area. Total production area of rice is 13.48 ha with a total production of 35,960 kg, among which, 5,500 kg (15.3% of the total production) were sold for cash. As for per household, it is estimated that the production of rice is 922 kg/HH with an average planted area of 0.35 ha, among which 141 kg were sold for cash, with a value of 148,461 Kip.

Vegetables (garlic, onion, lettuce):
Among 39 households, only one household produces vegetables in the dry season. Total production area of vegetables is 50 m^2 with a total production of 200 kg, among which some were sold for cash with a value of 300,000 Kip.

Maize:
Among 39 households, only one household produces maize in "Na". Total production area of maize is 0.5 ha with a total production of 2,000 kg, all of which were for home consumption.

No households used any chemical fertilizer or pesticide for the above crops. Major crop damages are pests, insects, rats, wild pigs and birds. The future of 3 major crops production is summarized below.

Production of 3 Major Crops in "Na" area by the 39 Interviewee Households

Items	Major Crops		
1. Name of crops	Rice	Vegetables	Maize
2. Planted area : (ha)	13.48	0.005	0.5
: (kg seed)	540	-	12.5
3. Total production (kg)	35,960	200	2,000
4. Form of Products	Paddy	Raw vegetable	Dry grain
5. Production sold (kg)	5,500	0	0
6. Price at sold (Kip / kg)	1,195	-	-
7. Total sales (Kip)	6,570,000	300,000	-
8. Production given to others (exchanged or lent to others) (kg)	710	0	0
9. Chemical fertilizer used (kg)	No chemical fertilizer / Pesticide used		
10. Major crop damage, if any	Pests, diseases, insects, rats, wild pigs and birds		

Production of 3 Major Crops in "Na" area per HH

Production Volume per HH			
Items	Crop 1 (a)/39	Crop 2(b)/39	Crop 3(c)/39
1. Name of crops	Rice	Vegetables	Maize
2. Planted area : (ha)	0.35	0.0001	0.01
: (kg seed)	14	-	0.32
3. Total production (kg)	922	5.13	52.28
4. Form of Products	Paddy	Raw vegetable	Dry grain
5. Production sold (kg)	141	-	-
6. Price at sold (Kip / kg)	1,195	-	-
7. Total sales (Kip)	148,461	7,692	-

3.5 Annual paddy production and consumption per HH

The interviewees were asked their annual paddy production and consumption in their households. Some slight difference between the results of questions of the paddy production in Section 3.3 and 3.4 (35,960 kg + 26,610 kg = 62,570 kg) and Section 3.5 (65,470 kg) is found but it is judged to be within an allowance for this survey.

Annual paddy production and consumption, and their balance are as shown below.

Annual Paddy Production and Consumption

Paddy Production and Consumption	Quantity (a)	Typical volume per HH (a)/39
1. Paddy production in paddy land "Kao Na"	37,760 kg/year	968 kg/year
2. Paddy production in slash and burn area "Kao Hai"	27,710 kg/year	710 kg/year
3. Total paddy production (3 = 1 + 2)	65,470 kg/year	1,678 kg/year
4. Total paddy consumption in a month (average)	5,639 kg/month	145 kg/month
5. Total paddy consumption in a year (average)	67,662 kg/year	1,734 kg/year
6. Balance of paddy in household (6 = 3 – 5)	- 2,192 kg/year	- 56 kg/year

The survey result suggests that in average each household produces almost sufficient rice for their family demand. On the other hand, as seen in Section 2.3.1, it is estimated that among 39 households, 11 households (28.2%) face rice shortage for about 4.9 months. It is understood that some can produce rice to meet their demand and the other can purchase rice based on their requirements, and such food availability much depends on the land availability and their family labor availability, etc.

3.6 Fruits/Tree crops

Most 5 major fruits/tree crops among the 39 households are i) pine apple, ii) banana, iii) lemon, iv) papaya, and v) mango in order of number, and the average numbers of those bearing trees per HH are i) 133 roots, ii) 10 trees, iii) 9 trees, iv) 5 trees, and v) 3 trees, respectively, as summarized below.

Fruits/ Tree Crops

Type	Numbers of trees		Numbers of trees per HH	
	Bearing trees (a)	Non-bearing trees (b)	Bearing trees (a)/39	Non-bearing trees (b)/39
1. Orange	17	5	0.4	0.6
2. Lemon	363	146	9.3	3.7
3. Lime	-	-	-	-
4. Longan	3	2	-	-
5. Jackfruit	26	28	0.6	0.7
6. Tamarind	27	24	0.6	0.6
7. Guava	2	-	-	-
8. Papaya	215	-	5.5	-
9. Banana	413	170	10.5	4.3
10. Coconut	62	107	1.5	2.7
11. Coffee	3	-	-	-
12. Tea	-	-	-	-
13. Mangoes	122	51	3.1	1.3
14. Pine Apple	5,190	950	133.0	24.3

3.7 Non-timber forest products

3.7.1 Major NTFPs

Most 5 major NTFPs among the 39 households are i) paper mulberry, ii) tree bark, iii) tiger grass, iv) bamboo shoot, and v) eagle wood in order of cash income available, as summarized below.

Major Non-Timber Forest Products

Items	Priority order of cash income available up to 5					
	1	2	3	4	5	Total
1. Mak neng (Cardamon)	0	0	0	0	0	0
2. Mak wai (Rattan seed)	0	0	0	0	0	0
3. Wai (Rattan)	0	0	0	0	0	0
4. Ynan (Benzoin)	0	0	0	1	0	1
5. Puack muak (Tree bark)	17	5	1	0	0	23
6. Po sa (Paper mulberry)	14	17	1	0	0	32
7. Mak kha (Wild ginger)	0	0	0	0	0	0
8. Nohmai (Bamboo shoot)	0	3	2	0	0	5
9. Khem (Tiger grass)	2	5	15	1	0	23
10 Mai ketsana (Eagle wood)	1	0	1	0	0	2
11. Sa pan (a kind of tea)	0	0	0	0	0	0
12. Others (Mushroom)	0	0	0	0	0	0

3.7.2 Production and sale

The harvest season, volume of harvest in 2003, price at sold in 2003 and total sale of major NTFPs are presented as follows.

Production and Sale of Major NTFPs by the 39 Interviewee Households

Items	NTFP 1(a)	NTFP 2(b)	NTFP 3 (c)	NTFP 4 (d)	NTFP 5 (e)
1. Name of NTFPs	Paper mulberry	Tiger grass	Tree bark	Bamboo shoot	Eagle wood
2. Harvest season	1-12	3-4	1-12	4-12	1-2
3. Volume of harvest in 2003 (kg)	3,104	5,736	6,923	1,230	150
5. Price at sold in 2003 (Kip/kg)	2,773	2,028	2,885	for consumption	12,000
6. Total sales (Kip)	8,608,000	11,632,000	19,971,500		1,800,000

Production and Sale of Major NTFPs per HH

Items	NTFP 1(a)/39	NTFP 2(b)/39	NTFP 3 (c)/39	NTFP 4 (d)/39	NTFP 5 (e)/39
1. Name of NTFPs	Paper mulberry	Tiger grass	Tree bark	Bamboo shoot	Eagle wood
2. Harvest season	1-12	3-4	1-12	4-12	1-2
3. Volume of harvest in 2003 (kg)	80	147	177	4	32
5. Price at sold in 2003 (Kip/kg)	2,773	2,028	2,885	for consumption	12,000
6. Total sales (Kip)	220,718	298,256	512,090		48,000

3.8 Livestock and fish

3.8.1 Livestock

The average numbers of livestock raised per household are i) cattle (0.1 head), ii) buffalo (1.5 head), iii) goat (1.6 head), iv) pig (3.1 head), v) chicken (28.6 heads), vi) duck (6.2 heads), respectively, as summarized below.

Livestock Raising

Type	No. (a)	No. of HH	Feeding				Typical livestock per HH (a)/39
			Wet Season		Dry Season		
			Main feed	Sufficiency	Main feed	Sufficiency	
1. Cattle	5	1	Grass	Sufficient	Grass	Sufficient	0.1
2. Buffalo	62	17	Grass	Sufficient	Grass	Sufficient-Just enough	1.5
3. Goat	64	4	Grass	Sufficient	Grass	Sufficient-Just enough	1.6
4. Pig	122	28	Crop residue	Sufficient	Crop residue	Sufficient-Just enough	3.1
5. Chicken	1,119	33	Crop residue	Sufficient	Crop residue	Sufficient-Just enough	28.6
6. Duck	244	18	Crop residue	Sufficient	Crop residue	Sufficient-Just enough	6.2

3.8.2 Catch of fishes

Main types of fishes caught are:
“Pa Kheung” (Mystus wyckii), “Pa King”(Onychostoma sp.; carp),
“Pa Chat”(Acrossocheilus deauratus),
“Pa Keng”(Osteochilus prosemion fowler, Cirrhinus molitorella),
“Pa Nang” (Kryptopterus apogon),
“Pa Mom”(Scaphiodontichtys sp.; carp), “Pa Siou”(Luciosoma setigerum),
“Pa Hieng”(Tor sinensis; carp), “Pa Park”(Puntius gonionothus),
“Pa Lad”(Mastacembelus armatus Hora), “Pa Pe”(Achiroides sp.; flat fish),
“Pa Ket”(Bagarius yarelli), “Pa Sakang”(Puntiolites proctozysron),
“Pa Nam”(Mystacoleucus greenwayi; small carp) and “Pa Noi”(small fish).
Season of fishing is all the year. The total production of 39 households is 96 kg per week and an average catch of fishes per week per HH is estimated at 4 kg/week/HH.

3.8.3 Fish raising

Among the 39 households, 2 households own their fish ponds (2 ponds) raising Indian fish, carp, Pa Park and Pa Tong.

3.8.4 Livestock/fishes sold in the last 12 months

The average numbers of livestock sold per household in last 12 months are i) buffalo (0.2 head), ii) goat (0.1 head), iii) pig (0.7 head), iv) chicken (8.8 heads), v) duck (3.7 heads), respectively. As for fishes, 40.8 kg/HH of fishes were sold in the last 12 months, as summarized below.

Livestock/Fishes Sold in the Last 12 Months

Type	No.of heads sold		No.of HH sold	No.of heads sold per HH	
	Adult (a)	Young (b)		Adult (a)	Young (b)
1. Cattle	1	-	1	-	-
2. Buffalo	9	3	9	0.2	-
3. Goat	6	11	3	0.1	0.2
4. Pig	28	12	19	0.7	0.3
5. Chicken	345	67	25	8.8	1.7
6. Duck	145	4	19	3.7	0.1
7. Fish	1,592 kg (weight of fishes)		9	40.8 kg (weight of fishes)	

4. Estimated Marketed Volumes of Major Products by Village

Based on the results of the household interview survey, the total marketed volumes of major products from the village were estimated as shown in the following table.

Total major crops sold outside the village are 6,612 kg of rice, 23,185 kg of sesame, 15,801 kg of Job's tear. Total major NTFPs sold outside the village are 7,163 kg of paper mulberry, 15,976 kg of tree bark, 13,237 kg of tiger grass, and 346 kg of eagle wood. Total major livestock and fish sold outside the village are 21 heads of buffalo, 14 heads of goat, 65 heads of pig, 796 heads of chicken, and 335 heads of duck.

Estimated Marketed Volumes of Major Products (Hat Houay)

Description		3 Major Crops			5 NTFPs				
		Rice, **/	Sesame	Job's tear	Paper mulberry	Tree bark	Tiger grass	Bamboo shoot	Eagle wood
I.	Total of Sampled 39 HHs								
-	Volume harvested in 2003	62,570	10,047	7,232	3,104	6,923	5,736	1,230	150
-	Volume sold in 2003	9,550	10,047	6,847	3,104	6,923	5,736	0	150
-	Average price at sold in 2003 (Kip/kg)	1,210	6,764	3,163	2,773	2,885	2,028	-	12,000
-	Form of products	paddy	seed	grain	dry bark	dry bark	dry grass	raw	dry wood
-	Unit	kg	kg	kg	kg	kg	kg	kg	kg
II.	Total of the Village (90 HHs)								
-	Total volume sold	22,038	23,185	15,801	7,163	15,976	13,237	0	346
-	Sold within the village,*/ (estimated,**/)	15,427	0	0	0	0	0	0	0
-	Sold outside the village (estimated,**/)	**6,612**	**23,185**	**15,801**	**7,163**	**15,976**	**13,237**	**0**	**346**

(continued)

Description		Livestock/Fish						
		Cattle	Buffalo	Goat	Pig	Chicken	Duck	Fish
I.	Total of Sampled 39 HHs							
-	Volume harvested in 2003	-	-	-	-	-	-	-
-	Volume sold in 2003	1	9	6	28	345	145	1,592
-	Average price at sold in 2003 (Kip/kg)	-	-	-	-	-	-	-
-	Form of products/adult head	head	head	head	head	head	head	head
-	Unit	head	head	head	head	head	head	kg
II.	Total of the Village (90 HHs)							
-	Total volume sold	2	21	14	65	796	335	3,674
-	Sold within the village,*/ (estimated,**/)	0	0	0	0	0	0	3,674
-	Sold outside the village (estimated,**/)	**2**	**21**	**14**	**65**	**796**	**335**	**0**

Note: */ estimated based on the results of the Venn Diagram Preparation, **/ upland rice + lowland rice

5. Income and Expenditure

5.1 Sources of major income

The interviewees were asked to enumerate major income sources no more than 5, and their annual amounts. Major income sources enumerated by the interviewees were i) selling livestock/poultry (32 households), ii) selling NTFPs (32 households), iii) selling field crops/vegetables (17 households), iv) remittance from family members (3 households), and v) selling fruits/ tree crops (20 households), in order of amount of income. Average amounts of major income sources per household are presented as shown below.

Average Amount of Major Income Sources per HH

Income Sources	No.of HHs	Amount of Annual Major Income (Kip/year) (a)	Average per HH (a)/39 (Kip/year/HH)
1. Selling livestock/ poultry products	32	55,671,000	1,427,461
2. Selling NTFPs	32	47,742,800	1,224,174
3. Selling field crops/ vegetables	17	19,107,500	489,936
4. Remittance from family members	3	17,800,000	456,410
5. Selling fruits/ tree crops	11	14,303,200	366,749

5.2 Major income per HH

Annual amounts of major income per household vary from 208,000 Kip/year to 34,820,000 Kip/year with an average of 5,131,628 Kip/year/HH (a total of 200,133,500 Kip/year by the 39 households).

Major Cash Income per HH

Range of Cash Income	Kip/year/HH
1. Maximum	34,820,000
2. Minimum	208,000
3. Average	5,131,628

5.3 Major income of sample households

In order to grasp the typical major income per HH, three typical samples (high, medium and low levels) of major income per household are presented below.

Major Income of Typical Sample Household (High Level)

Income Sources	Kip/year/HH
1. Remittance form family members	14,400,000
2. Selling livestock and poultry products	13,070,000
3. Private business (trading, shop, etc.)	3,000,000
4. Selling fruits/ tree crops	50,000
5. -	-
Total	30,520,000

Major Income of Typical Sample Household (Medium Level)

Income Sources	Kip/year/HH
1. Wage from temporarily jobs out of farm	2,500,000
2. Selling livestock and poultry products	1,600,000
3. Selling fruits/ tree crops	750,000
4. Selling NTFPs	375,000
5. Selling field crops/ vegetables	50,000
Total	5,275,000

Major Income of Typical Sample Household (Low Level)

Income Sources	Kip/year/HH
1. Selling field crops/ vegetables	75,000
2. Selling NTFPs	71,000
3. Private business (trading, shop, etc.)	46,000
4. Selling livestock and poultry products	16,000
5. -	-
Total	208,000

5.4 Items of major expenditure

The interviewees were asked to enumerate major expenditure no more than 5, and their annual amounts. Major expenditure enumerated by the interviewees were those for i) food (38 households) ii) health (33 households), iii) clothes (35 households), iv) education (24 households) and v) social activities (festivals, ceremonies, religious events, etc.) (18 households), in order of amount of expenditure. Average amount of major expenditure item per household are shown below.

Average Amounts per Expenditure Item per HH

Expenditure Item	No.of HHs	Amount of Annual Major Expenditure (Kip/year) (a)	Average per HH (a)/39 (Kip/year/HH)
1. Food	38	49,014,000	1,256,769
2. Health	33	40,726,000	1,044,256
3. Clothes	35	22,246,000	570,410
4. Education	24	13,734,500	352,167
5. Social activities/events	18	3,791,000	97,205

5.5 Major expenditure per HH

Annual amounts of major expenditure per household vary from 270,000 Kip/year to 14,640,000 Kip/year with an average of 3,432,244 Kip/year/HH (a total of 133,857,500 Kip/year by the 39 households).

Major Expenditure per HH

Range of Expenditure Amount	Kip/year/HH
1. Maximum	14,640,000
2. Minimum	270,000
3. Average	3,432,244

5.6 Major expenditure of sample households

In order to grasp the general future of expenditures per household, three levels (high, medium, and low) of major expenditure of typical sample households are selected as shown below.

Major Expenditure of Typical Sample Household (High Level)

Expenditure Items	Kip/year/HH
1. Health	9,300,000
2. Food	2,000,000
3. Education	1,720,000
4. Clothes	1,500,000
5. Fuel wood	120,000
Total	14,640,000

Major Expenditure of Typical Sample Household (Medium Level)

Expenditure Items	Kip/year/HH
1. Food	2,100,000
2. Clothes	800,000
3. Health	500,000
4. Education	300,000
5. Social activities/events	100,000
Total	3,800,000

Major Expenditure of Typical Sample Household (Low Level)

Expenditure Items	Kip/year/HH
1. Food	200,000
2. Health	200,000
3. Education	100,000
4. Tax payment	45,000
5. Fuel wood	25,000
Total	570,000

5.7 Major investment of productive and fixed assets

The interviewees were asked to enumerate major investments of productive and fixed assets in the last year no more than 3, and their annual amounts. Major investments enumerated by the interviewees were those for i) private business (8 households) ii) livestock (8 households), and iii) Farm machinery/ tools (12 households), in order of amount of investment. On the other hand, among 39 households, 11 households did not invest any money for the last year. Average amounts per investment item per household are shown below.

Average Amounts per Investment Item per HH

Investment Item	No.of HHs	Amount of Last Year Major Investments (Kip/year) (a)	Average per HH (a)/39 (Kip/year/HH)
1. Private business	8	39,000,000	1,000,000
2. Livestock	8	7,125,000	182,692
3. Farm machinery/ tools	12	3,804,000	97,538

5.8 Major investment per HH

Annual amounts of major investment per household vary from 40,000 Kip/year (excluding 11 households, who did not invest any money last year) to 98,000,000 Kip/year with an average of 3,261,756 Kip/year/HH (a total of 127,208,500 Kip/year by the 39 households).

Major Investment per HH

Range of Investment Amount	Kip/year/HH
1. Maximum	10,500,000
2. Minimum	40,000
3. Average	2,440,519

5.9 Major investment of sample households

In order to grasp the general future of investment per household, three levels (high, medium, and low) of major investments of typical sample households are selected as shown below, excluding 11 households, who did not invest any money last year.

Major Investment of Typical Sample Household (High Level)

Investment Items	Kip/year/HH
1. Housing (improvement)	5,000,000
2. Transportation means	280,000
3. Land	85,000
Total	5,365,000

Major Investment of Typical Sample Household (Medium Level)

Investment Items	Kip/year/HH
1. Private business	1,350,000
2. Household appliance	50,000
3. -	-
Total	1,400,000

Major Investment of Typical Sample Household (Low Level)

Investment Items	Kip/year/HH
1. Farm machinery/tools	145,000
2. Household appliance	50,000
3. Land	50,000
Total	245,000

6. Utilization of Credit/Loan

Among all the 39 interviewees, 4 households have borrowed money from Bank, all of which have already paid off the loan. As for the borrower's name, 3 borrowers were the household heads and the other one was the wife. The purposes for borrowing money are for purchasing livestock, private business and weaving. The borrowing amounts vary from 500,000 Kip to 2,000,000 Kip with an average of 1,125,000 Kip, with a monthly interest of 1.0 to 1.7%.

In addition to the loan above, there are 8 borrowers who borrowed money from i) cooperative, ii) neighbor, iii) mutual aid group, and iv) others like a project fund. The borrowing amounts vary from 50,000 to 700,000 Kip with a monthly interest of 0 to 1.0%. The future of the utilization of credit/loan is summarized below.

Utilization of Credit/Loan

Possible Source	Number of Borrower	Purpose of Loan	Amount of Loan (Kip)	Monthly Interest (%)	Status of Loan	
					Paid off (Kip)	Remaining (Kip)
1. Bank	4	Livestock, Private business and weaving	4,500,000	1-1.7	4,50,000	-
2. Cooperative	1	Private business	500,000	0	150,000	350,000
3. Relative	-	-	-	-	-	-
4. Neighbor / Friend	1	Medical	200,000	0	200,000	-
5. Trader / Dealer	-	-	-	-	-	-

6. Mutual aid group	2	Livestock, crop production	730,000	1.0	30,000	700,000
7. Others (a project fund)	4	Private business Medical	1,550,000	0	1,150,000	400,000

7. Extension

Among the 39 interviewees, 18 (46%) have never received any training or technical advice from DAFO extension staff. The other 21 have received training or technical advice one to four times before, like 1 time (6 households), 2 times (4 households) and 3 times (6 households), 4 times (5 households), respectively, as summarized below.

Total HH interviewed	Have not received any training (HH)	Received training and technical advice				
		Total HH	Times of visit by the extension staff			
			1 time	2 times	3 times	4 times
39	18	21	6 HHs	4 HHs	6 HHs	5 HHs

B. HOUSEHOLD MEMBER SURVEY

Among the sampled 39 households for Household Interview Survey, a half of households (20 households) were further selected for Household Member Survey (HMS) (20 males and 20 females) for clarifying i) participation/ engagement of household members and ii) activities to make easy, the results of the HMS are summarized below.

8. Participation/ Engagement of Household Members

The participation of the household members in each activity can be defined as follows.

(1) Home activities:
Females especially wives are responsible for almost home activities such as fetching of drinking water, cooking, washing, sweeping the house, child / elderly care, except house repair and kitchen gardening, for which males or the heads of the household seem to be responsible.

(2) Farming activities (concerned low land rice cultivation):
Males are mainly responsible for lowland rice cultivation and females also play important roles particularly for transplanting and harvesting.

(3) Slash and burn activities:

Males especially the heads of the household are responsible for all the slash and burn activities with important assistance from females or their wives.

(4) Livestock and poultry raising activities:
Females, especially wives are responsible for all of the activities of livestock and poultry raising activities such as feeding, watering and other activities on this field.

(5) Fishing activities:
Males are responsible for all of fishing activities.

(6) Forestry activities:
Females are responsible for collection of forest vegetables/ crops, and both of males and females are responsible for collection of fuel wood, while timber harvest and charcoal production are almost not being practiced among the interviewees.

(7) Post-harvest & marketing activities:
Females are responsible for post-harvest and marketing activities such as processing products for selling with the assistance from males.

(8) Domestic business activities:
Males are basically responsible for the domestic business activities.

(9) Communication activities:
Males and females are responsible for attending community meeting, getting information from media and discussions among villagers, but the resolving in-village conflicts is in charge of males.

(10) Religious / cultural activities:
Both of males and females are responsible for religious / cultural activities.

Summary of Participation/Engagement of Household Member Survey (HMS) is presented below.

Summary of Participation/ Engagement of Household Member Survey

Activities	Usually, responsible		Usually, assistant		Sometimes		None		Total	
Home activities	M	F	M	F	M	F	M	F	M	F
1. Fetching of drinking water	5	16	10	3	5	1	0	0	20	20
2. Cooking	2	19	11	1	6	0	1	0	20	20
3. Washing	3	18	8	1	5	1	4	0	20	20
4. Sweeping the house	1	19	6	0	9	0	4	1	20	20
5. House repair	14	0	1	4	4	11	1	4	20	19
6. Child / elderly care	5	18	9	2	5	0	1	0	20	20
7. Kitchen gardening	12	7	1	6	3	2	4	5	20	20
8. Sewing and knitting	0	5	0	0	1	5	19	10	20	20
9. Shopping in market	4	7	0	2	11	8	5	3	20	20
Total	46	109	46	19	49	28	39	23	180	179
Farming activities										

10. Plowing	10	2	0	5	0	0	10	13	20	20
11. Seeding/ transplanting	10	5	0	6	0	0	10	9	20	20
12. Weeding	6	3	0	2	1	2	13	13	20	20
13. Application of chemical fertilizers	6	3	0	1	0	0	14	16	20	20
14. Harvesting	9	6	1	5	0	0	10	9	20	20
15. Repairing of farm	10	3	0	5	0	0	10	12	20	20
Total	51	22	1	24	1	2	67	72	120	120
Slash & burn activities										
16. Slashing	11	2	0	7	2	2	7	9	20	20
17. Burning	10	1	0	5	2	3	8	11	20	20
18. Clearing	11	3	0	7	2	2	7	8	20	20
19. Fencing	6	1	0	4	2	2	12	13	20	20
20. Seeding	9	5	1	5	2	2	8	8	20	20
21. Weeding	9	5	1	5	3	3	7	7	20	20
22. Harvesting	8	3	1	6	2	2	9	9	20	20
Total	64	20	3	39	15	16	58	65	140	140
Livestock & poultry raising activities										
23. Grazing control	3	1	2	1	5	8	10	10	20	20
24. Feeding	6	13	7	3	4	2	3	2	20	20
25. Watering	3	11	6	2	4	1	7	6	20	20
26. Collection/ production of fodder	2	2	1	1	3	4	14	13	20	20
27. Sweeping of livestock & poultry tall	4	9	1	0	3	1	12	10	20	20
Total	18	36	17	7	19	16	46	41	100	100
Fishing activities										
28. Fish catching in dam reservoir	4	2	0	1	1	1	15	16	20	20
29. Fish catching in river	13	2	0	1	1	2	6	15	20	20
30. Fish production in pond	0	0	0	0	0	0	20	20	20	20
31. Maintenance of boat / engine	4	0	0	0	0	1	16	19	20	20
32. Maintenance of pond	1	0	0	0	0	0	19	20	20	20
Total	22	4	0	2	2	4	76	90	100	100
Forestry activities										
33. Collection of fuel wood	8	10	3	6	2	3	7	1	20	20
34. Collection of forest vegetable/crops	1	14	4	1	9	4	6	1	20	20
35. Timber harvest	0	0	0	0	0	0	20	20	20	20
36. Charcoal production	1	0	0	0	1	1	18	19	20	20
Total	10	24	7	7	12	8	51	41	80	80
Post-harvest & marketing activities										
37. Threshing of cereals	13	2	0	9	0	1	7	8	20	20
38. Processing livestock & poultry products	0	3	1	0	3	2	16	15	20	20
39. Processing fishes	2	8	1	0	4	2	13	10	20	20
40. Processing of forest vegetables/crops	2	7	2	0	0	1	16	12	20	20
41. Selling crops	2	5	1	3	7	5	10	7	20	20
42. Selling livestock & poultry products	3	5	3	3	2	3	12	9	20	20
43. Selling fishes & fishery products	2	4	2	2	4	3	12	11	20	20
44. Selling forest vegetables/crops	6	5	2	2	4	5	8	8	20	20
45. Selling of fuel wood/charcoal	2	2	0	0	0	0	18	17	20	19
Total	32	41	12	19	24	22	102	97	160	159
Domestic business activities										
46. Rice mill	2	1	0	0	0	2	18	17	20	20
47. Trading	7	2	1	3	5	6	7	9	20	20
48. Shop keeping	17	0	0	0	1	1	2	19	20	20

49. Handicraft	0	3	0	0	1	3	19	14	20	20
Total	26	6	1	3	7	12	46	59	80	80
Communication activities										
50. Attending community meetings	17	4	0	3	3	13	0	0	20	20
51. Resolving in-village conflicts	10	1	0	1	7	3	3	15	20	20
52. Getting information from TV	1	0	0	0	7	8	12	12	20	20
53. Getting information from Radio	9	7	1	0	9	10	1	3	20	20
54. Political discussion with others	9	6	3	1	4	3	4	10	20	20
55. Official letter writing	2	0	0	0	3	0	15	20	20	20
Total	48	18	4	5	33	47	35	60	120	120
Religious / cultural activities										
56. Dance party	7	3	0	0	11	12	2	5	20	20
57. Picnic	7	3	0	0	8	9	5	8	20	20
58. Worship ceremony	8	2	0	0	12	15	0	3	20	20
59. Sport events	19	2	0	0	0	0	19	18	20	20
60. Playing music	1	1	0	0	3	2	16	17	20	20
61. Drawing	2	1	0	0	0	0	18	19	20	20
Total	44	12	0	0	34	38	60	70	120	120

9. Activities Wanted to Make Easy

The interviewees were asked to choose up to 5 activities with priority which they want to make easy. The results of this question are summarized below.

Five Prioritized Activities to Make Easy

Male	Female
1. Clearing	1. Child/ elderly care
2. Slashing	2. Weeding
3. Harvesting	3. Harvesting
4. Plowing	4. Cooking
5. Seeding/ transplanting	5. Grazing control

Summary of Priorities to Make Easy

Activities	Priorities wanted to make easy											
	1st		2nd		3rd		4th		5th		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
Home activities												
1. Fetching of drinking water	3	1		2		1					3	4
2. Cooking	1	2	1	1		4					2	7
3. Washing				2							0	2
4. Sweeping the house		1									0	1
5. House repair									1		1	2
6. Child / elderly care	1	5					1	2		1	2	8
7. Kitchen gardening	1		2					2		2	3	4
8. Sewing and knitting											0	0
9. Shopping in market	1	1									1	1
Farming activities												
10. Plowing	3		4	4			1				8	4
11. Seeding/ transplanting			1	2	2	2	2				6	4

12. Weeding			1		1			2		1	2	3
13. Application of chemical fertilizers		1									0	1
14. Harvesting	1	3	3		3	2	1	2	1		9	7
15. Repairing of farm	1			1	1		1	1	1	1	4	3
Slash & burn activities												
16. Slashing	5	2	1	1	2	1	1		1		10	4
17. Burning			2	1	1	1					3	2
18. Clearing		1	1	2	2	1	1	1	1		13	5
19. Fencing			1		1		1					
20. Seeding					1	1		1				2
21. Weeding	1		1			4	3	4	3			8
22. Harvesting			1	2			1	1	2	4		6
Livestock & poultry raising												
23. Grazing control					1	1						6
24. Feeding				1				1				2
25. Watering												
26. Collection/ production of fodder								1				
27. Sweeping of livestock & poultry stall									1	1		1
Fishing activities												
28. Fish catching in dam reservoir					1						1	
29. Fish catching in river	1	1			1				1			1
30. Fish production in pond												
31. Maintenance of boat / engine												
32. Maintenance of pond					1							
Forestry activities												
33. Collection of fuel wood		1				1						2
34. Collection of forest vegetable/crops		1		1				1				3
35. Timber harvest												
36. Charcoal production												
Post-harvest & marketing activities												
37. Threshing of cereals							1		1	1		1
38. Processing livestock & poultry products												
39. Processing fishes												
40. Processing of forest vegetables/crops												
41. Selling crops												
42. Selling livestock & poultry products			1									
43. Selling fishes & fishery products												
44. Selling forest vegetables/crops								1	1			1
45. Selling of fuel wood/charcoal												
Domestic business												
46. Rice mill	1									1		1
47. Trading										2		2
48. Shop keeping												
49. Handicraft												
Total	18	20	20	20	18	16	14	17	14	14	68	88

Table & Figures

Table V2-1 Meteorological Data (Hat Houay)

Rainfall at Luang Prabang Station, */ (unit: mm)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1993	0.0	0.0	76.8	80.7	146.1	212.5	263.5	189.5	100.6	118.6	0.0	1.0	1,189.3
1994	0.0	5.4	110.7	29.1	170.2	243.6	202.5	361.6	143.6	31.6	18.5	81.6	1,398.4
1995	7.5	4.8	8.7	49.0	201.5	230.4	332.4	541.5	134.4	190.4	70.6	0.7	1,771.9
1996	0.0	12.6	38.9	147.2	151.6	219.9	291.8	302.4	185.5	168.0	67.2	0.0	1,585.1
1997	1.5	0.4	56.9	105.7	144.3	147.7	311.6	258.5	128.4	40.1	2.4	0.0	1,197.5
1998	27.0	2.2	13.0	178.1	160.9	138.2	179.4	265.4	99.4	47.1	25.5	0.0	1,136.2
1999	9.0	0.0	44.1	60.3	203.5	281.1	73.9	285.0	197.5	97.9	54.9	44.5	1,351.7
2000	0.0	35.3	11.5	68.0	243.5	269.1	274.4	233.9	228.4	115.6	0.0	7.0	1,486.7
2001	8.1	0.0	155.9	53.0	191.9	155.8	393.1	395.7	246.2	192.3	2.0	0.0	1,794.0
2002	48.5	1.1	24.0	55.5	268.8	155.6	384.4	258.9	161.4	71.0	75.7	96.9	1,601.8

Rainfall at Pakseng District Station, **/ (unit: mm)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1999	0.7	0.0	12.3	65.7	152.2	126.9	81.2	134.4	192.6	38.1	77.9	0.0	882.0
2000	0.0	0.0	5.3	27.9	182.4	118.5	204.5	139.4	196.7	49.2	23.3	0.0	947.2
2001	0.0	0.0	128.0	42.3	226.5	145.3	373.5	361.7	196.5	130.0	8.8	0.0	1,612.6
2002	38.4	0.0	19.0	27.8	262.2	160.0	633.8	66.0	145.7	56.4	36.2	0.0	1,445.5
2003	0.0	0.0	5.6	92.4	69.6	92.3	87.5	214.1	271.2	0.0	0.0	0.0	832.7

Maximum Temperature at Luang Prabang (Monthly Average), */ (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	28.2	33.1	36.2	35.4	32.7	32.7	33.1	30.9	32.1	31.7	29.4	23.9
2000	29.5	29.9	33.5	35.0	32.0	31.7	31.7	32.1	31.2	31.3	29.7	29.3
2001	31.1	33.0	31.5	36.2	32.2	33.7	30.3	32.6	32.2	31.2	27.4	27.1
2002	26.3	31.1	33.2	35.8	33.5	32.1	29.9	30.8	31.8	31.4	27.8	27.0
2003	25.8	30.3	32.3	34.5	36.0	33.0	33.8	32.8	33.1	33.0	31.0	28.5

Minimum Temperature at Luang Prabang (Monthly Average), */ (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	14.7	16.9	17.4	23.1	22.8	23.6	24.2	23.6	22.9	22.8	19.3	12.2
2000	14.8	15.0	17.5	22.5	23.1	24.5	24.2	24.1	22.7	21.5	16.4	16.0
2001	16.3	16.3	20.3	22.9	23.5	23.6	23.6	23.7	23.1	22.5	15.9	15.5
2002	14.8	16.9	18.4	20.8	23.8	24.2	23.5	23.2	23.0	20.7	18.7	17.9
2003	15.1	16.3	18.4	21.7	22.7	24.0	23.4	23.7	23.1	21.2	17.0	12.7

Mean Temperature at Luang Prabang (Monthly Average), */ (unit: ^{o}C)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1999	20.4	23.7	26.0	28.6	26.8	27.4	27.7	26.5	26.6	26.9	23.2	17.2
2000	20.8	21.6	25.0	28.6	27.0	27.8	27.6	27.6	26.3	25.6	21.9	21.1
2001	22.2	23.6	25.4	28.7	26.9	27.7	25.7	27.4	26.8	26.0	20.3	20.1
2002	19.1	22.6	24.5	27.5	27.9	27.5	26.1	26.3	26.4	24.7	22.0	21.0
2003	18.7	21.4	23.9	27.2	27.9	27.6	27.8	27.2	26.7	25.7	22.2	18.8

Source: */ Department of Meteorology, Ministry of Agriculture and Forestry, **/ Dividion of Meteorology, PAFO of Luang Prabang

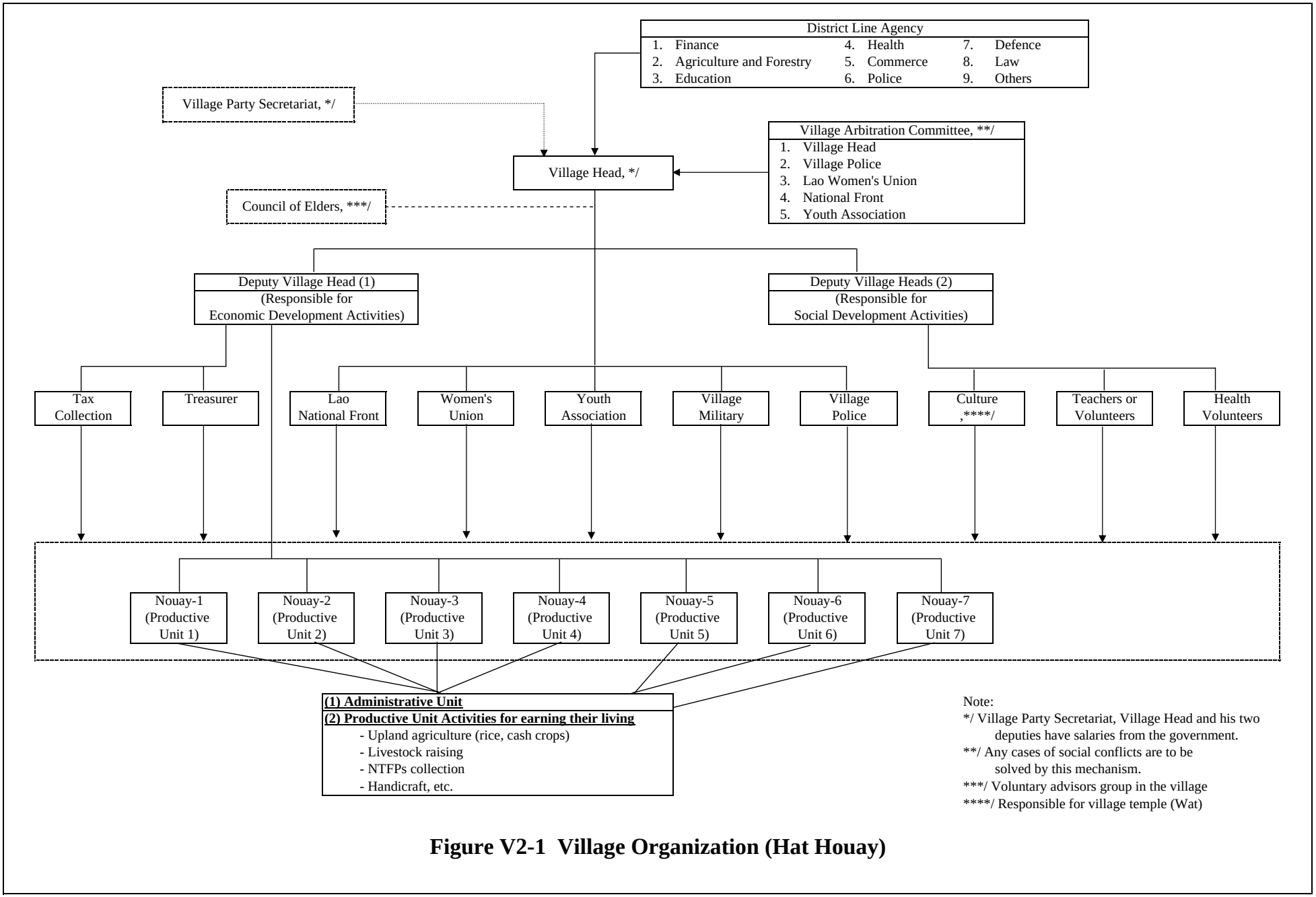
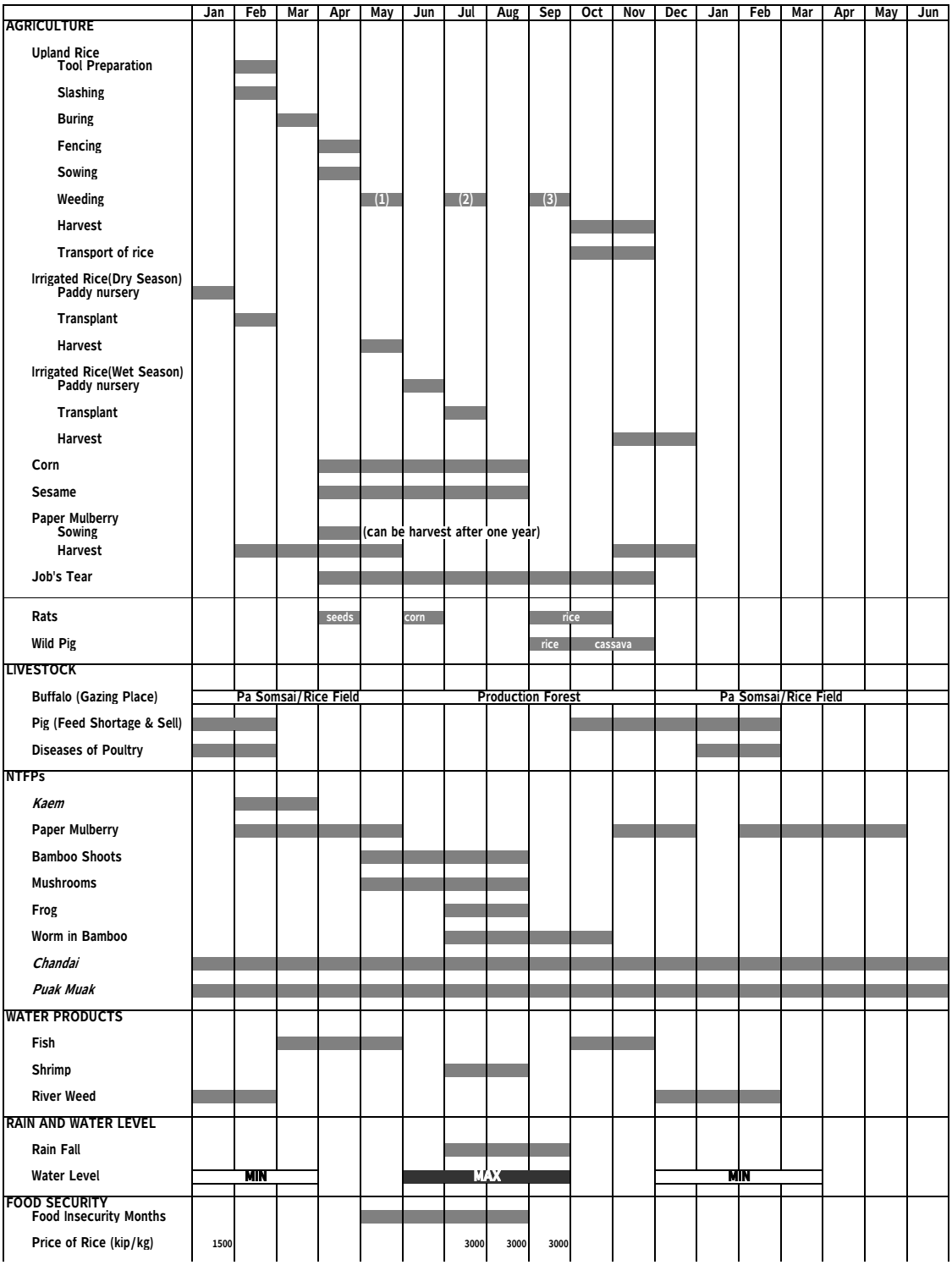


Figure V2-1 Village Organization (Hat Houay)


Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
AGRICULTURE
Upland Rice
Tool Preparation
Slashing
Buring
Fencing
Sowing
Weeding
(1)
(2)
(3)
Harvest
Transport of rice
Irrigated Rice(Dry Season)
Paddy nursery
Transplant
Harvest
Irrigated Rice(Wet Season)
Paddy nursery
Transplant
Harvest
Corn
Sesame
Paper Mulberry
Sowing
(can be harvest after one year)
Harvest
Job's Tear
Rats
seeds
corn
rice
Wild Pig
rice
cassava
LIVESTOCK
Buffalo (Gazing Place)
Pa Somsai/Rice Field
Production Forest
Pa Somsai/Rice Field
Pig (Feed Shortage & Sell)
Diseases of Poultry
NTFPs
Kaem
Paper Mulberry
Bamboo Shoots
Mushrooms
Frog
Worm in Bamboo
Chandai
Puak Muak
WATER PRODUCTS
Fish
Shrimp
River Weed
RAIN AND WATER LEVEL
Rain Fall
Water Level
MIN
MAX
MIN
FOOD SECURITY
Food Insecurity Months
Price of Rice (kip/kg)
1500
3000
3000
3000

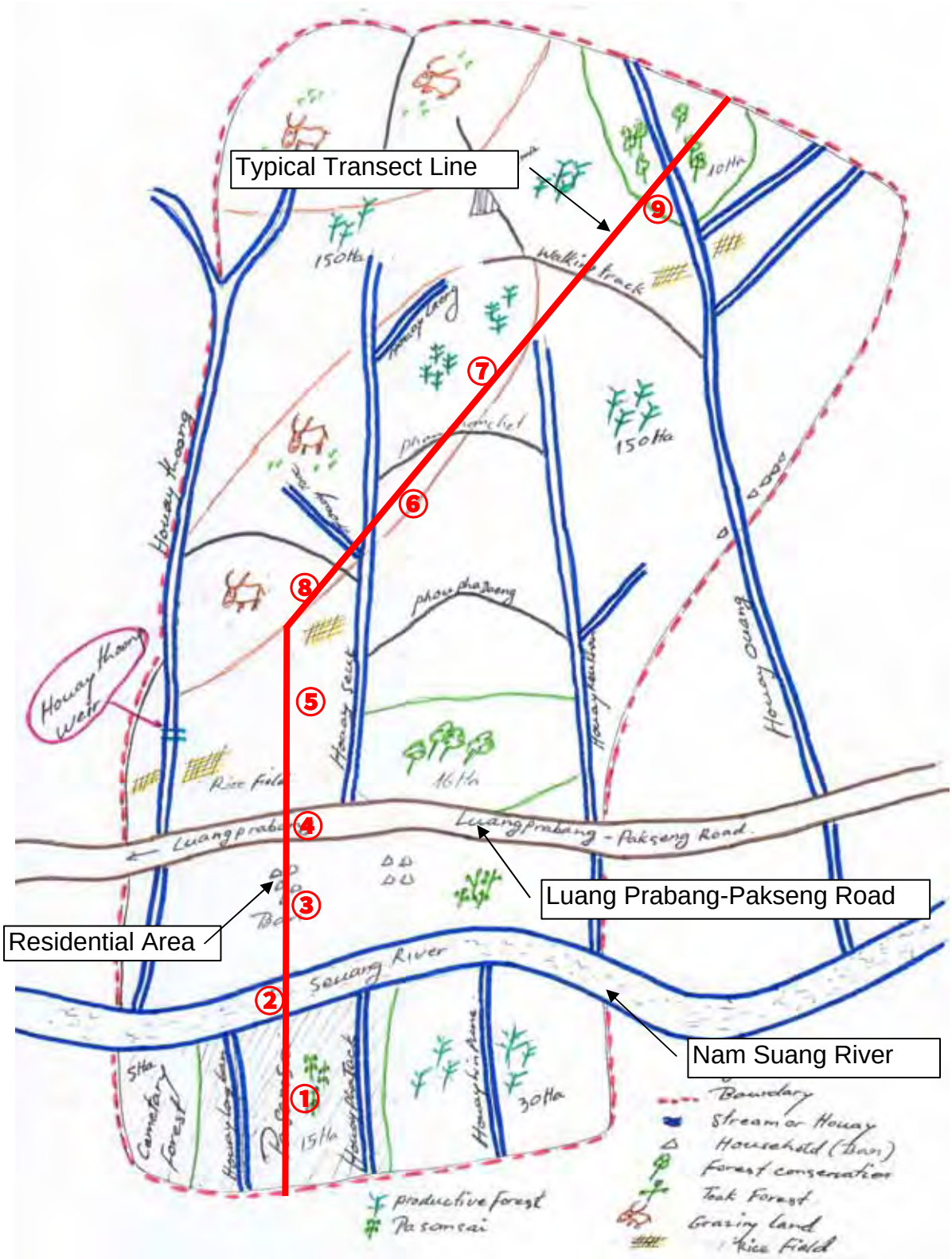
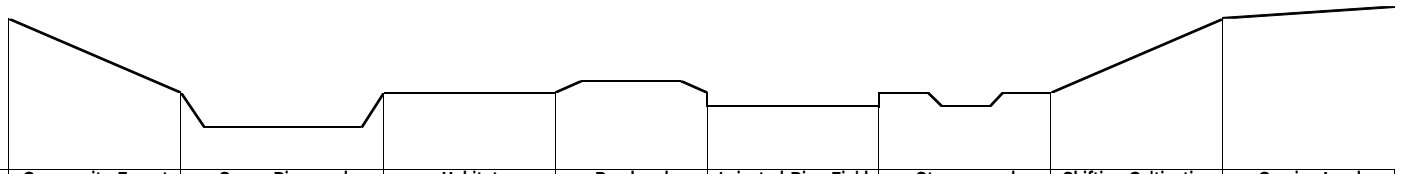


Figure V2-3 Resource Map (Hat Houay)



Category	Community Forest	Suang River and its circumference	Habitat	Road and its circumference	Irrigated Rice Field	Streams and its circumference	Shifting Cultivation	Grazing Land Production Forest
(in Lao)	Pa Somsai	Nam Suang			Na Pi/ Na Saeng	Houay	Hai	Khet Liyang Sat Pa Phalit
Transect Line on Resource Map	①	②	③	④	⑤	⑥	⑦	⑧
Activity	Hunting lizard *(laen)* snake birds wild pig wild hen Collecting bamboo shoots mushrooms *kaem* paper mulberry Cutting Trees *mai san* (house material) soft trees	Fishing *pa nang* perch *(pa keng)* *pa kang* Collecting river weed crab shell shrimp	Livestock pig chicken turkey duck Fruit jackfruit mango coconut tamarind Weaving Bamboo Handcraft Rice Wine Repairing Fish Net	Teak Plantation	Rice Cultivation sticky rice Collecting frog wild vegetables Livestock buffalo(dry season)	Fishing catfish *pa nang* perch *(pa keng)* *pa duk thong (na)* Collecting crab shell shrimp (riverside) paper mulberry wild vegetables *kaem* bamboo shoots *puak muak* Planting (riverside) paper mulberry	Shifting Cultivation upland rice corn sesame job's tear	Livestock buffalo (rainy season)
Problems	Some of the big animals like deers have been disappeared.		Number of fruit trees are limited.	Teak trees are more difficut (taking time) to cash than livestock.	Only 2 HHs receive benefit from irrigation during the dry season.	Water level is decreasing. Fishes in streams are decreasing in number.	Land allocation acceralated deterioration of soil. The poor tend to engage upland rice.	
Others	Cutting *mai doo* and *mai ka* trees is prohibited. Hunting is prohibited (but villagers still go hunting)	The river is not important as transportation route as before. Villagers prefer fishing to hunting due to its easiness.						Villagers prefer buffalo to other animals

Figure V2-4 Transect (Hat Houay)

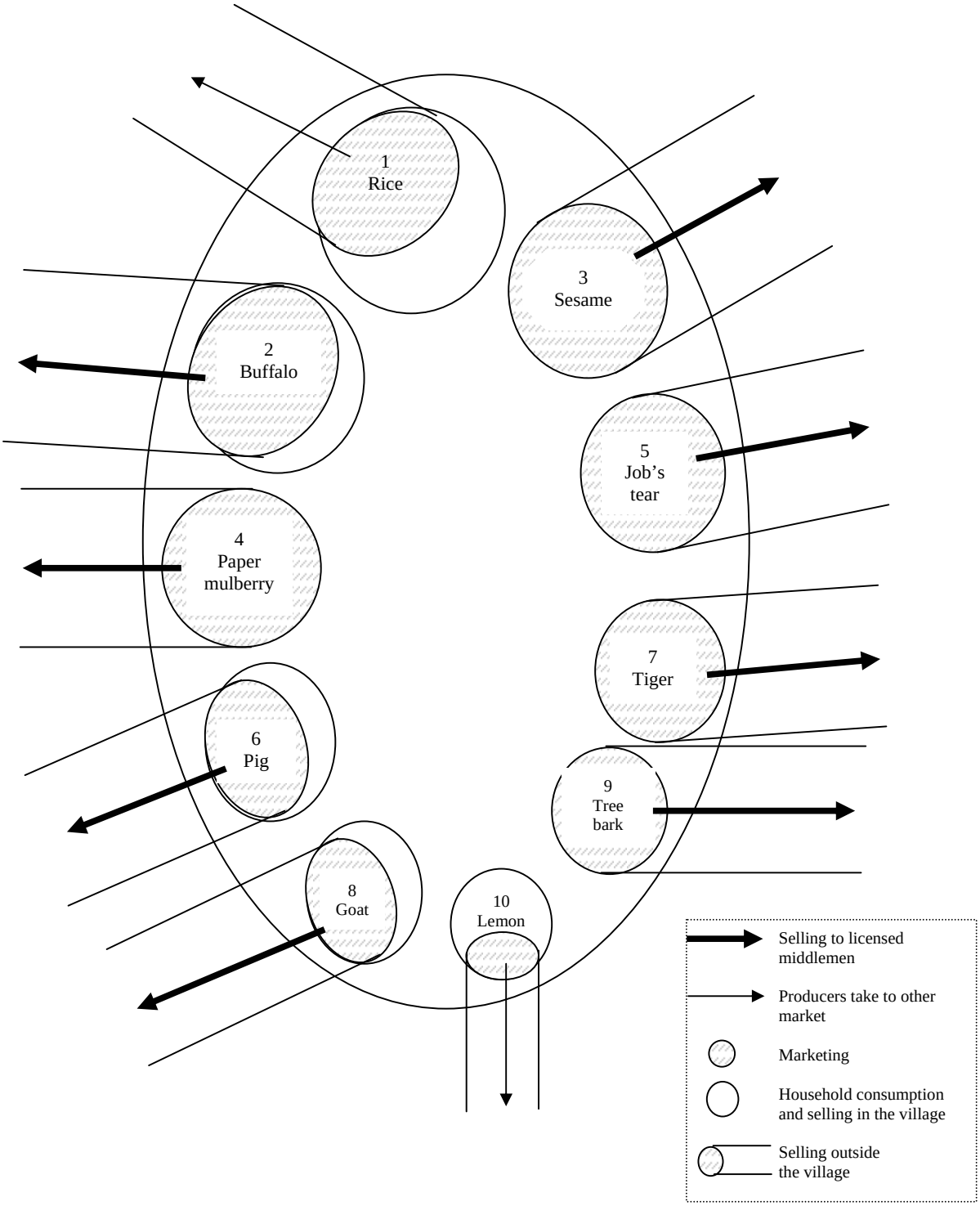


Figure V2-5 Venn Diagram of Major Products by Male Group (Hat Houay)

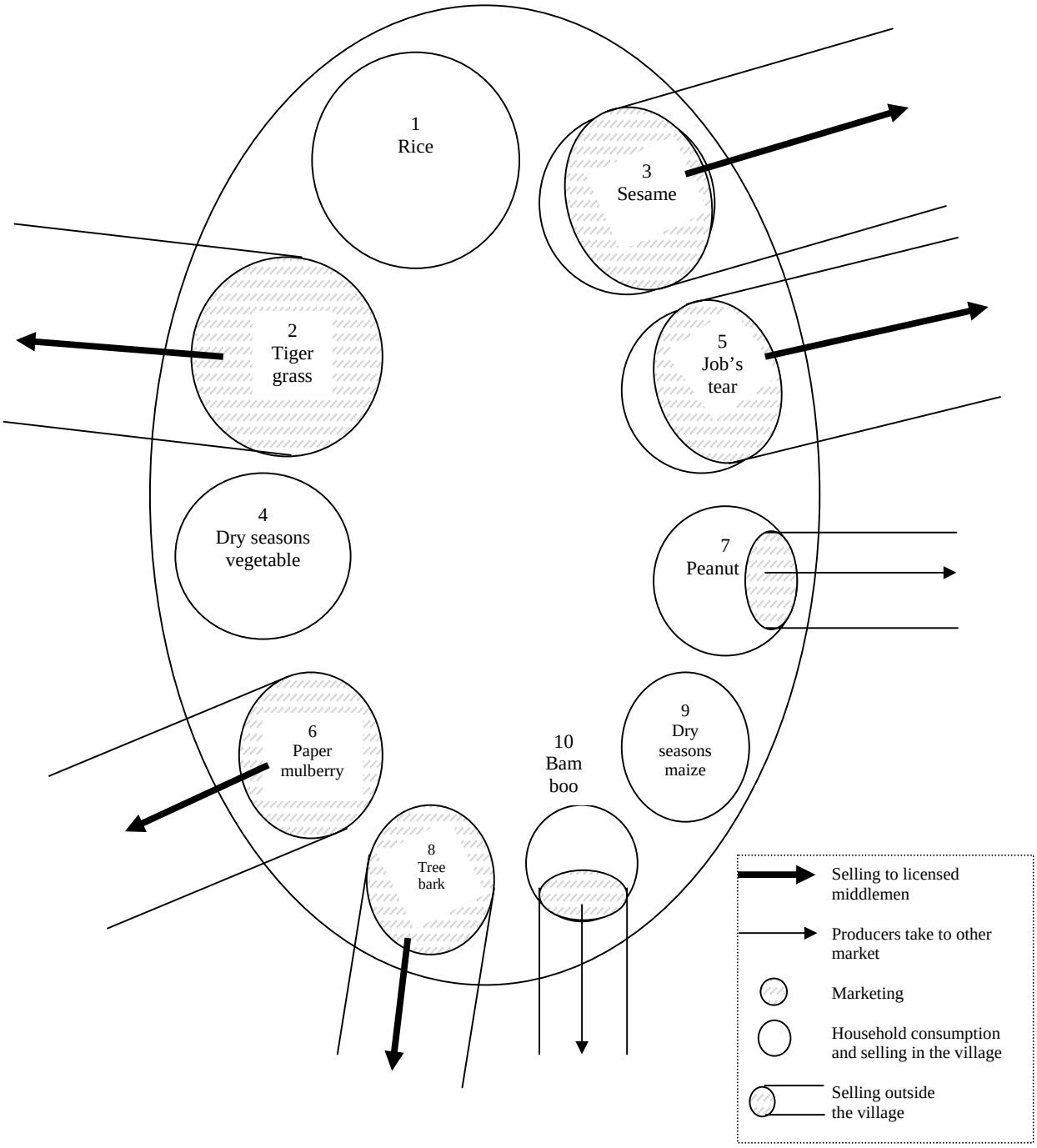
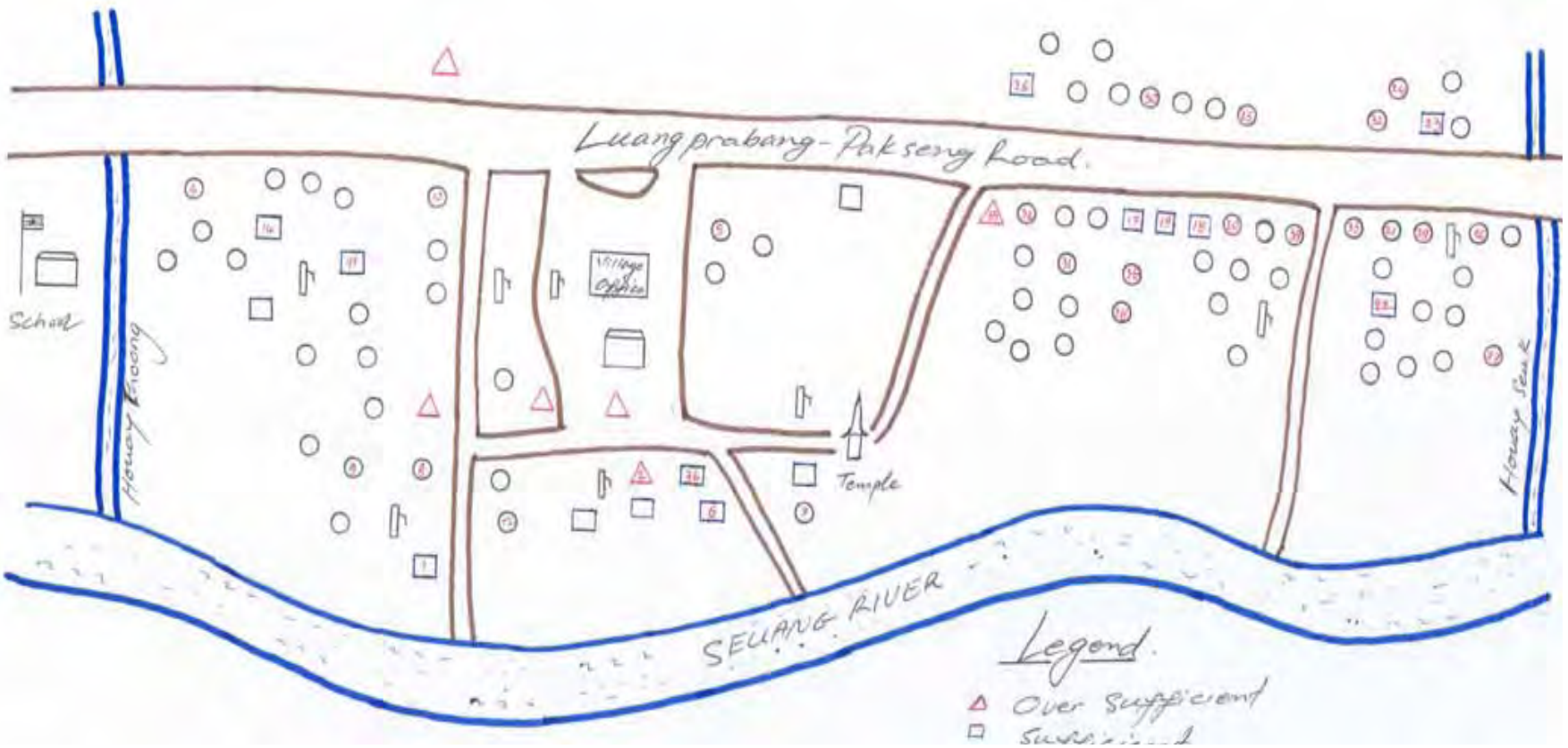


Figure V2-6 Venn Diagram of Major Products by Female Group (Hat Houay)



Legend

- Over Sufficient
- Sufficient
- Under Sufficient
- Gravityfed Water Supply
- Household Interviewee

Figure V2-7 Social Map (Hat Houay)