FIGURES

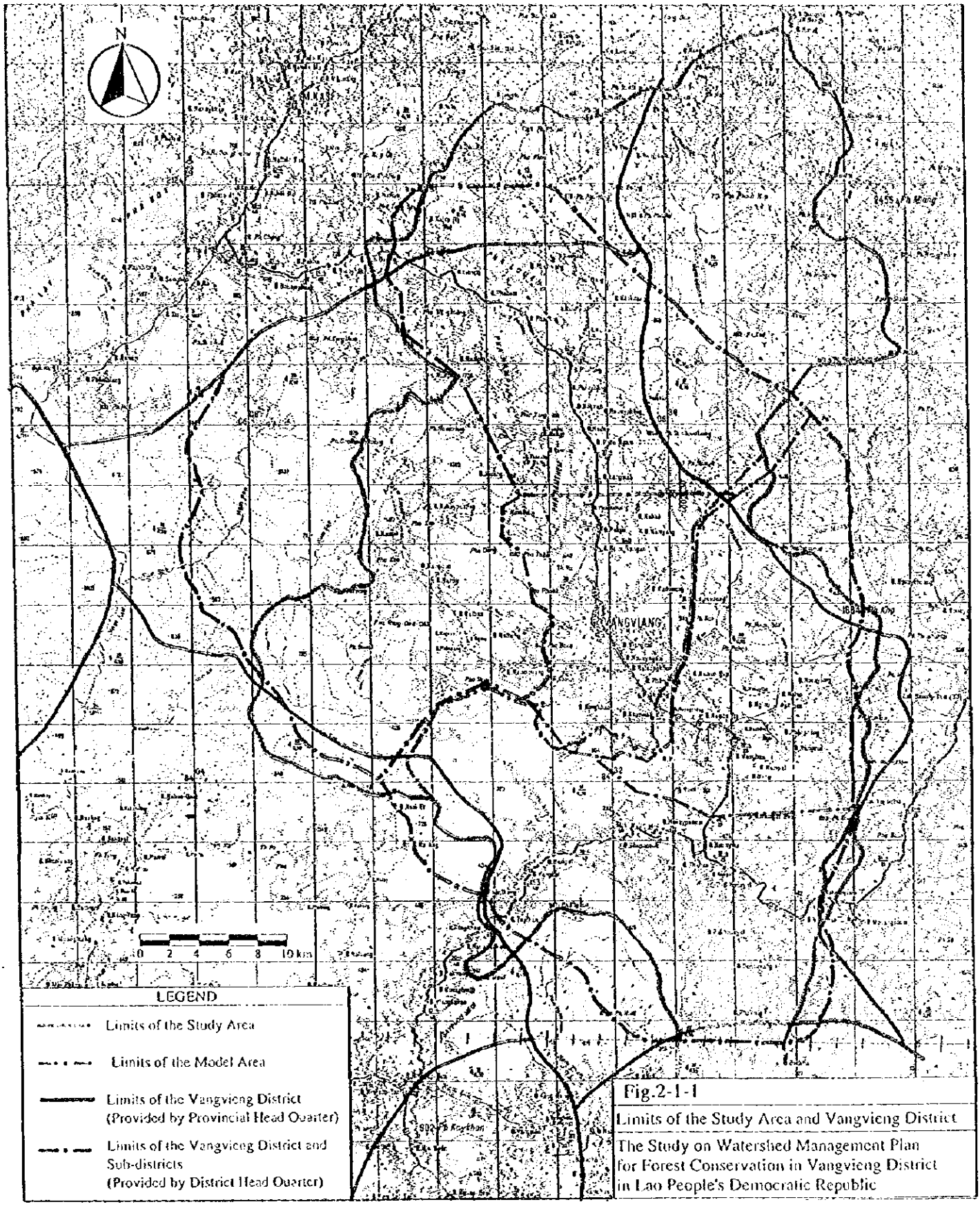


Fig.2-1-1

Limits of the Study Area and Vangvieng District

The Study on Watershed Management Plan
for Forest Conservation in Vangvieng District
in Lao People's Democratic Republic

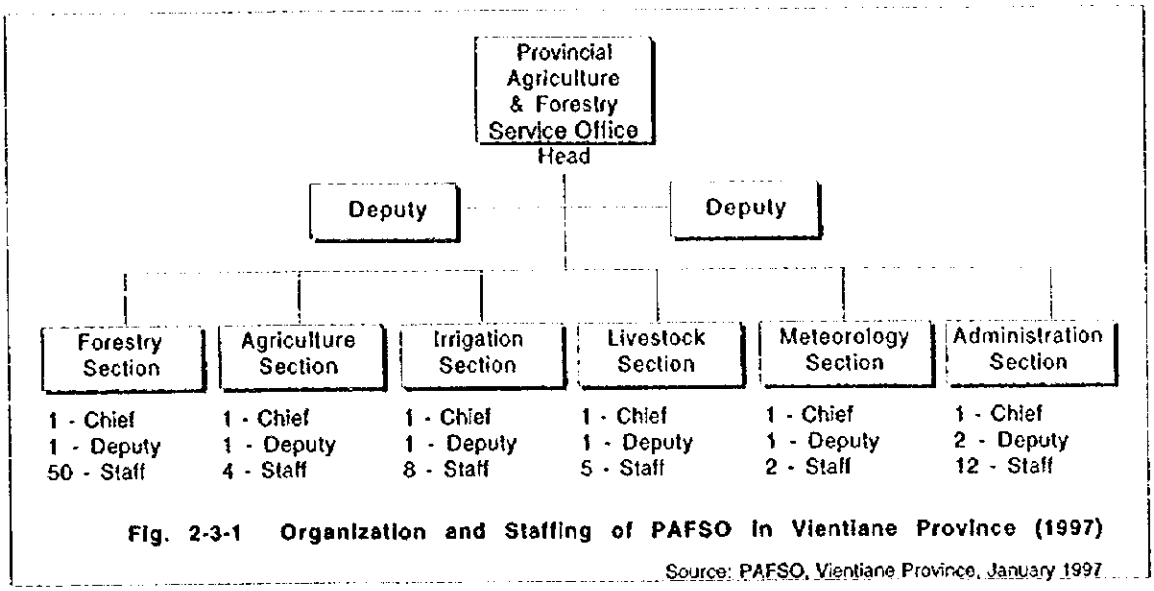


Fig. 2-3-1 Organization and Staffing of PAFSO in Vientiane Province (1997)

Source: PAFSO, Vientiane Province, January 1997

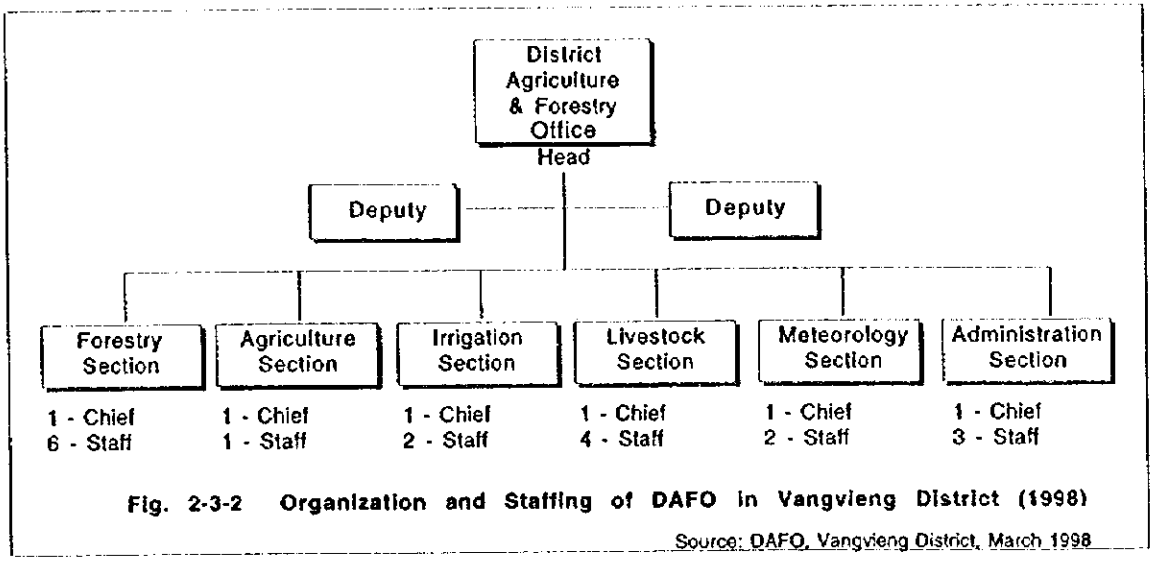


Fig. 2-3-2 Organization and Staffing of DAFO in Vangvieng District (1998)

Source: DAFO, Vangvieng District, March 1998

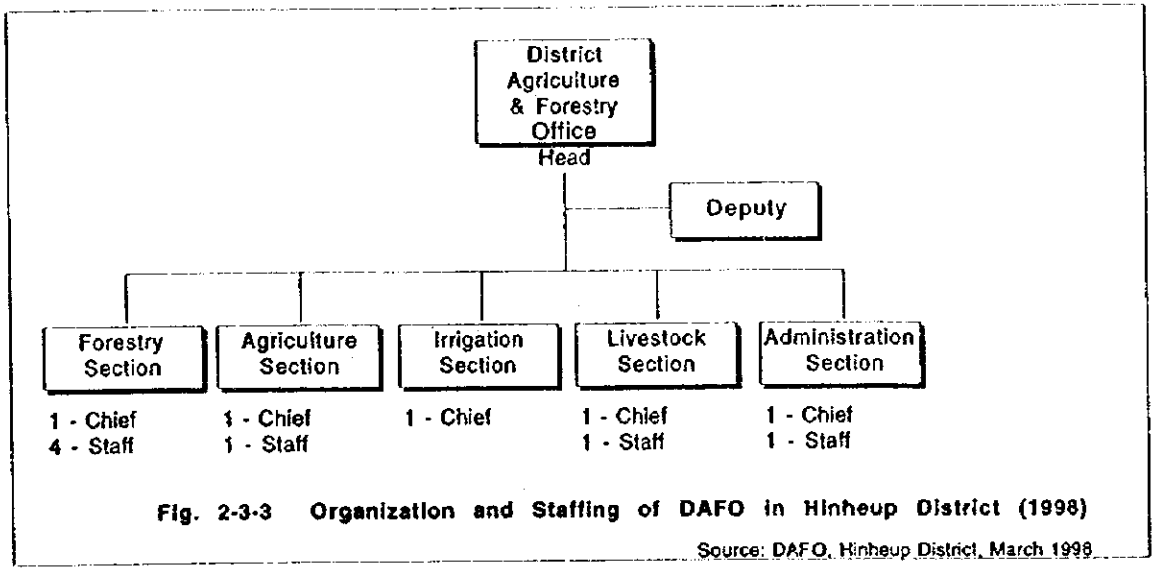


Fig. 2-3-3 Organization and Staffing of DAFO in Hinheup District (1998)

Source: DAFO, Hinheup District, March 1998

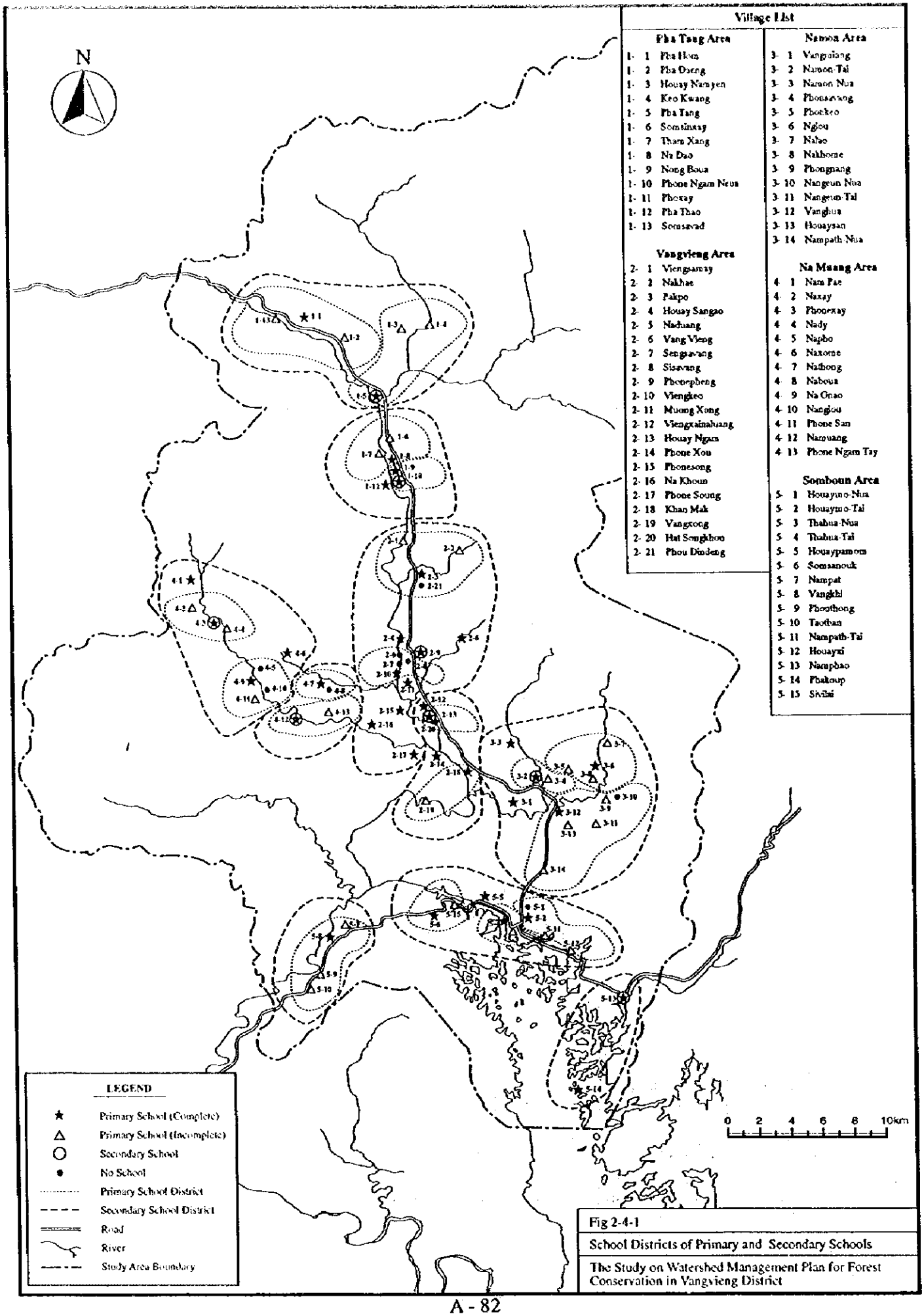


Fig 2-4-1

School Districts of Primary and Secondary Schools

The Study on Watershed Management Plan for Forest Conservation in Vangvieng District

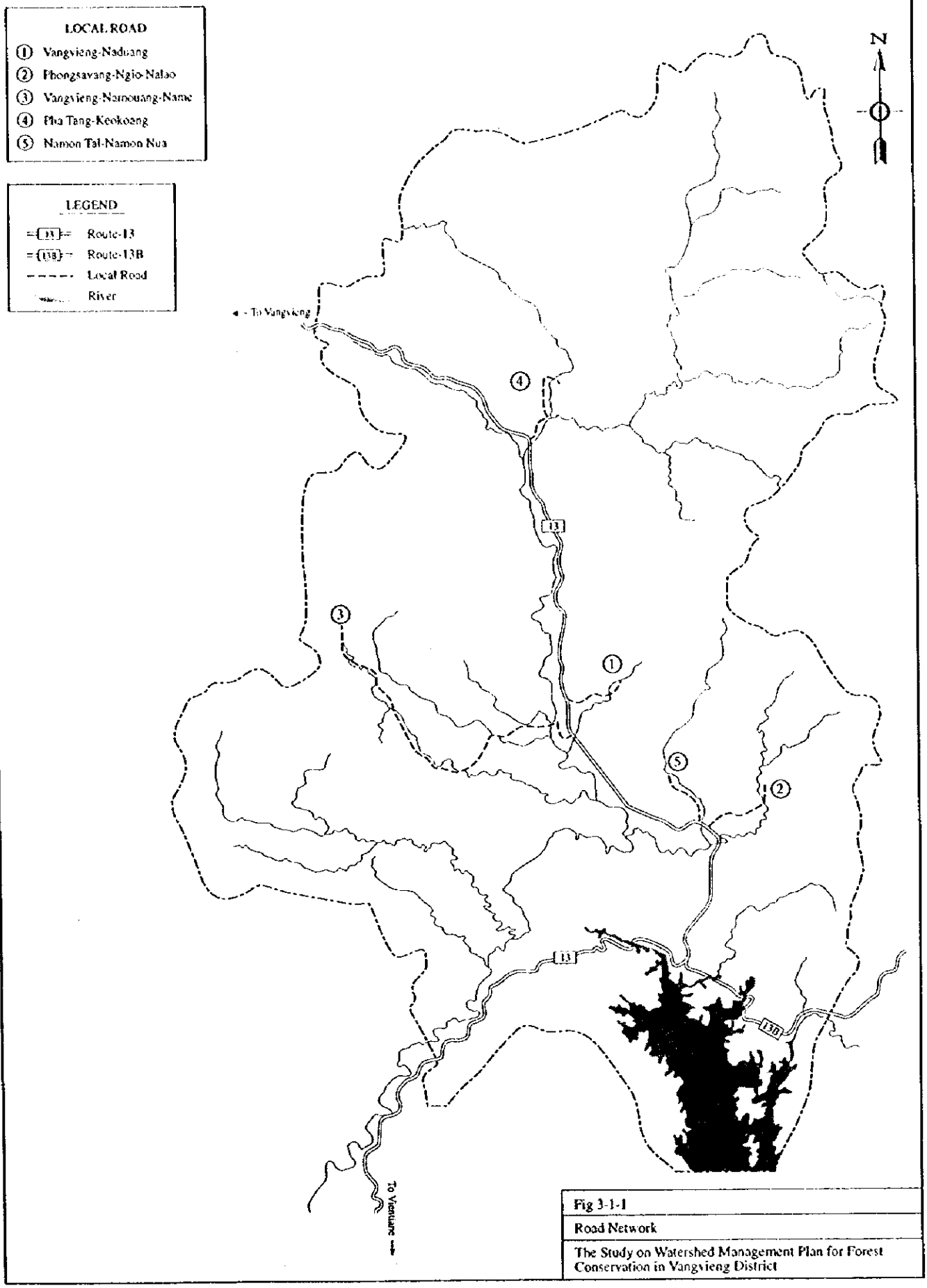


Fig 3-1-1

Road Network

The Study on Watershed Management Plan for Forest Conservation in Vangvieng District

ANNEX 3

PARTICIPATORY RURAL APPRAISAL (PRA)

The Study on Watershed Management Plan
for
Forest Conservation in Vangvieng District
in
Lao People's Democratic Republic

ANNEX 3

PARTICIPATORY RURAL APPRAISAL (PRA)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENT

1. INTRODUCTION

The participatory rural appraisal (PRA) was carried out in the course of the Study on Watershed Management Plan for Forest Conservation in Vangvieng District (hereinafter referred to as "the Study") during the period from August to November 1997, as one of the most important survey activities of the Phase 2 of the Study. All the villages located in the Model Area of the Study were covered by the village PRA focussing on formulation of village based land use plan under villagers participation. The major works of PRA were subletted to a local consulting firm of Societe Mixte D'etude et de Development (hereinafter referred to as "the subcontractor"). The subcontractor was responsible not only for execution of the village PRA, but for preparatory works for 3-D model construction and training of his PRA team members. All the works made by the subcontractor were supervised by the JICA Study Team expert and his counterpart.

Prior to the PRA execution, the Socio-economic Baseline Survey was carried out as one of the Phase 1 studies during November 1996 - February 1997 period. During this period, aerial photographs covering the whole Model Area were also prepared, and the original scale of 1/20,000 photographs was enlarged to 1/5,000 scale. In addition, topographic maps and land use and vegetation maps of the Model Area, both in 1/20,000 scale, were also prepared in the home office work of the Phase 1 study. All these outcomes of the Phase 1 study were adopted to the PRA works as the secondary data.

This Annex presents all the important contents of the PRA works carried out in the Phase 2 study. In Chapter 2, the PRA objectives and method are described. In Chapter 3, the results of PRA are explained including, among others, present land use situation identified by the villagers, problems on present land use assessed by the villagers, land use plan formulated by the villagers, and the villagers' preference ranking on land use. In Chapter 4, the results of PRA are evaluated. The evaluation includes the assessment on problems of watershed degradation and their causes. Socio-economic projection for the Model Area is also made in this Chapter to grasp an approximate future situation on population, food balance of paddy, expansion of slash and burn land, and alternative cash income requirement for decrease of slash and burn cultivation, and based on the projection, potentials and proposed approach for watershed conservation are examined.

2. PRA OBJECTIVES AND METHOD

2.1 PRA Objectives

The objectives of PRA were to facilitate village level planning based on villagers' needs focussing on future land use and to formulate a village-based watershed management plan map. These objectives were considered to be achieved in a participatory manner through the following three logical steps;

1) To facilitate the villagers to identify problems and constraints on the present land use,
2) To facilitate the villagers to identify causes of the above problems and constraints on the present land use, and
3) To facilitate the villagers to determine proper land use plan and to find their needs for proper land use and with which the above causes of problems and constraints are reduced or removed.

2.2 Objective Villages

All 29 villages in the Model Area were the objective villages of PRA. An area of the total Model Area is about 595 km^2. Administratively, the Model Area is under jurisdiction of Vangvieng district and newly established Hinheup district. There are 23 villages in Vangvieng and six villages in Hinheup district. For the convenience of PRA works, however, the Model Area was divided into two areas, i.e. Namon and Somboun Areas.[1] The number of villages in Namon Area is 14 and 15 in Somboun Area as listed below.

---

[1]: The boundaries of these Areas are basically the same with those of previous Namon and Somboun sub-districts in Vangvieng district.

Objective Villages of PRA

Village No.	Village Name	Admini. Jurisdiction (District)	Village No.	Village Name	Admini. Jurisdiction (District)
Namon Area			Somboun Area		
3-1	Vangmiang	Vangvieng	5-1	Houaymo-Nua	Vangvieng
3-2	Namon-Tai	Vangvieng	5-2	Houaymo-Tai	Vangvieng
3-3	Namon-Nua	Vangvieng	5-3	Thahua-Nua	Vangvieng
3-4	Phonsavang	Vangvieng	5-4	Thahua-Tai	Vangvieng
3-5	Phonkeo	Vangvieng	5-5	Houaypamom	Vangvieng
3-6	Ngiou	Vangvieng	5-6	Somsanouk	Hinheup
3-7	Nalao	Vangvieng	5-7	Nampat	Hinheup
3-8	Nakhom	Vangvieng	5-8	Vangkhi	Hinheup
3-9	Phongnang	Vangvieng	5-9	Phonthong	Hinheup
3-10	Nangeun-Nua	Vangvieng	5-10	Taothan	Hinheup
3-11	Nangeun-Tai	Vangvieng	5-11	Nampath-Tai	Vangvieng
3-12	Vanghua	Vangvieng	5-12	Houayxi	Vangvieng
3-13	Houaysan	Vangvieng	5-13	Namphao	Vangvieng
3-14	Nampath-Nua	Vangvieng	5-14	Phakoup	Vangvieng
			5-15	Sivilai	Hinheup

Two new villages were established in Namon Area in February 1997, i.e. Somsaat and Nam-Ngat. The former village was created by dividing Namon-Tai village into two, and the latter was established by dividing Vanghua village into two. In the present PRA, however, no particular PRA was carried out for these new villagers, but they were covered by the village PRA conducted in the respective old villages.

2.3 Method of PRA

2.3.1 General

The PRA works were carried out in accordance with the following steps of procedure:

1) 3-D model construction,
2) PRA training for PRA team members,
3) PRA in the objective villages, and
4) Office work for the preparation of reports and maps.

Actual time schedule for the above steps is outlined as follows:

Outline of Actual Time Schedule of PRA Works

Major Work Item	1997					
	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1) 3-D model construction						
2) PRA training of Subcontractor's team						
3) PRA execution in 29 villages						
4) Office work for preparation of report						

All these works were carried out by the subcontractor under the supervision of JICA Study Team expert and his counterpart in charge of the PRA works.

2.3.2 Materials Provided to the Subcontractor

The JICA Study Team provided the following materials to the subcontractor for the execution of PRA works. These materials have been prepared in the Phase 1 of the Study.

1) Topographic maps with a scale of;
   - 1/20,000 (original scale)
   - 10,000 (enlarged)
   - 1/5,000 (enlarged)
2) Land use and vegetation maps with a scale of;
   - 1/20,000 (original scale)
3) Aerial photographs with a scale of;
   - 1/5,000 (enlarged, original scale was 1/20,000)
4) Village boundary map with a scale of;
   - 1/50,000 (enlarged, original scale was 1/100,000)
5) Data from Socio-economic Baseline Survey (including the above village boundary map)

2.3.3 3-D Model Construction

A total of 6 units of 3-D models was constructed by the subcontractor. The features of each 3-D model constructed were as follows:

Features of Constructed 3-D Models

No.	Scale	Size	Village(s) Covered by 3-D Model a/					
Namon Area								
1	1/10,000	1 x 1m	1) Namon-Tai	2) Namon-Nua	3) Phonesavang			
			4) Phonkeo	5) Ngiou	6) Nalao			
			7) Nakhom	8) (Phongnang)	9) (Nangeun-Nua)			
2	1/5,000	0.8 x 1.2m	1) Houaysan	2) (Nangeun-Tai)	3) (Nampath-Nua)			
3	1/5,000	1 x 1m	1) Nampath-Nua					
4	1/5,000	1 x 1m	1) Houaymo-Nua	2) (Houaymo-Tai)				
5	1/5,000	1.4 x1.4m	1) Namphao	2) (Houayxi)				
Somboun Area								
6	1/10,000	1 x 1m	1) Nampat	2) Vangkhi	3) Phonthong			
			4) (Taothan)					

Note: a/; The village boundary information obtained from Socio-economic Baseline Survey was utilized for the determination of limits of each 3-D model.
( ); Most village area is covered by 3-D model, but not completely.

Limit of each 3-D model was decided taking topographic conditions, village boundaries and a proper size of 3-D model into account. Regarding the village boundaries, the limits were decided based on the information obtained from Socio-economic Baseline Survey as illustrated on Fig. 2.3.1.

In summary, characteristics of the 3-D models constructed were as follows:

1) Plywoods made board was used as a base board of 3-D models to retain strength.
2) 3-D model was made by laying 1.5 mm thick paper board on top of another.
3) Elevation of 3-D model was represented by every 20m contour line of topographic maps.
4) In the case of 3-D model scaled 1/5,000, 4.5 mm thick or 3 sheets of paper board was assumed 20 m in height.
5) In the case of 3-D model scaled 1/10,000, 3.0 mm thick or 2 sheets of paper board was assumed 20 m in height.

The subcontractor hired six technicians particularly for the 3-D model construction. They were well trained technicians for the works and spent about 30 days for the construction of six models. On an average, it therefore took about 30 man-days for the construction of each 3-D model.

The present land use information was painted on the 3-D models during the PRA training period. This work was carried out by a supporting unit of the PRA team (see Subsection 2.3.5 for the organization of PRA team). It took about two weeks for the painting of six 3-D models with five engineers. A manpower needed for the painting of 3-D model was, therefore, about 11 man-days/ model on an average. For smooth painting, the land use and vegetation maps prepared by the JICA Study Team were enlarged to the scale of 1/10,000 or 1/5,000 following the scale of each model. The 3-D models were painted using limited numbers of colors to make simple colored 3-D models. Colors on 3-D models for land use categories in relation with the land use and vegetation map were as follows:

Colors of 3-D Models Used for Land Use Categories

Category			Symbol of Land Use Map	Color of 3-D Model	Criteria
Forest	Man-made Forest		Mf	Light Green	teak forest; brown on photograph
	Natural Forest	Primary	Np	Green	forest with high, large diameter trees
		Secondary	Ns	Red	regenerated forest on former slash andburn site with tree height of 5m or more
	Bamboo Forest (1)		B1	Green	mixed with primary natural forest or along river banks
	Shrub Land		S	Green	mainly distributed along ridge lines
Slash and Burn Site and Former Slash and Burn Site	Slash and Burn Site (Hay)		Hy	Orange	exposed ground surface with dotted small cabins
	Bushi		Bh	Red	regenerated bush on former slash and burn site with a tree height of less than 5m
	Bamboo Forest (2)		B2	Red	bamboo forest on former slash and burn site; yellow green on photograph
	Glassland		G	Pink	covers a fairly large area on a former slash and burn site; liver brown on photograph
Permanent Farmland	Lowland Paddy Field		Lp	Yellow	spreads over a relatively large area compartmented by riges
	Dry Farmland		Df	Purple	located near houses and encireled by fencing
	Orchard		Od	Purple	located near houses with bananas and pine-apples, etc.
Settlement			Co	White	Group of houses
Bare Land			Br	Brown	
Road			Rd	White	
Water Body			W	Blue	

2.3.4 PRA Training

(1) General

The PRA training was organized to train up the PRA team members up to a certain level that they practically can execute PRA in the objective villages. The training was provided for three weeks from September 1 to 21, 1997, about one week for the classroom training in Vientiane and another about two weeks for the field exercises.

(2) Trainees

A total of 25 PRA team members were trained in the PRA training. All trainees were expected to be leaders and/or members of five PRA field groups organized for the village PRA works. Among 25 trainees, five were the staff of the subcontractor, another five were government officers, and the remaining 15 were hired by the subcontractor particularly for this PRA works. In order to organize an interdisciplinary PRA field groups, the subcontractor was requested to select trainees as each of them has different field of education, e.g. forestry, agriculture, socio-economy and rural education. Five government officers (foresters) were selected by the Department of Forestry. Each of them was expected to learn PRA method and tools in the training and execute the village PRA. A list of trainees including their

educational backgrounds and working experiences is presented in Table 2.3.1. As seen in the list, no one have had experience in PRA before the PRA training.

(3) Trainers

The subcontractor invited PRA trainers from Thailand where PRA is widely practiced for forest conservation, rural development purposes and so on. Two of them were invited from the Royal Forest Department and one trainer came from Kasetsart University. The JICA Study Team supported the subcontractor in the selection of PRA trainers. Some more details on Thai PRA trainers are as shown below:

1) Ms. Teunchai Lakhaviwattanakul, Reforestation Extension Office, Royal Forest Department
2) Mr. Adisorn Noochdumrong, Buriram Provincial Forest Office, Royal Forest Department
3) Dr. Dachanee Emphandhu, Department of conservation, Faculty of Forestry, Kasetsart University

(4) Contents of PRA training

The PRA training curriculum is presented in Attachment. The major subjects and exercises provided to the trainees are summarized as follows:

Classroom training

1) PRA goal and objectives
2) Concepts of PRA
3) Concepts of land use planning
4) Availability of PRA materials
5) PRA tools and techniques
   - Interviewing and diagramming
   - Transect walks and sketch mapping
   - Diagramming (Venn diagram, Resources flow diagram, cause and effect diagram, activity calendar) and preference ranking
   - Appreciation of 3-D model and aerial photograph in land use planning

Field exercises

6) Practices of PRA tools and techniques
7) Organizing village meetings
8) PRA report preparation and presentation

The field exercises were carried out in the selected three objective villages. In the selection, their accessibility from Vangvieng town and socio-economic conditions such as dominancy of ethnic groups in each village were considered. The villages selected for the field exercises were Namon-Nua (Lao Sung village), Nakhom (Lao Lum village) and Nampath-Nua (Lao Theung village). At the end of field exercises, the trainees prepared PRA field reports for these three villages. The presentation of PRA results from the field exercises was made both in the field and the subcontractor's office in Vientiane. In Vientiane, the PRA results were presented to the JICA Study Team experts, counterparts, JICA experts in FORCAP, etc.

(6) Evaluation of PRA training

The trainers' team evaluated an understanding level and capability of trainees for the execution of PRA works. The evaluation results are presented in Table 2.3.2. After the classroom session, many trainees were evaluated that their degree of understanding was still low mainly in map related works such as aerial photograph and topographic map analyses. This was because of their limited experience in these works. In addition, their understanding was at lower level in forest categories and the objective of this PRA works. However, many of them were evaluated skillful in semi-structured interview and understanding of village secondary data.

After the field exercises, the capability of trainees in execution of PRA works was evaluated again. The evaluation results showed that their understanding level was considerably improved in many aspects as shown in Table 2.3.2. However, many of them were evaluated that they were still weak in map related works, e.g. 3-D model analysis, aerial photograph analysis, and land use mapping. In addition, they were evaluated that their capability was not very high in the selection of appropriate PRA techniques to certain situations and problems, and in documentation for the field report. Moreover, trainers' team pointed out that many trainees had a tendency to respect their group leaders too much, although interdisciplinary team work is essential in PRA approach.

Based on the above evaluation results, capability of the PRA field groups who took responsibility for the village PRA after the training can be summarized as follows:

1) Before the commencement of PRA field works, the trainees basically well understood the objectives and goals of PRA works, PRA method, and use of major PRA tools and techniques,
2) However, many of them were still weak in map-related works, because of their limited experience in these fields which were difficult to learn within the three

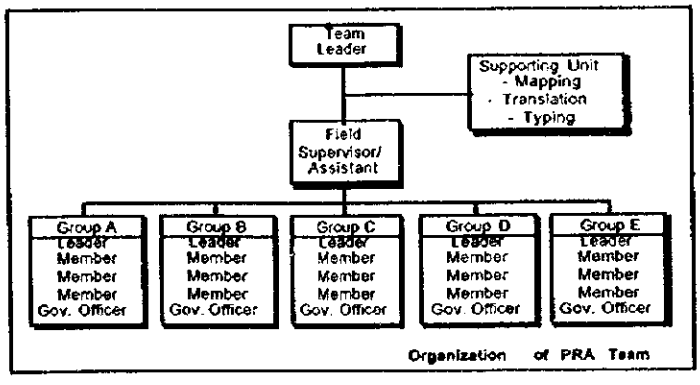
weeks,

3) The importance of interdisciplinary team work in PRA was explained many times in the training sessions. However, well organized interdisciplinary team work was less expected in the PRA field groups, because of their behavior that they respect their leaders too much and they dislike to present different opinions against their leaders.

2.3.5 Organization of PRA Team

At the end of the training, trainees were divided into five PRA field groups, each consisting of one group leader, three members and one government officer. In organizing the groups, distribution of each member or government officer was made considering his degree of understanding of PRA method and tools and educational background. It is noteworthy that each group was organized to have at least one member whose performance was comparatively good in mapping, since most of trainees were weak in map-related works.

In the PRA execution in the objective villages, the PRA field groups were supported by a backup team consisting of field supervisor and assistant supervisor. They, at the field level, took responsibility for logistic support and a review of PRA reports prepared by the PRA field groups. They stationed at Thahua-Nua during the period of PRA field works. At the subcontractor's head office in Vientiane, supporting unit was organized under the team leader. This unit was responsible mainly for PRA report finalization. The organization of PRA team is illustrated below:



Organization of PRA Team

2.3.6 PRA Works in the Objective Villages

(1) General

The PRA works in the objective villages were carried out during the period from September 23 to November 18, 1997 (57 days). Each field group was responsible for five or six

villages so as to cover the remaining 26 villages after the training. Assignment of responsible villages for each field group was decided considering time schedule and availability of 3-D models and aerial photographs. On an average, each PRA field group spent about 10 days for each village including the field report preparation. Actual time schedule of each PRA field group is as shown in Fig. 2.3.2.

(2) PRA works

The PRA works were made in accordance with that learnt in the PRA training, and the general procedure of the works is as shown in Table 2.3.3. For each step of the procedure presented in the table, some additional explanations are given as follows:

1) About two to three days before the commencement of PRA works in a certain village, a village chief was informed of PRA objectives, schedule and contents. An official letter from DAFO, Vangvieng requesting villagers cooperation for PRA was also presented to the village chief at this time. This work was basically carried out by the JICA Study Team with an assistance of the PRA field group.
2) In the first step of the PRA works, the PRA field group visited the village chief to let him know their arrival. Then, it was usually in the evening, the village chief gathered all the villagers to introduce the PRA field group members and explain the PRA objectives, etc. to the villagers.
3) In the second step, the PRA field group worked for data collection and review of the Socio-economic Baseline data through interview to selected key informants, e.g. village chief, deputies, leaders of village organizations. For these works, it took about one day.
4) In the third step, the PRA field group carried out situation analyses on a present land use and socio-economic conditions with a participation of the villagers. This step needed about two to three days.
5) In the fourth step, the members of PRA field group had a group discussion to analyze village present situation based on the data and information collected in the above 3) and 4) steps. In this step, they prepared present land use map, and relevant tables, matrices and diagrams for easy understanding of present situation for the villagers. The PRA field group usually had the group discussion in every evening or night after the PRA works with villagers.
6) In the fifth step, with villagers participation, the PRA field group confirmed a villagers' intention for the future situation of land use and socio-economic conditions. In this step, the PRA field group facilitated the villagers in a future land use planning, priority ranking for land use and rural infrastructure

development. This step needed about one to two days.

7) In the sixth step, the members of PRA field group again had discussions among them to analyze the villagers' land use plan and needs for the development. They prepared a future land use map, and relevant tables, matrices and diagrams also in this step.

8) In the eighth step, the PRA field group and villagers had a village meeting using maps, tables, matrices and diagrams prepared in the above steps in 5) and 7). The 3-D models and aerial photographs were also utilized in the meeting. All the important PRA results were explained to the villagers mainly by the PRA field group and discussed among the villagers and had a consensus for the future land use plan, priorities for rural infrastructure development, etc. The village meeting usually took two to four hours.

9) In the final step, the PRA field group prepared a PRA field report (in Lao) in order to report the village PRA results. All major PRA outputs were presented in the report. They were i) village background information, ii) present land use, iii) problems and causes analysis results, iv) future land use plan, and v) conclusion. They spent about 3 to 4 days in net for the reporting.

The number of villagers interviewed and presented at village meeting during the village PRA are as shown in Table 2.3.4. As a whole, about 16% of the population over 15 years old were interviewed and about 23% of them were presented at the village meeting. These percentages were similar between the Areas, e.g. 22% in Namon and 23% in Somboun for the attendance of village meeting. However, these differences were considerably large between male and female population. The percentage of male interviewed was 24% of the male population over 15 years old and that of female was 6%, and the percentage of male presented at village meeting was 33% and that of female was 13%. In short, nearly 80% were male among the villagers interviewed and 70% were also male among the villagers presented at village meeting. As a whole again, the average attendance rate per household at the village meeting was nearly 0.8 person per household showing considerably good attendance, although it differed much from village to village.

(3) Procedure of land use planning

General procedure particularly for the land use planning in the above steps is illustrated on Fig. 2.3.3. The materials available for land use planning were i) colored 3-D models, ii) colored land use and vegetation maps, iii) aerial photographs, and iv) village boundary map. Using these materials, present land use map was prepared based on the information from villagers. Then, the future land use map was prepared based on villagers intention expressed after

identification of problems on present land use and their causes. The future land use was discussed among the villagers in the village meeting. After getting villagers consensus, the maps were sent to the backup team together with PRA report. The backup team checked these maps and sent them to the head office for preparation of the final ones in 1/20,000 scale.

2.3.7 Office Work for Report Finalization

In the office work in Vientiane, all the PRA field reports written in Lao language were translated into English, and the present and future land use plan maps for each village were redrawn in scale 1/20,000. In addition, a summary land use plan map was drawn on the 1/20,000 topographic map according to the simple land use categories as shown below.

Land Use Categories of Summary Land Use Plan Map

Category		Symbol of Land Use Map	Criteria
Forest	Protection forest	Fp	Forests in which all human activities are not allowed.
	Symbiosis forest	Fs	Forests in which only Hai is not allowed. Other activities, e.g. fuelwood collection and huntingare allowed.
	Man-made forest	Fm	Trees are planted.
	Other forest	Fo	Forest in which utilization is not decided yet.
Slash and Burn Site	Upland paddy	Hp	Hai for upland paddy
	Cassava	Hc	Hai for cassava
	Chile	Hm	Hai for chile
	Others	Ho	Hai for other crops, or Hai crop name is not clearly decided yet.
Permanent Farmland	Lowland Paddy Field	Lp	
	Orchard	Od	Fruits trees are planted.
Grassland		G	
Fish pond		Pd	
Settlement		Co	Group of houses
Cemetery			
Bush			
Bare Land		Br	Sand, gravel, stone, no vegetation, etc.
Water Body		W	

3. RESULTS OF PRA

3.1 Limitation of the Present PRA

The present PRA was carried out with certain limitations. These limitations are expected to restrict, to a certain extent, on use of the PRA results as explained below:

1) The village PRA was carried out by the subcontractor's field groups after the three weeks training. Before the PRA training, they have had little experience in similar works with PRA. Even after the training, they were evaluated that their capability for the PRA works was not sufficiently high particularly in reading several types of maps including aerial photographs as mentioned in Subsection 2.3.4 (6).
2) It was planned to formulate the land use plan for the next 10 years in PRA. During the field training period, however, it became clear that the villagers were difficult to image their village situation for such a long-term future. In the present PRA, therefore, the villagers' land use plan was formulated for the next five years.
3) Technical and economic feasibility of the villagers' land use plan was not sounded in the PRA due mainly to the time limitation of the present study. It is therefore needed to make further study before the implementation of the land use plan, particularly for the development of paddy land that generally needs considerably higher investment and brings a certain benefit to the villagers.
4) PRA was carried out by the end of wet season. Because of this, in some villages, many villagers went to their slash and burn land for upland paddy harvest during PRA period. In these villages, therefore, the villagers were not satisfactorily participated in PRA.

3.2 Present Land Use

3.2.1 Village Boundaries and Areas

(1) Village Boundaries

In order to know the present land use in each village, the village boundary was firstly confirmed with villages. Although the village boundaries in the Model Area have not yet been delineated and authorized by the District Government, the villagers have decided the boundaries to a certain degree. Through PRA, however, overlapped areas utilized by two or three villages were recognized at 24 locations as shown in Table 3.2.1 and Fig. 3.2.1. The

total area of these overlapped areas is about 6,400 ha or about 14% of the total area of the 29 villages (45,500 ha). The village boundaries are more complicated in the Somboun Area comparing to those in the Namon Area.

Among 24 locations or 6,400 ha of overlapped areas, four locations or about a half of the areas were perceived by the villagers. The villagers were unaware of the remaining overlapped areas. Even so, no particular conflict between villages has occurred by reason of this unclearness of village boundaries, except for one location between Phonthong and Taothan village. This overlapped area has sometimes caused trouble in land use mainly in slash and burn cultivation areas.

(2) Village Areas

The land area of each village is estimated based on the information obtained through PRA. In the estimate, the overlapped areas perceived by the villagers are allocated to the related villages based on the population size of each village. The other overlapped areas of about 3,200 ha are ignored and double counted. Since the double counted area is only about 7% of the total village area, this would have little small influence upon the evaluation of village land use characteristics.

In terms of land area, the biggest village in the Model Area is Somsanouk (4,340 ha), while the smallest village is Sivilai (4 ha). These two villages are categorized as a special village in the Model Area. Somsanouk is a village established in 1970 for lepers for their medical treatment and self-support, and Sivilai is a Lao Sung (Hmong) village established in 1994 by returned refugees from Thailand and only small housing land area has been allocated to the village.

On average, the per capita village land is 2.7 ha in the Namon Area, 2.8 ha in the Somboun Area and 2.8 ha in the Model Area as shown in Table 3.2.2. The per capita village land is the smallest in Phonsavang (0.3 ha per capita) if that in Sivilai is excluded and the biggest in Phongnang (8.8 ha per capita).

3.2.2 Present Land Use Characteristics

The present land use conditions confirmed with villagers are illustrated in Fig. 3.2.2, and detailed areal information by villages are tabulated as shown in Tables 3.2.3 and 3.2.4. In preparation of these tables, only overlapped areas perceived by the villages are allocated to the related villages as mentioned in the above Subsection 3.2.1 (2). The land use characteristics

in the total area of the 29 villages are as follows:

1) The largest land use category is natural forest [2] occupying about 34,700 ha or about 75% of the total 29-village land area. The proportion of natural forest in the Namon Area (about 85%) is larger than that in the Somboun Area (70%). However, land use for man-made forest is small both in the Namon Area (about 20 ha or 0.1% of the land area) and the Somboun Area (110 ha or 0.3% of the same).
2) The second largest land use category is water body accounting for about 14% of the total 29-village land area. Particularly in the Somboun Area, this proportion is more than 20%, because of the existence of the Nam Ngum reservoir in this area.
3) The land use for slash and burn cultivation (for 1997 crop) is the third largest category occupying about 1,600 ha or about 4% of the total 29-village land area. The proportion of this land use category is higher in the Somboun Area (about 4%) than that in the Namon Area (3%).
4) The total land area of lowland paddy is about 1,300 ha or about 3% of the total 29-village land area. In the Namon Area, however, this land use category is considerably large at 1,030 ha or about 5% of the total village land area in the Namon Area. On the contrary, this is small at 260 ha or only 1% of the total village land area in the Somboun Area.
5) Other land use categories, e.g. grassland, orchard and fish pond, are all small in proportion in the total 29-village land area.

In addition to the above, the per capita land use conditions in the total 29-village land area are tabulated as shown in Table 3.2.2. The characteristics of per capita land use are outlined as follows:

1) The proportion of agricultural land which consists of slash and burn land, grassland, lowland paddy, orchard, and fish pond is small at only 11% in the Namon Area, 7% in the Somboun Area and 8% in the total 29-village land area. The smaller proportion of agricultural land in the Somboun Area indicates difficulties of agricultural production in this area.
2) The big difference between the Namon and Somboun Areas in agricultural land use is indicated by lowland paddy, whose per capita land is 0.15 ha in the Namon Area and 0.03 ha in the Somboun Area.

/[2] : The natural forest includes secondary and degraded forests.

3) Per capita slash and burn land is 0.08 ha in the Namon Area, 0.11 ha in the Somboun Area and 0.1 ha in the total 29-village land area. This difference between the Namon and Somboun Areas is small compared to that in lowland paddy.

3.2.3 Present Forest Utilization

Many villagers use the forests for slash and burn cultivation, collection of fuelwood, timber and non-wood forest products, hunting, etc. In order to control villagers' utilization of forest, most village authorities have utilization rules to a certain degree, and in PRA the following 10 types of forest in terms of utilization were confirmed.

Forest Utilization Types

Forest Utilization Type	Slash & Burn Cultiv.	Logging	Fuel-wood Collect.	Hunting	Non-wood Forest Products
A	Yes	Yes	Yes	Yes	Yes
B	No	Yes	Yes	Yes	Yes
C	No	No	Yes	Yes	Yes
D	No	No	No	Yes	Yes
E	No	No	No	No	Yes
F	No	No	No	No	No
G	No	Yes	No	Yes	Yes
H	No	No	Yes	No	No
I	Yes	No	Yes	Yes	Yes
J	Unknown or not decided yet				

The villagers may utilize freely the forest types A and J. However, they use the forest types B to I with certain restrictions. For instance, slash and burn cultivation is not allowed in the forest types B to H, and logging is also not allowed in the types C to F and H and I, although these rules are not always observed by the villagers. The distribution of forest lands based on these utilization types is tabulated as shown in Table 3.2.5, and is summarized in the table below. As seen in these tables, certain restrictions on forest use are placed on about 30% of the natural forest lands in the total 29-village land area. For the remaining 70%, however, no particular restrictions are placed on utilization.

Summary of Present Forest Utilization

Forest Utilization Type	Namon Area		Somboun Area		Model Area	
	Area (ha)	% in Total NF (%)	Area (ha)	% in Total NF (%)	Area (ha)	% in Total NF (%)
1) Slash and burn cultivation is not allowed	3,999	25.0	5,642	30.1	9,641	27.8
2) Logging is not allowed	955	6.0	3,051	16.3	4,006	11.5
3) Tree felling for fuelwood is not allowed	623	3.9	3,024	16.1	3,647	10.5
4) Hunting is not allowed	421	2.6	608	3.2	1,030	3.0
5) Non-wood forest products collection is not allowed	421	2.6	536	2.9	957	2.8
6) No particular control is done	11,888	74.4	12,927	68.9	24,816	71.4
Total Natural Forest land (NF)	15,983	100.0	18,758	100.0	34,741	100.0

NF = Natural forest

3.2.4 Problems on Present Land Use

The problems and causes analysis on the present land use was carried out with the villagers. The major problems clarified in each village were all similar, and they could be collectively summarized into two major problems, i.e. (i) lack of agricultural land and (ii) low productivity of agricultural land. These problems were pointed out in many villages in relation with paddy cultivation in lowland paddy and slash and burn land. This reveals that the biggest concern of the villagers with the present land use is the increase of paddy production.

As another problems, forest degradation and frequent occurrence of diseases of livestock were also pointed out in many villages, although the latter problem has no direct relation with the present land use. Decrease of fish resources was confirmed by the villagers in Thahua-Nua, because their fish catches made in the Nam Ngum reservoir are an important economic activity.

After clarification of the problems, the villagers analyzed the causes and impact of the problems. The results of these analyses from all the villages are summarized in Table 3.2.6 and described hereinafter.

(1) Lack of Agricultural Land

As seen in Table 3.2.6, lack of lowland paddy and lack of slash and burn land are the major sub-items of the major problem of lack of agricultural land. In context with the former problem, the causes clarified by the villagers are topographic constraint, lack of irrigation water, and insufficiency of irrigation facilities. The impacts of the problem are food shortage, difficult life in the village, population outflow, and increase of slash and burn land. In order to solve the problem, the villagers need to develop or improve new lowland paddy land, irrigation facilities, farm roads, and industries other than agriculture.

Regarding the problem of lack of slash and burn land, the causes pointed out by the villagers are ambiguity of village boundaries and increase of population. The impacts of the problem are shortening of rotation period for slash and burn cultivation, execution of slash and burn in other villages, occurrence of conflict among the villagers on land use, and degradation of forest. To solve the problem, the villagers want to establish clear village boundaries, implement a land-forest allocation program, develop new agricultural land, and establish and strengthen regulations on land use.

(2) Low Productivity of Agricultural Land

The villagers identified sub-items related to the low productivity of agricultural land in lowland paddy land and slash and burn land. The causes of the low productivity in the lowland paddy are insufficient irrigation water and irrigation facilities, lack of crop cultivation techniques, damages by livestock and pests, etc. The major impacts of this problem are food shortage and low income. To solve the problem, they need to develop and improve irrigation facilities, promote cash crop cultivation, introduce improved crop cultivation technologies, establish grass and grazing land, etc.

As causes of the low productivity of slash and burn land, the villagers pointed out degraded soil, damages by livestock and pests, etc. Impacts of the problem are the same as those in the lowland paddy, i.e. food shortage and low income. To solve the problem, they need to promote cash crop cultivation in the slash and burn land, introduce new cultivation techniques, etc.

(3) Forest Degradation

The villagers identified the causes of forest degradation as expansion of slash and burn land, forest fire, ambiguity of village boundaries and land tenure, illegal logging, uncontrolled grazing of livestock and fuelwood collection, etc. The impacts of the problem are decrease of river base flow in the dry season, occurrence of floods in the wet season, increase of soil erosion and sedimentation in rivers, expansion of low productive land, shortage of timber, etc. To solve the problem, they want to introduce another production system instead of slash and burn cultivation, promote a forest-land allocation program, establish clear village boundaries, establish production, grazing and forest zones, promote afforestation and fruit tree planting, etc.

(4) Frequent Occurrence of Livestock Disease

The villagers pointed out that the causes of frequent occurrence of livestock diseases are due to the predominance of free grazing, lack of grass land, lack of raising techniques, etc. The impacts of the problem are high mortality rate of livestock, decrease of draft animals for farming, and low income. To solve the problem, they need to establish grazing land with fences, promote protective inoculation, supply better feed, introduce new grazing techniques, etc.

(5) Decrease of Fish Resources

The villagers indicated that the causes of this problem are the increase of fishermen, unestablished fish conservation zone, and uncontrolled fish catches even in the breeding season. To solve the problem, the villagers want to establish a fish conservation zone, and control fishing in the breeding season.

3.3 Village Level Land Use Plan

3.3.1 Land Use Plan Formulated by Villagers

Based on the above examined problems on present land use and their causes and solutions, the proper land use plan was discussed with the villagers, and the future land use plan was formulated as shown in Fig. 3.3.1 and Tables 3.3.1 and 3.3.2. As described in Section 3.1, the villagers' land use plan was formulated for the next five years.

As a tendency of all the 29 villages, the villagers intend to expand the land use category of orchard by 11 times as large as the present level, followed by man-made forest (9 times), grass land (4 times), lowland paddy (1.5 times), and fish pond (1.4 times). They also intend to expand the slash and burn land by about 4.4 times as large as at the present level. However, they plan to use this land for the next five years with 4 to 5-year rotation. Due to these increases of agricultural land, the area of natural forest is to be decreased to about 70% of that at present.

In the future land use in the Namon Area, man-made forest is planned to be increased by 21 times as large as the present level, followed by orchard (11times), grass land (2.7 times), and lowland paddy (1.2 times). In the Somboun Area, the area is to be expanded in orchard (11 times), man-made forest (7 times), grassland (5 times), lowland paddy (2.6 times) and fish pond (1.5 times).

3.3.2 Forest Utilization Plan Formulated by Villagers

Based on the results of analyzing the problems and causes of forest degradation explained in Subsection 3.2.4 (3), the forest utilization plan was discussed and formulated with the villagers. All the results obtained from the villages are presented in Table 3.3.3 in accordance with the forest utilization types presented in Subsection 3.2.3, and summarized in the table below:

Summary of Future Forest Utilization Plan

Forest Utilization Type	Namon Area		Somboun Area		Model Area	
	Area (ha)	% in Total NF (%)	Area (ha)	% in Total NF (%)	Area (ha)	% in Total NF (%)
1) Slash and burn cultivation is not allowed	12,124	96.8	11,313	95.9	23,437	96.4
2) Logging is not allowed	7,561	60.4	8,241	69.8	15,802	65.0
3) Tree felling for fuelwood is not allowed	7,435	59.4	8,241	69.8	15,676	64.5
4) Hunting is not allowed	3,658	29.2	5,825	49.4	9,483	39.0
5) Non-wood forest products collection is not allowed	3,658	29.2	5,825	49.4	9,483	39.0
6) No particular control is done	395	3.2	490	4.2	885	3.6
Total Natural forest land	12,519	100.0	11,803	100.0	24,322	100.0

NF = Natural forest

As seen in the table, the villagers intend to conserve about 23,400 ha or 96% of the future forest land (about 24,300 ha in 29 villages) by banning slash and burn cultivation. (The remaining about 900 ha or 4% in forest utilization type No. 6 in the above table is considered to be ignored in the village PRA.) They also intend to conserve about 65% of the future forest land by banning logging and tree felling for fuelwood collection, and about 40% of the same by banning hunting and non-wood forest products collection. It is therefore evaluated that the villagers well perceive the importance of forests as they analyzed themselves in Subsection 3.2.4 (3), and they particularly intend to control the slash and burn cultivation.

In addition to the above, an another analysis on the villagers' forest utilization plan is made in accordance with the four categories of forest utilization mentioned in Subsection 2.3.7. They are (i) protection forest, (ii) symbiosis forest, (iii) man-made forest, and (iv) other forest. As shown in Table 3.3.4 and Fig. 3.3.1, the area of total protection forest in the 29 villages in the future is to be expanded by 16 times compared to that at present. The areas of symbiosis and man-made forests are also to be expanded by about 1.6 times and 9 times, respectively. Contrarily, the other forests in the future are to be decreased to only 4% of that at present. For the respective areas, the area of protection forest in the future is to be expanded by 8.7 times in the Namon Area, and by 12.3 times in the Somboun Area. On the other hand, the symbiosis forest is to be expanded by 2.4 times in the Namon Area, and 1.1 times in the Somboun Area.

3.3.3 Villagers' Preference Ranking for Land Use Plan

(1) Preference Ranking for Land Use

As the final step of PRA, villagers' preference ranking on land use was confirmed. Top priority was given to the development/improvement of annual crop cultivation land, mainly for lowland paddy, by 13 villages (among 14 villages) in the Namon Area and eight villages (among 15) in the Somboun Area as shown in Table 3.3.5. Because many villagers in the Somboun Area recognized that the land development potential for lowland paddy is considerably small, and suitable land for slash and burn cultivation is decreasing in this area, the first priority was given to the other land use categories, i.e. grass land/livestock development (including some fish culture development) by five villages and orchard development by two villages. As the second priority in the Namon Area, orchard development was selected by eight villages, grass land/livestock development (including some fish culture development) was chosen by five villages, and the remaining one village preferred man-made forest development. As the second priority in the Somboun Area, grass land/ livestock development (including some fish culture development) was selected by six villages, orchard development was chosen by five villages, and the remaining four villages preferred annual crop cultivation land development.

As a whole, the villagers prefer to develop/improve the lowland paddy and irrigation facilities to increase paddy production, and to develop/ improve the grass land/livestock, fish pond and orchard to increase their cash income. For implementation of these development/ improvement works, many villages expressed their wish to provide not only labors and available construction materials such as stones and timber, but also a certain proportion of construction cost.

(2) Preference Ranking of Villagers' Needs for Implementation of Land Use Plan

The preference ranking of the villagers' needs for implementation of their land use plan was also confirmed in PRA. The results are presented in Table 3.3.6. As seen in the table, their needs differ considerably by village. In order to know the tendency of villagers needs, the table below summarizes the villagers needs by counting the highest needs by items based on Table 3.3.6.

Summary of Preference Ranking of Villagers' Needs for Implementation of Land Use Plan

Category/ Item	Namon Area	Somboun Area	Model Area
1. Annual Crops			
1) Fund	2	1	1
2) Seed/stock	3	2	2
3) Market		3	
4 Irrigation	1		3
2. Fruit Trees			
1) Fund	1	2	2
2) Seed/stock	2	1	1
3) Technic	3	3	3
3. Livestock/ Fishery			
1) Fund	1	1	1
2) Seed/stock	2	2	2
3) Technic	3	3	3
4. Industrial Trees			
1) Fund	1	2	1
2) Seed/stock	2	1	2
3) Technic	3	3	3
5. Cottage Industry			
1) Fund	1	1	1
2) Technic	3	3	3
3) Market	2	2	2

Note: 1; Items with the most highest numbers of "highly needed"
2; Items with the secondly highest numbers of "highly needed"
3; Items with the thirdly highest numbers of "highly needed"

As a whole, the villagers' needs are higher for funds, seed/ stock and techniques, and lower for fertilizer and agro-chemicals. The villagers' needs are considerably different between the Namon and Somboun Areas in the development of annual crop cultivation land, i.e. the need for irrigation is the highest in the former area, and that for market is the highest in the latter area. This is probably because of the preference of the villagers for the development/ improvement of lowland paddy in Namon, whereas in Somboun, they intend to introduce, in addition to lowland paddy, upland crops which are usually difficult to market. For the development of man-made forest, the villagers' needs are higher for funds and seed/ stock (seedlings) than techniques.

The villagers' needs for the development of cottage industries are also presented in the above table, although this development is not directly connected with land use planning. Since recent selling prices of *sinh* (traditional skirt) produced in the Model Area are low, the villagers' needs are considerably high for marketing.

3.4 Villagers' Preference Ranking for Social Infrastructure Development

The villagers' preference is high for the development of social infrastructure such as roads, domestic water, schools and electricity, and development of these has direct and indirect relation with the land use planning. The villagers' preference ranking for social

infrastructure development was thus confirmed in PRA, and the results are presented in Table 3.4.1.

In the Namon Area, the first ranking was given to road improvement by seven villages followed by electrification by three villages, domestic water supply by two villages and primary school improvement by two villages. Many villages gave the first ranking to road improvement, because ten villages in this area are located far from Route 13 and the conditions of local roads from these villages to Route 13 are poor in general. In the Somboun Area, the first ranking was given to domestic water supply by seven villages followed by primary school improvement by five villages, electrification by two villages and road improvement by one village. Since no water supply is available in seven villages in this area, this result is also understandable. In general, the village authorities are responsible for construction and improvement of primary schools and their funds for this purpose are usually insufficient. Thus, the preference ranking for school improvement is considerably high in both areas.

4. EVALUATION OF PRA RESULTS

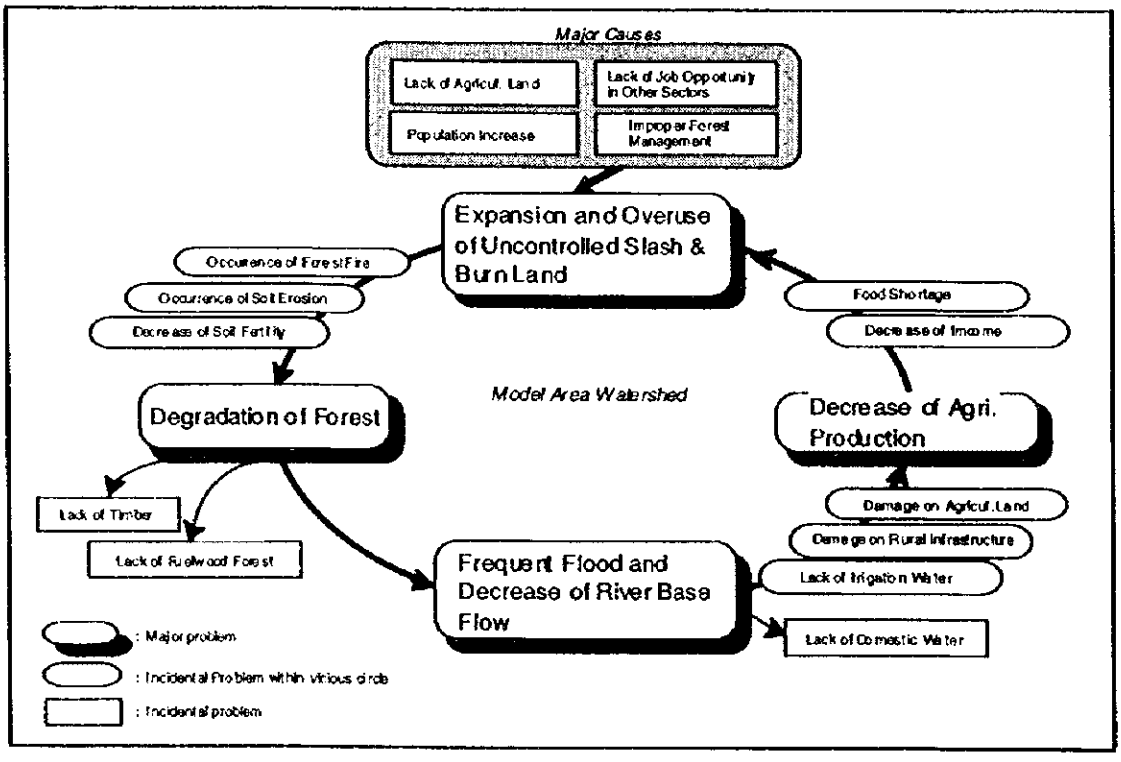
4.1 General

As stated in S/W of the Study, the objective of the Study is to formulate an integrated watershed management plan in the Vangvieng district in order to contribute to the improvement of resource management and livelihood of the local people. It is thus expected to prevent forest degradation and soil erosion, and maintain environmental sustainability through these improvements.

Based on this objective and on the results of the PRA and Socio-economic Baseline Survey, this Chapter firstly clarifies, in Section 4.2, major problems of watershed degradation and causes of the problems. Then, in Section 4.3, the potential for watershed conservation by removing these problems is examined.

4.2 Problems in Watershed and Their Causes

The predominant problems of watershed degradation and their causes are simply illustrated as shown below:



Major Problems of Watershed Degradation and Their Causes

The major problems of watershed degradation are (i) expansion and overuse of uncontrolled slash and burn land, (ii) degradation of forest, (iii) frequent occurrence of flooding and decrease of river base flow, and (iv) decrease of agricultural production. These problems are considered to form a vicious circule as seen in the above figure.

The expansion and overuse of uncontrolled slash and burn land cause incidental problems such as forest fire, soil erosion, and soil degradation. As a result, another major problem, forest degradation, occurs. Forest degradation invites incidental problems such as shortage of timber and fuelwood forest, and also the major problem of frequent floods in the wet season and decrease of river base flow in the dry season. These problems bring incidental problems such as lack of irrigation water in the dry season and damages to the rural infrastructure and agricultural land, and also the major problem of decrease of agricultural production. This major problem invites incidental problems such as food shortage and income decrease, and leads to expansion and overuse of uncontrolled slash and burn land.

The major causes of the vicious circle, namely causes of watershed degradation, are (i) population increase, (ii) lack of agricultural land, (iii) lack of job opportunities in other sectors, and (iv) improper forest management, as analyzed by the villagers in PRA to a certain extent.

4.3 Potential for Watershed Conservation

It is proposed to consider countermeasures for watershed conservation with which the major causes of watershed degradation mentioned in Section 4.2 are reduced and/or removed. The countermeasures needed for proper watershed conservation are thus examined in this Section. In the examination, a socio-economic projection is firstly carried out, since the target year of the Study is set at 2008. The socio-economic projections includes projections of population, food balance of paddy, and expansion of slash and burn land due mainly to the population increase.

4.3.1 Socio-economic Projection

(1) Population Projection

According to the data from Vangvieng district statistic office, the population increase rates in Namon and Somboun Areas during 1991-1996 period were 4.51% p.a. and -0.16% p.a., respectively. Although the reliability of these figures are considered to be low, it is understandable that Namon Area, where the agricultural development potential is

comparatively high, received population, and Somboun Area, where the development potential is comparatively low, release population.

For the population projection for 2008 in the Model Area, the national average growth rate of 2.48% p.a. during 1985-1995 period is directly applied, since official data on population forecasts for the Model Area are not available. The calculation results show that the population in 2008 will be 9,100 in Namon, 12,500 in Somboun and 21,600 in the Model Area, about a 34% increase from the present population.

(2) Paddy Balance Projection

Based on the above calculated 2008 population and the following assumptions, the food balance of paddy in 2008 is projected.

1) Twenty percentage increase of lowland paddy production would be performed in 2008 due to cultivation technique improvement,
2) Paddy production in the slash and burn land in 2008 will be the same as the present level, and
3) Per capita consumption of paddy will be increased to 300 kg (which is the national average of the 1992-1994 period estimated by FAO) from the present level of 264 kg (result of Socio-economic Baseline Survey).

As a result, as shown in Table 4.3.1, paddy deficit will be about 670 tons in Namon, 2,250 tons in Somboun and 2,920 tons in the Model Area.

(3) Projection on Expansion of Slash and Burn Land

The projection on expansion of slash and burn land for the year 2008 is made based on the assumptions below.

1) The balance between the amount of paddy deficit estimated above (e.g. 2,920 tons in the Model Area) and that at present level is assumed to be the amount of paddy deficit in 2008, and
2) All the amount of paddy deficit in 2008 will be produced in slash and burn land with an average yield of 1.0 ton/ha.

As a result, requirement for increase of slash and burn land area in 2008 is 570 ha in Namon, 1,170 ha in Somboun and 1,740 ha in the Model Area as shown in Table 4.3.1. Comparing these areas with the ones at present (results of PRA), the slash and burn land in 2008 will be 2.6 times in Namon, 2.2 times in Somboun, and 2.3 times in the Model Area as shown also in Table 4.3.1.

In practice, however, it is difficult to expand the slash and burn land by more than double that at present, because new land for slash and burn is hard to find even under the present condition. The villagers can only shorten the rotation period for slash and burn cultivation. However, this leads to further watershed degradation, and is not an approach recommended for watershed conservation. Accordingly, the potential countermeasures for watershed conservation to reduce the slash and burn cultivation are (i) increase production of paddy and cash crops through introduction of new and/or improved production system, and (ii) increase cash income by promotion of other income generation programmes.

4.3.2 Examination on Potential for Watershed Conservation

(1) Potential for Development of Agricultural Land

The present production system in the Model Area is mainly paddy cultivation in the lowland paddy and slash and burn land. However, the potential for expansion of agricultural land to support the present production system is very low in the Model Area. According to PRA, the villagers intend to expand the lowland paddy in the future to about 1.5 times that at present as a whole. However, the area expansion of lowland paddy seems to be difficult in many proposed sites due to less availability of irrigation water and high cost of expansion. Moreover, even if it is possible to realize all the expansion of lowland paddy proposed by the villagers, the shortage of paddy in the Model Area may not be fulfilled, and they probably need to continue paddy production in the slash and burn land. The area expansion of slash and burn land is also difficult in the Model Area, and according to the Socio-economic Baseline Survey, the average rotation period of slash and burn land is already about 2.6 years at present. As a result, abandoned areas are expanding and forest recovery in these areas are declined.

According to PRA, many villagers well understand that the potential for the development of new lowland paddy and new slash and burn land is low in the Model Area. Thus, their intention is also high for the improvement of the irrigation systems in order to increase crop unit yields. Beside the expansion of lowland paddy and slash and burn land, their intention is high in the development of grass land/livestock, fish pond, orchard and man-made forest mainly for income generation. Since predominant land use categories in the Model Area are

natural forest and water body, the development potential for these relatively new production systems is considered to be high in the Model Area.

For the implementation of villagers' land use plan, however, they will face financial and technical difficulties as confirmed in PRA. For the realization of their land use plan, therefore, it is proposed to provide financial and technical supports to them. Through the proposed approach to watershed conservation, further participation of villagers is expected and reduction of slash and burn land will be achieved to a certain extent.

(2) Potential for Other Industrial Sector Development

Agriculture is the economic backbone in the Model Area. According to the results of the Socio-economic Baseline Survey, 84% of sample households are farm households cultivating lowland paddy and/or slash and burn land. However, self-sufficient type agriculture is dominant, and thus it brings relatively little cash income to the households. The cash income from the agriculture is estimated to be only 43% of the total cash income on average household. Accordingly, in the Model Area, the primary target group of income generation programmes should be focused on the farmers, and cash income increase should basically be realized through agricultural development including livestock, fishery, and forestry.

Other than agriculture, the development potential seems to be high in (i) marketing related business for agricultural products whose production is expected to increase in the future, (ii) cement related industry using limestone hugely available in and around the area, and (iii) cottage type industries such as weaving and bamboo works. From the viewpoint of creation of job opportunities, however, large scale employment is not expected in marketing related businesses. A new cement factory planned to be established in the Vangvieng sub-district is expected to create some job opportunities, and also expected to work effectively for reduction of slash and burn cultivation. The existing Lao Vangvieng Cement Plant hires about 330 laborers including some villagers in the Model Area. For example in Namon-Tai village, some villagers are working in the Cement Plant as labors. In addition, in this village, assistance for agricultural development was also carried out under the Upland Agricultural Development Project (with financial assistance from the World Bank). These effectively helped income generation in the village, and as a result, this village completely stopped slash and burn cultivation in 1997. Regarding cottage industries, certain assistance is needed particularly for weaving which employs a considerable number of women in the Model Area. Since recent prices of the products are low, it is proposed to improve the capacity of weavers in quality control and marketing through providing training in these fields.

(3) Potential for Improvement of Forest Management

There are two major subjects in relation to improper forest management according to the PRA results, i.e. (i) ambiguity of village boundaries, and (ii) ambiguity of land tenure. In PRA, many villagers pointed out that the ambiguity of village boundaries disturbs their proper land and forest use. In fact, 24 locations in the Model Area are overlapped areas, each of which is utilized by two or three villages. Although all the village boundaries were confirmed with the villagers in the PRA, these have not been authorized yet by the local and central government, and the actual situation is considered to be more complicated than that illustrated in Fig. 3.2.1. The pressure of population on the land is expected to increase in the future. For execution of proper watershed management, it is thus proposed to establish clear village boundaries so as to clarify the territorial area or responsible area of each village.

In addition to the village boundaries, the land tenure situation is also unclear in the Model Area, particularly in the natural forest area where slash and burn cultivation is widely conducted. The majority of land use for slash and burn cultivation follows ambiguous traditional cultivation rights decided basically by each village authority. It is considered that the traditional rights had worked to a certain extent many years ago. Due to the population increase, however, suitable areas for slash and burn cultivation have decreased in recent years. In this situation, conflicts start to occur among the villagers and between the villages in use of the slash and burn land. Land and forest management can not be done properly, because, among others, the body responsible for the land is unclear. Poor management of land and forest may cause frequent occurrence of forest fires and soil erosion. Therefore, it is also proposed to establish clear land cultivation rights for individuals in the Model Area.

Recognizing the above situation, the Government of Lao PDR initiated the Land-Forest Allocation Program in 1996. This program intends to reduce slash and burn cultivation and to conserve the forest by allocation of land to households who are non-owner cultivators of permanent farm land. Lands subject to the program are basically land not used for production purposes and slash and burn land. The land size to be allocated to each household is decided based on available labor force with a maximum size of 3.0 ha/ labor. This program has not been implemented in the Model Area, since priority was given to the northern part of Lao PDR where forest degradation is more severe than that in the Model Area. Since a new or improved agricultural production system needs to be introduced in the allocated land, certain technical and financial support to the villagers is also needed together with implementation of the Land-Forest Allocation Program. For execution of the program, the results of the PRA and the Socio-economic Baseline Survey will be of great use to help reduce the cost and time required, because village boundaries and land use plans clarified with the villagers are available for all 29 villages in the Model Area.

TABLES

Table 2.3.1 List of Trainees or PRA Field Group Members with Their Educational Background

Group	Ldr/M	Name of Group Leader and Member	Age	Background	Education	Year Obtain.	Main Experience
Group A	Ldr	Phoumy SOUKPHILANOUVONG	47	Staff of SMED	Dongdok agriculture school, Rural Economy section, VTE	1973	Agro-socio-economic surveys
	M-1	Niphonlack MANITHIP	46	Hired by SMED	Agriculture, Salakham Research Station	1971	Enumerators for Socio-economic surveys
	M-2	Phonepraseuth MIXAYKONE	30	Hired by SMED	Planning & Statistic, Dongdok school	1986	Assistant supervisor in: MicroFinance, Small Scale Enterprise, etc.
	M-3	Sida SIVILAY	34	Hired by SMED	Commerce/ Finance, Dongdok school	1985	Enumerators for Socio-economic survey
	G	Souliya THAMMAKHOT	29	DOF	Muong Mai Forestry Tech. School	1992	Forester in DOF
Group B	Ldr	Bounsong KEOSOMBATH	44	Staff of SMED	Tashkent Agri. Institute, Data processing and Analysis, USSR	1988	Agro-socio-economic surveys
	M-1	Boun Orm	53	Hired by SMED	Forestry & Fish Culture	1966	Tech. forestry and fishculture trainer for DOF
	M-2	Phanasack SONGSENG	35	Hired by SMED	Tat Thong Irrigation School	1990	Irrigation O & M Prov. Savannakhet
	M-3	Khanthala PHETSALATH	25	Hired by SMED	Forestry School, Dongdok	1994	Forest Inventory and Land use
	G	Vong INTHAVONG	30	DAFO	Muong Mai Forestry Tech. School	1991	Forester in DAFO
Group C	Ldr-1	Manh PHIMPHACHANH	46	Staff of SMED	Agriculture School, Dongdok	1973	Agro-socio-economic surveys
	Ldr-2	Soubanh KEOHAVONG	58	Hired by SMED	Fishery School in Khonkaen, Thailand	1968	Watershed Management, Department of
	M-1	Sompomg VILAYSANE	35	Hired by SMED	Muong May Forestry School	1992	Watershed Management, DOF
	M-2	Daophet RITHAVIXAY	50	Hired by SMED	Agriculture School, Dongdok	1973	Tech. Forestry, Log at Damsite, Forest Seed multiplication center, Vientiane
	M-3 *	Amphayvanh KEOHAVONG	34	Hired by SMED	Forestry School, Dongdok	1984	Tech. Forestry & reforestation, Muong Sangthong, Vientiane Muni.
	G	Lattana PHAXAYSOMBATH	32	FORCAP (PAFO)	Forestry University, Germany	1985	Forester in PAFO
Group D	Ldr	Humpheng XAYAVONG	47	Staff of SMED	Agriculture School, Dongdok	1973	Agro-socio-economic surveys
	M-1	Khampha BOUNMAK	52	Hired by SMED	Livestock & Veterinary, Thailand	1965	Animal feed cropping & livestock
	M-2	Lamthen SONGSENG	36	Hired by SMED	Nabong Agriculture College	1986	Extension on agri-livestock; Socio-economic surveys
	M-3	Souvanna KEOLAKHONE	28	Hired by SMED	Paksan Forestry College	1992	Technician forestry at Luangnamtha
	G	Oudong KEOMYPHET	30	PAFO	DOF	1995	Forester in PAFO
Group E	Ldr-1	Solasinh INTHAVONG	62	Staff of SMED	National Institute of Statistic and Economic Study , France	1958	Statistic and sample surveys
	Ldr-2	Kham Ouane LUANGDUANGSITHIDETH	43	Hired by SMED	B. Sc. Agri. Czechoslovakia	1987	Extension officer on Sustainable Agri. and chief of mulberry cropping center.
	M-1	Sounthone NAOSAVATH	28	Hired by SMED	Forestry School, Germany	1994	Technician Forestry at CPAW
	M-2	Sisaket PHACHANTHA	63	Hired by SMED	Teacher	1984	Enumerator for Socio-economic surveys
	M-3 *	Keophet	38	Hired by SMED	Mathemethics, Dongdok University	1988	Teacher at Tathong Irrigation School, PRA on
	G	Sithong SISONGKHAM	27	PAFO	Muong Mai Forestry Tech. School	1990	Forester in PAFO

Note: 1) Ldr = Leader, M = Member, G = Government officer

2) *; This member was not trained in the PRA Training.

Table 2.3.2 Understanding Level and Capability of Trainees Evaluated During and After PRA Training

(Unit: % of trainees)

Items	High	Moderate	Low	Remarks
CLASSROOM SESSION				
1. Understanding PRA procedure for land use planning				
1.1 Principles and concepts of PRA	0	100	0	
1.2 Techniques				
- Semi-structured interview	67	33	0	**
- Diagramming	33	33	33	
- Preference ranking	33	33	33	
- 3-D model	0	100	0	
- Aerial photograph analysis	0	33	67	*
- Topographic map analysis	0	0	100	*
- Topic and subtopics formulation	0	33	67	*
- Framework preparation	33	33	33	
2. Understanding information relevant to PRA for land use planning				
2.1 Forest categories and definitions	0	0	100	*
2.2 Secondary data of target villages	67	33	0	**
2.3 Land use planning concepts	0	100	0	
3. Understanding objectives and goals of PRA works	0	0	100	*
Overall rating	33	33	33	

Note: **; For this item, more than 60% of trainees were evaluated as higher level understanding.
*; For this item, more than 50% of trainees were evaluated as lower level understanding.
Evaluation was made by the trainers' team.

(Unit: % of trainees)

Items	High	Moderate	Low	Remarks
FIELD EXERCISE SESSION				
1. Applying PRA procedure for land use planning				
1.1 Principles and concepts of PRA	50	50	0	
1.2 Materials and equipment preparation	50	50	0	
1.3 Techniques				
- Semi-structured interview	100	0	0	**
- Diagramming	28	28	44	
- Preference ranking	23	32	45	
- Transact walks	0	25	75	*
- Sketch mapping	100	0	0	**
- 3-D model analysis	28	16	56	*
- Aerial photograph analysis	28	8	64	*
- Transferring information from 3-D model and aerial photographs to topographic map	20	16	64	*
- Topics and subtopics formulation	48	52	0	
- Framework preparation	50	50	0	
- Selection of key informants	100	0	0	**
- Pre-dialogue with villagers	100	0	0	**
- Village meeting	50	50	0	
2. Understanding information relevant to PRA for land use planning				
2.1 Forest categories and definitions	50	50	0	
2.2 Secondary data of target villages	50	50	0	
2.3 Land use planning concepts	0	100	0	
3. Understanding objectives and goals of PRA works	100	0	0	**
4. Team performance				
4.1 Cooperation among team members	50	50	0	
4.2 Respect to team leader	100	0	0	**
4.3 Ability to solve conflict within team	50	50	0	
5. Capability of selecting appropriate PRA techniques to certain situations/ problems	0	100	0	
6. Capability of organizing PRA information	50	50	0	
7. Capability of analyzing PRA information	50	50	0	
8. Capability of preparing existing and future land use map	100	0	0	**
9. Capability of drawing land use boundary onto 3-D model	50	50	0	
10. Capability of writing report	0	100	0	
Overall rating	50	50	0	

Table 2.3.3 General Procedure of Village PRA Works

PRA Work Items	Major Villager Participants	Major PRA Tools Used	Materials Used	Remarks
0. Explanation of PRA to village authority - Objective, schedule, major activities in the village	- Contact with village chief			- Village chief informed villagers of PRA.
1. Introduction of PRA group to villagers - Objective, schedule, major activities in the village	- Basically all villagers available			
2. Data collection and review of Socio-economic baseline data - Village history - Organization - Regulations - Demography - Infrastructures - Education & health - Others	- Village chief and deputies - Leader of Elders Organiz. - Leader of Women's Union - Leader of Youth Organiz. - Leader of Elders Group - Unit chiefs	- Venn diagram - Disease problem ranking table		
3. Analysis of present situation 3.1 Present land use - Village boundary - Confirmation of present land use - Problems on present land use	- Village chief and deputies - Leaders of village organiz. - Farmers/ land users	- Semi-structured interviews - Transect map - Crop calendar	- 3-D model - Aerial photo. - Land use and vegetation map - Village boundary map	
3.2 Socio-economic situation - Occupation - Agricultural and other production - Income and expenditure - Living conditions - Problems on socio-economic situat. - Plans or wishes for village develop.	- Village chief and deputies - Selected villagers from rich and poor, and respective ethnic groups	- Semi-structured interviews - Activity calendar - Problems & causes analysis matrix - Income & expend. diagram		
4. PRA group discussions/ works 4.1 Present land use - Preparation of present land use map - Estimate of area by land use categories			- 3-D model - Aerial photo. - Land use and vegetation map	- Group works done by PRA group members
4.2 Socio-economic situation - Preparation of relevant tables, matrices and diagrams				- Group works done by PRA group members
5. Villages intention for future situation 5.1 Future land use plan - Forest utilization - Production areas - Others	- Village chief and deputies - Leaders of village organization - Farmers/ land users	- Semi-structured interviews - Present land use map prepared	- 3-D model - Aerial photo. - Land use and vegetation map	
5.2 Preference ranking for land use - Priority of land use - Villagers needs for land use plan	- Village chief and deputies - Leaders of village organizations - Selected villagers from rich and poor, and respective ethnic groups,	- Preference ranking table		
5.3 Socio-economic situation - Priority of villagers needs for rural infrastructure deve.	- Village chief and deputies - Selected villagers from rich and poor, and respective ethnic groups			
6. PRA group discussions/ works 6.1 Future land use plan - Preparation of future land use map - Estimate of area by land use categories			- 3-D model - Aerial photo. - Land use and vegetation map	- Group works done by PRA group members
6.2 Socio-economic situation - Preparation of relevant tables, matrices and diagrams				- Group works done by PRA group members
7. Village meeting - Discussion on PRA results - Consensus among villagers for land use, priority, etc.	- Village chief and deputies - All family heads were invited.			
8. PRA group's report preparation				- Group works done by PRA group members

Table 2.3.4 Number of Villagers Interviewed and Presented at Village Meeting during Village PRA

Village	Villagers interviewed							Villagers Attended at Village Meeting							Total	Pop. (over 15 yrs old) b/			Total Population b/		
	Male		Female		Total		per HH	Male		Female		Total		per HH	HH b/	Male	Female	Total	Male	Female	Total
	(prn)	(%) a/	(prn)	(%) a/	(prn)	(%) a/	(prn)	(prn)	(%) a/	(prn)	(%) a/	(prn)	(%) a/	(prn)	(No.)	(prn)	(prn)	(prn)	(prn)	(prn)	(prn)
Namon Area																					
1 Vangmiang	48	28.7	13	8.0	61	18.5	0.6	73	43.7	25	15.4	98	29.7	1.0	100	167	163	330	303	295	598
2 Namon-Tai	47	24.1	39	14.5	86	18.6	0.6	49	25.2	16	6.0	65	14.0	0.5	140	195	269	463	351	484	835
3 Namon-Nua	n.a	-	n.a	-	n.a	-	-	40	21.7	4	2.1	44	11.6	0.4	113	184	194	378	369	388	757
4 Phonsavang	21	12.6	7	3.7	28	7.9	0.3	32	19.3	19	10.1	51	14.4	0.5	110	166	188	354	300	340	640
5 Phonkeo	89	38.7	0	0.0	89	18.9	0.7	46	20.0	5	2.1	51	10.8	0.4	130	230	241	471	486	510	996
6 Ngiou	36	44.7	6	7.1	42	25.4	1.0	35	43.4	22	25.9	57	34.4	1.3	44	81	85	165	147	155	302
7 Nalao	60	35.3	6	5.0	66	22.8	0.8	65	38.3	29	24.3	94	32.5	1.2	78	170	119	289	279	196	475
8 Nakhom	10	49.5	4	13.3	14	27.9	0.6	21	104.0	4	13.3	25	49.8	1.1	22	20	30	50	43	64	107
9 Phongnang	30	47.4	8	13.5	38	31.0	1.5	23	36.4	20	33.7	43	35.1	1.7	26	63	59	123	96	90	186
10 Nangeun-Nua	16	36.3	9	20.2	25	28.2	0.9	24	54.5	8	18.0	32	36.1	1.1	29	44	45	89	96	97	193
11 Nangeun-Tai	20	21.1	15	15.0	35	18.0	0.6	45	47.6	11	11.0	56	28.7	0.9	62	95	100	195	220	233	453
12 Vanghua	23	8.6	8	3.0	31	5.8	0.2	92	34.4	24	9.0	116	21.7	0.8	151	267	267	534	427	426	853
13 Houaysan	15	31.0	12	26.9	27	29.0	0.9	30	61.9	19	42.5	49	52.6	1.6	31	48	45	93	103	95	198
14 Nampath-Nua	10	18.8	3	5.4	13	12.0	0.4	14	26.4	21	37.9	35	32.3	1.1	33	53	55	108	91	95	186
Sub-total or Average c/	425	26.6	130	7.8	555	17.0	0.6	589	33.0	227	12.2	816	22.4	0.8	1,069	1,784	1,860	3,643	3,311	3,468	6,779
Somboun Area																					
1 Houaymo-Nua	19	25.0	6	7.6	25	16.1	0.4	34	44.8	20	25.2	54	34.8	0.9	60	76	79	155	156	163	319
2 Houaymo-Tai	22	17.2	12	9.2	34	13.2	0.4	31	24.2	23	17.7	54	20.9	0.6	84	128	130	258	273	277	550
3 Thahua-Nua	28	8.6	7	2.3	35	5.6	0.2	106	32.7	43	14.4	149	23.9	0.9	165	324	300	624	581	537	1,118
4 Thahua-Tai	31	12.9	13	5.1	44	8.9	0.3	60	25.0	72	28.0	132	26.6	0.9	142	240	257	497	400	429	829
5 Houaypamom	32	11.1	8	2.8	40	7.0	0.2	108	37.4	32	11.4	140	24.6	0.7	195	289	281	570	586	570	1,156
6 Somsanouk	26	9.2	6	2.2	32	5.8	0.2	28	9.9	7	2.6	35	6.3	0.2	177	283	269	551	485	461	946
7 Nampat	29	34.5	5	6.7	34	21.4	0.7	31	36.9	3	4.0	34	21.4	0.7	49	84	75	159	166	148	314
8 Vangkhi	47	17.8	19	7.6	66	12.8	0.4	74	28.1	18	7.2	92	17.9	0.6	158	264	252	515	456	435	891
9 Phonthong	20	49.2	4	8.4	24	27.3	0.9	18	44.3	7	14.8	25	28.4	0.9	28	41	47	88	72	84	156
10 Taothan	28	26.3	4	3.8	32	15.2	0.5	35	32.8	10	9.6	45	21.4	0.6	71	107	104	211	225	220	445
11 Nampath-Tai	30	43.9	8	11.5	38	27.5	1.1	30	43.9	6	8.6	36	26.1	1.0	36	68	70	138	114	116	230
12 Houayxi	56	83.0	16	18.0	72	46.1	1.1	63	93.4	27	30.4	90	57.6	1.4	65	67	89	156	148	195	343
13 Namphao	150	40.9	20	5.2	170	22.7	0.8	131	35.7	35	9.2	166	22.2	0.8	202	367	381	748	698	725	1,423
14 Phakoup	60	45.5	12	11.0	72	29.9	0.9	56	42.4	22	20.2	78	32.4	1.0	76	132	109	241	274	226	500
15 Sivilai	10	20.0	3	5.4	13	12.3	0.6	16	32.0	13	23.5	29	27.5	1.3	22	50	55	105	75	83	158
Sub-total or Average	588	23.3	143	5.7	731	14.6	0.5	821	32.6	338	13.5	1,159	23.1	0.8	1,530	2,519	2,497	5,016	4,709	4,669	9,378
Total or Average c/	1,013	24.7	273	6.6	1,286	15.6	0.5	1,410	33.0	565	13.0	1,975	22.9	0.8	2,599	4,278	4,340	8,618	8,020	8,137	16,157

Note: a/; Percentage of villagers interviewed or attended at village meeting in male, female or total population more than 15 years old
b/; Demographic data from the results of Socio-economic Baseline Survey
c/; The figures from Namon-Nua village are excluded from the calculation of percentages the columns of villagers interviewed.

Table 3.2.1 List of Overlapped Village Land Areas in the Model Area

	Related Villages						Area	Distri.	Remarks
	(No.)	Name	(No.)	Name	(No.)	Name	(ha)	(%)	
1.	3-1	Vangmiang	3-2	Namon-Tai			56	0.9	aware a/
2.	3-3	Namon-Nua	3-7	Nalao			326	5.1	
3.	3-5	Phonkeo	3-6	Ngiou			16	0.2	
4.	3-5	Phonkeo	3-10	Nangeun-Nua			365	5.7	
5.	3-9	Phongnang	3-10	Nangeun-Nua			45	0.7	
6.	3-9	Phongnang	3-11	Nangeun-Tai			130	2.0	
7.	3-11	Nangeun-Tai	3-13	Houaysan			856	13.4	aware
8.	3-12	Vanghua	3-13	Houaysan			160	2.5	
Sub-total in Namon Area							1,954	30.5	
9.	3-11	Nangeun-Tai	5-12	Houayxi			62	1.0	
10.	3-14	Nampath-Nua	5-11	Nampath-Tai			212	3.3	
Sub-total in Namon and Somboun Areas							274	4.3	
11.	5-1	Houaymo-Nua	5-11	Nampath-Tai			213	3.3	
12.	5-1	Houaymo-Nua	5-2	Houaymo-Tai			20	0.3	
13.	5-1	Houaymo-Nua	5-2	Houaymo-Tai	5-11	Nampath-Tai	90	1.4	
14.	5-2	Houaymo-Tai	5-11	Nampath-Tai			174	2.7	
15.	5-2	Houaymo-Tai	5-3	Thahua-Nua			55	0.9	
16.	5-2	Houaymo-Tai	5-3	Thahua-Nua	5-4	Thahua-Tai	359	5.6	
17.	5-3	Thahua-Nua	5-4	Thahua-Tai			1,817	28.3	aware
18.	5-3	Thahua-Nua	5-4	Thahua-Tai	5-6	Somsanouk	314	4.9	
19.	5-4	Thahua-Tai	5-5	Houaypamom			56	0.9	
20.	5-4	Thahua-Tai	5-6	Somsanouk			110	1.7	
21.	5-5	Houaypamom	5-6	Somsanouk			14	0.2	
22.	5-9	Phonthong	5-10	Taothan			461	7.2	aware
23.	5-11	Nampath-Tai	5-12	Houayxi			237	3.7	
24.	5-13	Namphao	5-14	Phakoup			262	4.1	
Sub-total in Somboun Area							4,182	65.2	
Total							6,410	100.0	

Note: a/; These villages are aware of the sharing area.
Source: PRA, September-November 1997

Table 3.2.2 Per Capita Land Use at Present Conditions by Villages

Vill. No.	Village	Land Use (ha)									Per Capita Land Use (ha)									Population c/ (prn)
		Forest b/	Slash & Burn	Grass-land	Low-land Paddy	Or-chard	Fish Pond	Water Body	Other Land	Total Land Area	Forest b/	Slash & Burn	Grass-land	Low-land Paddy	Or-chard	Fish Pond	Water Body	Other Land	Total Land Area	
Namon Area																				
3-1	Vangmiang a/	1,538	26	0	204	0	0	2	51	1,822	2.56	0.04	0.00	0.34	0.00	0.00	0.00	0.08	3.04	600
3-2	Namon-Tai a/	456	0	0	160	0	0	8	87	710	0.54	0.00	0.00	0.19	0.00	0.00	0.01	0.10	0.84	849
3-3	Namon-Nua	2,262	110	142	120	4	0	1	23	2,662	2.81	0.14	0.18	0.15	0.00	0.00	0.00	0.03	3.31	804
3-4	Phonsavang	146	3	0	25	0	1	2	19	195	0.22	0.00	0.00	0.04	0.00	0.00	0.00	0.03	0.29	677
3-5	Phonkeo	1,907	138	166	29	5	0	2	23	2,269	2.08	0.15	0.18	0.03	0.01	0.00	0.00	0.02	2.48	915
3-6	Ngiou	437	14	0	71	2	0	8	23	556	1.50	0.05	0.00	0.24	0.01	0.00	0.03	0.08	1.90	292
3-7	Nalao	3,082	102	76	67	0	1	160	12	3,499	7.63	0.25	0.19	0.17	0.00	0.00	0.40	0.03	8.66	404
3-8	Nakhom	215	0	15	124	1	0	0	50	405	1.33	0.00	0.09	0.76	0.01	0.00	0.00	0.31	2.50	162
3-9	Phongnang	1,583	9	0	24	2	4	0	11	1,633	8.51	0.05	0.00	0.13	0.01	0.02	0.00	0.06	8.78	186
3-10	Nangeun-Nua	1,454	26	0	18	0	0	0	11	1,508	8.36	0.15	0.00	0.10	0.00	0.00	0.00	0.06	8.67	174
3-11	Nangeun-Tai a/	898	23	0	44	0	0	0	7	972	2.15	0.05	0.00	0.11	0.00	0.00	0.00	0.02	2.33	418
3-12	Vanghua	692	5	15	99	7	0	38	53	909	0.70	0.01	0.01	0.10	0.01	0.00	0.04	0.05	0.91	994
3-13	Houaysan a/	852	24	0	33	0	0	6	10	925	4.11	0.12	0.00	0.16	0.00	0.00	0.03	0.05	4.47	207
3-14	Nampath-Nua	484	43	0	10	0	0	3	6	546	3.01	0.27	0.00	0.06	0.00	0.00	0.02	0.03	3.39	161
	Sub-total or Average	16,005	523	413	1,029	21	5	228	385	18,610	2.34	0.08	0.06	0.15	0.00	0.00	0.03	0.06	2.72	6,843
Somboun Area																				
5-1	Houaymo-Nua	841	58	0	25	3	0	7	9	943	2.59	0.18	0.00	0.08	0.01	0.00	0.02	0.03	2.90	325
5-2	Houaymo-Tai	602	101	0	6	9	0	1,092	14	1,825	1.14	0.19	0.00	0.01	0.02	0.00	2.06	0.03	3.45	529
5-3	Thahua-Nua a/	672	24	7	5	3	2	413	22	1,148	0.62	0.02	0.01	0.00	0.00	0.00	0.38	0.02	1.06	1,086
5-4	Thahua-Tai a/	660	20	0	4	5	1	366	17	1,073	0.73	0.02	0.00	0.00	0.01	0.00	0.41	0.02	1.19	899
5-5	Houaypamom	793	115	0	2	6	3	270	15	1,205	0.70	0.10	0.00	0.00	0.01	0.00	0.24	0.01	1.07	1,128
5-6	Somsanouk	3,395	214	206	0	0	0	503	19	4,338	2.94	0.19	0.18	0.00	0.00	0.00	0.44	0.02	3.75	1,156
5-7	Nampat	755	35	0	0	0	0	0	8	798	2.39	0.11	0.00	0.00	0.00	0.00	0.00	0.02	2.53	316
5-8	Vangkhi	3,990	47	0	55	6	0	48	45	4,192	4.28	0.05	0.00	0.06	0.01	0.00	0.05	0.05	4.50	932
5-9	Phonthong a/	370	3	0	6	3	0	36	14	433	2.20	0.02	0.00	0.03	0.02	0.00	0.21	0.08	2.57	168
5-10	Taothan a/	1,239	9	0	26	5	0	54	21	1,354	2.60	0.02	0.00	0.05	0.01	0.00	0.11	0.04	2.84	476
5-11	Nampath-Tai	1,131	157	0	19	0	0	205	13	1,525	4.47	0.62	0.00	0.08	0.00	0.00	0.81	0.05	6.03	253
5-12	Houayxi	1,945	58	96	7	2	12	734	15	2,869	4.97	0.15	0.25	0.02	0.01	0.03	1.88	0.04	7.34	391
5-13	Namphao	1,587	234	0	105	36	0	250	43	2,255	1.15	0.17	0.00	0.08	0.03	0.00	0.18	0.03	1.63	1,381
5-14	Phakoup	889	19	0	0	0	0	2,015	12	2,934	2.13	0.05	0.00	0.00	0.00	0.00	4.82	0.03	7.02	418
5-15	Sivilai	0	0	0	0	0	0	0	4	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	155
	Sub-total or Average	18,870	1,095	310	260	78	18	5,992	270	26,893	1.96	0.11	0.03	0.03	0.01	0.00	0.62	0.03	2.80	9,613
	Total or Average	34,875	1,618	723	1,290	100	24	6,220	655	45,504	2.12	0.10	0.04	0.08	0.01	0.00	0.38	0.04	2.77	16,456

Note: a/; Overlapped areas in these villages are allocated based on the population size of each village. b/; Natural and man-made forests are included.
c/; Population confirmed in PRA.

Source: PRA, September-November, 1997

Table 3.2.3 Present Land Use by Villages

(Unit: ha)

Vill. No.	Village	Forest			Slash and Burn Land				Grass-land	Low-land Paddy	Or-chard	Fish Pond	Village Settle-ment	Ceme-tery	Bush	Bare Land	Water Body	Total Land Area
		Natural Forest	Man-made	Sub-total	Upland Paddy	Cass-ava	Others	Sub-total										
Namon Area																		
3-1	Vangmiang a/	1,523	16	1,538	26	0	0	26	0	204	0	0	42	3	0	5	2	1,822
3-2	Namon-Tai a/	456	0	456	0	0	0	0	0	160	0	0	20	1	30	36	8	710
3-3	Namon-Nua	2,262	0	2,262	46	43	21	110	142	120	4	0	15	6	0	1	1	2,662
3-4	Phonsavang	143	3	146	2	2	0	3	0	25	0	1	17	2	0	0	2	195
3-5	Phonkeo	1,904	3	1,907	105	33	0	138	166	29	5	0	21	2	0	0	2	2,269
3-6	Ngiou	437	0	437	12	2	0	14	0	71	2	0	15	4	0	5	8	556
3-7	Nalao	3,082	0	3,082	84	17	0	102	76	67	0	1	5	0	0	7	160	3,499
3-8	Nakhom	215	0	215	0	0	0	0	15	124	1	0	6	5	22	16	0	405
3-9	Phongnang	1,583	0	1,583	9	0	0	9	0	24	2	4	10	1	0	0	0	1,633
3-10	Nangeun-Nua	1,454	0	1,454	20	6	0	26	0	18	0	0	8	3	0	0	0	1,508
3-11	Nangeun-Tai a/	898	0	898	15	8	0	23	0	44	0	0	5	2	0	0	0	972
3-12	Vanghua	692	0	692	5		0	5	15	99	7	0	37	4	11	2	38	909
3-13	Houaysan a/	852	0	852	18	7	0	24	0	33	0	0	3	3	0	4	6	925
3-14	Nampath-Nua	483	1	484	14	3	26	43	0	10	0	0	3	2	0	0	3	546
	Sub-total or Average	15,982	23	16,005	356	121	47	523	413	1,029	21	5	208	38	63	76	228	18,610
Somboun Area																		
5-1	Houaymo-Nua	841	0	841	53	5	0	58	0	25	3	0	9	0	0	0	7	943
5-2	Houaymo-Tai	602	0	602	99	2	0	101	0	6	9	0	12	3	0	0	1,092	1,825
5-3	Thahua-Nua a/	667	5	672	13	3	9	24	7	5	3	2	21	1	0	0	413	1,148
5-4	Thahua-Tai a/	660	1	660	11	2	6	20	0	4	5	1	15	1	0	0	366	1,073
5-5	Houaypamom	781	13	793	113	2	0	115	0	2	6	3	14	1	0	0	270	1,205
5-6	Somsanouk	3,395		3,395	212	3	0	214	206	0	0	0	17	2	0	0	503	4,338
5-7	Nampat	755	0	755	35	0	0	35	0	0	0	0	4	4	0	0	0	798
5-8	Vangkhi	3,979	11	3,990	47	0	0	47	0	55	6	0	21	11	0	13	48	4,192
5-9	Phonthong a/	368	2	370	3	0	0	3	0	6	3	0	8	6	0	1	36	433
5-10	Taothan a/	1,233	6	1,239	9	0	0	9	0	26	5	0	11	7	0	3	54	1,354
5-11	Nampath-Tai	1,078	53	1,131	145	8	3	157	0	19	0	0	7	4	0	1	205	1,525
5-12	Houayxi	1,928	18	1,945	54	4	0	58	96	7	2	12	7	8	0	0	734	2,869
5-13	Namphao	1,585	2	1,587	177	56	2	234	0	105	36	0	28	15	0	0	250	2,255
5-14	Phakoup	887	2	889	16	3	0	19	0	0	0	0	6	5	0	0	2,015	2,934
5-15	Sivilai	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
	Sub-total or Average	18,758	112	18,870	987	88	20	1,095	310	260	78	18	184	69	0	18	5,992	26,893
	Total or Average	34,740	135	34,875	1,343	208	67	1,618	723	1,290	100	24	391	107	63	94	6,220	45,504

Note: Overlapped areas in these villages are distributed based on the population size of each village.

Source: PRA results carried out September-November, 1997 period

Table 3.2.4 Percentage Distribution of Present Land Use by Villages

(Unit: %)

Vill. No.	Village	Forest			Slash and Burn Land				Grass-land	Low-land Paddy	Or-chard	Fish Pond	Village Settle-ment	Ceme-tery	Bush	Bare Land	Water Body	Total Land Area
		Natural Forest	Man-made	Sub-total	Upland Paddy	Cass-ava	Others	Sub-total										
Namon Area																		
3-1	Vangmiang a/	83.6	0.9	84.4	1.4	0.0	0.0	1.4	0.0	11.2	0.0	0.0	2.3	0.2	0.0	0.3	0.1	100.0
3-2	Namon-Tai a/	64.2	0.0	64.2	0.0	0.0	0.0	0.0	0.0	22.5	0.0	0.0	2.8	0.1	4.2	5.1	1.1	100.0
3-3	Namon-Nua	85.0	0.0	85.0	1.7	1.6	0.8	4.1	5.3	4.5	0.1	0.0	0.6	0.2	0.0	0.1	0.0	100.0
3-4	Phonsavang	73.3	1.6	74.9	0.9	0.8	0.0	1.7	0.0	12.7	0.0	0.3	8.6	0.9	0.0	0.0	0.8	100.0
3-5	Phonkeo	83.9	0.1	84.0	4.6	1.5	0.0	6.1	7.3	1.3	0.2	0.0	0.9	0.1	0.0	0.0	0.1	100.0
3-6	Ngiou	78.7	0.0	78.7	2.1	0.4	0.0	2.6	0.0	12.8	0.4	0.0	2.7	0.7	0.0	0.8	1.3	100.0
3-7	Nalao	88.1	0.0	88.1	2.4	0.5	0.0	2.9	2.2	1.9	0.0	0.0	0.2	0.0	0.0	0.2	4.6	100.0
3-8	Nakhom	53.1	0.0	53.1	0.0	0.0	0.0	0.0	3.8	30.5	0.3	0.0	1.5	1.3	5.5	4.0	0.0	100.0
3-9	Phongnang	97.0	0.0	97.0	0.6	0.0	0.0	0.6	0.0	1.5	0.1	0.2	0.6	0.1	0.0	0.0	0.0	100.0
3-10	Nangeun-Nua	96.4	0.0	96.4	1.3	0.4	0.0	1.7	0.0	1.2	0.0	0.0	0.5	0.2	0.0	0.0	0.0	100.0
3-11	Nangeun-Tai a/	92.4	0.0	92.4	1.5	0.8	0.0	2.4	0.0	4.5	0.0	0.0	0.6	0.2	0.0	0.0	0.0	100.0
3-12	Vanghua	76.1	0.0	76.1	0.6	0.0	0.0	0.6	1.6	10.9	0.8	0.0	4.0	0.4	1.3	0.2	4.2	100.0
3-13	Houaysan a/	92.1	0.0	92.1	1.9	0.7	0.0	2.6	0.0	3.6	0.0	0.0	0.4	0.3	0.0	0.4	0.6	100.0
3-14	Nampath-Nua	88.4	0.3	88.6	2.6	0.6	4.8	7.9	0.0	1.9	0.0	0.0	0.6	0.4	0.0	0.0	0.5	100.0
	Sub-total or Average	85.9	0.1	86.0	1.9	0.6	0.3	2.8	2.2	5.5	0.1	0.0	1.1	0.2	0.3	0.4	1.2	100.0
Somboun Area																		
5-1	Houaymo-Nua	89.2	0.0	89.2	5.6	0.5	0.0	6.2	0.0	2.7	0.3	0.0	0.9	0.0	0.0	0.0	0.7	100.0
5-2	Houaymo-Tai	33.0	0.0	33.0	5.4	0.1	0.0	5.5	0.0	0.3	0.5	0.0	0.6	0.1	0.0	0.0	59.9	100.0
5-3	Thahua-Nua a/	58.1	0.4	58.5	1.1	0.2	0.8	2.1	0.6	0.4	0.2	0.2	1.8	0.1	0.0	0.0	36.0	100.0
5-4	Thahua-Tai a/	61.5	0.1	61.5	1.0	0.2	0.6	1.8	0.0	0.4	0.4	0.1	1.4	0.1	0.0	0.0	34.1	100.0
5-5	Houaypamom	64.8	1.0	65.8	9.4	0.1	0.0	9.5	0.0	0.2	0.5	0.3	1.2	0.1	0.0	0.0	22.4	100.0
5-6	Somsanouk	78.3	0.0	78.3	4.9	0.1	0.0	4.9	4.7	0.0	0.0	0.0	0.4	0.1	0.0	0.0	11.6	100.0
5-7	Nampat	94.6	0.0	94.6	4.4	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	100.0
5-8	Vangkhi	94.9	0.3	95.2	1.1	0.0	0.0	1.1	0.0	1.3	0.1	0.0	0.5	0.3	0.0	0.3	1.1	100.0
5-9	Phonthong a/	85.1	0.5	85.6	0.7	0.0	0.0	0.7	0.0	1.3	0.8	0.0	1.8	1.3	0.0	0.2	8.3	100.0
5-10	Taothan a/	91.1	0.4	91.5	0.7	0.0	0.0	0.7	0.0	1.9	0.4	0.0	0.8	0.5	0.0	0.2	4.0	100.0
5-11	Nampath-Tai	70.7	3.5	74.2	9.5	0.6	0.2	10.3	0.0	1.3	0.0	0.0	0.5	0.3	0.0	0.1	13.4	100.0
5-12	Houayxi	67.2	0.6	67.8	1.9	0.1	0.0	2.0	3.4	0.2	0.1	0.4	0.2	0.3	0.0	0.0	25.6	100.0
5-13	Namphao	70.3	0.1	70.4	7.8	2.5	0.1	10.4	0.0	4.6	1.6	0.0	1.2	0.7	0.0	0.0	11.1	100.0
5-14	Phakoup	30.2	0.1	30.3	0.5	0.1	0.0	0.7	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	68.7	100.0
5-15	Sivilai	0.0	7.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.5	0.0	0.0	0.0	0.0	100.0
	Sub-total or Average	69.7	0.4	70.2	3.7	0.3	0.1	4.1	1.2	1.0	0.3	0.1	0.7	0.3	0.0	0.1	22.3	100.0
	Total or Average	76.3	0.3	76.6	3.0	0.5	0.1	3.6	1.6	2.8	0.2	0.1	0.9	0.2	0.1	0.2	13.7	100.0

Note: Overlapped areas in these villages are distributed based on the population size of each village.

Source: PRA results carried out September-November, 1997 period

Table 3.2.5 Present Utilization of Forests by Villages

Vill. No.	Village	Area Distribution (ha)													Percentage Distribution (%)												
		Natural Forest											Man-made Forest	Total	Natural Forest											Man-made Forest	Total
		A	B	C	D	E	F	G	H	I	J	Sub-total			A	B	C	D	E	F	G	H	I	J	Sub-total		
Namon Area																											
3-1	Vangmuang	1,267	187	0	0	0	0	0	0	0	68	1,523	16	1,538	82.4	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	99.0	1.0	100.0
3-2	Namon-Tai	0	456	0	0	0	0	0	0	0	0	456	0	456	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-3	Namon-Nua	0	619	0	54	0	0	0	0	0	1,589	2,262	0	2,262	0.0	27.4	0.0	2.4	0.0	0.0	0.0	0.0	0.0	70.2	100.0	0.0	100.0
3-4	Phonsavang	143	0	0	0	0	0	0	0	0	0	143	3	146	97.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.9	2.1	100.0
3-5	Phonkeo	906	0	0	102	0	0	0	0	0	895	1,904	3	1,907	47.5	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	47.0	99.8	0.2	100.0
3-6	Ngiou	238	104	0	0	0	0	0	0	95	0	437	0	437	54.4	23.8	0.0	0.0	0.0	0.0	0.0	0.0	21.8	0.0	100.0	0.0	100.0
3-7	Nalao	2,711	222	0	0	0	0	0	0	0	150	3,082	0	3,082	88.0	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	100.0	0.0	100.0
3-8	Nakhom	0	215	0	0	0	0	0	0	0	0	215	0	215	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-9	Phongnang	747	363	0	0	0	0	0	0	0	472	1,583	0	1,583	47.2	22.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.8	100.0	0.0	100.0
3-10	Nangeun-Nua	813	29	236	0	0	377	0	0	0	0	1,454	0	1,454	55.9	2.0	16.2	0.0	0.0	25.9	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-11	Nangeun-Tai	415	483	0	0	0	0	0	0	0	0	898	0	898	46.3	53.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-12	Vanghua	692	0	0	0	0	0	0	0	0	0	692	0	692	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-13	Houaysan	764	70	0	0	0	0	0	0	0	18	852	0	852	89.7	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	100.0	0.0	100.0
3-14	Nampath-Nua	0	392	0	46	0	44	0	0		0	483	1	484	0.0	81.1	0.0	9.5	0.0	9.2	0.0	0.0	0.0	0.0	99.7	0.3	100.0
	Sub-total or Average	8,696	3,139	236	202	0	421	0	0	95	3,192	15,983	23	16,006	54.3	19.6	1.5	1.3	0.0	2.6	0.0	0.0	0.6	19.9	99.9	0.1	100.0
Somboun Area																											
5-1	Houaymo-Nua	557	56	0	0	0	40	0	0	188	0	841	0	841	66.3	6.7	0.0	0.0	0.0	4.7	0.0	0.0	22.3	0.0	100.0	0.0	100.0
5-2	Houaymo-Tai	247	0	0	0	0	0	291	64	0	0	602	0	602	41.0	0.0	0.0	0.0	0.0	0.0	0.0	48.3	10.6	0.0	100.0	0.0	100.0
5-3	Thahua-Nua	583	8	4	0	72	0	0	0	0	0	667	5	672	86.8	1.2	0.6	0.0	10.7	0.0	0.0	0.0	0.0	0.0	99.2	0.8	100.0
5-4	Thahua-Tai	570	26	63	0	0	0	0	0	0	0	660	1	660	86.4	4.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.9	0.1	100.0
5-5	Houaypamom	555	14	0	75	0	20	0	0	0	117	781	13	793	69.9	1.7	0.0	9.5	0.0	2.5	0.0	0.0	0.0	14.7	98.4	1.6	100.0
5-6	Somsanouk	2,626	201	0	569	0	0	0	0	0	0	3,395	0	3,395	77.3	5.9	0.0	16.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
5-7	Nampat	0	72	0	96	0	0	0	0		587	755	0	755	0.0	9.5	0.0	12.7	0.0	0.0	0.0	0.0	0.0	77.7	100.0	0.0	100.0
5-8	Vangkhi	0	578	0	1,164	0	0	0	0		2,238	3,979	11	3,990	0.0	14.5	0.0	29.2	0.0	0.0	0.0	0.0	0.0	56.1	99.7	0.3	100.0
5-9	Phonthong	0	167	0	0	0	0	0	0	0	201	368	2	370	0.0	45.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.3	99.4	0.6	100.0
5-10	Taothan	0	31	0	284	0	0	0	0	0	918	1,233	6	1,239	0.0	2.5	0.0	22.9	0.0	0.0	0.0	0.0	0.0	74.1	99.5	0.5	100.0
5-11	Nampath-Tai	420	599	0	0	0	48	0	0	0	11	1,078	53	1,131	37.2	53.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	1.0	95.3	4.7	100.0
5-12	Houayxi	1,876	44	0	0	0	0	0	0	0	8	1,928	18	1,945	96.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	99.1	0.9	100.0
5-13	Namphao	1,043	178	0	0	0	364	0	0	0	0	1,585	2	1,587	65.7	11.2	0.0	0.0	0.0	23.0	0.0	0.0	0.0	0.0	99.9	0.1	100.0
5-14	Phakoup	371	516	0	0	0	0	0	0	0	0	887	2	889	41.8	58.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.8	0.2	100.0
5-15	Sivilai	0	0	0	0	0	0	0	0		0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0
	Sub-total or Average	8,848	2,488	67	2,188	72	472	291	64	188	4,079	18,758	112	18,870	46.9	13.2	0.4	11.6	0.4	2.5	1.5	0.3	1.0	21.6	99.4	0.6	100.0
	Total or Average	17,545	5,628	303	2,390	72	893	291	64	283	7,271	34,740	135	34,876	50.3	16.1	0.9	6.9	0.2	2.6	0.8	0.2	0.8	20.8	99.6	0.4	100.0

Note:

Forest Utilization Type	Slash & Burn Cultiv.	Logging	Fuel-wood Collect.	Hunting	Non-wood Product
A	Yes	Yes	Yes	Yes	Yes
B	No	Yes	Yes	Yes	Yes
C	No	No	Yes	Yes	Yes
D	No	No	No	Yes	Yes
E	No	No	No	No	Yes
F	No	No	No	No	No
G	No	Yes	No	Yes	Yes
H	No	No	Yes	No	No
I	Yes	No	Yes	Yes	Yes
J	Unknown or not decided yet				

Source:
PRA, September-November, 1997

Table 3.2.6 Summary of Problems and Causes Analysis on Present Land Use

Problem	Cause	Impact	Solution
I. Lack of Agricultural Land			
1. Lack of lowland paddy land	- Topographically restricted for new land development	- Food shortage	- Development of new lowland paddy land
	- Lack of roads to farms	- Difficult to live in a village	- Development of irrigation system
	- Lack of irrigation facilities	- Population outflow	- Construction of farm roads
	- Lack of irrigation water	- Increase in slash and burn cultivation	- Promotion of other industries
2. Lack of slash and burn land	- Unclearness of village boundaries	- Short cultivation rotation	- Establishment of clear village boundary
	- Creation of new villages	- Slash and burn in remote areas/ other villages	- Promotion of land allocation
	- Population increase	- Soil degradation	- Development of new agri. land
		- Decrease of forest resources	- Establishment of clear rules for land use
		- Conflict among villagers in land use	- Promotion of other industries
		- Food shortage	
		- Population outflow	
II. Low Productivity in Agricultural Land			
1. Low productivity in lowland paddy	- Lack of irrigation water	- Food shortage	- Construction/ rehabilitation of irrigation facilities
	- Lack of irrigation facilities	- Low income	- Introduction of cash crops instead of paddy
	- Lack of cultivation technique		- Introduction of new culti. technique
	- Damaged by livestock		- Establishment of grazing land with fences
	- Damaged by pest		- Use of fertilizer /chemical
	- Use of low quality seeds		- Use of better seeds
2. Low productivity in slash and burn land	- Degraded soils in slash and burn land	- Food shortage	- Cash crop cultivation in slash and burn land
	- Damaged by animal	- Low income	- Cultivation of fruit trees
	- Damaged by pest		- Introduction of new culti. technique
III. Other Agriculture			
1. Forest degradation	- Expansion of slash and burn cultivation	- Decrease of river flow in the dry season	- Introduction other production system to reduce S&B
	- Unclearness of land ownership	- Occurrence of flood in the wet season	- Promotion of forest land allocation
	- Unclearness of village boundaries	- Expansion of low productive land	- Establishment of clear village boundaries
	- Illegal logging (by other villagers)	- Increase of soil erosion	- Establishment of production, grazing, and forest zones
	- Forest fire	- Increase of sedimentation in rivers	- Promotion of reforestation and fruit tree plantation
	- Free grazing of livestock	- Expansion of low productive land	- Making a fence for grazing land
	- Uncontroled fuelwood collection	- Shortage of timber	- Establishment rules for forest use and more propagation
2. High incidence of diseases	- Easily infected due to free grazing	- High mortality of livestock	- Establishment of grazing land with fence
	- Limited vaccination	- Lack of draft animals for farming	- Give more vaccination
	- Low quality and quantity feed	- Low income	- Supply of better feed
	- Limitedly available grazing land		- Introduction of new grazing technique
	- Lack of raising technique		- Development of grass land
			- Ban of sale of disease animal
3. Decrease of fish resources	- Increase of fishermen	- Decrease of fish catch	- Establishment of conservation area
	- No fish conservation area	- Increase of investment for fishing gear	- Ban of fishing in breeding season
	- Fishing in breeding season	- Low income	

Source: PRA, September - November, 1997

Table 3.3.1 Future Land Use Plan by Villages

(Unit: ha)

Vill. No.	Village	Forest			Slash and Burn Land				Grass-land	Low-land Paddy	Or-chard	Fish Pond	Village Settle-ment	Ceme-tery	Bush	Bare Land	Water Body	Total Land Area
		Natural Forest	Man-made	Sub-total	Upland Paddy	Cass-ava	Others	Sub-total										
Namon Area																		
3-1	Vangmiang a/	1,331	54	1,385	69	0	0	69	113	204	0	0	40	3	0	5	2	1,822
3-2	Namon-Tai a/	401	55	456	0	0	0	0	0	160	0	0	20	1	30	36	8	710
3-3	Namon-Nua	1,872	64	1,936	235	37	0	271	155	229	47	0	15	6	0	1	1	2,662
3-4	Phonsavang	132	14	147	0	0	0	0	0	25	2	1	18	1	0	0	2	195
3-5	Phonkeo	1,508	28	1,536	425	37	0	462	169	57	21	0	21	2	0	0	2	2,269
3-6	Ngiou b/	340	7	346	60	0	0	60	0	112	5	0	15	4	0	5	8	554
3-7	Nalao	2,419	60	2,479	509	17	0	527	221	67	33	1	5	0	0	7	160	3,499
3-8	Nakhom	153	33	187	0	0	0	0	43	124	11	0	10	5	9	16	0	405
3-9	Phongnang	1,349	0	1,349	100	0	0	100	136	31	3	4	10	1	0	0	0	1,633
3-10	Nangeun-Nua	440	159	598	691	0	0	691	98	22	88	0	8	3	0	0	0	1,508
3-11	Nangeun-Tai a/	655	0	655	146	0	0	146	102	44	18	0	5	2	0	0	0	973
3-12	Vanghua	626	0	626	0	0	0	0	86	99	6	0	37	4	11	2	38	909
3-13	Houaysan a/	815	0	815	7	14	0	20	10	57	7	0	3	3	0	4	6	925
3-14	Nampath-Nua	479	14	493	8	0	19	27	0	17	0	0	3	2	0	0	3	546
	Sub-total or Average	12,519	488	13,007	2,249	104	19	2,373	1,134	1,248	239	5	211	37	50	76	228	18,608
Somboun Area				0														
5-1	Houaymo-Nua	684	0	684	43	10	0	53	68	122	0	0	9	0	0	0	7	943
5-2	Houaymo-Tai	536	74	610	37	1	0	38	37	24	9	0	12	3	0	0	1,092	1,825
5-3	Thahua-Nua a/	558	69	627	15	0	4	19	35	3	27	2	21	1	0	0	413	1,148
5-4	Thahua-Tai a/	572	1	572	0	0	5	5	103	3	6	1	15	1	0	0	365	1,073
5-5	Houaypamom	595	49	644	48	7	0	54	147	2	69	3	14	1	0	0	270	1,205
5-6	Somsanouk	1,759	0	1,759	1,438	0	151	1,589	206	16	221	0	41	2	0	0	503	4,338
5-7	Nampat	168	18	186	434	0	88	522	39	0	43	0	4	4	0	0	0	798
5-8	Vangkhi	2,686	310	2,996	207	0	0	207	452	211	233	0	21	11	0	13	48	4,192
5-9	Phonthong a/	250	6	256	46	0	0	46	40	30	9	0	10	6	0	1	36	433
5-10	Taothan a/	442	90	532	495	0	76	571	24	60	92	0	11	7	0	3	54	1,354
5-11	Nampath-Tai	821	80	901	209	0	0	209	123	57	12	4	7	4	0	1	205	1,525
5-12	Houayxi	1,038	34	1,072	753	4	0	757	258	7	15	12	7	8	0	0	734	2,869
5-13	Namphao	1,039	2	1,041	571	56	4	630	148	141	1	0	28	15	0	0	250	2,255
5-14	Phakoup	655	54	709	8	19	0	27	0	0	172	5	6	5	0	0	2,010	2,934
5-15	Sivilai	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
	Sub-total or Average	11,803	786	12,589	4,305	96	328	4,729	1,681	675	909	27	211	69	0	18	5,986	26,893
	Total or Average	24,322	1,274	25,596	6,554	200	347	7,102	2,814	1,923	1,148	33	421	106	50	94	6,214	45,501

Note: a/; Overlapped areas in these villages are distributed based on the population size of each village.
b/; 2.2 ha of army camp are excluded.

Source: PRA, September-November 1997

Table 3.3.2 Percentage Distribution of Future Land Use Plan by Villages

(Unit: %)

Vill. No.	Village	Forest			Slash and Burn Land				Grass-land	Low-land Paddy	Or-chard	Fish Pond	Village Settle-ment	Ceme-tery	Bush	Bare Land	Water Body	Total Land Area
		Natural Forest	Man-made	Sub-total	Upland Paddy	Cass-ava	Others	Sub-total										
Namon Area																		
3-1	Vangmiang a/	73.1	3.0	76.0	3.8	0.0	0.0	3.8	6.2	11.2	0.0	0.0	2.2	0.2	0.0	0.3	0.1	100.0
3-2	Namon-Tai a/	56.4	7.7	64.2	0.0	0.0	0.0	0.0	0.0	22.5	0.0	0.0	2.8	0.1	4.2	5.1	1.1	100.0
3-3	Namon-Nua	70.3	2.4	72.7	8.8	1.4	0.0	10.2	5.8	8.6	1.8	0.0	0.6	0.2	0.0	0.1	0.0	100.0
3-4	Phonsavang	68.0	7.4	75.3	0.0	0.0	0.0	0.0	0.0	12.7	0.8	0.3	9.3	0.6	0.0	0.0	0.8	100.0
3-5	Phonkeo	66.5	1.2	67.7	18.7	1.6	0.0	20.3	7.4	2.5	0.9	0.0	0.9	0.1	0.0	0.0	0.1	100.0
3-6	Ngiou b/	61.4	1.2	62.5	10.8	0.0	0.0	10.8	0.0	20.3	0.8	0.0	2.7	0.7	0.0	0.8	1.4	100.0
3-7	Nalao	69.1	1.7	70.8	14.6	0.5	0.0	15.0	6.3	1.9	0.9	0.0	0.2	0.0	0.0	0.2	4.6	100.0
3-8	Nakhom	37.9	8.2	46.1	0.0	0.0	0.0	0.0	10.7	30.5	2.7	0.0	2.4	1.3	2.2	4.0	0.0	100.0
3-9	Phongnang	82.6	0.0	82.6	6.1	0.0	0.0	6.1	8.3	1.9	0.2	0.2	0.6	0.1	0.0	0.0	0.0	100.0
3-10	Nangeun-Nua	29.1	10.5	39.7	45.8	0.0	0.0	45.8	6.5	1.5	5.8	0.0	0.5	0.2	0.0	0.0	0.0	100.0
3-11	Nangeun-Tai a/	67.3	0.0	67.3	15.0	0.0	0.0	15.0	10.5	4.5	1.9	0.0	0.6	0.2	0.0	0.0	0.0	100.0
3-12	Vanghua	68.9	0.0	68.9	0.0	0.0	0.0	0.0	9.5	10.9	0.7	0.0	4.0	0.4	1.3	0.2	4.2	100.0
3-13	Houaysan a/	88.1	0.0	88.1	0.7	1.5	0.0	2.2	1.1	6.1	0.7	0.0	0.4	0.3	0.0	0.4	0.6	100.0
3-14	Nampath-Nua	87.7	2.6	90.3	1.5	0.0	3.5	5.0	0.0	3.1	0.0	0.0	0.6	0.4	0.0	0.0	0.5	100.0
	Sub-total or Average	67.3	2.6	69.9	12.1	0.6	0.1	12.8	6.1	6.7	1.3	0.0	1.1	0.2	0.3	0.4	1.2	100.0
Somboun Area																		
5-1	Houaymo-Nua	72.6	0.0	72.6	4.6	1.1	0.0	5.7	7.2	12.9	0.0	0.0	0.9	0.0	0.0	0.0	0.7	100.0
5-2	Houaymo-Tai	29.4	4.0	33.4	2.0	0.0	0.0	2.1	2.0	1.3	0.5	0.0	0.6	0.1	0.0	0.0	59.9	100.0
5-3	Thahua-Nua a/	48.6	6.0	54.6	1.3	0.0	0.4	1.7	3.0	0.3	2.4	0.2	1.8	0.1	0.0	0.0	36.0	100.0
5-4	Thahua-Tai a/	53.3	0.1	53.3	0.0	0.0	0.5	0.5	9.6	0.3	0.5	0.1	1.4	0.1	0.0	0.0	34.1	100.0
5-5	Houaypamom	49.4	4.1	53.5	4.0	0.5	0.0	4.5	12.2	0.1	5.8	0.3	1.2	0.1	0.0	0.0	22.4	100.0
5-6	Somsanouk	40.6	0.0	40.6	33.1	0.0	3.5	36.6	4.7	0.4	5.1	0.0	1.0	0.1	0.0	0.0	11.6	100.0
5-7	Nampat	21.1	2.3	23.3	54.4	0.0	11.0	65.5	4.9	0.0	5.4	0.0	0.5	0.5	0.0	0.0	0.0	100.0
5-8	Vangkhi	64.1	7.4	71.5	4.9	0.0	0.0	4.9	10.8	5.0	5.6	0.0	0.5	0.3	0.0	0.3	1.1	100.0
5-9	Phonthong a/	57.9	1.3	59.2	10.6	0.0	0.0	10.6	9.2	6.9	2.0	0.0	2.2	1.3	0.0	0.2	8.3	100.0
5-10	Taothan a/	32.6	6.6	39.3	36.6	0.0	5.6	42.2	1.8	4.4	6.8	0.0	0.8	0.5	0.0	0.2	4.0	100.0
5-11	Nampath-Tai	53.9	5.3	59.1	13.7	0.0	0.0	13.7	8.1	3.8	0.8	0.3	0.5	0.3	0.0	0.1	13.4	100.0
5-12	Houayxi	36.2	1.2	37.4	26.2	0.1	0.0	26.4	9.0	0.2	0.5	0.4	0.2	0.3	0.0	0.0	25.6	100.0
5-13	Namphao	46.1	0.1	46.2	25.3	2.5	0.2	28.0	6.6	6.3	0.1	0.0	1.2	0.7	0.0	0.0	11.1	100.0
5-14	Phakoup	22.3	1.8	24.2	0.3	0.6	0.0	0.9	0.0	0.0	5.9	0.2	0.2	0.2	0.0	0.0	68.5	100.0
5-15	Sivilai	0.0	7.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.5	0.0	0.0	0.0	0.0	100.0
	Sub-total or Average	43.9	2.9	46.8	16.0	0.4	1.2	17.6	6.2	2.5	3.4	0.1	0.8	0.3	0.0	0.1	22.3	100.0
	Total or Average	53.5	2.8	56.3	14.4	0.4	0.8	15.6	6.2	4.2	2.5	0.1	0.9	0.2	0.1	0.2	13.7	100.0

Note: a/; Overlapped areas in these villages are distributed based on the population size of each village.
b/; 2.2 ha of army camp are excluded.

Source: PRA, September-November 1997

Table 3.3.3 Future Utilization of Forests by Villages

Vill. No.	Village	Area Distribution (ha)													Percentage Distribution (%)											
		Natural Forest										Man-made Forest	Total		Natural Forest										Man-made Forest	Total
		A	B	C	D	E	F	G	H	I	J	Sub-total			A	B	C	D	E	F	G	H	I	J	Sub-total		
Namon Area																											
3-1	Vangmiang	0	570	0	270	0	491	0	0	0	0	1,331	54	1,385	0.0	41.1	0.0	19.5	0.0	35.4	0.0	0.0	0.0	0.0	96.1	3.9	100.0
3-2	Namon-Tai	0	195	0	0	0	206	0	0	0	0	401	55	456	0.0	42.8	0.0	0.0	0.0	45.2	0.0	0.0	0.0	0.0	87.9	12.1	100.0
3-3	Namon-Nua	0	30	0	1,789	0	52	0	0	0	0	1,872	64	1,936	0.0	1.6	0.0	92.4	0.0	2.7	0.0	0.0	0.0	0.0	96.7	3.3	100.0
3-4	Phonsavang	0	102	0	0	0	31	0	0	0	0	132	14	147	0.0	69.3	0.0	0.0	0.0	20.9	0.0	0.0	0.0	0.0	90.2	9.8	100.0
3-5	Phonkeo	0	856	0	338	0	60	0	0	0	254	1,508	28	1,536	0.0	55.7	0.0	22.0	0.0	3.9	0.0	0.0	0.0	16.5	98.2	1.8	100.0
3-6	Ngiou	0	105	29	44	0	50	0	0	0	112	340	7	346	0.0	30.3	8.4	12.6	0.0	14.6	0.0	0.0	0.0	32.3	98.1	1.9	100.0
3-7	Nalao	0	533	97	789	0	971	0	0	0	29	2,419	60	2,479	0.0	21.5	3.9	31.8	0.0	39.2	0.0	0.0	0.0	1.2	97.6	2.4	100.0
3-8	Nakhom	0	134	0	0	0	20	0	0	0	0	153	33	187	0.0	71.6	0.0	0.0	0.0	10.5	0.0	0.0	0.0	0.0	82.1	17.9	100.0
3-9	Phongnang	0	405	0	239	0	705	0	0	0	0	1,349	0	1,349	0.0	30.0	0.0	17.7	0.0	52.3	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-10	Nangeun-Nua	0	19	0	26	0	395	0	0	0	0	440	159	598	0.0	3.1	0.0	4.3	0.0	66.1	0.0	0.0	0.0	0.0	73.5	26.5	100.0
3-11	Nangeun-Tai	0	262	0	0	0	393	0	0	0	0	655	0	655	0.0	40.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-12	Vanghua	0	360	0	194	0	73	0	0	0	0	626	0	815	0.0	57.4	0.0	31.0	0.0	11.6	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-13	Houaysan	0	582	0	89	0	144	0	0	0	0	815	0	815	0.0	71.4	0.0	11.0	0.0	17.6	0.0	0.0	0.0	0.0	100.0	0.0	100.0
3-14	Nampath-Nua	0	411	0	0	0	67	0	0	0	0	479	14	493	0.0	83.4	0.0	0.0	0.0	13.7	0.0	0.0	0.0	0.0	97.1	2.9	100.0
	Sub-total or Average	0	4,563	126	3,777	0	3,658	0	0	0	395	12,519	488	13,007	0.0	35.1	1.0	29.0	0.0	28.1	0.0	0.0	0.0	3.0	96.2	3.8	100.0
Somboun Area																											
5-1	Houaymo-Nua	0	237	0	269	0	177	0	0	0	2	684	0	684	0.0	34.6	0.0	39.3	0.0	25.8	0.0	0.0	0.0	0.3	100.0	0.0	100.0
5-2	Houaymo-Tai	0	174	0	0	0	362	0	0	0	0	536	74	610	0.0	28.5	0.0	0.0	0.0	59.3	0.0	0.0	0.0	0.3	87.9	12.1	100.0
5-3	Thahua-Nua	0	8	0	469	0	79	0	0	0	2	558	69	627	0.0	1.2	0.0	74.9	0.0	12.6	0.0	0.0	0.0	0.3	89.0	11.0	100.0
5-4	Thahua-Tai	0	0	0	509	0	63	0	0	0	0	572	1	572	0.0	0.0	0.0	88.9	0.0	11.0	0.0	0.0	0.0	0.0	99.9	0.1	100.0
5-5	Houaypamom	469	14	0	0	0	113	0	0	0	0	595	49	644	72.7	2.1	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0	92.4	7.6	100.0
5-6	Somsanouk	0	168	0	528	0	1,063	0	0	0	0	1,759	0	1,759	0.0	9.6	0.0	30.0	0.0	60.4	0.0	0.0	0.0	0.0	100.0	0.0	100.0
5-7	Nampat	0	13	0	0	0	155	0	0	0	0	168	18	186	0.0	7.0	0.0	0.0	0.0	83.3	0.0	0.0	0.0	0.0	90.3	9.7	100.0
5-8	Vangkhi	0	649	0	498	0	1,539	0	0	0	0	2,686	310	2,996	0.0	21.7	0.0	16.6	0.0	51.4	0.0	0.0	0.0	0.0	89.7	10.3	100.0
5-9	Phonthong	0	39	0	0	0	211	0	0	0	0	250	6	256	0.0	15.2	0.0	0.0	0.0	82.6	0.0	0.0	0.0	0.0	97.8	2.2	100.0
5-10	Taothan	0	122	0	92	0	228	0	0	0	0	442	90	532	0.0	23.0	0.0	17.3	0.0	42.8	0.0	0.0	0.0	1.0	91.1	8.9	100.0
5-11	Nampath-Tai	0	289	0	0	0	523	0	0	0	9	821	80	901	0.0	32.1	0.0	0.0	0.0	58.0	0.0	0.0	0.0	0.8	96.8	3.2	100.0
5-12	Houayxi	0	74	0	52	0	903	0	0	0	8	1,038	34	1,072	0.0	6.9	0.0	4.9	0.0	84.2	0.0	0.0	0.0	0.8	99.8	0.2	100.0
5-13	Namphao	0	665	0	0	0	374	0	0	0	0	1,039	2	1,041	0.0	63.9	0.0	0.0	0.0	35.9	0.0	0.0	0.0	0.0	99.8	0.2	100.0
5-14	Phakoup	0	620	0	0	0	35	0	0	0	0	655	54	709	0.0	87.5	0.0	0.0	0.0	4.9	0.0	0.0	0.0	0.0	92.4	7.6	100.0
5-15	Sivilai	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
	Sub-total or Average	469	3,072	0	2,416	0	5,825	0	0	0	21	11,803	786	12,589	3.7	24.4	0.0	19.2	0.0	46.3	0.0	0.0	0.0	0.2	93.8	6.2	100.0
	Total or Average	469	7,635	126	6,194	0	9,483	0	0	0	416	24,322	1,274	25,596	1.8	29.8	0.5	24.2	0.0	37.0	0.0	0.0	0.0	1.6	95.0	5.0	100.0

Note:

Forest Utilization Type	Slash & Burn Cultiv.	Logg-ing	Fuel-wood Collect.	Hunting	Non-wood Product
A	Yes	Yes	Yes	Yes	Yes
B	No	Yes	Yes	Yes	Yes
C	No	No	Yes	Yes	Yes
D	No	No	No	Yes	Yes
E	No	No	No	No	Yes
F	No	No	No	No	No
G	No	Yes	No	Yes	Yes
H	No	No	Yes	No	No
I	Yes	No	Yes	Yes	Yes
J	Unknown or not decided yet				

Source:
PRA, September-November, 1997

Table 3.3.4 Changes of Forest Utilization from Present to Future by Categories and Villages

Vill. No.	Village	Forest Utilization at Present					Forest Utilization in the Future					Changes in Forest Utilization (Future - Present or Future / Present x 100)									
		Protec-tion (ha)	Sym-biosis (ha)	Man-made (ha)	Others (ha)	Total (ha)	Protec-tion (ha)	Sym-biosis (ha)	Man-made (ha)	Others (ha)	Total (ha)	Protection Forest		Symbiosis Forest		Man-made Forest		Other Forests		Total Forests	
												(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)
Namon Area																					
3-1	Vangmiang	0	187	16	1,336	1,538	491	840	54	0	1,385	491	-	653	450	38	346	-1,336	0	-153	90
3-2	Namon-Tai	0	456	0	0	456	206	195	55	0	456	206	-	-261	43	55	-	0	-	0	100
3-3	Namon-Nua	0	673	0	1,589	2,262	52	1,819	64	0	1,936	52	-	1,146	270	64	-	-1,589	0	-326	86
3-4	Phonsavang	0	0	3	143	146	31	102	14	0	147	31	-	102	-	11	465	-143	0	1	101
3-5	Phonkeo	0	102	3	1,802	1,907	60	1,194	28	254	1,536	60	-	1,092	1,171	25	875	-1,547	14	-371	81
3-6	Ngiou	0	104	0	333	437	50	178	7	112	346	50	-	74	171	7	-	-222	34	-91	79
3-7	Nalao	0	222	0	2,861	3,082	971	1,419	60	29	2,479	971	-	1,197	640	60	-	-2,832	1	-604	80
3-8	Nakhom	0	215	0	0	215	20	134	33	0	187	20	-	-81	62	33	-	0	-	-28	87
3-9	Phongnang	0	363	0	1,220	1,583	705	643	0	0	1,349	705	-	280	177	0	-	-1,220	0	-234	85
3-10	Nangeun-Nua	377	265	0	813	1,454	395	44	159	0	598	19	105	-221	17	159	-	-813	0	-856	41
3-11	Nangeun-Tai	0	483	0	415	898	393	262	0	0	655	393	-	-221	54	0	-	-415	0	-243	73
3-12	Vanghua	0	0	0	692	692	73	553	0	0	626	73	-	553	-	0	-	-692	0	-66	91
3-13	Houaysan	0	70	0	782	852	144	671	0	0	815	144	-	602	962	0	-	-782	0	-37	96
3-14	Nampath-Nua	44	438	1	0	484	67	411	14	0	493	23	152	-27	94	13	1,014	0	-	9	102
	Sub-total or Average	421	3,578	23	11,984	16,006	3,658	8,466	488	395	13,007	3,236	868	4,888	237	465	2,095	-11,589	0.0	-2,999	81
Somboun Area																					
5-1	Houaymo-Nua	40	56	0	745	841	177	506	0	2	684	137	444	450	903	0	-	-743	0	-157	81
5-2	Houaymo-Tai	0	355	0	247	602	362	174	74	0	610	362	-	-181	49	74	-	-247	0	7	101
5-3	Thahua-Nua	0	84	5	583	672	79	477	69	2	627	79	-	393	570	64	1,347	-581	0	-45	93
5-4	Thahua-Tai	0	89	1	570	660	63	509	1	0	572	63	-	419	570	0	100	-570	0	-88	87
5-5	Houaypamom	20	89	13	671	793	113	14	49	469	644	93	560	-75	15	36	387	-203	70	-149	81
5-6	Somsanouk	0	770	0	2,626	3,395	1,063	696	0	0	1,759	1,063	-	-74	90	0	-	-2,626	0	-1,636	52
5-7	Nampat	0	168	0	587	755	155	13	18	0	186	155	-	-155	8	18	-	-587	0	-569	25
5-8	Vangkhi	0	1,742	11	2,238	3,990	1,539	1,146	310	0	2,996	1,539	-	-595	66	299	2,818	-2,238	0	-995	75
5-9	Phonthong	0	167	2	201	370	211	39	6	0	256	211	-	-128	23	3	259	-201	0	-114	69
5-10	Taothan	0	315	6	918	1,239	228	214	90	0	532	228	-	-100	68	84	1,483	-918	0	-707	43
5-11	Nampath-Tai	48	599	53	431	1,131	523	289	80	9	901	475	1,089	-310	48	27	151	-422	2	-230	80
5-12	Houayxi	0	44	18	1,884	1,945	903	127	34	8	1,072	903	-	83	290	17	196	-1,876	0	-873	55
5-13	Namphao	364	178	2	1,043	1,587	374	665	2	0	1,041	10	103	488	374	0	100	-1,043	0	-546	66
5-14	Phakoup	0	516	2	371	889	35	620	54	0	709	35	-	104	120	52	3,375	-371	0	-180	80
5-15	Sivilai	0	0	0	0	0	0	0	0	0	0	0	-	0	-	0	94	0	-	0	94
	Sub-total or Average	472	5,170	112	13,115	18,870	5,825	5,488	786	490	12,589	5,353	1,234	318	106	674	702	-12,626	4	-6,280	67
	Total or Average	893	8,748	135	25,099	34,876	9,483	13,954	1,274	885	25,596	8,589	1,061	5,207	160	1,139	942	-24,214	4	-9,280	73

Source: PRA, September - Nobember, 1997

Table 3.3.5 (1/2) Preference Raking of Villagers' Needs on Land Use

	No. 1		No. 2		No. 3		No. 4		No. 5	
	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item
Namon Area										
3-1 Vangmiang	Annual crops	Rice Peanut Maize	Fruit trees	Rambutan Tamarind	Indust. trees	Tectona grandis Afzelia sp. Hopea sp.	Livestock & Fishery	Poultry Fish Cattle & pig	Non-agriculture	Weaving
3-2 Namon-Tai	Annual crops	Rice Peanut Cucumber	Fruit trees	Tamarind Longan Rambutan	Indust. trees	Teak Eucalyptus Cochinchinesis	Livestock	Poultry Pig & cattle	Non-agriculture	Weaving Blacksmith
3-3 Namon-Nua	Livestock	Cattle/ buffalo Fish Poultry	Fruit trees	Tamarind Rambutan Mango	Annual crops	Rice Peanut Pineapple	Indust. trees	Rubber trees Teak Eucalyptus		
3-4 Phonsavang	Annual crops	Rice Peanut Melon	Livestock & Fishery	Pig Poultry Fish	Non-agriculture	Weaving	Fruit trees	Pineapple Banana Mango		
3-5 Phonkeo	Annual crops	Rice Cassava Watermelon	Fruit trees	Mango Tamarind Lemon	Indust. trees	Tectona grandis Sindora sp. Pterocarpus sp.	Livestock	Cattle Pig Poultry	Non-agriculture	Knitting Blacksmith
3-6 Ngiou	Annual crops	Rice Chile Cabbage	Fruit trees	Tamarind Mango Longan	Indust. trees	Teak Leucanea alata Eucalyptus	Livestock	Cattle Pigs Poultry	Non-agriculture	Weaving
3-7 Nalao	Annual crops	Rice Maize Cassava	Fruit trees	Tamarind Mango Lemon	Indust. trees	Teak Mai Ngiou Mai Dou				
3-8 Nakhom	Annual crops	Rice Cucumbers Peanut	Fruit trees	Mak Phuk Tamarind Coconuts	Indust. trees	Teak Mai Dou May Tae	Livestock & Fishery	Buffalo Cow Fish		
3-9 Phongnang	Annual crops	Rice	Livestock	Cattle Pig Poultry	Fruit trees	Mango Pineapple	Indust. trees	Teak		
3-10 Nangeun-Nua	Annual crop	Rice	Indust. trees	Teak Rose wood Afzelia	Fruit trees	Mango Coconuts Pomelo	Livestock	Buffalo Cow		
3-11 Nangeun-Tai	Annual crops	Rice Cassava Ginger	Livestock & Fishery	Cow Buffalo Fish	Fruit tree	(pineapple)	Indust. trees	Tectona- grandis		
3-12 Vanghua	Annual crops	Rice Cucumber Beans	Fruit trees	Coconut Rambutan Lamout	Livestock & Fishery	Cow Poultry Fish	Indust. trees	Teak Mai Khilek Mai Kungpu	Non-agriculture	Weaving
3-13 Houaysan	Annual crops	Rice Peanuts Water melon	Livestock	Pig Buffalo Cow	Fruit trees	Banana Pineapple				
3-14 Nampath-Nua	Annual crops	Rice Chile Maize	Livestock	Buffalo Cow Pig	Indust. trees	Teak Eucalyptus	Fruit trees	Pineapple Banana Mango	Non-agriculture	Weaving

Source: PRA, September - December, 1997

Table 3.3.5 (2/2) Preference Raking of Villagers' Needs on Land Use

	No. 1		No. 2		No. 3		No. 4		No. 5	
	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item	Main Item	Sub Item
Somboun Area										
5-1 Houaymo-Nua	Annual crops	Rice Maize Chile	Fruit trees	Mango Coconuts Tamarind	Indust. trees	Teak Mai Dou Kathin Narong	Livestock	Cow Buffalo Goats	Non-agriculture	Weaving Tailoring
5-2 Houaymo-Tai	Annual crops	Rice Cassava	Fish culture	Pa Nin Carp Catfish	Fruit trees	Jackfruit Mango Tamarind	Livestock	Buffalo Cow Goat	Non-agriculture	Weaving
5-3 Thahua-Nua	Fruit trees	Mango Tamarind Jackfruit	Livestock	Cow Buffalo Pig	Indust. trees	Teak Rose wood Afzelia				
5-4 Thahua-Tai	Livestock	Cattle Poultry Pig	Fish culture		Fruit trees	Mango Tamarind Longan	Indust. trees	Teak Genus Leuceana Eucalyptus		
5-5 Houaypamom	Annual crops	Rice Cassava	Fruit trees	Banana Pineapple Mangoes	Indust. trees	Teak Maidou Maitaeka	Livestock	Cow Buffalo Poultry	Non-agriculture	Weaving Bamboo works
5-6 Somsanouk	Livestock & Fishery	Cow Fish Poultry	Annual crops	Rice Cassava Chile	Fruit trees	Banana Pineapple Mango	Indust. trees	Teak		
5-7 Nampat	Livestock & Fishery	Cattle Fish Pig	Fruit trees	Coconuts Lemon Pineapple	Annual crops	Chile Cassava Onion	Non-agriculture	Weaving		
5-8 Vangkhi	Annual crops	Rice	Livestock	Pig Cattle Poultry	Fruit trees	Rambutan Mango Longan	Non-agriculture	Weaving	Indust. trees	Teak
5-9 Phonthong	Annual crops	Rice Chile Cabbage	Livestock & Fishery	Cattle Buffalo Fish	Fruit trees	Banana Mango Pineapple	Indust. trees	Teak Mai Gue Tree	Non-agriculture	Weaving
5-10 Taothan	Annual crops	Rice Chile	Fruit trees	Tamarind Mango Banana	Livestock	Cattle Fish Poultry	Indst. trees	Teak	Non-agriculture	Weaving
5-11 Nampath-Tai	Fruit trees	Tamarind Hogpalum Mango	Annual crops	Rice Peanut Pineapple	Indust. trees	Teak Pterocarpus Sindoras cho.	Livestock	Poultry Pig Cows		
5-12 Houayxi	Livestock & Fishery	Fish Poultry Pig	Annual crops	Cassava Maize Banana	Indust. trees	Teak Mai Safang Mai Pong	Non-agriculture	Weaving		
5-13 Namphao	Annual crops	Rice Cassava Pineapple	Livestock & Fishery	Pig Poultry Fish	Fruit trees	Banana Mango Tamarind	Indust. trees	Teak	Non-agriculture	Weaving
5-14 Phakoup	Livestock	Pig Poultry Fish	Non-agriculture	Weaving	Annual crops	Cassava Chile Pineapple	Fruit trees	Banana Mango Jujube	Public infrast.	Dispensary Tubewell School repair
5-15 Sivilai	Annual crops	Rice Cash crops	Fruit trees		Indust. trees		Livestock	Cow Buffalo Pig	Fishery	

Source: PRA, September - December, 1997

Table 3.3.6 Preference Raking of Villagers' Needs for Implementation of Land Use Plan

No.	Village	Annual Crops							Fruit Trees							Livestock / Fishery							Industrial Trees							Cottage Industry						
		Fund	Seed/ stock	Tec- hnic	Mar- ket	Irri. water	Fer- til.	Inse- cti.	Fund	Seed/ stock	Tec- hnic	Mar- ket	Irri. water	Fer- til.	Inse- cti.	Fund	Seed/ stock	Tec- hnic	Mar- ket	Irri. water	Fer- til.	Inse- cti.	Fund	Seed/ stock	Tec- hnic	Mar- ket	Irri. water	Fer- til.	Inse- cti.	Fund	Seed/ stock	Tec- hnic	Mar- ket	Irri. water	Fer- til.	Inse- cti.
Namon Area																																				
3-1	Vangmiang	-	M	-	L	H	L	ML	L	H	M	-	L	-	-	H	M	L	-	-	-	-	M	HM	L	-	-	-	-	M	-	L	H	-	-	-
3-2	Namon-Tai	-	M	L	L	H	M	L	L	H	M	-	-	-	-	HM	HM	L			-	-	HM	HM	L	-	-	-	-	H	-	L	H	-	-	-
3-3	Namon-Nua	HM	HM	ML	H	H	-	H	M	HML	ML	HM	L	-	-	HM	H	ML	HM	HM	-	-	HM	H	HL	HL	-	-	-	-	-	-	-	-	-	-
3-4	Phonsavang	HM	HM	ML	-	HM	HL	ML	H	HM	H	-	-	M	M	HM	H	HM	-	-	-	-	-	-	-	-	-	-	-	H	-	-	H	-	-	-
3-5	Phonkeo	H	ML	ML	L	HL	M	ML	H	L	M	-	-	-	-	H	-	ML	L	-	-	-	H	M	L	-	-	-	-	H	-	M	M	-	-	-
3-6	Ngiou	-	HM	-	-	HL	M	L	H	M	L	-	-	-	-	H	HM	ML	-	-	-	-	H	M	L	-	-	-	-	H	-	M	L	-	-	-
3-7	Nalao	HL	ML	ML	-	HL	HL	ML	M	L	H	-	-	-	-	HM	L	HL	-	-	-	HM	H	M	L	-	-	-	-	H	-	L	M	-	-	-
3-8	Nakhom	-	HML	-	-	H	M	HML	H	M	L	-	-	-	-	HL	H	M	M(f)	-	-	-	H	M	L	-	-	-	-	-	-	-	-	-	-	-
3-9	Phongnang	H	-	HM	HM	-	-	-	-	-	H	M	-	-	-	H	-	HM	H	-	-	-	H	-	-	-	-	-	-	H	-	HM	H	-	-	-
3-10	Nangeun-Nua	H	-	H	-	-	-	-	H	-	M	-	-	-	-	H	-	-	-	-	-	-	H	-	H	-	-	-	-	-	-	-	-	-	-	-
3-11	Nangeun-Tai	H	H	-	H	H	M	L	-	-	-	H	-	-	-	-	M(f)	H	-	-	-	-	-	H	-	-	-	-	-	-	-	H	-	-	-	-
3-12	Vanghua	H	H	-	-	H	-	-	H	H	H	-	-	-	-	H	H	H	-	H(f)	-	-	-	H	-	-	-	-	-	H	-	-	-	-	-	-
3-13	Houaysan	HL	HM	HM	-	-	L	M	H	H	-	-	-	-	-	H	M	HL	-	-	-	-	-	-	-	-	-	-	-	-	-	H	-	-	-	-
3-14	Nampath-Nua	HM	HL	L	ML	HL	-	-	H	H	L	M	-	-	-	H	HM	ML	-	-	-	-	H	H	-	-	-	-	-	H	-	-	-	-	-	-
Somboun Area																																				
5-1	Houaymo-Nua	H	HM	M	-	-	-	M	-	M	M	-	-	-	M	H	-	M	-	-	-	-	-	HM	M	-	-	-	-	H	-	-	-	-	-	-
5-2	Houaymo-Tai	H	M	M	-	H	-	M	-	H	-	-	-	-	-	H	-	M	-	-	-	-	H	-	M	-	-	-	-	H	-	-	-	-	-	-
5-3	Thahua-Nua	-	-	-	-	-	-	-	H	H	M	-	-	M	-	H	H	M	H	-	-	-	H	H	M	-	-	-	-	-	-	-	-	-	-	-
5-4	Thahua-Tai	-	-	-	-	-	-	-	HM	HM	HM	-	-	-	-	H	M	H	-	-	-	-	HM	HM	H	-	-	-	-	H	-	M		-	-	-
5-5	Houaypamom	H	H	M	-	-	M	-	H	H	HM	-	-	-	-	H	H	HML	-	-	-	-	H	H	M	H	-	-	-	H	-	-	H	-	-	-
5-6	Somsanouk	H	ML	H	M	-	HML	L	-	HML	HML	HML	-	ML	ML	HL	ML	ML	-	-	-	-	-	H	M	-	-	L	L	-	-	-		-	-	-
5-7	Nampat	L	HML	L	H	-	L	L	HML	HML	ML	HML	-	M	-	HL	HML	HM	-	M	-		-	-	-	-	-	-	-	H	-	H	H	-	-	-
5-8	Vangkhi	HM	M	HM	-	H	M	M	-	M	M	M	-	M	M	HML	M	HM	L	-	-	HM	M	M	L	-	-	L	L	M	-	L	H	-	-	-
5-9	Phonthong	HM	HML	ML	L	H	ML	ML	M	HML	ML	ML	-	M	M	H	H	HM	L	-	-	-	M	HM	ML	-	-	M	L	M	-	M	H	-	-	-
5-10	Taothan	H	H	M	-	M	-	ML	HM	H	ML	-	-		M	H	-	HM	M	H(f)		M	H	H	H	-	-	-	-	H	-	H	L	-	-	-
5-11	Nampath-Tai	H	HL	ML	H	-	-	-	H	HM	ML	L	-	ML	-	H	H(f)	M	-	-	-	-	H	H	M	-	-	-	-	H	-	M	HL	-	-	-
5-12	Houayxi	-	H	-	M	-	-	-	-	-	-	-	-	-	-	H	M	L(f)	HM	-	-	M	H	H	M	H	-	H	M	H	-	H	H	-	-	-
5-13	Namphao	H	ML	M	H	-	H	H	H	M	H	ML	-	L	H	H	HM	M	HM	-	-	HM	H	H	M	-	-	-	-	H	-	-	M	-	-	-
5-14	Phakoup	H	L	H	HM	-	-	-	H	H	H	M	-	M	M	H	H	H	HM	-	-	HM	H	H	H	-	-	M	M	-	-	-	-	-	-	-
5-15	Sivilai	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	H	H(f)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: H=Needs are high, M=Needs are medium, L=Needs are low

Source: Results of PRA carried out September - November, 1997 period

Table 3.4.1 Preference Ranking of Villagers' Needs on Social Infrastructure

No.	Village	Preference Ranking			
		No. 1	No. 2	No. 3	No. 4
Namon Area					
3-1	Vangmiang	Road improve.	Domestic water	Health service	School improve.
3-2	Namon-Tai	Domestic water	Health service	School improve.	
3-3	Namon-Nua	Electrification	Domestic water	Health service	School improve.
3-4	Phonsavang	School improve.			
3-5	Phonkeo	School improve.	Health service	Road improve.	
3-6	Ngiou	Road improve.	School improve.	Electrification	Domestic water
3-7	Nalao	Electrification	New road&bridge	School improve.	Health service
3-8	Nakhom	Electrification	Road improve.	Domestic water	Health service
3-9	Phongnang	New road const.	Domestic water	School improve.	Health service
3-10	Nangeun-Nua	New road const.	School improve.	Domestic water	Health service
3-11	Nangeun-Tai	New road const.	School improve.	Domestic water	Health service
3-12	Vanghua	Domestic water	School improve.	Road to school	
3-13	Houaysan	Road improve.	School improve.	Domestic water	Health service
3-14	Nampath-Nua	Road to farm	School improve.		
Somboun Area					
5-1	Houaymo-Nua	Electrification	Health service	School improve.	Road to farm
5-2	Houaymo-Tai	Road to farm	Electrification to all villagers	Domestic water	School improve.
5-3	Thahua-Nua	School improve.	Electrification to all villagers	Domestic water	Health service
5-4	Thahua-Tai	School improve.	Domestic water	Health service	
5-5	Houaypamom	School improve.	Domestic water	Health service	
5-6	Somsanouk	Domestic water	Health service		
5-7	Nampat	Domestic water	School improve.		
5-8	Vangkhi	Domestic water	Health service	School improve.	
5-9	Phonthong	Domestic water			
5-10	Taothan	Domestic water			
5-11	Nampath-Tai	Domestic water	School improve.	Health service	Electrification
5-12	Houayxi	Domestic water	Electrification	School improve.	Health service
5-13	Namphao	School improve.	Domestic water	Health service	Community hall
5-14	Phakoup	School improve.	Domestic water	Health service	
5-15	Sivilai	Electrification	Health service		

Souce: Results of PRA carried out September - November, 1997 period

Table 4.3.1 Socio-economic Projection for Future Expansion of Slash and Burn Land

		Namon Area	Somboun Area	Model Area Total or Ave.
Present Condition (Based on Socio-economic Baseline Survey Results)				
I. Paddy Production				
Lowland paddy	(ton)	1,450	290	1,740
Upland paddy	(ton)	320	1,150	1,470
Total paddy	(ton)	1,770	1,440	3,210
II. Paddy Consumption				
Per capita consumption	(kg)	276	272	273
Population	(prn)	6,779	9,378	16,157
Total consumption	(ton)	1,870	2,551	4,420
III. Paddy Balance	(ton)	-100	-1,111	-1,210
Future Condition (Estimated for Yr. 2008)				
I. Paddy Production				
Lowland paddy a/	(ton)	1,740	348	2,088
Upland paddy b/	(ton)	320	1,150	1,470
Total paddy	(ton)	2,060	1,498	3,558
II. Paddy Consumption				
Per capita consumption c/	(kg)	300	300	300
Population d/	(prn)	9,100	12,600	21,700
Total consumption	(ton)	2,730	3,780	6,510
III. Paddy Balance	(ton)	-670	-2,282	-2,952
IV. Upland Paddy Area Requirement e/				
Additional production needed	(ton)	570	1,171	1,742
Assumed yield of upland paddy	(t/ha)	1.00	1.00	1.00
Additional upland area needed	(ha)	570	1,171	1,742
V. Increase of Slash and Burn Land Area				
Present slash and burn land area (1997)	(ha)	356	987	1,343
Additional S&B land area needed (2008)	(ha)	570	1,171	1,742
Total S&B land area needed (2008)	(ha)	926	2,158	3,085
Increase of S&B land area	(%)	260	219	230

Note: a/; 20% increase is assumed for the year 2008.
b/; Assumed to be the same with the present condition.
c/; Assumed to be the same with the national average from 1992 to 1994 according to FAO estimate.
d/; National population increase rate of 2.48 % p.a. during 1985-1995 period is applied for 1996 population.
e/; Only upland paddy area expansion is assumed to be performed to fulfill the paddy shortage.

FIGURES

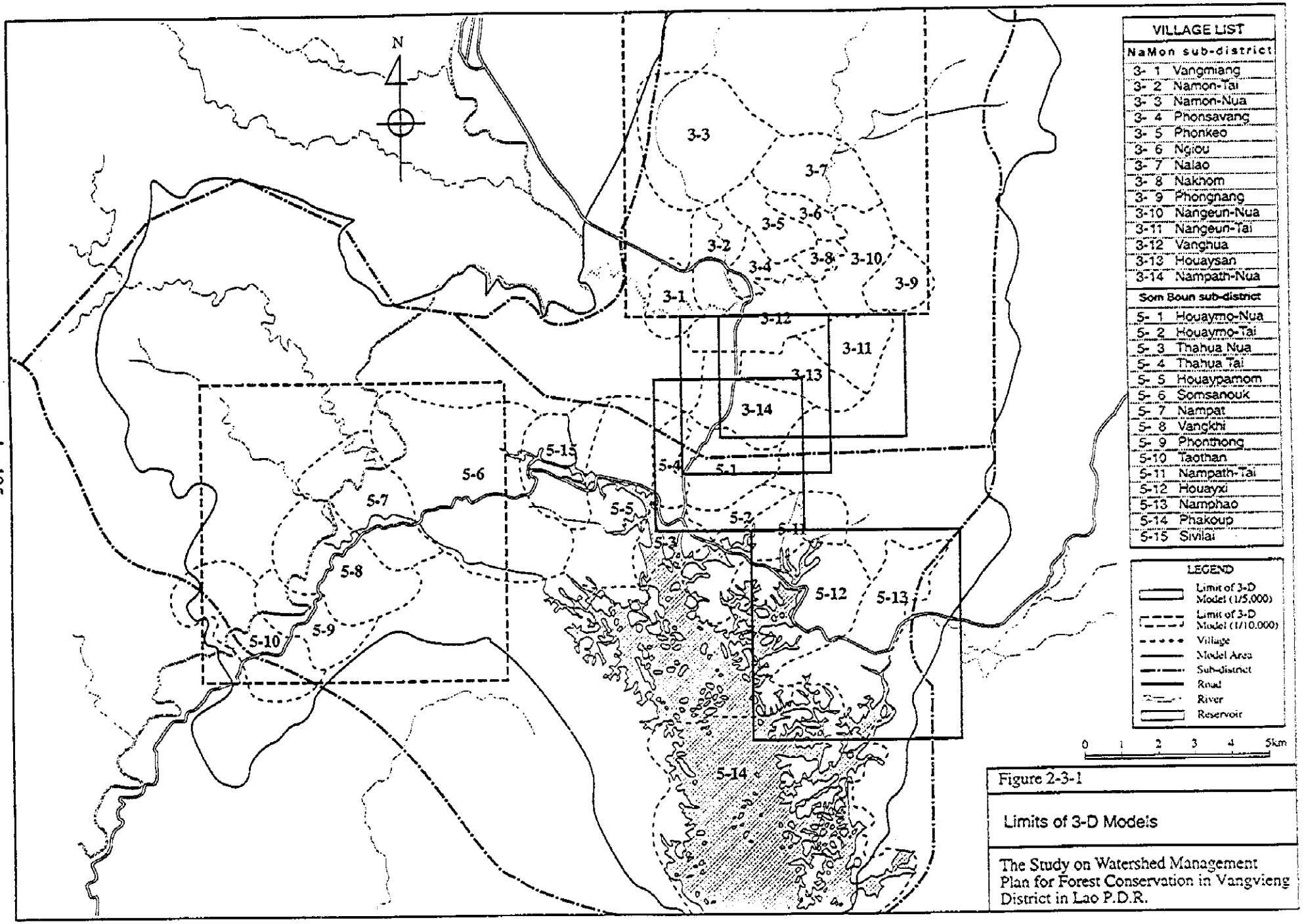
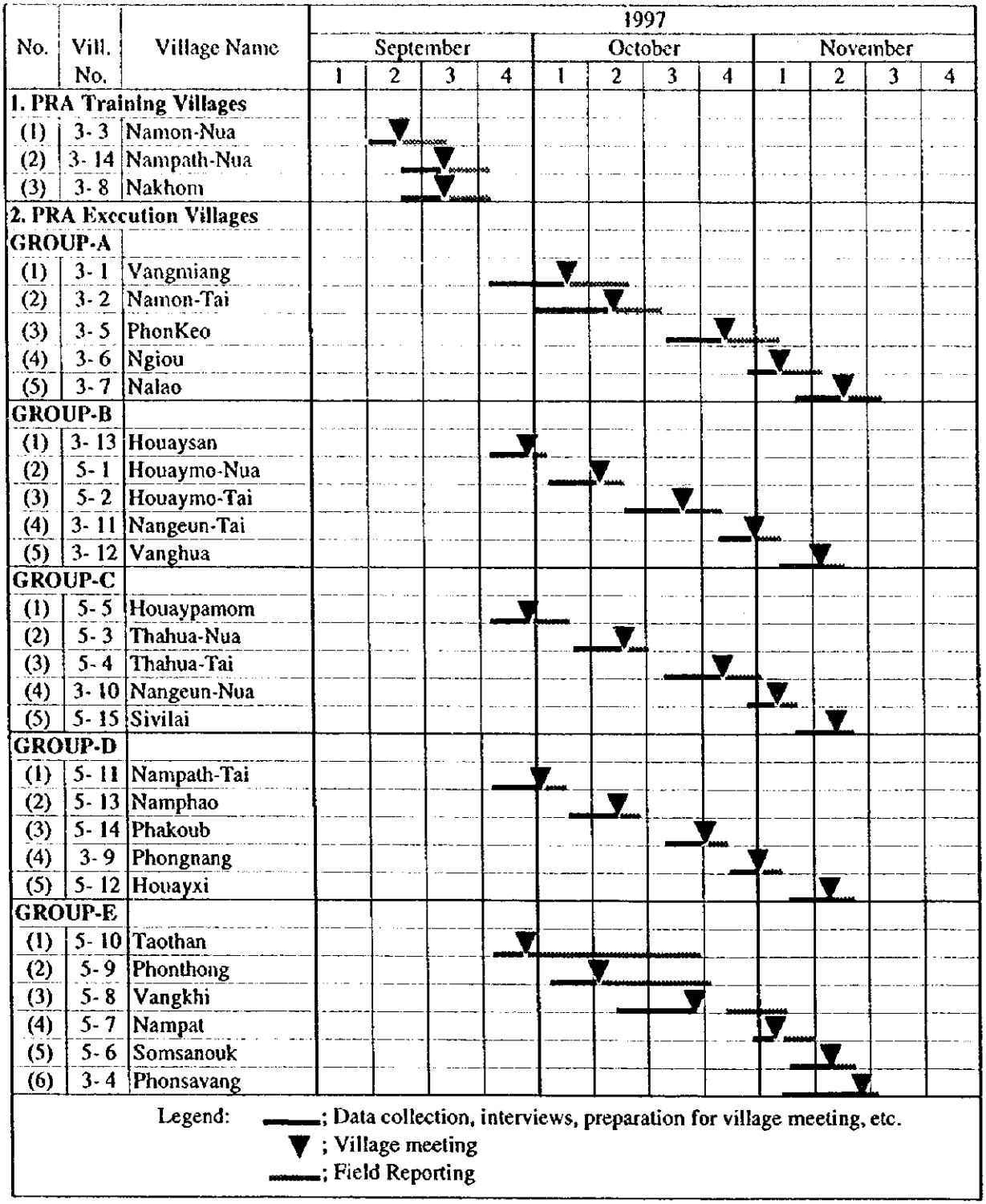


Figure 2-3-1

Limits of 3-D Models

The Study on Watershed Management Plan for Forest Conservation in Vangvieng District in Lao P.D.R.

Fig. 2.3.2 Actual Schedule of Each PRA Field Group for Village PRA



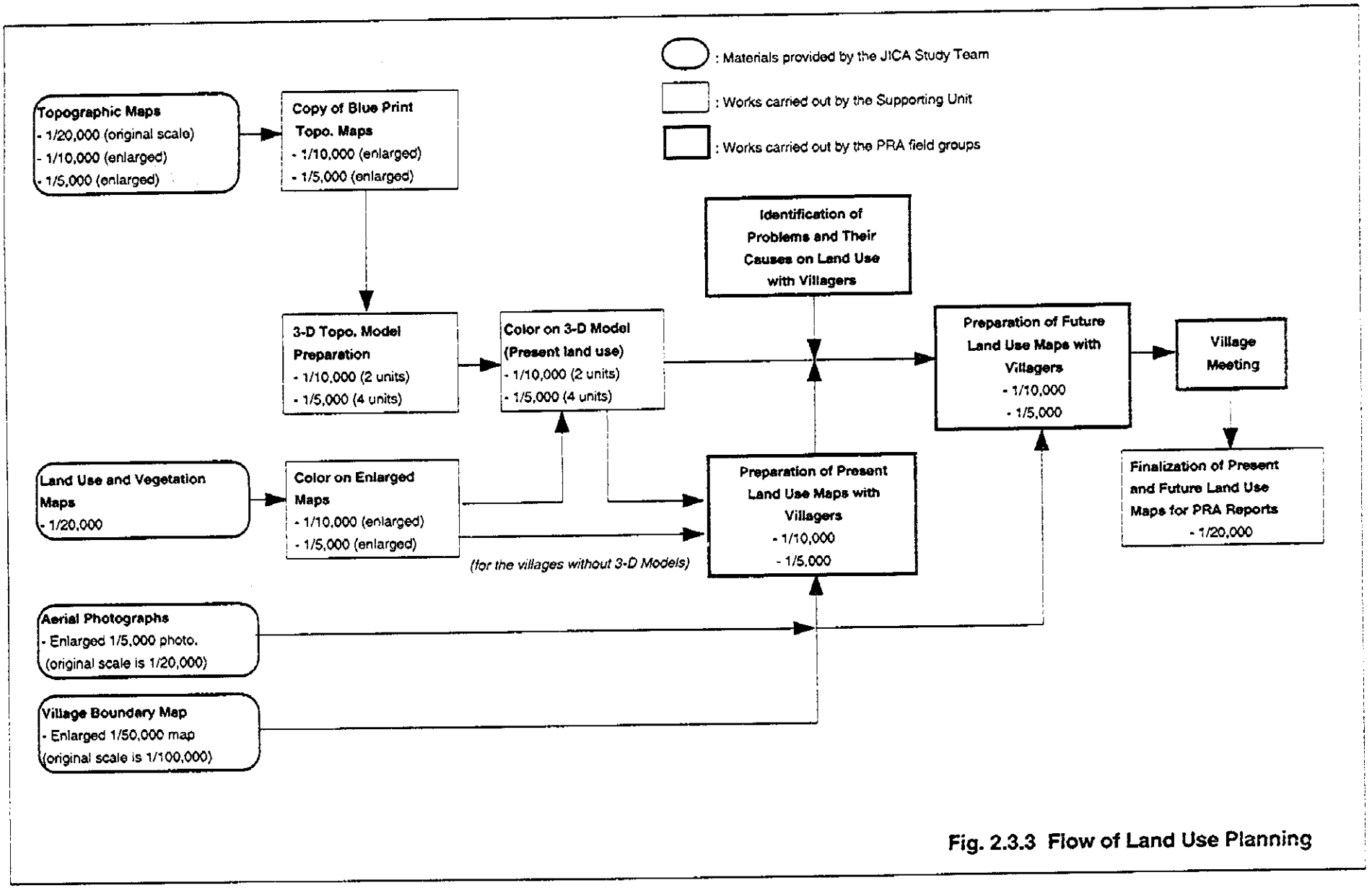


Fig. 2.3.3 Flow of Land Use Planning

VILLAGE LIST			
Namon Area		Somboun Area	
3-1	Vanginiang	5-1	Houaymo-Nua
3-2	Namon-Tai	5-2	Houaymo-Tai
3-3	Namon-Nua	5-3	Thahua-Nua
3-4	Phonsavang	5-4	Thahua-Tai
3-5	Phonkeo	5-5	Houaypamoon
3-6	Ngiou	5-6	Somsanouk
3-7	Nalao	5-7	Nampat
3-8	Nakhom	5-8	Vangkhi
3-9	Phongnang	5-9	Phonthong
3-10	Nangeun-Nua	5-10	Taodhan
3-11	Nangeun-Tai	5-11	Nampath-Tai
3-12	Vanghua	5-12	Houayxi
3-13	Houaysan	5-13	Namphao
3-14	Nampath-Nua	5-14	Phakoup
		5-15	Sivilai

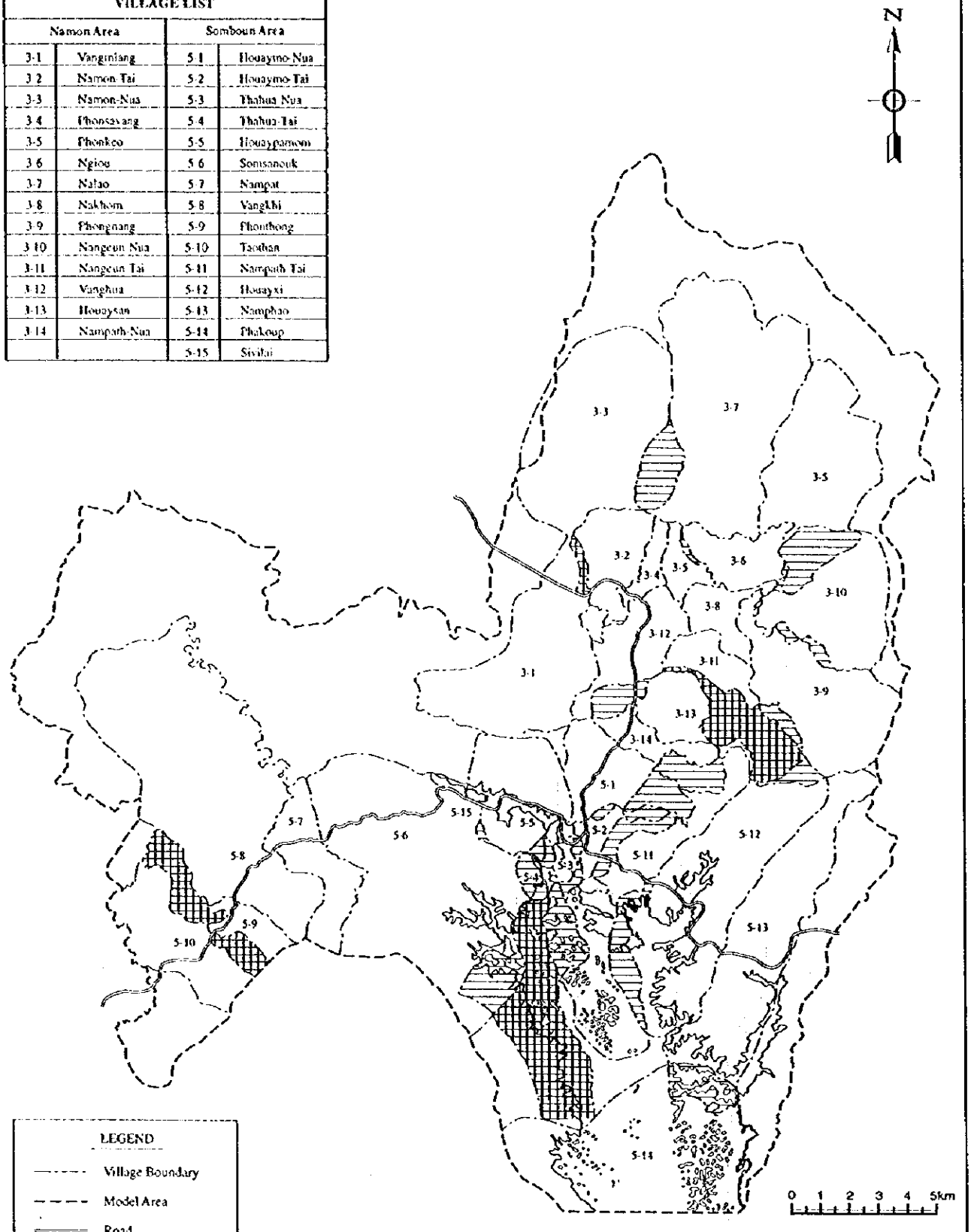


Fig 3-2-1

Village Boundries Delineated by Villagers in PRA

The Study on Watershed Management Plan for Forest Conservation in Vangvieng District

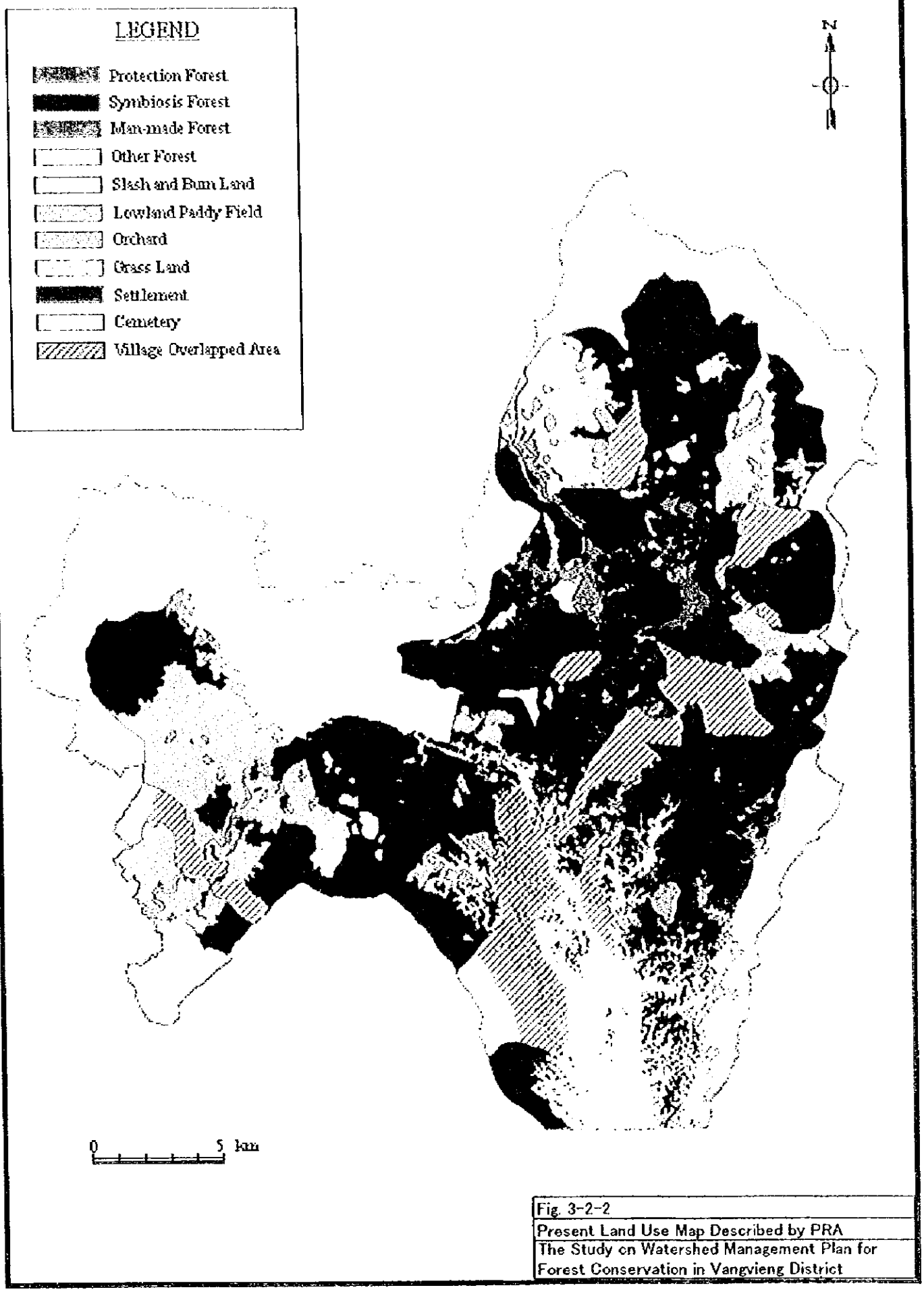


Fig. 3-2-2
Present Land Use Map Described by PRA
The Study on Watershed Management Plan for Forest Conservation in Vangvieng District

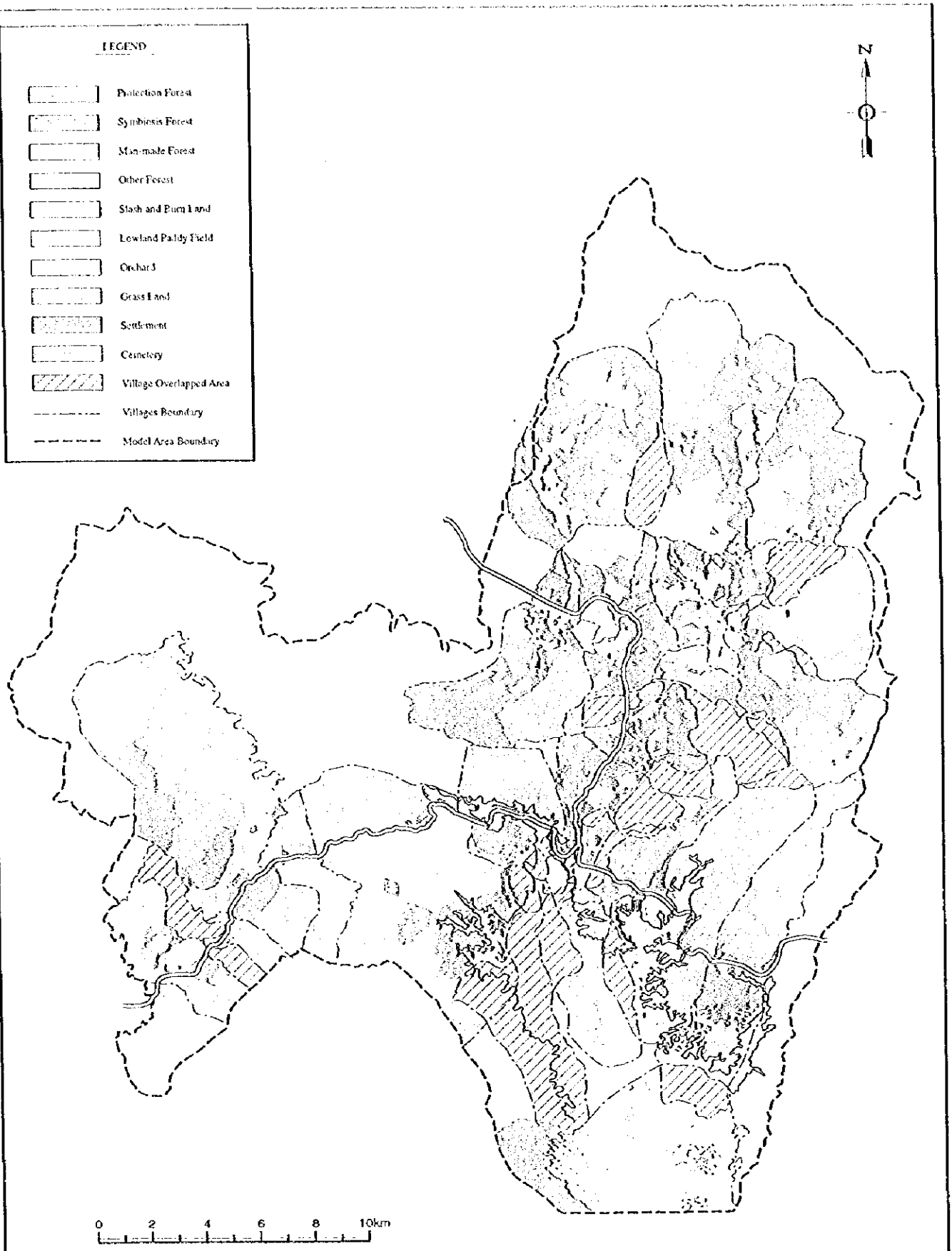


Fig 3-3-1

Village Level Future Land Use Classification Map

The Study on Watershed Management Plan for Forest Conservation in Vangvieng District

ATTACHMENT

ATTACHMENT
PARTICIPATORY RURAL APPRAISAL (PRA)
TRAINING CURRICULUM

1. 1st Classroom Exercise in Vientiane
From September 1 to 6 (6 days)

1. September 1 (Mon.)

8:30 - 10:00	- Introduction to the training course; goal and objectives
10:00 - 10:15	- Coffee break
10:15- 12:00	- Presentation on participants' experiences and expectations
12:00 - 14:00	- Lunch break
14:00 - 15:30	- Division of participants for classroom exercises - Preparation of equipment and materials for classroom exercises
15:30 - 15:45	- Coffee break
15:45 - 17:00	- Preparation of secondary data and information

2. September 2 (Tue.)

8:30 - 10:00	- Lecture on principles and concepts of land-use planning
10:00 - 10:15	- Coffee break
10:15 - 12:00	- Lecture on principles and concepts of land-use planning (cont.)
12:00 - 14:00	- Lunch break
14:00 - 15:30	- Lecture on aerial photograph interpretation - Preparation of equipment and materials for classroom exercises
15:30 - 15:45	- Coffee break
15:45 - 17:00	- Lecture on principles and concepts of PRA

3. September 3 (Wed.)

8:30 - 10:00	- Lecture on tools and techniques for PRA
10:00 - 10:15	- Coffee break
10:15 - 12:00	- Lecture on tools and techniques for PRA; interviewing and diagramming (cont.)
12:00 - 14:00	- Lunch break
14:00 - 15:30	- Group exercise; interviewing
15:30 - 15:45	- Coffee break
15:45 - 17:00	- Group presentation of interviewing results

4. September 4 (Thu.)

8:30 - 10:00	- Lecture on tools and techniques for PRA; transect walks and sketch mapping
10:00 - 10:15	- Coffee break
10:15 - 12:00	- Group exercise; diagramming and preference ranking
12:00 - 14:00	- Lunch break
14:00 - 15:30	- Group presentation; diagramming and ranking
15:30 - 15:45	- Coffee break
15:45 - 17:00	- Group exercise; sketch mapping

5. September 5 (Fri.)

8:30 - 10:00	- Lecture on application of 3-D model and aerial photograph in land-use planning
10:00 - 10:15	- Coffee break
10:15 - 12:00	- Lecture on application of 3-D model and aerial photograph in land-use planning (cont.)
12:00 - 14:00	- Lunch break
14:00 - 15:30	- Group exercise; transferring land-use boundary on to the 3-D model

15:30 - 15:45 - Coffee break
15:45 - 17:00 - Group exercise (cont.)

6. September 6 (Sat.)
8:30 - 10:00 - Lecture on PRA framework preparation
10:00 - 10:15 - Coffee break
10:15 - 12:00 - Preparation of PRA framework
12:00 - 14:00 - Lunch break
14:00 - 15:30 - Presentation of PRA framework
- Improvement of PRA framework
15:30 - 15:45 - Coffee break
15:45 - 17:00 - Preparation for field exercise

II. Field Exercise in Vangvieng From September 7 to 19 (13 days)

7. September 7 (Sun.)
14:00 - - Move to Vangvieng

8. September 8 (Mon.)
8:00 - 17:00 - PRA field practice in Namon-Nua village
18:00 - 19:00 - Review of collected data
20:00 - 22:00 - Brainstorming

9. September 9 (Tue.)
8:00 - 17:00 - PRA field practice in Namon-Nua village
18:00 - 19:00 - Review of collected data
20:00 - 22:00 - Brainstorming

10. September 10 (Wed.)
8:00 - 12:00 - Preparation data and materials for village meeting
12:00 - 14:00 - Lunch break
14:00 - 18:00 - Village meeting

11. September 11 (Thu.)
8:00 - 17:00 - Review and analysis of data
- Writing first draft report
20:00 - 22:30 - Report presentation for suggestions and comments

12. September 12 (Fri.)
16:00 - 18:00 - Preparation of PRA teams for PRA field practice in Nampath-Nua and Nakhom villages

13. September 13 (Sat.)
8:00 - 17:00 - PRA field practice in Nampath-Nua and Nakhom villages
18:00 - 19:00 - Review of collected data
20:00 - 22:00 - Brainstorming

14. September 14 (Sun.)
8:00 - 17:00 - PRA field practice in Nampath-Nua and Nakhom villages
18:00 - 19:00 - Review of collected data
20:00 - 22:00 - Brainstorming

15. September 15 (Mon.)
8:00 - 17:00 - Review of collected data
19:00 - 22:00 - Brainstorming

16. September 16 (Tue.)
8:00 - 12:00 - Collecting additional data in Nampath-Nua and Nakhom villages
14:00 - 17:00 - Review and analysis of data
- Preparation of data and materials for village meeting

17. September 17 (Wed.)

8:00 - 12:00	- Village meeting in Nakhom village
14:00 - 17:00	- Village meeting in Nampath-Nua village
18:00 - 19:30	- Brainstorming for Nampath-Nua village

18. September 18 (Thu.)

8:00 - 10:00	- Brainstorming for Nakhom village
10:00 - 16:00	- Report writing for the two villages
16:00 - 18:00	- Conclusion of field practices

19. September 19 (Fri.)

8:30 -	- Move to Vientiane
	- Writing final reports

III. 2nd Field Exercise in Vangvieng
From September 20 to 21 (2 days)

20. September 20 (Sat.)

14:00 - 17:00	- Preparation for the presentation of PRA results

21. September 21 (Sun.)

8:30 - 12:00	- Presentation of PRA results
12:00 - 12:30	- Ending of the training