

**Regional Environmental Technical Assistance 5771
Poverty Reduction & Environmental Management in Remote Greater
Mekong Subregion Watersheds Project (Phase I)**

**RRA Report on
the Profile of Nam Ou Watershed,
Phongsaly Province**

Watershed Profile

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CONTENTS

1	Background	2
2	Introduction	2
3	Description of surveyed villages	3
3.1	Village size	3
3.2	Main Feature of interest	4
4	Demographic features	5
4.1	Population and growth	5
4.2	Trend of Population growth	5
4.3	Gender Issues	5
4.4	Ethnicity and its effects on environmental management and poverty	6
5	Environmental indicators	9
5.1	Resource base	9
5.2	Land use pattern	12
5.3	Land and resource tenure	13
5.4	Summary of environmental conditions	13
6.	Poverty indicators	17
6.1	Education	17
6.2	Housing	19
6.3	Health	20
6.4	Employment opportunities	21
6.5	Summary of poverty conditions	21
7	Development priorities	24
7.1	Provincial development plans and actions	24
7.2	Development Projects active in the Province	25
8	Conclusion and Recommendation for Phase II	28

1. Background

This report is prepared as a consequence of the Mid Term Report Review (MTR) of the project entitled "Poverty Reduction and Environmental management in Remote Greater Mekong Subregion Watershed" (Phase I) under the support of Regional Environmental Technical Assistance Project (RETA, No. 5771) and Science Technology and Environment Organisation (STENO). As a result of the MTR workshop, Nam Ou Watershed was selected and proposed as the potential and priority site for further study and development in according to the criteria set by RETA.

This report is a result of a short-term study of the Nam Ou watershed with priority areas given in Phongsaly Province. The study aim to present profile and overview of Nam Ou watershed in terms of socio-economic development and natural resource management as well as how local minor ethnic people develop their livelihood. This report also try to compile some of the intervention measures carried out and promoted by government and other international support projects active in the areas.

According to the scope of the survey, The team visited and met with different Provincial Offices and Division as well as District authorities and included villages and households interviewed. Schedule of the field activities has been summarised in **Annex 1.1**. There were four representative villages selected to be visited and interviewed. According to the Terms of reference, at least one of the village locates near the National Biodiversity Conservation Area (NBCA) should be visited. However, due to the communication and transportation constraints the team can not visit villages locate near the Phou Dene Dinh NBCA. To do so, it needs three days walk to access to the target villages. So the team skipped and replaced those villages by visiting the northern most of the watershed and Phongsaly Province. Selected villages for visiting were discussed and agreed upon with local (district) authorities. Although number of the selected villages and households are relatively small but they were presumably represented the diverse of ethnic minorities in the watershed (Phongsaly Province).

2. Introduction

Nam Ou ranges as longest Mekong tributary that is originated in Lao territory with a length of about 425 km. It is originated from the mountain ridges that border Laos and China and flow southwards through Oudomxay Province before it meets the Mekong River at Luang Prabang Provinces. Figure 1.1 and 1.2 shows the location of the study area and the river system in the area. Nam Ou watershed is covered almost entire Phongsaly province, some parts of Oudomxay and small part of Luang Prabang Provinces. The total watershed area is about 24,653 Km² of which about 14,230 Km² attached to Phongsaly Province and the remaining area attach to Oudomxay and Luang Prabang Provinces. Due to its topographic and accessible conditions this study is target to the entire Phongsaly Province in which more than 50 per cent of its land area fall under Nam Ou Watershed, except only small part is fallen to Nam Houay Tale in May District, the south-eastern district of the province and border with Vietnam. Houay Tale catchment that is attached to May District, Phongsaly Province and has a land area of about 1,175 km². The mainstream of this river network flow to Vietnam.

Administratively Phongsaly comprises of seven Districts namely Phongsaly, Nhod Ou, Boun Nuea, Boun Tai, Samphanh, May and Khoua with 609 villages. The Province is considered as the most remote in Lao PDR with a rudimentary infrastructure and poor communication. Communication from the central provincial administration to other districts are very difficult and in far distance, accept the district of Phongsaly, Boun Nuea, Boun Tai, Khoua and May. Based on the National Forest Inventory conducted by National Office for Forest Inventory and Planning (NOFIP, 1992), it was reported that about **30%** of the province still cover by forest that is include large portion of primary forest and so-called Phou Dene Dinh in which now declared as Protected Area or NBCA (Decree 186, 1993). The large portion of Production Forest is identified and located in Boun Tai District. The exploitation survey had been carried out and logging plan had been prepared. Now the forest production area is under logging operation to supply timber to the sawmill at Ban Yo in Boun Tai District. In the upper watershed where Nam Ou originated and its tributaries, is the area where some ethnic groups have been settled. While some logging activities also carried out in these areas, especially where road is accessible.

3. Description of surveyed villages

According to the difficulties in accessibility through out the Phongsaly Province, the survey team had conducted the field survey and observation in Nhod Ou, Phongsaly, Boun Nuea, Boun Tai, Samphanh and Khoua Districts. Four representative villages were selected for village and households interviews. Village profiles are summarised in **Annex 2.1**. Based on the field survey and observation some of the following aspects can be summarised:

3.1 Village size

Size of villages is varied due to its location, ethnic groups and availability of permanent agriculture land especially paddy. Village size ranges from 20 households to 80 households. Small villages are normally located in the remote area where no access road available. Large villages are normally located near the main roads and have long history in settlement. Normally, these villages have enough permanent agricultural land and the ratio of production land compared with number of villagers is high. Rice production from both lowland paddy and upland field are mainly for self-subsistence purpose. Household size in general is about 6 person per household.

Although there are diverse in ethnic groups in the Province, shifting cultivation and upland farming system are a common cultivation practice for almost of the population especially in the Phongsaly, Samphanh, Boun Tai and Khoua Districts, while flat area with potential for paddy development is limited and scared.

Due to poor communication and accessibility that result in the difficulty to exchange goods and consumable items between village and villages, villages and Districts and District and Districts. Many villages are still not having access road and to access to these villages can only do by walk of which some villages will take one or two days walk from the district centre.

From the surveyed villages and observation, Lue and Lao ethnic groups are the dominant ethnic group to have skill in low land and terracing paddy development while Khamu Phounoy and other ethnic groups are mainly engaged in shifting cultivation.

Yao and other minority group in Nhod Ou District are promoted to settle along and near the main road from Boun Nuea to Lantouy Area via Nhod Ou District. Sugar cane plantation has been promoted to substitute rice cultivation in the upland. In 1998, there were about 800 hectares of sugar cane plantation established and yielded. However, the sugarcane had been exported to the sugar mill in China located about 12 km from Lao-Chinese border. Sugar cane plantation has been promoted with the expectation to generate cash income for these ethnic groups, but there are some problems occurred when sugar cane processed in the mill while sugar cane producers are not receiving money due to unclear marketing system managed by the Provincial Commercial Office of Phongsaly and Sugar Mill in China. As a results villagers who did not receive money from selling sugar cane have no money to buy rice and these group of people have had a rice shortage for more than 8-9 months in 1998-99.

Opium production is still practised by some of the ethnic groups through out the Province and Nam Ou watershed especially villages locate in remote mountainous areas and border with China and Vietnam. Opium cultivation is also reported in the villages near the District administrative centre such as a Khamu village in Samphanh District where access is possible only by walk and rare of extension visit from the District technical services.

3.2 Main Feature of interest

Regarding agricultural land use, at present most of surveyed villages are facing with land scarcity especially paddy and upland for shifting cultivation. Rotation of upland or shifting cultivation is shorter when compared with last ten or fifteen years ago. Rice shortage had been reported in the Yao and Khamu villages where people are mostly engaged in shifting cultivation. Rice shortage ranges from 4 to 8 months a year due to limited upland areas and short rotation of fallow period that resulted in insufficient rice production and low yield respectively.

Access to road network, health improvement through disease prevention and clean water accessibility are other main interests of the interviewed

villages. Common diseases in the Province as well as reported by villagers are malaria, acute respiratory infection, and diarrhoea that sometimes caused dead of villagers.

Health service facility is not yet available in many villages even in some District Centres. Health care and service as well as clean water have been raised as a major concerned of the interviewed villages and people

4. Demographic features

4.1 Population and growth

The population in Phongsaly Province is considerably diverse in ethnic groups compared with population in other provinces in the country. At present, there are about 156,300 people inhabit in Phongsaly Province. From the census in 1995, population growth was estimated at about 2.3 percent per annum (NSC, 1995) and the recent figure it was report that population growth in the province has been decreased due to some of the population have moved to the southwards. The movement of population is in dynamic conditions. Due to the limitation of low land and irrigated paddy fields, some of its population have moved to other provinces namely Lung Namtha, Luang Prabang, Borikhamxay where some potential lands for paddy development are still available and other mean of livelihood development are considerably better.

4.2 Trend of Population growth

Regarding population growth, it is estimate that rate of growth has been reduced to the level of less than two per cent. From the census in 1995, population in Phongsaly was 152,848 inhabitants. In 1998, the provincial statistic estimated that the population in Phongsaly was about 156,300 inhabitants. From this figure, it is estimated that about 2,000 people were added up every year, even some people have moved to other provinces.

4.3 Gender Issues

Study on gender issues in the watershed and province has so far not yet been carried out by any institution. However, from the observation and with few knowledge from the interview with men, women and the concerned organisations in the province some of the following points can be summarised:

- In some ethnic groups women is considered to have lower status in terms of decision making, opportunity for education and access to information.
- Most of the participants participate in the meeting and discussion are still dominated by men.
- Some ethnic groups are still prefer to have son rather than daughter
- Men are considered as the family head of which any legal status men will be firstly recognised.
- The status of women in the villages is generally low and women have little power in decision making within the family or control over family resources.
- Women in some ethnic groups are prohibited from attending formal health service during or after pregnancy.

4.4 Ethnicity and its effects on environmental management and poverty

Numbers of ethnic groups who settle in Phongsaly Province have been reported in different number by different sources. The Provincial Office reported that there are about 31 different ethnic groups recorded in Phongsaly Province. However, some of the similar ethnic group were grouped and called as the same name of other group. **Table 4.1** shows Ethnic group and its Population in Phongsaly Province as summarised by the Planning and Co-operation Office of Phongsaly Province. In the report of Stephen (1998), there were 31 different ethnic groups classified (**Table 4.2**). The diversity of ethnic groups are simplified officially by division into three main groups have been divided as follows:

- Lao Loum: Lao (Lowland), Lue, Tai Dam
- Lao Theung: Khamu, Phounoy, Lao Seng
- Lao Soung: Ikor, Hmong and Lolo

The existence of various ethnic groups living in relative isolation in scattered villages and different in physical environment throughout the watershed (Phongsaly Province) that is resulting in an heterogeneous situation in terms of local ethnic knowledge. For instance, Lue and Thai Lao are vary knowledgeable about growing rice on terraced paddy fields where some ethnic groups are not. Some groups like the Ho are more knowledgeable about marketing and trading. Some ethnic groups are very efficient shifting cultivators practising a well balanced system with long fallow periods resulting in very little damage to the environment whereas others are practising a short-fallow system without compensatory measures to maintain the fertility of the soil and ecosystem. Some Phounoy villagers are already experienced in raising cattle in the central highlands of Phongsaly District whereas the Lao Seng along Nam Ou river near Phou Dene Dinh area are not. the Lue are mostly familiar with using buffalo and ploughing techniques for wetland rice cultivation whereas Lao Seng of Phou Dene Dinh area along Nam Ou river are not. It is observed that indigenous technical knowledge of different villagers are due to the socio-cultural and physical environment (Stephen D. et al., 1996).

Based on the studies of Jouanneau and Laffort (CCL, 1994) which demonstrate that the Phou Noy and the Lue agrarian systems where villagers live in a relative socio-cultural isolation have not evolved very much during the last century and are still ecologically well balanced. By comparison, the ethnic villages close to Luang Prabang city have undergone major socio-cultural changes during the last three decades causing more disruptions in the social and ecological balances of rural communities.

Major impact on ethnic minorities in Phongsaly will be a resettlement program whereas some ethnic minorities who settled in the most remote areas, especially in the top of some stream sources, are promoted to move and settle along the main newly constructed roads. Further more some substitute production system like sugar cane plantation has been introduced. The impacts on sugar cane plantation in large scale seems to be necessary to have detail studies on both socio-cultural and environmental impacts.

Table 4.1 Population by ethnic groups in Phongsaly Province

No.	Ethnic group	Population	Female	% of population
1	Khamu	36,124	18,581	23.64
2	Ikor	32,531	16,075	21.47
3	Phounoy	29,309	15,031	19.18
4	Lue	13,895	6,988	9.09
5	Phouthai (Tai Dam)	9,088	4,329	5.95
6	Ho	7,512	3,789	4.92
7	Lao	6,471	3,366	4.23
8	Yao	4,975	2,463	3.26
9	Hmong	3,673	1,730	2.40
10	Yang	2,411	1,243	1.58
11	Laokheu	2,169	1,046	1.42
12	Sila	1,932	825	1.26
13	Bid	1,133	638	0.74
14	Hayi	891	432	0.58
15	Lolo	885	407	0.48
	Total			100

Source: Office for Co-operation and Planning of Phongsaly Province, 1999.

Table 4.2 Ethnic Groups per District in Phongsaly Province

District	Grouping	Ethnic Group	Remarks
Phongsaly (25,700 people)	ε Mon-Khmer:	- Lao Seng	- 29 villages
		- Lao Bith	- small community
	ε Tai	- Phou Noy	- 25 villages
		- Tai (Lue & Deng)	- 2 villages
	ε Tibeto-Burmese	- Hani	- small community
		- Ho (Lolo)	- 14 villages
		- Alu (Lolo)	- small community
		- Ikho (Akha)	- 16 villages
		- Lao Pai (Akha)	- A few villages
		- Yang (Karen)	- small community
- Hmong		- 2 villages	
Nhot Ou (24,250 people)	ε Mon-Khmer	- Lao Seng	- 1 village
		- Tai Lue	- 19 village
	ε Tai	- Tai Nuea	- 5 villages
		- Yao	- 24 villages
		- Kheu	- 11 villages
		- Ikho	- 10 villages
		- Sila	- 4 villages
		- Ho	- 14 villages
		- Yang	- 2 villages
		- Hani	- 3 villages
- Halu	- 1 village		
Boun Tai (12,500 people)	ε Mon-Khmer	- Phounoy	- 9 villages
		- Yao	-
	ε Miao Yao	- Pakha	-
		- Tchaho	-
		- Kho	- 6 villages
		- Ikho	- 12 villages

		- Oma - Pala - Yang	- - - 3 villages
Boun Nuea (14,060 people)	<ul style="list-style-type: none"> ε Mon-Khmer ε Tai: ε Miao Yao ε Tibeto-Burmese 	<ul style="list-style-type: none"> - Lao Seng - Phou Noy - Lao Bith - Tai Lue - Tai Dam - Yao - Ho - Ikhhor 	<ul style="list-style-type: none"> - 1 village - 29 villages - 1 village - 8 village - 1 village - 2 villages - 2 villages - 23 villages
Samphanh (25,160 people)	<ul style="list-style-type: none"> ε Mon-Khmer: 	<ul style="list-style-type: none"> - Khmu Ou - Lao Loum - Sila - Ikor - Hmong - Eupa - Muchi - Phoussang - Phounoy - Pala - Ho 	<ul style="list-style-type: none"> - 40 villages - 6 villages - 6 villages - 10 villages - 2 villages - 5 villages - 5 villages - 2 villages - 6 villages - 9 villages - 2 villages
Khoua (28,240 people)	<ul style="list-style-type: none"> ε Mon-Khmer: 	<ul style="list-style-type: none"> - Khamu Ou - Ikor - Tai Lue - Tai Dam - Lao - Loma 	

Source: Stephen D., 1996 and own added up.

5. Environmental indicators

5.1 Resource base

5.1.1 Natural forest

Nam Ou Watershed is still rich in natural forest compared with other watershed in the northern provinces of Laos. Forest covered is estimated at about 30 per cent. Large portion of forest covers are in Nhod Ou, Boun Neua, Phongsaly and Boun Tai Districts. However, pressure on resettlement and market driven situations, some of the forest areas have been converted to agricultural land such as upland rice field, sugar cane plantation. In some districts a well growth of secondary forest have been cut down and converted to cash crop plantation like sugar cane. **Figure 5.1** shows the clear of natural forest to use the land for sugar cane plantation in Nhod Ou District. In many places the well growth of regeneration forest have been cleared and converted to cash crop plantation. Most of the natural forest and regrowth forest along the main road and target as settlement areas have been threatened to be converted. Due to poor soil conditions in the upland, some times quality of sugar cane plantation is very poor in terms of yields. **Figure 5.2** shows the sugar cane plantation in Nhod Ou District where the selling of the cane get stuck due to the sugar factory has not paid the farmers even the cane transported to the factory already.

With present development strategy, by resettlement program, natural forest along the road sides have been seriously threatened to be cut down and converted to agricultural land of which long term and sustainability of the resources in terms of people livelihood and environment quality are not ensured.

Apart from the logging in the Production forest in Boun Tai District, in 1998 the province had granted a permit to log the timber in the Nhod Ou area in the volume of 5000 m³ and most of the timber extraction was export to China. The logging activities are carried out by contracted local people and Chinese workers and company. Selective logging method with tree species and diameter selection has been applied. From the field observation, there is a lack of logging monitoring in the field, the timber will be checked and stamp at the Lao-Chinese border checkpoint. As lesson learnt from many logging areas, the lack of field monitoring will cause great adverse impact on environment especially in the forest area itself. For example the wrong cutting road on the slope will cause serious soil erosion that produce huge amount of the sediment flow to the river system that consequently impact to water quality. Using a low technique for tree felling and cutting will cause the lost of wood volume. Furthermore illegal logging is presumably foreseeable. **Figure 5.3** and **5.4** show the forest condition and logging activities in Nhod Ou Area.

With poor control and lack of regulation on the collection of Non-Timber Forest Products in the natural forest and forest land. While some plants and herbal species are in high demand in Chinese market. The open access to the resource will create the tragedy of the common and it will cause the extinction of some rare species.

5.1.2 Plantations

Based on the reports from the Provincial Agriculture and Forestry Office, forest plantation is not yet established in a large area. From the statistic, there are only 300 ha of plantation established throughout the Province. Planting sites and size are in small areas and counted on the number of planted trees. So far, there is no clear guideline for the province and districts on reforestation program and areas classified as forest plantation. Most of the District have no nursery. There is a nursery in Boun Nuea District that used to support by the Lao-Swedish Forestry Program of Sida and Department of Forestry in early of 90s, now it is not in operation due to the lack of fund and clear guideline in seedling production and reforestation activities.

Rubber plantation has been initiated in some districts namely Boun Nuea, Boun Tai where the seedlings for the plantation are imported from China. Rubber plantation has been promoted by the Province as part of the provincial and focal site development programme.

5.1.3 Water supply

Water supply can be considered as a crucial issue in Phongsaly Province, especially in the areas where water sources have been destroyed by many means of human activities. Major cause for water source destruction is due to slash and burn cultivation where almost of water sources originated. A shortage of water supply has occurred in dry season especially in Phongsaly District. Water supply system projects have been established in some districts in the province namely Phongsaly, Boun Neua, Boun Tai, Khoua Districts. The Lao-Australia for Health and Social Development Project (LAHSDP) who active in Boun Nuea and Boun Tai Districts have supported many villages to establish water supply system as part of the rural health improvement. Apart from the LAHSDP activities, the Project for Rural Development in Phongsaly District, supported by Comite de Co-operation avec le Lao (CCL), has also supported some villages in Phongsaly District in establishing water supply system to help rural people have clean drinking water.

Clean water supply has also been requested by people in Nhod Ou District, although Nam Ou is flowing through the district centre but people who live there are not keen to use water in Nam Ou for Drinking. Samphanh District is considered as the most remote district since the access can be reached only by boat through Nam Ou. Infrastructure that includes water supply system in this district is far behind other district in the province.

5.1.4 Fisheries

Very limited fish culture has been observed. Most of the fishing activities are relying on natural fishing ground in Nam Ou and its tributaries. Based on the villages and household interviews, local people reported that fish population has been decreased in most of the interviewed villages. One indicator to evaluate fish population and consumption is a very seldom that fish will be sold in the market of Phongsaly District.

In the village where people settle down near Nam Ou in Nhod Ou District, fishing was not reported as the main daily activities for villagers. This is due to the number of fish declines and people have not considered fishing as the main activity for food exploitation. Fishing in Nam Ou have been carried out by some small fishing groups, mainly for daily consumption. Even people in Khoua district is not so active for fishing though the Nam Ou in this district is relatively large and inhabit large number of fish population when compared with other area and districts where Nam Ou running through.

The adverse impact on natural fishing ground will be the overfishing by use of chemicals, electrocution and dynamite. Fishing by the use of electrocution and dynamite is evidence along Nam Ou especially by the crew of road construction workers.

5.1.5 Livestock

Based on the report from Phongsaly Province, cattle raising are most common and can be a source of good income for people in some Districts namely Nhod Ou, Boun Tai, Boun Neua and May District. Number of Buffaloes range on top that is about 38,200 heads, cows 19,700 heads, horses 4,000 heads, goats 3,200 heads. Grazing land for these livestock are in forestland, fallow land and paddy field after harvesting. In the future, number of livestock will be increased so as the vaccination network has reduced mortality of the livestock. However, raising livestock in the sloping areas needs to consider the impact on soil and forest regeneration as the animal steps will compacts the soil and some times damage the seedlings in the natural forest.

Human resources

Human resource development in the watershed is likely related to educational system as well as to the trend of administrative improvement. In general, each sector in the administrative and technical sectors reported they had a lack of staff. In some sectors their staff has low and less skill and experience in providing technical service to local people and farmers. Training needs have been mentioned in each technical level, but those requirement were in a short-term basis with considered only present workload but careless about long-term development and commitment for the development in the future. Human resource development is considered as a crucial issue in Phongsaly Province. There is insufficient number of skilled and experienced personnel working in the technical offices at provincial and district levels. As to improve skill and experience of technical staff, operating cost to support field activities seem to be necessary and in fact there is very limited budget granted to support field activities.

Farmers of some ethnic groups are also skilled and experienced with soil and water conservation, for example the Lue has long experience in developing terracing paddy on the slope land while Phounoy group also has a long experience in raising livestock in the upland areas.

So far, farmers get training in livestock vaccination especially in areas where development projects are active. However, the training in soil conservation and sustainable land use is not yet initiated. As most of the time, farmers work with soil and water to ensure their daily livelihood, so that to improve their food security it is necessary to make them understand how to improve all resources that they normally use.

5.2 Land use pattern

5.2.1 Shifting cultivation

Shifting cultivation is commonly practised by most of the ethnic groups. Based on present statistic data collected by the Agriculture and Forestry Office of Phongsaly Province, shifting cultivation areas have been reported decreasing each year. However, in 1998, there are about 12,600 ha of upland rice field (shifting cultivation) have been practised. Other upland farming in large scale like sugar cane plantation has been reported at about 1000 ha particularly in Nhod Ou, Boun Nuea and Boun Tai District. **Figure 5.5** shows patterns of upland farming and practice in Phongsaly District. The bold of mountains are in common in the district due to a shorter rotation of the farming practice as a result of population growth and the scarcity of land for the growing number of population.

5.2.2 Paddy

Wetland paddy field have been developed in the flood plain area along Nam Ou river and its tributaries, along small streams and some water sources where water is available and soil can hold water. In the watershed area that attached to Phongsaly Province, there are 5,339 ha of paddy has been developed and cultivated of which 57 ha are irrigated. Average yield of rainfed paddy rice ranges from 1.8 to 3.5 ton per hectare whereas the dry irrigated paddy rice is about 2.5 ton per hectare. Major ethnic groups who practised wetland paddy are the Lue and Lao Loum. Some other ethnic groups such as Yao, Hmong, Phounoy, Lao Seng are also practising wet paddy cultivation but in a small scale. Figure 5.6 shows wet paddy field developed by the Lue community in Nhod Ou District.

5.2.3 Other

Apart from wet paddy and upland paddy cultivation, villagers in Nam Ou watershed are also use land for growing of other food and cash crops such as melon, cucumber, vegetables, chilli, onion. Cardamom plantation have been established in many districts especially in Boun Nuea, Boun Tai and Phongsaly. Tea and coffee plantations have also been initiated. From the environmental point of view, cardamom and tea plantation will conserve natural forest and soil. Because cardamom requires shadow and humid sites especially under the natural forest along the creek and streams.

5.3 Land and resource tenure

In tradition, some of ethnic groups, especially Hmong or Lao Soung group who are usually settle at high elevation on the mountain, are usually relocated their settlement from one areas to other. The settlement period depend very much on quality of the soil and its production. The Lue, Lao Loum who are mainly engaged in permanent cultivation especially lowland and rainfed paddy cultivation. These group of people usually have a long historical settlement in the areas where they are living now. Very few have been reported to relocate and move their villages.

Paddy land is only a most recognisable customary and legal rights for ownership and uses of this type of land among villages and villagers. Most of the upland fields are also recognised among villagers and villages about using rights especially in villages with a long history in settlement (more than 30 years).

Land tenure for the Hmong, Yao and other mountainous ethnic groups are has not yet been known because of the custom, culture and movement of villages and population of these ethnic groups. In many cases the resettlement communities have to settle on the land where other groups occupied and used a long time ago. The movement of population in the watershed is due to the ethnic customs and also the development policy of the Province and District that try to promote remote communities to settle in the area where access and administrative are easier.

Apart from the wet paddy field, homestead area and upland field, the access to other resources such as forest and non-timber forest products, fish, water is practically open and careless about government regulation. Forestland is still considered as open access and easy to convert to agricultural land.

As part of rural development program and focal site development, the province has promoted a land allocation in the focal sites with the purpose to allocate agricultural land to individual family and forestland to village for the utilisation and management respectively. One out of many expected outputs of the province from land allocation is to stabilise shifting cultivation and settlement of some ethnic minority groups. Additionally the land allocation also provide opportunity for all ethnic minorities to have the rights to use and occupy land for their livelihood development and maintain this resource for their generation.

5.4 Summary of environmental conditions

5.4.1 Extent of degradation

At present forest resource and forest land is considered in threatened due to the need for agricultural land for both food and cash crop production. While timber and wood demand for income generation, house construction, energy for household. As demand follow the growth of population and other facilities, forest resource seem to be only option to be extracted and use in forms of materials and monetary to fulfil the requirement of human need. However, demand in agricultural land is considerably high at present and indicated by the conversion of forestland especially natural forest into agricultural land. **Figure 5.2** shows the sharp road cut slope that also creates soil erosion and sedimentation.

Fish population is another degraded resource since the harvesting of this resource has no restriction in terms of quality, season and methods. Although the fish population and its diversity are not yet recorded, but based on the information from local people indicated that some fish species are rare and some species is reduced in number when compared to the last twenty years. The degradation of species and population of fish are possibly due to the change of water quality and quantity in the Nam Ou main stream since the waste water, sediment, chemical and hazardous substances have accumulated in the river.

The development with less intention and poor knowledge in ecological system are presumably creating the adverse impacts to the ecological balance. Water shortage in Phongsaly District and Provincial administrative centre is apparently a good indicator for the degradation of the environment and the imbalance of human need and natural supply.

5.4.2 Resource and Land Sustainability

Sustainability of the resource is always measured by the quantity of the resource can produce or provide and the extraction and use of those resources. As population density in the watershed especially in Phongsaly is relatively low, 9 person per square kilometre, when compared with the average national population density that is 15 person per square kilometre. Due to the fact that, the steep slope land is very fragile for land degradation if cultivated without conservation measures. Although the present density of people is low, but to maintain quality of resource and land need the effective regulation in which local people accepted and agreed.

Based on field observation and discussion with local people, sustainability of resource in the watershed is dealt with way of extraction and level of living condition. More often, local ethnic group consider forestland as a free area for food and cash crop cultivation areas ignoring the value of timber and their indirect benefit to the ecosystem. Since wood or timber are very seldom use for house construction and no direct benefit to their living.

Many ethnic groups are relied on natural base resource and they have their own management system. The extraction of natural resources may not be hazard if only for local consumption. Normally, with the growth demand due to market accessibility, the rate of resource extraction will be increased and always beyond the capacity of the resource can be supplied. For example, the collection of some NTFPs may not be a serious problem in Phongsaly District but since the Chinese come with truck and good price, some pants species are considered scare and threatened to be extinct.

5.4.3 Planned development structures, roads, dams etc.

Based on the Development Plan of the Province, priority sites have been selected as a so-called "focal site" development. The activities in the development are focus on land allocation, intensive farming with priority to irrigable areas. Rice production for self-sufficiency is one out of major objectives. At district level, focal sites for development may differ from the Provincial target, for example the focal site for agriculture and forestry development in Lantouy Area, Nhod Ou District is identified by the Provincial level, at the same time Nhod Ou district also have their own development priority areas. As priority development areas have set in different places and target, the problem of lacking of technical staff are evidence. At the same time, the small budget allocate to work

Roads

The total length of the road in the province is about 504 Km of which 133 Km is paved, 193 is gravelled and 178 is earthen roads. Road density in Phongsaly Province is relatively low. Some districts can not be reached by the National road like Nhod Ou and Samphanh Districts.

Recently the road from Boun Nuea to Nhod Ou District has been cut and to use this road it will take about two more years due to the construction conditions have to rely on manual operation and can be constructed only dry season.

According to the transport and communication development plan of the Province. Some new road network to Districts, focal sites and villages have been designed and surveyed. Apart from the main road for vehicle, many small track and cart road have been cut by local villagers but those tracks can be used only in dry season and it will be difficult to use this type of road in rainy season. Road development plan in the province can be summarised as follows:

- ⌚ improve road by gravel compaction from Pak Nam Noi to Ban Yo, Boun Tai District with the length of 109 km
- ⌚ construct a road from Boun Nuea to Lantouy the provincial focal site for agriculture and forest development with the length of 156 km. In the dry season of 1999 this road can be used but it will take another two more dry seasons to complete the construction.
- ⌚ improve the road from Phongsaly to Hatsa with the length of 20 km. This road plays important role to connect Phongsaly administrative centre to Samphanh and Khoua Districts. This road will serve the access for extracting construction materials (sand and gravel) from Nam Ou for Phongsaly, Boun Nuea and Boun Tai Districts.
- ⌚ Improve the road in the Province administrative centre by paving of asphalt. The total length is 10 km.
- ⌚ conduct rural road survey of about 500 km, these roads will connect District to District and District to focal development sites.

Due to the poor access and transportation to and from Phongsaly to other Districts and Provinces, the road network development has been put in the priority list of the Provincial Development Plan. In 1998 the gravel road from Pak Nam Noy to Phongsaly administrative centre was completed. Prior to that, from Oudomxay Province to Phongsaly administrative centre could be done by either go to Khoua District then take the boat upstream on Nam Ou to Hatsa then take a car from Hatsa to the city centre or other road would be exit at Luang Namtha via Mengla, Yunnan Province of China then entry at Boun Nuea District to Phongsaly.

From the environmental point of view, the road cut through the steep slope mountain, if there is not enough protection measures, it will cause soil erosion, land slide and finally the sediment will flow to river course. The dilution of sediment in the stream and river water will affect water quality.

Dams

As known by the local authorities about dam construction, so far there are three hydropower development projects in Phongsaly Province. Two project are located in Nam Ou, where one possible project is identified in Nhod Ou District in which feasibility study has been conducted by the Chinese engineers. The project is fallen in a medium scale of about 40 MW power generation. If constructed the power will provide energy to Nhod Ou District.

Second project is located in Houay Phae Village, Samphanh District and it is about 7 kilometres far from Khoua District centre. Several studies have been carried out but the construction is not yet foreseen. Based on the information from the Samphanh District about impacts of dam construction, the construction of dam will create the following impacts:

Positive impacts

- ⌚ There will be sufficient electric energy to support social and economic development in the Northern Provinces and it will reduce the pressure from forest resources use especially for fire wood for energy source.
- ⌚ the reservoir will improve the whole year round river transportation especially from Khoua to Phongsaly Districts.
- ⌚ the reservoir will provide opportunity in fishing for the communities settle along the edge of the reservoir
- ⌚ there will be more alternative for livelihood development so that it will reduce shifting cultivation.

Negative Impacts

- ⌚ Some villages settle along Nam Ou will be resettled and moved to other places.
- ⌚ some small path of natural forest will be flood, but due to the forest in the proposed reservoir area are almost destroyed by shifting cultivation and the flooding level will cause little damage to the remained forest in which cover in higher elevation.

The third project is supposed to be a 600 MW proposed Nam Ou hydropower project. Unfortunately this project is not known by local people and local authorities especially the district officials. Although at the central level this project has a signed Memorandum of Understanding, no activities have yet been carried out. Based on the drawing illustration, if the project has to construct its reservoir will flood almost all the District of Khoua and the road from Oudomxay to Khoua District. There will be a huge resettlement scheme of people who presently live in the proposed reservoir area.

6. Poverty indicators

6.1 Education

Current status and opportunity

The educational system in the province is relatively poor if compared with other northern provinces. Budget for school construction is limited as well as the teacher at primary school. Most of the teachers complete only lower secondary, at the primary school in remote villages were trained with a short period, then assigned to be teachers. Quality of education is far below standards of schools in the city.

With present educational system that to promote education to rural and remote area. The provincial education sector have made good effort to establish school in remote area and introduce education for minor ethnic groups who are living far away from the urban communities where school and infrastructure are likely available especially school for children. In parallel with the establishment of primary school for children, attempts are also made in terms of non-formal education for adult people throughout the province. Based on the figures from the Education Sector of Phongsaly Province, there are about 28,000 people out of 52,700 people, with the age from 15 to 40 years, being able to reach a literacy level that is account for 61% of the population in this age class (Education Sector, Phongsaly Province, 1997).

There were about 10,470 people out of 30,000 people at the age from 6 to 10 years enrolled in the primary school of which 4,300 people are female. **Table 6.1** shows the ratio of children under school age which are enrolled in the primary school.

Some constraints for the promotion of education are due to:

- ⌚ By custom and culture of few ethnic groups that are not allowed women to go to school;
- ⌚ Each ethnic group prefer to have teachers from their own group, but this preference can not be fulfilled due to number of teacher from each ethnic group are not well distributed.
- ⌚ The ratio between number of teachers and students is not in a good balance. Lack of teachers as well as poor school building are very common in the remote villages.
- ⌚ Teachers who has been assigned the task in remote area are not often like to teach in the remote area where communication and transportation are in difficult.

Future scenarios

According the discussion with the provincial office for education, demand on education is high in the future. As number of pupils and students will increase as the growth of population, especially in the remote areas. To provide the service in education as a demand of population growth is very challenge as compared with the present local economic growth. As such the education needs huge amount of public and private investment, the improvement and development of education level in the province is foreseen a real breakthrough.

In some extents, introduction of newly technologies is also required understandable means and communication. New forms of education need to be adjusted and applied especially for adult people. Informal education is still needed in order to promote education for the people who are over school age.

The use of Lao national language to educate some of the ethnic groups whose cultures and language have to be considered, as to maintain and conserve some of the traditions and cultures of these ethnic groups. The education systems need to be developed and to be adapted by the ethnic minorities. To promote education in any particular ethnic group, the teaching materials should be developed as bilinguals. Using their own language in school would make them confidence and better absorb knowledge. However, to do this, it is take more effort and resource to develop this system especially to educate teacher from different ethnic groups to develop such kind of education materials and system. An incentive system to promote people in education system is also a big challenge to be clarified and to find out a proper means in terms of budget and working atmosphere.

Table 6.1 Number of population in the school age enrolled in the primary school in different Districts,

District	Total No. of pupils in primary school		No. of population age 6-10 years		No. of pupils age 6-10 yrs		Percentage enrolled in primary school	
	Total	Female	Total	Female	Total	Female	Total	Female
Nhod Ou	3,103	1,184	3,274	1,804	1,874	736	57.23	40.80
Boun Neua	2,466	1,016	2,442	1,229	1,508	676	61.75	55
Boun Tai	1,886	742	2,095	1,042	1,612	408	76.94	39.15
Phongsaly	7,187	3,170	9,377	4,679	4,199	2,452	44.78	52.41
Samphanh	3,358	1,275	3,901	1,926	1,217	544	31.19	28.24
Khoua	3,465	1,580	4,335	1,925	1,276	575	29.43	29.87
May	2,220	834	3,592	1,690	1,033	454	28.75	26.86
Total								

Source: Report on Education Sector of Phongsaly Province, 1998

6.2 Housing

Current status

Based on the census in 1995, the most common type of dwelling or house in Phongsaly Province was the semi-permanent house, occupied by almost 72 per cent. The second largest type of house was wood that occupied by 21 per cent. Concrete dwelling was recorded about one per cent and mostly were in the urban areas of Phongsaly, Khoua, May, Boun Neua and Boun Tai Districts.

Accept the house in the Phongsaly capital and Khoua districts, houses are built mainly by bamboo and roofing with thatch. Some house in the area of Nhod Ou has an influence from China where they are using roof tiles, cement and brick to build the house **Figure 6.1** shows house of the Hor ethnic group In Lantouy Area of Nhod Ou District. Wood is still a main source of house construction materials. Lue and Lao Loum, Tai Dam are preferably using hard wood and sawn wood to build their houses with flooring and wall by sawn wood. Houses of some other ethnic minority are still built by using simple materials like bamboo and roofing with thatch, for example house of Ikor who are most likely build the house on top

of the mountain and with simple materials. **Figure 6.2** shows Houses and settlement patterns of Ikor Village in Boun Tai District. Because the house built by using simple materials, every three to four years these people have to build a new house or renovate their houses apart from an annual renovation of roof, floor and wall.

Future opportunity

Because wood is still being main material for building the houses and meanwhile big trees in the forest nearby have been cut down and burnt then the land has been used to cultivate food crops. Availability of wood for house construction in the near future seem to be scared especially wood for building houses in the city of Phongsaly, Samphanh and Khoua Districts where forest in these districts are being converted to agricultural field.

6.3 Health

Current Conditions

Based on the report from the Public Health of the Province, the sector is now trying to extend the service to remote area by providing health education, vaccination and promotion of family planning. At present there are 287 health service staff through out the province of which 18 persons graduated from university level, 89 practical medicinal staff, and 172 nurses. Almost all districts in the province has a small hospital except in May District where there is only a health care centre. There is only a 50-bed hospital located in the Phongsaly District.

Common diseases caused dead to the patients reported as malaria, diarrhoea, lung disease. Although many attempts have been made to promote health care improvement but there are still many ethnic groups not being provided health care service by the public. Some ethnic groups especially the animists prefer to treat their health by using the tradition beliefs. The Lao Australia Health and Social Development Project has support the sector to improve the health service in the remote villages of which Village primary health care centres have been established in some of the target villages. But those support is limited by the distance of village from walking should not more than one hour (details of the project see **section 7.3.3**).

Drug addict in form of opium smoking is another socio and economic threatening that cause problem for both health and social conditions. In addition, some young people in Khoua and May Districts have taken a newly produced drug in forms of amphetamine.

Future Opportunity

Health improvement, especially the prevention of common diseases such as malaria and diarrhoea has been given as a priority action by the health sector in the province. Furthermore the establishment and expansion of drug revolving fund in the village will enhance the capability of health service in remote area.

In the remote villages, accessibility will a major constraints to get the health service due to most of the intervention projects try to work in the villages where access is easy and can make the project achieve their objectives.

A lack of health service staff will be continuing short in the next five year, since there is no attraction for young graduate from the Vientiane to work in the Province. At the same time the growth of urban communities also need a health prevention measures in which housing conditions and sanitation need to be improved. Part of the health improvement, access to clean water is another main important factor to avoid diseases outbreak through water borne.

6.4 Employment opportunities

Based on present livelihood development, and priority set by the Province on the focal site development concept, the employment opportunities are foresee in forestry and agriculture, education (teacher), and health services. As there is very limit in medium and large scale industries developed in the Province as well as the construction, the job opportunities for engineer and architecture are considerably limited. Job opportunities in public sectors are also limited due to the lack of budget to pay for salary.

As a growth of private sectors is not feasible most of the work opportunities are relied on public sectors. While each year there will be a quota for position in public service declared by pipeline technical ministries, but there is very few staff interested to apply to work in the remote provinces and districts.

Although there are many people from the Province go to study in the Capital of Vientiane or abroad but when those people graduate they are reluctance to return their hometown.

As many projects will be implemented in the province, the need of qualified and skilled personnel are necessary to absorb knowledge and experience. Actually, those projects that are active in the province should provide job opportunities to local personnel rather than employ personnel from other regions.

6.5 Summary of poverty conditions

extent of poverty

Food production in terms of rice is still far beyond the present productivity before the rice can be self-subsistence. Rice can be self-sufficiency only in the districts and villages where paddy field reach a ratio of 15 person per hectares and with the yield of 3.5 ton per hectare. While present rice or food crops production is still focusing on rainfed paddy area and upland field. **Table 6.2** shows a trend of rice production in different districts in Phongsaly Province.

Although, many attempts have been made by the province to resettle people who practised shifting cultivation in the remote areas where accessibility is difficult then to promote these people, mostly ethnic minority groups, to cultivate and growth cash crops mainly sugar cane where market is relying only the sugar factory in Mengla, Yunnan Province of China. As the province has prepared a list of poverty level in different districts. In **Table 6.3** shows list and rank of criteria use to measure poverty in the province. Rice shortage is ranked as the first criteria to measure poverty followed by road access, school, illiteracy, public health service, level of government intervention, marketing, income and housing conditions. If using these criteria to measure poverty there are a large number of population still in poverty and the trend will be continuing unless some improvement and intervention need to be made to release these pressures and improve the livelihood of the people.

Future scenarios

As limitation of physiographic conditions of the watershed and the Province to the development of a wetland paddy field that is the most preferable and priority to ensure better rice production. But concerning the high terrain of the small plain along the stream and river to develop irrigation system in the area seems to be very costly and it will exceed make the development scheme has no viable economic return. While policy on promoting of remote villages to move to the areas where access and service are easier will create another wave of problem and the pressure towards land resources along the main road.

Conflict on resource occupation and management is presumably increased especially among old communities who used and occupied resources in the areas and the new settled communities who also would like to claim fertile land and rich forest.

The promotion of cash crops cultivation in the upland is a good alternative to substitute rice production by selling of those cash crop products. It would be risky, if the market for the promoted cash crops are not ensured and guaranteed.

Even there is a success of cash crop promotion, the improvement of road network and accessibility is considerably necessary in order to make better transportation and communication from and to market places.

As the province is the poorest communication and transportation network. Roads and accessible tracks will be given as the priority. Meanwhile the topographical conditions will limit the development of this infrastructure. furthermore, with limit resource to build and maintain the road, it is quite often that road cutting will cause soil erosion that created source of sedimentation in the rivers and streams that affect water quality in the watershed.

Table 6.2 Rice Production by Districts of Phongsaly Province (1998)

No.	District	Population*	Total Rice Production			Rainfed Paddy			Irrigated Paddy			Upland Dry Paddy		
			Area (ha)	Yield ton/ha	Production (ton)	Area (ha)	Yield (t/ha)	Production (t)	Area (ha)	Yield (t/ha)	Prod. (ton)	Area (ha)	Yield (t/ha)	Prod. (ton)
1	Phongsaly	25,823	2,716	1.54	3,409	226.17	1.8	419.17				2,490.5	1.2	2,989.5
2	Nhod Ou	24,133	3,231.4	2.49	8,048	2,337	2.87	6,707				894	1.5	1,341.5
3	Khoua	28,244	2,491.6	1.74	4,323	232.3	3.4	812.66	0.4	3.0	1.2	2,249	1.56	3,509.1
4	Samphanh	25,101	3,500	1.19	4,162.4	82.6	2.0	165.2				3,418	1.1	3,997.2
5	May	23,005	2,795.6	2.05	5,717.6	647.5	3.5	2,266.4	52	1.88	97.61	2,096	1.6	3,353.6
6	Boun Neua	14,083	1,612.5	2.31	3,727.7	1,176	2.5	2,940	2.87	2.5	7.18	433.6	1.8	780.5
7	Boun Tai	12,459	1,669.4	2.27	3,782.3	637.8	3.5	2,232.3	2.6	2.5	6.5	1,029	1.5	1,543.4
	Total	152,848	18,017.6	1.84	33,170	5,339.5	2.91	15,543.7	57.9	1.94	112.5	12,610.6	1.39	17,514.8

Source: Agriculture and Forestry Office, Phongsaly Province, 1998
Population number refer to the census in 1995. (population growth rate from 1995-98 estimated at about 2%)

Table 6.2 Number of villages considered under poverty conditions*

District	Total		criteria 1-12		criteria 1-8		criteria 1-5	
	No. of villages	No. of families						
May	90	4222	33	1503	18	734	6	282
Samphanh	92	5371	35	1,407	29	1,524	21	1,536
Khoua	122	5283	19	613	11	458	6	195
Phongsaly	86	4613	44	1735	19	813	4	267
Nhod Ou	98	4,746	53	2134	16	773	4	156
Boun Neua	66	2570	16	463	8	252	4	116
Boun Tai	54	2312	14	410	10	389	9	551

Source: Co-operation and Planning Office Phongsaly Province, 1998

criteria used to measure the poverty

1. more than half of the population has a rice shortage more than 5 month in a year
2. no access road
3. no primary school or children have no opportunity to go to school
4. population in the age between 14-40 has an illiteracy more than 10%
5. no health care centre or public health service
6. no vaccination for the children
7. more than half of the population have paddy land less than 0.4 ha per household
8. no external support and development intervention
9. no market, commercial shop or trading of production
10. no rice mill

11. more than half of the population have average income less than 50 USD per year/household
12. Number of houses built by sawn wood less than 20 per cent of total houses in the village

7. Development priorities

7.1 Provincial development plans and actions

In 1998, the governor of Phongsaly Province approved a so-called Rural Socio-Economic Development Plan for 1998 and 2005 in which the plan prepared by the Provincial Committee for Rural Development. There are 332 villages in seven Districts were selected and grouped into 33 focal development groups. According to the local physical conditions and people traditions, every group has been promoted to use their existing potential to put effort on rice production by increase yield of paddy field, expansion of potential paddy field, cash crops cultivation, industrial wood planting and livestock raising. At the same time some villages locate in the most remote areas and considered as environmental threatening especially villages locate near water sources have planned to relocate and settle near main roads and close to big communities.

In action to the plan, the province has formed a rural development team that comprises staff from different sector at provincial level to work with district authority to carry out the following tasks:

- educate local people with present government policy and development plans
- to discuss with target villages on land allocation and conduct land allocation and village development plan has been prepared accordingly.
- to promote farming activities by providing technical support and sometime facilitate farmers access to agricultural credit via Agriculture Promotion Bank.

Apart from that the Province has also try to co-ordinate with the existing development projects that are active in the province. Main development project that are active in the province have been described in **section 7.2**.

7.2 Development Projects active in the Province

7.2.1 Rural Development of Phongsaly District (PDDP)

The PDDP aims are the harmonious economic development of the target area and the stabilisation of slash and burn agriculture of Phongsaly District. The project is to support and intervene some of the following activities:

- (1) Support to Livestock development (buffaloes, cattle, pigs and poultry) with the activities to
 - train animal health artisan for vaccination and veterinarian care in each village and establish a sustainable supply system
 - establish animal health monitoring and a certification system,
 - carry out research and development on animal raising systems
- (2) Support to development of commercial goods (e.g. cardamom, tea, honey and coffee). Activities are defined to:
 - study marketing (identification of markets and operators) and improve condition for trade (building and development of market place in Phongsaly District).
 - train and provide technical assistance for small scale processing of agricultural products,
 - carry out research and development to introduce new cropping systems (cultivated cardamom) and improvement of quality of agricultural products (tea, honey)
- (3) Improve social, health and economic conditions by developing the water supply infrastructure: village water supplies, small-scale terrace irrigation based on strong village participation.
- (4) Development infrastructure for communications:
 - rehabilitation of 59 Km road and 33 Km of feeder road
 - creating a network of paths (80 km) for villagers, pack-saddled animal and two-wheeled vehicles, based on strong village participation.
- (5) Improve the access to capital in developing credit systems:
 - set-up a network of micro-finance schemes;
 - leaving reproductive buffaloes and cattle
- (6) Training of villagers (credit, animal vaccination and health care, community management of water and tracks), training of private operators (credit, marketing, small-scale processing), training of officials and technicians (animal health management, management methods, training of trainers, research & development). The training will use different forms either in-service training, local training sessions, in-country and abroad training.
- (7) Monitoring & Evaluation and complementary studies

The project is supported by Comite de Co-operation avec le Lao (CCL), the French NGO, with the lifespan of five year (first phase 3 years, second phase 2 years) with the total grant of 5.575 Million USD. The project started in May 1996.

7.2.2 Forest Conservation and Rural Development Project in Phongsaly Province (EU)

The project has a overall objective to improve the living standards and quality of life of rural based communities within Phongsaly Province. 60

villages in five districts (Boun Nuea, Boun Tai, Samphanh, Khoua and May Districts) are considered as the target areas.

To implement project activities, some of the following problems and points were raised to be solved by the project:

- ε Lack of food security and agricultural income
- ε Forest degradation
- ε Poor education, health and sanitation
- ε Low household income
- ε Potential capacity of Provincial Institutions not realised

Those above mentioned points were considered as the key points that lead to poverty and environmental degradation.

Main outputs of the projects will be:

1. Improved food security and agricultural income generated by sustainable use of natural resources.
2. Enhanced sustainable management of the forest resources on-farm as well as of-farm to contribute to the implementation of the national forest management plan.
3. Strengthened access to health and education services in target villages
4. Strengthened household economy in target area.
5. Improve capacity of provincial institutions to enhance service delivery.

The project lifespan will be seven year starting from June 1998 to May 2005. EU will provide grant to support technical assistance and infrastructure development throughout the project operation period. The total budget for the whole period of the project is 9.5 Million Euro and the Lao Government contributes 0.5 Million Euro.

7.3.3. Health and Sanitation Promotion and integrated Rural Development (AusAID)

The project activities cover two provinces, Phongsaly and Houaphanh. In Phongsaly Province, the project is active in three Districts namely Boun Nuea, Boun Tai and Nhod Ou. The aims of the project are to improve the living conditions of poor communities through improved village infrastructure, increase and more varied food production and higher levels of income. The project will provide technical advice, training of local administrative and technical staff, strengthening of the Lao Women Union and provide seed funding for revolving fund.

Although the project has a target to be active in the village of three Districts but at present the project is active in Boun Nuea and Boun Tai only. Total number of target villages are 75 villages and the criteria used for village selection are based on the following conditions:

- ε Remote, but with reasonable access
- ε receptive and in need of project interventions
- ε disadvantaged and not currently part of another donor project
- ε ethnic minority community
- ε Feasible for project objectives to be met
- ε To act as a demonstration centre for other nearby villages.

The project commences in April 1997 in Phongsaly Province and has lifespan of five years period. Main donor is Australian Agency for International Development (AusAID) in Association with World Vision Australia under the technical supervision of Acil Australia PTY LTD.

7.3.4 Non Government Organisations Project

- ε Church World Service : The organisation provide fund to support education activities especially building of schools in different Districts
- ε Mennonite Central Committee (MCC): the organisation provide fund and technical support to establish clean water supply to village. This organisation is active in Samphanh District.
- ε Quaker Service Laos: the organisation provide supports in water supply development in Khoua District.

8. Conclusion and Recommendation for Phase II

Physiographically, Nam Ou watershed or can be called an upstream Nam Ou watershed, in Phongsaly Province is considered well maintained in terms of water quantity and quality as well as forest covered. Due to the low population density and their distribution present rate of environmental degradation is not so serious if compared the impacts from the human activities in the watershed. However, due to the poor accessibility to the watershed, the communication and development activities from central government to the areas are often cause problem. So that the people in the watershed have to relied on their own resources to fulfil the daily need and large scale development. Meanwhile influence of large scale economic development in Yunnan, China has play significant role and impact to natural resources and social development in this area. As many attempts and intervention have been initiated to accelerate the development process especially to improve the living conditions of ethnic minority groups. In the future, It is foreseen that many development projects will be active in the watershed and to avoid a mixed up of concept of development, the provincial authorities should prepare themselves in terms of development strategy, personnel and administrative capacity in order to co-ordinate and facilitate different projects which are usually have different philosophy.

Based on the short field visit to the watershed area and watershed, the study team would like to conclude and recommend some of the following points:

To be saved for other development projects target to the watershed, it is necessary to carry out a detailed study on Socio-economic conditions of remote villages in different districts in the watershed. This will provide clearer understanding of the diverse socio-economic and cultural conditions of ethnic minorities who settle scattering in the watershed especially in the upper watershed.

Infrastructure development include road, school, health care seem to be the most urgent need and have been ranked as the first priority for almost all districts in the Province. However, road cutting to some of the forest rich of biodiversity should be taken in consideration especially to Phou Dene Dinh Protected Area.

Resettlement scheme of the province should have further study especially in short and long term impacts of the sustainability of natural resource management and socio-economic conditions of those who resettled to new accessible areas, mainly along the newly cut roads.

A long-term development in the province as well as in the watershed should focus on natural base production especially how local people treat and extract forest resources in forms of non-timber forest products (NTFPs). Promotion to grow some species such as cardamom, rattan, and some medicinal plants as well as some shade loving agricultural crops like coffee and tea are considered as a long-term viable economic plants. While experiences of market of these products are already available especially with Chinese market.

An illegal trade of NTFPs and wildlife to Vietnam and China is still going on. Part of the development scheme, the related projects should promote local people to plants and raise those rare species especially people who live close to the Protected Area. To promote this, it needs a details study as well as a clear guidelines to encourage local people participate and be able to share benefit from these activities.

Inter-sectoral co-ordination between central level and provincial level, projects and projects should be in the same framework and provincial development priorities as well as to consider the need of local ethnic minorities.

Due to poor government service in rural development and natural resource management, the capacity building and development support to watershed management are needed.

To improve farming systems of which mainly focus on water and soil conservation need outside support and intervention. While some experiences in natural forest regeneration and farming systems development are available. From these experiences it can be promoted and applied in the areas where socio, cultural and natural physical conditions are similar.

As to secure food production for subsistence purpose, besides wet paddy rice, upland rice is also having potential to fulfil the rice production target and need. In the development plan, figures always target to increase yield from upland field while the rotation of upland or shifting cultivation area is shorter as well as there is no any technical support in soil improvement and extension to farmers, attempts on soil and water conservation should be put on the ground to show to the people how the measures prolong the life of soil and water as well as yield of crops are maintained and increased.

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Annexes

[Annex 1 to](#) RRA Report on the Profile on Nam Ou Watershed, Phongsaly Province

[Annex 2 to](#) RRA Report on the Profile of Nam Ou Watershed, Phongsaly Province

**Regional Environmental Technical Assistance 5771
Poverty Reduction & Environmental Management in Remote Greater Mekong
Subregion (GMS) Watersheds Project (Phase I)**

**Annex 1 to
RRA Report on the Profile on Nam Ou Watershed,
Phongsaly Province**

**Schedule for Field Work
Phongsaly Province 5-19/3/99**

Date/Time	Activities
5/3/99 (Fri.)	Departure from Vientiane To Oudomxay Discuss with staff from the UNDP project in Oudomxay Province about general Development situations in the Province - Contact car to be rent for Phongsaly Province
6/3/99 (Sat.)	
7:30 4:30	Leaving Oudomxay for Phongsaly Arrived Phongsaly Province, Stayed at Phoufa Hotel
7/3/99 (Sun.)	
9:00	Discussed with the Project coordinator of Health and Rural Development Project, Dr. Khamsouk
8/3/99 (Mon.)	
8:00-12:00 9:30-10:00 13:30-14:30 14:45-15:30	Meeting with Mr. Xaykham Ounmixay, Chief of the Provincial Cabinet Office Meeting with Dr. Khamsoun Keovipha Meeting with Head of Provincial Public Health Office, Dr. Sengsiphanh and Dr. Bounchanh Khammixay, Deputy Head Meeting with Mr. Nokeo Mavongsa, Head of the Provincial Rural Development Office Meeting with Mr. Achoung Laomao, Head of the Planning and Cooperation Office of Phongsaly Province
9/3/99 (Tue.)	
9:00-10:30 10:30-11:30 14:00-15:30 15:40-16:25	Meeting with Mr. Thongsavanh Thammavong, Deputy head of PAFO and Mr. Southanou, Chief of Provincial Forestry Office Meeting with Mr. Phouy, the National Coordinator for the Phongsaly Rural Development Project Meeting with Mr. Douang Manichanh, Head of the Provincial Education Office Meeting with Ms. Deang Onesa, Deputy Head of the Woman Union of Phongsaly

	Province
10/3/99 (Wed.) 7:30 15:45-16:30	Leaving Phongsaly District for Ngod Ou District Arrived at Ngod Ou District, meeting with the deputy Chief of the District Cabinet Office of Ngod Ou District, Discussion on Basic data and general information about Ngod OU District, Design Plan for Village and household interview in the District. Stayed overnight in Ngod Ou District (Ou Tai)
11/3/99 (Thur.) 8:00-9:00 9:30-12:00	Mr. Nhinxai Daraxay made brief introduction about Ngod Ou District Village and households interview at Ban Theung, Ngod Ou District
13:00-15:00 15:00-17:00	Leaving Ngod Ou Town to the Nam Ou River source, Observed land use along the road to the Lao-Chinese Border line Meeting with the Provincial Land Allocation Team at Ban Souanteng, in LanTouy Zone. Getting some data and information about this Yao Village Stayed overnight at Ngod Ou District
12/3/99 (Fri.) 8:00 14:30-15:20 15:30-17:00	Leaving Ngod Ou District to Phongsaly Stopped over at Boun Nuea District, meeting with Mr. Khamsao Soulixay, governor of Boun Nuea District Returned to Phongsaly District, Stayed overnight at Phoufa Hotel
13/3/99 (Sat.) 7:30 14:30	Mr. Khamla Phanvilay leaving for Oudomxay and to Vientiane Mr. Noukone and Ms. Soutsada proceeded to Samphanh District via Hadsa and Nam Ou Meeting with and introduction to Samphanh District Office
14/4/99 (Sun.) 8:00 Afternoon	Meeting with Mr. Somsuene Head of Cabinet Office of Samphanh District Meeting with Mr. Houmpheng Head of Planning and Cooperation Office Meeting with Ms. Aenekham Head of Public Health Office Meeting with Mr. Somchit from the DAFO Meeting with Mr. Lekxay Head of Education Office
15/4/99 (Mon.) 8:00-16:00	Village and villager interviewed in Thaovong Village, Samphan District
16/4/99 (Tue.) Morning Afternoon	Leaving Samphan District proceeded to Khoua District by boat Meeting with the Governor of Khoua District Meeting with Related District offices
17/4/99 (Wed.)	

8:00-16:30	Village and villager interviewed in Houay Phae Village, Khoua District
18/4/99 (Thur) Morning	Meeting with the Governor of Khoua District before leaving to Oudomxay Stayed overnight in Oudomxay
19/4/99 (Fri.) 12:00	Returned to Vientiane

[Go back the Table of Contents](#)

**Regional Environmental Technical Assistance 5771
Poverty Reduction & Environmental Management in Remote Greater
Mekong Subregion (GMS) Watersheds Project (Phase I)**

Annex 2 to

RRA Report on the Profile of Nam Ou Watershed, Phongsaly Province

**Village Profiles of the Proposed RRA survey for the Poverty
Reduction and Environmental Management
In Remote GMS Watersheds Project**

Village: **Ban Theung**

Location: **Nhot Ou / 500m from the district center**

Year of establishment :	About 300 years ago
Ethic group :	Thai Lu, Ho and other
Belief :	Buddhist
Number of Population :	387 Female : 194
Number of households :	78
Main occupation of the villagers :	Rice cultivation
Secondary occupation :	Crops cultivation and fishing
Total village Area :	Not available
Wet paddy Area :	64,84 ha
Irrigated paddy Area :	2 ha
Rainfed Upland Area :	45,9 ha
Rice sufficiency :	Sufficient : 473.7 kg/person/year
Household Categories :	Poor: 21; Middle: 42; Rich: 15
Main Economic Activities : (Ranging by priorities)	Rice cultivation; Livestock; Crop plantation and Fishery

Access to market :	No market
Access to rural credit :	No credit system
Access to the education :	200 m (in the village)
Access to health service :	700 m
Access to clean water :	300 m
Plantation of forest land :	No forest plantation
Natural forest land :	Not available (land allocation program not started yet)
Number of schools in the village :	Primary school: 1; Lower secondary school: 1
Hospital :	No
Dispensary :	No
Key problem :	<ol style="list-style-type: none"> 1. No facility in transportation and communication 2. Health (malaria, acute respiratory infection, diarrhea), Lack of health facilities 3. Difficulty in livelihood (occupation of the villagers)
Development priorities :	<ol style="list-style-type: none"> 4. Water supply system 5. Electricity system 6. Irrigation system 7. Access road to the province

Village: **Ban Suan Teng**

Location: **Nhot Ou Nheu / 20 km from the Nhot Ou district center**

Year of establishment :	About 3 years ago
Ethic group :	Yao
Belief :	Animist
Number of Population :	79 persons Female : 35
Number of households :	19
Main occupation of the villagers :	Shifting Cultivation (upland rice)
Secondary occupation :	Crop Plantation (Sugarcane, Opium, Corn)

Total village Area :	1188,5 ha
Wet paddy Area :	1 ha (belong to the villager of other village)
Irrigated paddy Area :	No
Rainfed Upland Area :	25,8 ha
Rice sufficiency :	Insufficient : 6-8 months/year
Household Categories :	Same category (poor : 19)
Main Economic Activities : (Ranging by priorities)	Selling non-timber product, Sugarcane, Opium
Access to market :	No market
Access to rural credit :	No credit system
Access to the education :	No school
Access to health service :	Far from the hospital about 7 km
Access to clean water :	No clean water system
Plantation of forest land :	No forest plantation
Natural forest land :	Land has allocated (Conservation forest: 293,75 ha; Protected forest: 531,25 ha; Using forest: 237,5 ha)
Number of schools in the village :	No
Hospital :	No
Dispensary :	No
Key problem :	<ol style="list-style-type: none"> 1. 13 households drug used (opium) 2. Insufficient rice around of the year 3. Lack of capital 4. No paddy rice field 5. Health (malaria, acute respiratory infection, diarrhea)
Development priorities :	<ol style="list-style-type: none"> 6. Permanent occupation for the villagers 7. Health Service facility 8. Clean water 9. Land for rice cultivation (to have sufficiency in rice)

Village: **Ban Thao vong**

Location: **Samphanh District / 6 km from Samphanh district center**

Year of establishment :	About 40 years ago
Ethic group :	khamu
Belief :	Animist
Number of Population :	157 persons Female : 84
Number of households :	19
Main occupation of the villagers :	Shifting Cultivation (upland rice)
Secondary occupation :	Crop Plantation (Corn, Opium); Livestock (pig, poultry)
Total village Area :	Land not allocated yet (not available)
Wet paddy Area :	No
Irrigated paddy Area :	No
Rainfed Upland Area :	47.4 ha
Rice sufficiency :	Insufficient : 4-6 months/year
Household Categories :	Same category (poor: 26 households)
Main Economic Activities : (Ranging by priorities)	Selling non-timber product, Livestock, Opium and others
Access to market :	No market
Access to rural credit :	No credit system
Access to the education :	500 m from the village
Access to health service :	Far from the hospital about 6 km
Access to clean water :	No clean water system
Plantation of forest land :	No forest plantation
Natural forest land :	Land not allocated yet (not available)
Number of schools in the village :	1 school, 2 class
Hospital :	No
Dispensary :	No
Key problem :	<ol style="list-style-type: none"> 1. Insufficient rice (limited fallow land) 2. No rainfed paddy rice field 3. Lack of capital 4. Health (malaria, acute respiratory

	infection, diarrhea) 5. No permanent occupation 6. No access to market 7. No electricity
Development priorities :	8. Clean water (pipe water) 9. School 10. Permanent occupation for the villagers 11. More fallows land for upland rice 12. Dispensary at the village

Village: **Ban Hoi Phai**

Location: **Kua District / 7 km from Kua district**

Year of establishment :	About 25 years ago
Ethic group :	Khamu (Lao Theung)
Belief :	Animist
Number of Population :	251 persons Female : 155
Number of households :	43
Main occupation of the villagers :	Shifting Cultivation (upland rice)
Secondary occupation :	Crop Plantation (Corn); Livestock (pig, poultry)
Total village Area :	Land not allocated yet (not available)
Wet paddy Area :	No
Irrigated paddy Area :	No
Rainfed Upland Area :	51.6 ha
Rice sufficiency :	Insufficient : 5-7 months/year
Household Categories :	Poor: 43 households
Main Economic Activities : (Ranging by priorities)	Selling non-timber product, Livestock , fish and others
Access to market :	No market
Access to rural credit :	No credit system

Access to the education :	200 m from the village
Access to health service :	Far from the hospital about 7 km
Access to clean water :	No clean water system
Plantation of forest land :	No forest plantation
Natural forest land :	Land not allocated yet (not available)
Number of schools in the village :	1 primary school; 2 classes
Hospital :	No
Dispensary :	No
Key problem :	<ol style="list-style-type: none"> 1. Insufficient rice (limited fallow land) 2. No Access road 3. No rainfed paddy rice field 4. Health (no health facility) 5. No permanent occupation 6. No access to market 7. No electricity
Development priorities :	<ol style="list-style-type: none"> 8. More fallows land for upland rice 9. Pipe water (Clean water) 10. Permanent occupation for the villagers 11. Dispensary at the village 12. Access road to the village 13. Electricity

[Go back the Table of Contents](#)