

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

**SOCIAL AND ENVIRONMENT MANAGEMENT
FRAMEWORK AND OPERATIONAL PLAN (SEMFOP-1)**

[1st April 2005 to 30th September 2011]

PART 5:

**RESOURCE ACCESS RESTRICTION
FRAMEWORK**

(JANUARY 2005)

TABLE OF CONTENTS

5.1:	INTRODUCTION.....	3
5.1.1:	<i>Objectives of the Natural Resource Access Restriction Process Framework</i>	3
5.1.2:	<i>Administrative Procedures</i>	4
5.2	CRITERIA FOR ELIGIBILITY OF BENEFICIARIES AND AFFECTED PERSONS	7
5.2.1:	<i>Potentially Affected Groups</i>	7
5.2.2:	<i>Village Location – Village Type</i>	7
5.2.3:	<i>Affected Ethnic Minorities</i>	8
5.3:	CUSTOMARY APPROACHES TO NATURAL RESOURCE MANAGEMENT	9
5.3.1:	<i>Current Livelihood Systems</i>	9
5.3.2:	<i>Water Resource Management</i>	9
5.3.3	<i>Forest Land Management</i>	10
5.3.4:	<i>Forest Products Management</i>	10
5.3.5:	<i>Community Assessment of Significance of the Impacts</i>	12
5.4:	MITIGATION MEASURES FOR RESTRICTIONS TO ACCESS.....	22
5.4.1:	<i>Improved Natural Resource Management Planning</i>	22
5.4.2:	<i>Zonation and Rules and Regulations</i>	22
5.4.3:	<i>Determination of Threats to Biodiversity</i>	23
5.4.4:	<i>Village Forest and Land-use Management Agreements</i>	23
5.4.5:	<i>Sustainable Forest Product Harvests</i>	28
5.4.6:	<i>Ensuring Sustainable Land and Resource Use</i>	29
5.4.7:	<i>Social Development Compensation Measures</i>	31
5.4.8:	<i>Local Economic Opportunities</i>	31

5.1: INTRODUCTION

5.1.1: Objectives of the Natural Resource Access Restriction Process Framework¹

Some components of the SEMFOP may involve the future restriction of, or modification to, current community or household access to natural resources of the NPA. Such restrictions may come in various forms including:

- implementation or enforcement of existing NPA rules and regulations
- enforcement of international conventions, especially CITES;
- cessation of cross border trading in, or extraction of wildlife and prohibited NTFPs;
- development and implementation of NPA wide land use zoning system including the delineation of Totally Protected and Controlled Use Zones and the enforcement of agreed rules, regulations, rights and responsibilities applicable to these zones;
- stabilizing of ‘forest’ based shifting cultivation;
- adherence to agreed land use management plans;
- improved and sustainable wildlife management;
- improved and sustainable NTFP management practices.

The Resource Access Restriction Process Framework (RAR/PF) defines the process of identifying and mitigating the possible adverse impacts of restrictions placed on natural resource access for Project Affected People (PAPs) in the Nam Theun 2 Watershed/NPA and the peripheral impact zone (PIZ). Thus, it is mandated to work with all 31 NPA villages and the majority of the villages in the PIZ, i.e. those villages that will be affected by restrictions to access to natural resources (See Section 5.2.2).

The process framework described in this Chapter envisions a comprehensive approach whereby members of potentially affected communities participate in the design of SEMFOP program components. In addition to identifying restrictions, the approach will determine mitigating measures necessary to achieve its objectives. It should be noted that SEMFOP program components aim to avoid restrictions by recognizing village territories and customary rights. Only in cases where current practices are unsustainable or posing a threat to conservation will restrictions be agreed to and mitigation measures developed.

The following SEMFOP program components are intended to mitigate for potential resource access restrictions:

- PICAD: ensures that conservation and development is integrated and participatory. This is the fundamental basis on which the NT2 WMPA’s SEMFOP is developed, and is reflected in the organization and structure of the WMPA’s Secretariat;
- Natural resource management will be improved, and made more responsive to the needs of stakeholder villagers;
- Improved Forest and Land use Planning, Allocation and Management (FLUPAM) at both the village level (or village groups) and for the whole NT2 Watershed NPA, including the enhancement of land and resource use tenure security of NPA and PIZ villages.
- Development of sustainable forest product harvest regimes, ensuring access to subsistence protein sources, and long term viability of NTFP harvests and income;
- Steady development of improved sustainable agricultural pursuits;
- Improved education hardware and software;

¹ *The framework is developed in accordance with World Bank Safeguard Policy, Operational Policy OP 4.12, on Involuntary Resettlement and ADB’s Policy on Involuntary Resettlement and Operations Manual F2/BP. While no actual relocation of people is proposed for the watershed itself, OP 4.12 is ‘triggered’ due to possible restrictions on present access to resources as part of watershed protection and conservation initiatives, that may adversely affect persons and communities in the NPA and PIZ.*

- Improved health hardware and software, including the fostering of appropriate indigenous medical practices and medicines;
- Improving access between villages, and to the District center of Nakai; and
- Assistance to NPA communities for family planning to improve the management and control of their population. This is to ensure that programs aimed at sustainable natural resource management and agriculture are not jeopardized by increased use and consumption that uncontrolled population increases would inevitably bring.

It should be noted that these mitigation measures and particularly the type of activities that might be implemented under each, presented later in this Part and also elsewhere throughout the document, are merely indicative, and will be developed and agreed to with the informed participation of NPA and PIZ villages. The overall SEMFOP approach in this regard is to maintain flexibility and proceed slowly and with caution, adapting to new situations and ideas as they are identified. The process itself is expected to identify new ways to mitigate restrictions of access to resources, other than those identified in the document.

The PICAD process comprising land use planning (FLUPAM), biodiversity conservation management (PPAM) and Livelihood development (LDC) will be the “forum” for decision making in this respect and will bring together the key stakeholders of villagers, district authorities and the WMPA to make decisions on resource access restrictions and mitigation measures. Its eventual aim is to develop a sense of ‘custodianship’ of the NPA and its resources in local communities.

5.1.2: Administrative Procedures

5.1.2.1: Informing Stakeholders and Villagers

As a general rule, the transmission of information to stakeholders will be by holding local meetings, where the active participation will be promoted by the use of a variety of participatory methods and tools (See Section 2.2.2). Other methods of communication may include:

- distribution of notices and bulletins;
- information boards in the District and in each village;
- messages over the local radio station;
- publications in the local newspaper; and

In the case of national level laws, rules, regulations and rights, information will be disseminated to villagers via appropriate means. Village Focus International is currently working with DOF on a JICA-funded initiative to develop appropriate extension materials (booklets, posters, radio and video tapes, etc.) in this regard for forest custodian villagers. Copies of these drafts have been reviewed by the WMPA and feedback has been provided to assist in their development. It is anticipated that these materials will be available prior to SEMFOP implementation, and they will be used as support materials to inform villagers of their rights, roles and responsibilities in regard to all relevant laws and regulations.

The SEMFOP will facilitate information flow to stakeholders by:

- a) Improving the printed quality and number of information bulletins or rules and regulations.
- b) Ensuring the maintenance and use of bulletin boards.
- c) Regular use of local radio, in local languages.
- d) Conducting participatory meetings and informal workshops.

Forestry legislation in Lao PDR suffers from a general lack of clarity in regard to appeals of government decisions. In addition, government sometimes fails to act to ensure or protect individual or community rights enshrined under the law. To protect individual and community rights and to provide an accessible means of appeal in regard to decisions made under SEMFOP, a conflict resolution framework has been developed, along with mechanisms for arbitration and impartial adjudication (Section 5.1.2.2).

5.1.2.2: Conflict Resolution

Because of different perceptions, values, objectives and responsibilities among different stakeholders, a range of conflicts are likely to occur among NPA communities, PIZ villages, the WMPA, district authorities, the NTPC, central government and others. Conflict resolution procedures have been established (Section 6.5.3) that will cover the entire SEMFOP. These procedures cover potential conflicts which may arise in regard to compensation for resource access restrictions and will thus also be used for this RAR/PF Framework.

Under the procedures, every effort will be made to resolve conflicts by mutual agreement of the parties involved. In some cases, arbitration and adjudication on disagreements and conflicts by an external mediator will be required. Responsibility for arbitration and the means of adjudication will vary according to the parties involved, but will need to be referred to a higher level of authority than the parties concerned. The strategy for this is summarised in Table 5.1.

Table 5.1: Means of arbitration in conflict resolution

Parties to the conflict	Final decision/adjudication	Key mediator/arbitrer
Within village disputes	Majority decision of village meeting	Village Chief Elders and traditional leaders, often members of the LFNC Relevant WMPA Technical Division
Village-village disputes	Joint agreement of appointed village representatives	Relevant district authority Relevant WMPA Technical Division
Village – WMPA/district disputes	Joint agreement of both parties endorsed by province	Watershed arbitration panel Provincial authorities
WMPA-district disputes	Joint agreement of both parties endorsed by province	Watershed arbitration panel Provincial authorities
District-district disputes	Joint agreement of both parties endorsed by province	Watershed arbitration panel Provincial authorities
Province-province disputes	Joint agreement of both parties endorsed by PM's Office	Watershed arbitration panel

5.1.2.3: Monitoring and Evaluation

M&E systems are being developed as a prerequisite to evaluating progress towards all of SEMFOP's stated objectives and these are described in Section 6.5.1. As part of this process, initial M&E and baseline benchmark guidelines have been developed to monitor the progress made in regard to the benefits accruing to villagers from the development activities that will be used as mitigation measures for resource access restrictions as well as any adverse impacts from resource access restrictions (Section 3.9.3.1). At the start of SEMFOP monitoring systems will be designed, and mechanisms established to ensure that relevant data are collected for the baseline and on an ongoing basis for monitoring and evaluation purposes. This will include:

- (i) finalisation of the log-frame,
- (ii) identification of appropriate indicators,
- (iii) collecting baseline data,
- (iv) operationalising monitoring systems.

The community development/EM advisors and the LDC Division Deputy Director will play key roles throughout this process to ensure that the SEMFOP M&E system is able to capture and manage the information necessary for tracking progress of livelihood development towards its objectives in regard to compensation for resource access restrictions.

5.1.2.4: Apprehension and Enforcement of Regulations

With the exception of minor offences by local inhabitants which can be dealt with by the village chief, only the police, and at times the military, can apprehend suspected law offenders. The authority for adjudication depends on the severity and location of the offence and this is dealt with in more detail in Section 6.5.3.2. As a general rule, apprehension only occurs once the police have firm evidence, that the offender is in fact guilty. Penalties for the more minor infringements usually deal with first offenders by the confiscation of illegal materials and equipment and a warning. Second offences usually result in more severe warnings and a fine, and after this penalties would normally involve a fine and/or imprisonment. The legal processes and penalties for the infringement of forestry and wildlife laws are dealt with in more detail in Section 6.5.3.1, but are summarized here for different groups of offenders in Table 5.2.

Table 5.2: Legal process followed for offences committed in the NPA by different categories of individual.

Enforcement process	NPA Villager	Construction worker	Non-NPA Lao	Foreigner
Relevant laws and regulations	Village conservation agreements Forestry law	Employment contract	Forestry law	Immigration law Forestry law
Presentation of evidence	Evidence presented to village chief Evidence forwarded to district	Evidence presented to contractor Evidence forwarded to district	Evidence presented to district	Evidence presented to district Evidence forwarded to province
Judicial body	Village chief/forest land use committee/ customary bodies/ District court (more serious offences)	Employer (contractor) District court (more serious offences)	District court Provincial court (serious offences)	District court Provincial court
Possible penalties	Community sanction or fine Fine or imprisonment	Pay deduction or dismissal Fine or imprisonment	Fine or imprisonment	Fine or imprisonment Deportation

5.2 CRITERIA FOR ELIGIBILITY OF BENEFICIARIES AND AFFECTED PERSONS

5.2.1: Potentially Affected Groups

The potential range of stakeholders who may be affected by the implementation of restrictions on access to natural resources includes:

- i) Persons living in the villages in the NT2 Watershed/NPA – the NPA villages;
- ii) Persons living in villages located around the NT Watershed/NPA – peripheral impact zone villages
- iii) Foreign persons residing in another country who enter the NPA to trade or to extract natural resources from the NPA²;
- iv) Persons living distant from the NPA (i.e. outside the PIZ) but involved in the marketing on forest products from the NPA;
- v) Private or other companies who may wish to extract resources from the NPA; and
- vi) Government Agencies for whom the extraction of natural resources would result in financial dividends in term's of taxes etc,

Stakeholders on categories of (iii), (iv) and (v) are not considered as 'affected persons under SEMFOP and are thus not be eligible to participate in the programs outlined in section 5.6. Stakeholders (vi) and (v) will be a beneficiary of the NT2 Project as a whole, and thus will not be considered as a either affected person or direct beneficiaries of the SEMFOP program. Thus, the main stakeholders eligible to be beneficiaries of the program aimed at mitigating any adverse impact on the restriction of access to natural resources in the NPA are those villages in and around the NPA; i.e. categories (i) and 9ii).

5.2.2: Village Location – Village Type

An important criteria determining a villages eligibility for benefits arising from RAR mitigating measures (and its role in NPA management), is the location of the village - and the village boundaries - in relation to the NPA and the NPA boundaries.

SEMFOP recognizes four (4) general types of villages as illustrated in diagram 5.2 and explained below:

Type 1: Villages located totally within the NPA.

These are termed 'NPA' villages, and the nature of their location suggests that they will have a major impact upon, and a major role in the NPA and its management. There are currently 31 type 1 villages in the NT2 Watershed/NPA, all in Nakai District.

Type 2: Villages whose 'boundaries' overlap those of the NPA.

In this village type, the actual dwellings are usually located outside the NPA, but some village forests and even agricultural lands are located partly within the NPA boundaries.

Type 3: Villages adjacent to the NPA.

In this case the village and the NPA share a common boundary, often because both boundaries are defined by a significant geographical feature such as a mountain ridge or river. It can also occur because the village authorities (mistakenly) think that village boundaries cannot go into or overlap the NPA, and thus they 'claim' village boundaries up to the edge of the NPA.

Type 4: Villages distant from, but 'using' the NPA.

Villages of this type do not overlap or share a common border with the NPA, and may be some distance from it. However, villagers regularly or seasonally enter the NPA to collect natural resources in the NPA. They thus have a stake in NPA management, and will be affected by the enhanced implementation of restrictions on access to natural resources..

On this basis, the number of villages who m are categorised in Table 5.3 below:

² *Cross-border incursions is a major problem for NT2 Watershed NPAs management. Poachers cross the eastern international border to snare wildlife within Lao territory. Evidence of this problem comes from both participatory forest monitors and border post report. The equipment and illegal items confiscated are only a small portion of actual activities. None of these groups will be eligible for benefits of livelihood development schemes*

Table 5.3: Number of villages classified as Project Affected Villages

District	Total villages	Type 1	Type 2	Type 3	Type 4	Comments
Nakai	67	31	8	0	13	15 plateau villages not defined
Khamkerd	n.a	0	21	12	15	approximate only
Gnomalart	n.a	0	13	0	n.a	all potential PIZ villages
Boualahpa	n.a	0	3	0	8	all potential PIZ villages
Total		31	45	12	36	

Analysis of village type enables a process of prioritisation for initiating activities. In general activities will be initiated earlier in type 1 and type 2 villages, but all peripheral impact zone villages will be full participants in the program within SEMFOP-1, according to the schedule presented in Table 2.3 in Section 2.2.7. The PIZ survey conducted in June and July 2004 (See section 1.4.2) has identified 54 communities that will be given PIZ status, and thus eligible to receive benefits of mitigating measures. The survey also identified some initial priorities for action which have been incorporated in the FLUPAM schedule.

5.2.3: Affected Ethnic Minorities

The inhabitants of villages eligible for benefits of the proposed livelihood development program as mitigation for possible negative effects of the proposed conservation measures are considered 'ethnic minorities' as defined by the WB's Operational Directive 4.20 on Indigenous Peoples³. All groups have a strong sense of belonging to the area in terms of utilization and dependence on natural resources, and there are customary social and political institutions as well as cultural practices and beliefs which contrast with the dominant culture in the lowlands.

As also shown in Table 5.4, there are three main groups found inside the NT2 Watershed Area:

- Vietic groups (ca. 25% of the population) consisting of a number of small ethnic groups belonging to the Austro-Asiatic language family, formally hunter-gatherers but some now in a transition to more sedentary lifestyles;
- Brou (ca. 60%), a homogenous group of the Western Katuic language group of the Austro-Asiatic language family, who occur throughout the region and exhibit a number of livelihood systems; and
- Upland Tai groups (ca. 15%) consisting of a number of sub-groups such as Tai Men, Tai Moey, etc. who have recently arrived from the north-west and the Sek who cultivate irrigated paddy in several villages in the north of the NPA.

Table 5.4: Approximate representation of ethnic groups in the NT2 Watershed/NPA

Ethnic Group	NPA villages	No. of families	No. of persons
Tai and Sek Groups	6	152	811
Brou (Katuic)	17	533	2,705
Vietic Groups	10	280	1,443
Total:	331¹	965	4,959

¹ Includes two villages likely to be resettled on the Plateau.

There are also numerous Vietic, Brou and Tai villages bordering the NPA to the south on the Nakai Plateau and to the west in Khamkeut District of Bolikhamxai Province. In addition, there are a number of Hmong villages in Khamkeut District that are already utilizing the natural resources of the NPA.

All ethnic groups are reliant on the natural resources of the forest in addition to agricultural production. Socio-economic studies reveal that Vietic groups are more reliant on fishing and gathering of NTFPs whereas the Brou hunt to a far greater degree than other groups. Tai and Sek groups are more reliant on agricultural production but also engage in gathering NTFPs.

³ This OD is addressed fully in Part 3 of the SEMFOP.

5.3: CUSTOMARY APPROACHES TO NATURAL RESOURCE MANAGEMENT

Land use patterns in the NPA and bordering areas cut across ethnic divisions since no single ethnic groups can be associated with one particular adaptive technique. Thus, although current approaches to NRM will not be analyzed by desegregation along ethnic group lines, it is recognized that ethnicity is a factor in determining livelihood, although not the only one. What mainly determines livelihood is location, historical development and relations with neighboring groups. Importantly, it is a dynamic system, and both paddy and swidden rice yields are low due to a combination of poor soils and a lack of knowledge or technology. Thus, food security and nutritional requirements are major concerns of most communities. Few households are self-sufficient in relation to rice production, making them reliant on the harvesting of natural resources (NTFPs) and hunting.

5.3.1: Current Livelihood Systems

Five generalized livelihood systems could be identified:

1. Forest-reliant and semi-nomadic: Formally practiced by the Vietic groups, who are traditionally hunter-gatherers. Some are now living in settled communities and may be transitioning to other forms of livelihood. This, will be explored in depth as part of the FLUPAM process.
2. Forest/Swidden: Sedentary but still reliant on the forest to a large extent and some swidden. Some Vietic communities may be classified under this livelihood system.
3. Swidden: Primarily swidden cultivation with NTFPs and livestock for cash income, practiced by Vietic, Brou, Hmong and some Tai groups.
4. Swidden/Paddy: combining swidden, paddy and dependency on livestock and NTFPs practiced by Vietic, Brou, Tai and Sek groups
5. Paddy: primarily paddy cultivators with cash crops, livestock and trading, practiced by Brou, Sek, Tai (and Hmong groups on the periphery) where there is flat and irrigable land available.

5.3.2: Water Resource Management

Domestic water

While the source and management of domestic water varies from village to village depending on the actual sources of water available, the following general scenarios probably apply.

In the early dry season, domestic water is drawn from creeks and rivers. As the creeks dry up, water is drawn only from the major rivers which never dry up. Nearly all (27 of 31) villages in the NT2 Watershed-NPA is on a major river. As the upper watersheds of the area are well forested and without villages, water resource management is minimal, probably considered not necessary. It is unknown if there are rules prohibiting defecation and throwing of rubbish (of which there is little) into rivers, in order to protect the cleanliness of water for downstream villages.

The wet season results in rivers running turbid, although the turbidity of streams in the NT2 watershed-NPA is lower than other places in the Lao PDR due to well forested watersheds and sandier type of soils. When rains do occur and rivers and creeks run turbid, small household rainwater collection systems may be temporally erected, or clean springs may come into use. For those villages not near a major river, or those using springs on the wet season, management of the water resource usually does occur and consists of (a) keeping domestic animals away from the spring area and (b) generally ensuring the forest is maintained around the spring.

Irrigation Water

Water is used for paddy irrigation by only a small number of villages, mostly of the Sek ethnic group. In this case, the watershed of the stream providing the waters are usually protected from shifting cultivation.

Other Uses

Another use of water is for transportation by small canoe along the main rivers, although relatively few families have canoes in the mid and upper watershed.

5.3.3 Forest Land Management

Besides the many and varied products residing and growing in the forests, forests are also seen as a blanket on the earth which gives the earth fertility, or rejuvenates the earth's fertility in the case of a swidden system – 'fertility' being used in the sense of rice productivity. In this latter sense, the forest is seen as a 'fallow', thus the term swidden fallow.

As rice, the staple food, is the primary concern of villager livelihoods, this use or role of the forest is of paramount importance. However, it is this use which also causes the most concern, as it is generally the largest and oldest forest that will give the best rice yields, for the most years, and the fewest weeds. Thus, felling primary forest is attractive to some upland rice growers. On the other hand, felling of old forests with big trees takes more labour and energy than clearing small trees, and the partially unburned logs of old trees take up precious space on the ground – although in most cases the lack of weeds and good yields from the areas without logs justifies the effort and loss of space.

Thus, management of forest for upland rice growing is often difficult to identify. In a situation where soils are relatively good and thus large forests are not required to restore fertility, villagers have developed a system whereby they slash forest of age 10 to 20 years old to grow rice. At this age, the trees are not too large for cutting, most annual weeds would have been suppressed and the soils have recovered sufficiently to produce relatively good yields. However, village populations invariably increase and thus this system is rarely 'closed' - there are always new families wanting to start swiddening. Thus, this system in combination with natural population growth usually requires that the village to actually change location in order to be closer to either new forests or even upland fields in a 10 to 20 year rotation. This movement of villages often takes them into conflict with other villages.

Thus, management of forest for upland rice growing is often difficult to identify. In a situation where soils are relatively good and thus large forests are not required to restore fertility, villagers have developed a system whereby they slash forest of age 10 to 20 years old to grow rice. At this age, the trees are not too large for cutting, most annual weeds would have been suppressed and the soils have recovered sufficiently to produce relatively good yields. However, as village populations increase this system is rarely 'closed' - there are often new families wanting to start swiddening. Thus, this system in combination with natural population growth usually requires that the village change location in order to be closer to either new forests or upland fields in a 10 to 20 year rotation.

Another way to analyze effects of land use on forest and NTFP status is to explore shifting cultivation histories, and the NTFPs found in swidden fallows. In Ban Dteung it was found a range of products including cardamom, edible leaves, small eggplants, vegetables and mushrooms were gathered in either upland fields or regenerating swidden fallows. Certain habitats, animals and plants, thrive under sustainable shifting cultivation systems.

5.3.4: Forest Products Management*5.3.4.1: Plant Based Forest Products**Firewood*

An important livelihood component, firewood may come from a range of sources, such as;

- i) from felled trees in a swidden field;
- ii) from naturally dead trees, or fallen branch; or

- iii) from live trees felled specifically for firewood.

In the case of (i) and (ii) above, there is limited selection of the species of firewood collected, but in the case of felling live trees, certain species are usually preferred for fuel wood⁴, and may actually be the reason that a live tree is felled in preference to collection of dead wood. The other reason being proximity to the village, important for the collectors of firewood, usually children and women. There is usually little or no management of firewood resources, except in the case of certain highly sought after species (which may be, for example, smokeless, or good for charcoal) in which case the tree, live or dead may be claimed. Nonetheless, each family must forward plan their firewood needs and the source of that wood. Obtaining it from swiddens may figure in these plans.

Timber for Construction:

Transformation of logs into timber for construction requires tools and the time to undertake the sawing, a large extended family to help with the sawing, or money or goods to pay people to actually do the sawing. Thus, while all villagers would prefer a good fully timbered house, only certain well off families can afford the time, money or barter goods to build such a house. Unfortunately, data collected to date in the NT2 Watershed/NPA does not indicate the current standard of family housing.

In villages or areas where families can afford to build timber houses, management of the timber resource consists of claiming individual trees. In societies where the only claim on land (besides housing and gardens) relates to swidden areas which lack large timber trees, the claiming process in relation to timber trees is unknown, but assumed to be on a first come basis. These trees are usually marked with 'cuts' and the village chief informed. If swidden is done in 'primary' forest, then the swiddener may claim timber trees felled in the swidden process – if not too far from the village. In villages where paddy fields are worked, new fields are opened, or fields are permanently cropped, then the customary owner of that field would also have rights to any trees on or near that paddy field. As NTFP husbandry is developed, individual ownership of forest may also develop, and it is assumed that owners of NTFP forest plots would also lay claim to – management rights over – timber trees in that plot.

Villager harvest of timber for sale, or the sale of rights to cut trees for timber sale, is illegal. Nonetheless, it does occur, although due to difficulties in access, this is not often so in the case of NPA villages. It is more usually undertaken by villages in peripheral impact zones. Management of these trees is similar to timber for customary use.

NTFPs

A wide range of NTFPs are gathered from the forest. While 100's are gathered for home consumption, use as medicine, construction and handicrafts, relatively few are gathered for commercial sale to outside markets. As a general rule, there is no management of most NTFP's for two main reasons:

- a) most are still relatively plentiful, and thus local consider that management is not required;
- b) management of the forest environment (in which collection of NTFPs can be done surreptitiously), is very difficult. The further from the village the more difficult it is to control, and thus manage.

There are some exceptions however, as suggested in Table 5.5.

Table 5.5: Management of important NTFPs.

Commercial NTFPs	Use and management (type of access)
Khi si (damar)	No management – open use
Big rattans “thoun”, cardamom,	No management (except if quotas issued by government) – open use
Agarwood	Management – harvest timing - is starting to evolve but generally open use
“kheua hem” medicine	Management is attempted – conservation of other trees - but not successful and generally open use by villagers or stolen by outsiders.
	No management – open use

⁴ The choice of species is particularly important for the making of charcoal, although the making and use of charcoal is unknown in the NT2 Watershed-NPA.

“bong” bark	No management – open use
Mark Khene	If trees in former swidden fields, field owner has rights, other open use
Orchids	Management attempted – no feeling of trees, leave 25 % of plant behind etc,
Non commercial NTFPs	
Palmleaves "Kho"	Kho trees left standing in swidden fields. Some families even plant trees.
Small rattans "Vai"	No management – open use
Rattan shoots "Boun, San"	No management – open use
Forest vegetables "Phak"	No management – open use
Medicinal herb "Wanchod"	No management – open use
Wild galangal "Houa kha"	No management – open use
Palm shoots "Keuang"	No management – open use
Edible tubers "Man"	No management – open use
Forest fruits "Makfai, Mak ngen"	No management – open use

The effect of this situation of no management for most NTFPS is that the more valuable NTFPs, such as agarwood, large rattans etc, are now almost commercially extinct. In addition, the unmanaged harvest of other NTFPs affect their value, such as unmanaged cardamom harvests occurring too early resulting in bad quality, and thus low prices. The non management of damar resin trees means that outsiders may fell these trees for timber without consultation of the customary users.

While clear management practices are not evident for most NTFPS, villagers can, nonetheless display a detailed knowledge where they occur in the terrain – suggesting there may be subtle management strategies not elucidated to outside observers. These management systems will be explored in SEMFOP and incorporated into management and monitoring systems.

5.3.4.2: Animal Forest Product Management

Wildlife Management

Approaches to wildlife management vary amongst ethnic groups. Those Lao ethnic groups that practice Buddhism may follow the custom of no hunting in the Buddhist lent period which roughly coincides with the wet season, or the main paddy rice growing season (15 June to 15 October). This custom is applied to the main consumed meat species and probably relates to not interfering with or diminishing the species reproductive capacity. However, few, if any followers of Buddhism inhabit NPA villages, although the Sek are ethnically Lao-Tai. The following of this Buddhist practice by Lao-Tai groups in the peripheral impact zone villages is unknown.

Mammals, however, do play a significant role in the spiritual lives of some NNT residents, varying with the residents' ethnicity. One component of this spiritual relationship is taboos on killing some species. The animal most commonly protected by taboo is Gaur.

The most comprehensive set of taboos is probably held by the Kri people of Ban Maka (Vietic group). Their spiritual beliefs forbid them from killing most large mammals (and all snakes), specifically all wild cats (with the possible exception of leopard cat), bears, dhole, wild cattle, elephants and rhinoceroses. They may kill, apparently, all birds and all other mammals, including primates, civets, pigs, deer and Saola (whether or not this also includes southern serow is not clear). It is little understood (by outside researchers, at least) what impact the decline of animals with which villagers have a spiritual relationship might have on villagers' psychological well-being.

The Brou, belonging to the Mon-Khmer grouping, may follow the practice whereby family names are based on either a plant or an animal, and members of that family are not allowed to harvest or hunt and then eat the plant or animal after which their family is named.

5.3.5: Community Assessment of Significance of the Impacts

Most of the communities who may be affected by the enhanced implementation of natural resource management and use regulations have not yet been *directly* asked to assess the significance of the impacts of the programs enhanced natural resource management. Such an assessment is part of the planning

process that results in resource use agreements and community development activities to upset such impacts and improve the livelihoods of affected villagers.

There is some anecdotal evidence that communities believe current and/or future imposition of conservation objectives will adversely affect them. A report of the PRA undertaken by the DUDCP in late 2000 states that villagers consider that “*environmental conservation was not required by villagers – not perceived as necessary*” and that it was “*imposed on them by external factors*”. The “*villagers food needs are sufficiently satisfied by making use of collected and hunted forest products, and their major fear is lack of food if they are prevented from accessing forest products*”. Such fears may have come from either (a) overly zealous implementation of wildlife regulations; (b) unrealistic implementation of land and forest allocation; (c) reasonable wildlife regulations (globally accepted norms) actually impacting on their income; or (d) a lack of understanding on the impact of biodiversity loss on their lives.

On the other hand, another study (Foppes, 2001) found a different attitude from villagers, who recognize the diminution of some of the resources they have access to, and can even suggest solutions, management strategies, which will be important starting points for future participatory managers of the NT2 Watershed/NPA.

Apart from the above mentioned general fear of strict conservation or unrealistic land and forest use zoning, an indirect assessment of the potential impact on communities arising from restricted access to natural resources can be gleaned from analysis of the current use of those natural resources. However, it is very difficult to get information of all forest products, as some of them are already illegal to gather, hunt or sell and thus villagers do not report the use of these particular forest product.

It is common knowledge that agricultural activities alone do not meet the requirements for dietary and consumption needs of residents, and NTFPs play a key role in the daily life of villagers, providing them with all the materials for housing and tools, medicines and most food items except rice. However, the role of forest products on cash income is less clear, and estimates range from 25 to 64 % (see 5.5.3.6.1). Forest based income is seasonal and varies from one year to the next.

It is useful to distinguish between four broad classes of forest product use;

1. subsistence use (consumption) by residents;
2. subsistence use (consumption) by non-residents (villagers from the peripheral impact zone);
3. commercial harvest by residents; and
4. commercial harvest by non-residents.

Analysis of the value of these products can also be facilitated by desegregating the type of forest product on the basis of its use for direct consummation or sale⁵, as detailed below.

Consumption:

- protein intake from wildlife consumption (including fishes and frogs);
- carbohydrate intake, from consumption mainly of tubers;
- vitamin intake from a wide range of forest fruits and vegetables;
- use of trees and bamboos for housing and fuelwood; and
- upland rice production on former forest lands.

Sale or barter [income used to buy rice, and household goods, clothing, salt and condiments]:

- income from sale of wildlife;
- income from the sale of NTFPs;
- income from sale of timber; and
- large livestock grazed in forests.

⁵ This disaggregation is relevant to rules and regulations, which often allow customary use – assumed to be consumption - of a range of forest products, but disallows sale of those products, on the assumption that sale to an unlimited market is a) uncontrollable, and b) would lead to depletion of that product.

Besides potentially impacting on these direct benefits from current natural resource access, the enhanced implementation of laws and regulations will also have an impact on relations between stakeholders, such as conflicts could arise between in-holders and new immigrants, between in-holders and peripheral impact zone based resource extractors and with transboundary resource extractors and traders.

5.3.5.1: Protein Intake from Wildlife Consumption

The findings of study in 3 NPA villages (Foppes *et al*, 2000) found that wild meats including fish are a very significant component of protein intake, at least in Ban Navang, as summarized in Tables 5.6 and 5.7.

Table 5.6: Food consumption per family, estimates of women's group, comparing a 'normal' year with a 'bad' year, Navang village, May 2001

Type of food	In a normal year (at present)			In a bad year (once every 5-6 years)		
	Rich family	Medium	Poor family	Rich family	Medium	Poor family
1 Rice	1,800 kg	840 kg	240 kg	1,200 kg	600 kg	240 kg
2 Maize	120 kg	800 kg	1,000 kg	300 kg	700 kg	900 kg
3 Cassava	-	250 kg	500 kg	200 kg	400 kg	700 kg
4 Forest tubers	-	-	-	-	-	150 kg
5 Other tubers	-	-	-	20 kg	40 kg	60 kg
6 Wildlife	300 kg	200 kg	50 kg	-	-	-
7 Buffaloes	2	1	-	3	2	-
8 Pigs	4	2	3	Same	same	Same
9 Chicken	3	5	10	Same	same	Same
10 Fish	200 kg	300 kg	350 kg	Same	same	Same
11 Vegetables	50 kg	30 kg	10 kg	Same	same	Same

Table 5.7: Family food consumption estimates of men's group, comparing present and future, Ban Navang

Type of food	In a normal year (at present)			How the future should look like		
	Rich family	Medium	Poor family	Rich family	Medium	Poor family
1 Rice	2,160 kg	720 kg	180 kg	4,000 kg	3,600 kg	1,800 kg
2 Maize	60 kg	300 kg	227 kg	150 kg	450 kg	500 kg
3 Cassava	20kg	100 kg	180 kg	120 kg	300 kg	500 kg
4 Forest tubers	10 kg	50 kg	90 kg	25 kg	50 kg	70 kg
5 Other tubers	10 kg	35 kg	60 kg	30 kg	20 kg	100 kg
6 Wildlife	10 pieces	5 pieces	0.2 pieces	-	-	-
7 Buffaloes	2	1	-	5	3	2
8 Pigs	4	2	-	8	6	4
9 Chicken	10	10	-	15	10	15
10 Fish	150 kg	200 kg	50 kg	200 kg	250 kg	50 kg
11 Vegetables	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Invertebrates

One study found that the village of Ban Navang uses at least 62 varieties of terrestrial insects for food, and 21 varieties of aquatic invertebrates ("other water animals" besides fish, amphibians or reptiles). While these probably serve an important role as a supplementary protein source, no invertebrates or their products (such as honey) were listed by either men or women among the 20 most important NTFPs (including wildlife) in three villages surveyed. Nor were any named amongst the most important NTFPs in villages on the Nakai Plateau.

Fish

Human use of fish is high. Villagers in Ban Navang listed 35 varieties of fish they consume (although this might include a few species labeled 'fish' in local nomenclature but not in scientific ones, such as softshell turtles). Men in the NPA often rank fish as their most important NTFP. Five villages on the Plateau named 28 species they use, and they ranked fish and frogs together as their most important NTFP (equally with khisi resin) (Foppes *et al*, 1997).

Fish are also extracted in bulk by outsiders, including trans-border fishermen crossing into the NPAs upper watersheds, and explosives are often used. In three villages in the NPA, fish were included in a category of NTFPs that have declined significantly, but were still reasonably easy to find. Villagers report that formerly it took one hour to catch 1 kg. of fish, and now it takes four hours. They attribute the decline to (Foppes et al, 2001):

- changes in stream morphology due to sedimentation, filling in of deep holes/breeding pools (due probably to too much shifting cultivation);
- fishing and purchase of fish by outsiders; and
- use of explosives and other destructive means by resident and non-resident villagers.

The likely impact of the NT2 dam and reservoir on fish of the upper Nam Theun and tributaries in the NPA has been little discussed or studied. Migratory species (moving seasonally between streams in the NPA and the Nam Theun River) could be seriously affected, with an impact on local livelihoods.

Amphibians and Reptiles

The village of Ban Navang can name at least 20 types of amphibians and 32 reptiles they collect from the forest, mainly for food and trade. This is far more than other villages surveyed elsewhere in Lao PDR (Foppes, 2001). Frogs are harvested for consumption or local sale and, based on experience elsewhere, this may have resulted in population declines in some areas.

Birds

Hunting of birds by residents and outside poachers is done, for the most part, opportunistically. The species seen with hunters, as remains in villagers, or for sale in local markets are usually those most easily targeted - e.g., green pigeons (*Treron*) shot as they gather at fruiting trees, or pheasants and partridges caught in ground snares. Residents of Ban Navang named 73 varieties of birds that they kill or capture, mainly for food. None of these, however, is likely to be important or irreplaceable components of their diet. It should be noted that in the Nam Theun Corridor, villagers *do not* opportunistically, but routinely net green pigeons at the mineral licks.

Mammals

Wild mammals are probably a more important protein source for residents than wild birds, but not as important as fish. Certain species are hunted because villagers find they taste particularly good, e.g., gibbons, muntjacs, wild pigs and bats. Others are sometimes left unmolested because they taste particularly bad (e.g., Hog Badger). Residents of Ban Navang reported 45 varieties of mammals they kill or capture. Villagers in central and western portions of the NPA report drastic declines in gibbons and muntjacs from local hunting. Some species, such as macaques, tiger, pigs, rats and porcupines, are shot, snared or trapped near the village to protect crops or livestock. Scientific surveys have similarly reported a decline in most large mammals (gaur and tiger) from the plateau.

For reasons of local preference for the taste of wild meat, cultural affinity for hunting, and the trade value of many mammals, and ample free time after the agricultural period, it is unlikely that the expansion of livestock raising in the protected area may eliminate the 'need' for people to hunt wild mammals.

5.3.5.2: Carbohydrate Intake, from Consumption Mainly of Tubers

Few NPA villages are rice self sufficient, and many are short of rice as a staple food from one to eight months of the year. While some villages experience more rice shortages than others – due to lack of paddy, poor soils of upland fields etc, - the actual number of months of rice shortage in any particular year depends on the yield of rice in that year, which depends on droughts or pests. To make up for this shortage most villages forage for tubers, mainly of *Dioscorea* spp., of which at least 20 different kinds can be distinguished by the villagers.

Limited studies have been conducted as to where these tubers are gathered, but it is possible that it is in village controlled use forests. Thus, the continued gathering of these starch crops may not be impacted by natural resource access zonations and regulations.

5.3.5.3: Vitamin Intake from Forest Fruits and Vegetables:

Hundreds of forest fruits and vegetables are collected by NPA villages, and the imposition of natural resource access zonations and regulations will not likely impact or affect this gathering. In fact, it will be encouraged and recorded, as part of the indigenous knowledge base.

5.3.5.4: Use of Timber or Bamboos for Construction

Villagers mainly fell and saw wood for two purposes, building houses and building boats. Felling trees for house building is allowed by Law – up to 5 m³ per family, and it requires different types of timber for different purposes in house construction, from house supports, beams, walling, roof beams and even roof tiles. The ability to make such houses depends on money. A family must have money to hire people to saw logs, make planks and transport the wood. That is, if a family is poor it only has enough spare time to make a rough pole and bamboo house as opposed to a square pole and sawn plank house. A village with timber housing is thus a rich village. Data on the number of sawn wood houses in the NT2 Watershed/NPA is unavailable. Similarly, there are no data on the number of boats, but it is expected to be small. As a rule, such customary use of timber, if managed properly, is not seen as problem or threat in NPA villages.

Commercial logging by outsiders in the past has included:

1. Encroachment logging of areas outside the planned reservoir inundation zone;
2. Logging of *Fokienia* in the NPA by approved companies; and
- 3: Logging by transborder poachers, in which high value trees such as *Fokienia spp.* and *Dalbergia spp.* are cut and removed overland with teams of men or water buffaloes.

This type of logging is currently banned by PM's Decree 193 (2000) and will continue to be totally banned in all zones of the NT2 Watershed/NPA

5.3.5.5: Upland Rice Production on Former Forest Lands.

There is no definitive data on the area of paddy fields or of upland rice planted on former forest lands in the NT2 Watershed/NPA. On the assumption that most of the 1,000 NPA households plant an average of 0.75 hectares of upland rice per year, then about 750 hectares of upland rice would be cropped per year. Assuming the average yield is 700 kg/ha, then about 525 tons is produced per year.

5.3.5.6: Comparative Importance of NTFPs

The only definitive data available is from those limited surveys undertaken in some target villages in which villager participants refer to all of the animal and plant products they collect and utilize, making a generalized comparison of fauna and flora use possible. However, the full extent of forest product gathering and income generating from them is rarely reported correctly, as many wildlife products which villagers use, consume or sell are illegal to hunt or collect.

The 1998 ESMP report noted (Table 5.8) that villages outside the NPA (plateau villages) have a much higher cash income than the villages inside the NPA (NPA villages) mainly due to their access to markets, and the relative ease by which traders can access them. In the NPA villages, income from wildlife and plant NTFPs was similar in the Brou villages, but were so low overall as to be significant. For the Tai Kadai villages, plant NTFP income was more important than (reported) wildlife income, but not as much as livestock – which would have been cows and buffaloes.

Similarly, on the plateau, plant NTFPs were reported to be more important for income than wildlife, but again as most wildlife sale is illegal it would not have been reported.

Chazee (DUDCP, 2001) found that villagers sold few forest products such as cardamom, damar resin, rattan, markkaen, dry meat of deer, antlers of deer, muntjac and wild boar. He proposed, however, that there were many other traded products for which information was not given by villagers, including the sale of forest turtle, monitor lizard, pangolin, loris, and by-products (animal parts) of cats, gaur, goral and banteng.

Table 5.8: Sources of cash income of 12 villages in and outside Nakai-Nam Theun NPA

(from: Environmental and Social Management Plan, IUCN, 1998, part II, p. 36)

Location	Ethnic gp	Unit	Estimated annual income				
			agriculture	gathering	hunting	fishing	total
NPA	Brou	kip/yr	3,383	2,310	3,012	2,675	11,380
NPA	Tai Kadai	kip/yr	114,292	95,470	3,977		13,739
Plateau	<i>Tai Kadai</i>	<i>kip/yr</i>	<i>183,333</i>	<i>166,848</i>	<i>2,914</i>	<i>131,212</i>	<i>514,307</i>
PIZ	<i>Hmong</i>	<i>kip/yr</i>	<i>1,320,096</i>	<i>65,092</i>	<i>53,185</i>	<i>28,251</i>	<i>1,466,624</i>
NPA	Brou	%	25%	70%	3%	2%	100%
NPA	Tai Kadai	%	53%	45%	2%	0%	100%
Plateau	<i>Tai Kadai</i>	%	<i>36%</i>	<i>32%</i>	<i>6%</i>	<i>26%</i>	<i>100%</i>
PIZ	<i>Hmong</i>	%	<i>90%</i>	<i>4%</i>	<i>4%</i>	<i>2%</i>	<i>100%</i>

While villagers report that plant and animal NTFPs used for subsistence purposes are still abundant, those harvested for commercial sale, however, have declined, as shown in Table 5.9 below. This table also highlights a different attitude on the part of NPA villagers. In this survey (as opposed to the DUDCP PRA of 2000) villagers recognize the diminution of some of the resources they have access to, and can even suggest solutions – management strategies – which will be important baseline for future NPA managers.

Table 5.9: Abundance and availability of selected important NTFPs (Foppes et al, 2001).

Typical products	Past Situation	Present Situation	Trend	Typical causes of change	Solutions
Almost depleted					
1 Agarwood "Po heuang"	could cut 30-500 threes in 1 hour (NV)	cannot find more than 1 tree in 2 days	Totally Reduced)	Villagers cut agarwood for selling	-Protect remaining trees - plant new trees
2 Gibbons "Thani"	See gibbons within 3-5 minutes walk	Cannot see gibbons within 2 days walk	Reduction 480:1	-People eat them -Slash-and-burn reduces tall gibbon forests	-Protect remaining animals -Designate no-hunting, no-slash-and-burn zones
3 Big rattans "Thoun"	One man could get 60 kg in 1 hour or 10 stems in 2 hours	-A man needs 3 hours to find 20 kg or 12 hrs for 5 stems)	Reduced 90%	Villagers cut and sell - in 1994 Navang sold 100,000 stems	- Protect remaining stands (villages must agree, join in protection scheme) - Planting trials
Declining, but still easy to find					
'Boun' rattan shoots	One man can get 10 shoots in 1 hour	Same (MF) Same reduction as 'toey' (BT)	1:1 6:1	This plant often regrows in fallow	No problem perceived, no action needed
'Nor mai' bamboo-shoots	Can collect 1 basket (12 kg) in 1 hour(BT)	Now get only 1 kg in 1hour (BT)	12:1	More people in the village, Some bamboo died	No problem perceived, no action needed
'Kho' palm leaves	> cut 50 leaves in 3 hours (NV) > 30 leaves in 2 hours (BT) > 50 leaves in 6 hours (MF)	> 5 leaves in 4 hrs (women) > 50 leaves in 1 day (men) > 30 leaves in 1 day (BT) > no change (MF)	13:1 women 4:1 men 1:1	Trees suffer from slash-and-burn, eating of young shoots, more use of leaves for houses	Many families already protect the remaining "kho" trees in their fields. Some have started to plant "kho" trees near houses.
'Toey' pandan leaves	Find within 10 mins of village 1 bag in 6 hours (MF)	need to walk 1 hour to find No change (MF)	6:1 1:1	Village grows, more people need mats	No problem perceived
'Pa' fish	One man can get 1 kg in 1 hr	It takes 4 hours to get 1 kg	4:1	1. Less water (deep areas silted up) 2: outsiders buy, fish 3: used explosives, 4: population increase hunting by villagers	> make fish ponds ? > don't cut trees near the river > designate special no-fishing zones
'Farn' muntjak deer	You could see one in 30 minutes	It takes 1-2 day to see one	50-25:1		protected areas, hunting rules
No decline, or stable					
forest vegetables	Plenty	Plenty	No change		Not needed
Mushrooms	Plenty	Plenty	No change		Not needed
palm shoots	Plenty	Plenty	No change	It grows in fallows	Not needed
'wan chod' medicine	Plenty	Plenty	No change		Not needed
'ki si' resin	Plenty	Plenty	No change	Lack of market	Not needed
banana flowers	Plenty	Plenty	No change		Not needed

Relative Income from Commercial NTFPs

Estimating income from NTFPs is difficult, and the information must be used with caution as sales and income varies widely from year to year, depending on (i) a purchaser or a market for the product, (ii) the availability of the product in the forest, and (iii) an assessment by villagers of the value of their efforts expended compared to potential income. A summary of income estimated from NTFPs from all NTFP studies undertaken in the NPA and the plateau is given in table 5.10.

Table 5.10: The contribution of NTFPs to family cash income of communities in the Nam Theun area, estimates from various sources, 1997.

Source	Date	Area	Method	Total (kip)	% NTFP	% Livestock	%Others
Foppes e.a.	1997	plateau	ranking	-	76%	14%	10%
Foppes e.a.	1997	plateau	interviews	204,038	41%	32%	27%
IUCN	1998	plateau	interviews	514,307	64%	?	36%
IUCN	1998	NPA	interviews	174,307	65%	?	35%
Ingles e.a.	1998	NPA	ranking	-	54%	42%	4%
IUCN	2000	NPA	interviews	403,776	53%	32%	15%
Foppes e.a.	2001	NPA	ranking	-	24%	26%	50%
<i>Average</i>				Plateau	60%	15%	25%
<i>Average</i>				Upper NT	49%	25%	26%

In comparing NTFP income with income from other sources, the most recent study (Foppes, 2001), reported that men and women ranked livestock and NTFPs as the most important sources of cash family income, providing each about a quarter (26%) of all family cash income (see Table 5.11).

Table 5.11: Villagers' ranking of cash income sources, 3 NPA villages, May 2001

No	Income source	Ban Navang		B. Mak Feuang		Ban Teung		Average	Average	Average
		Women	Men	Women	Men	Women	Men	Women	Men	All
1	Livestock sales	10	9	9	8	n.a.	10	25%	26%	26%
2	NTFPs	9	25	6	5	n.a.	5	19%	28%	24%
3	Selling crop products	7		8	7	n.a.	2	20%	10%	14%
4	Selling alcohol/tobacco	8	5	3	2	n.a.	8	13%	14%	14%
5	Labour	6	5	4	8	n.a.	2	13%	14%	14%
6	Selling fish*	5				n.a.	3	5%	3%	4%
7	Selling wildlife*		6			n.a.		0%	4%	2%
8	Handicrafts*	6				n.a.		6%	0%	2%
total scores		51	50	30	30		30			

If fish, wildlife and handicrafts are also considered to be NTFPs, then NTFPs are the most important source of income (34%). Men and women mainly agree on the importance of products such as livestock, selling alcohol/tobacco and labor. However, selling NTFPs and wildlife gets more points from the men's group, and handicrafts from the women's group. This may indicate a gender division, but this is not sure, as the survey team observed more men working on handicrafts than women.

In the rest of Lao PDR, the average share of family income derived from NTFPs is around 50%, but villages close to rich forests reach up to 90%. One would expect a similar high percentage for the upper Nam Theun area, where villagers know and use such unusual high numbers of NTFPs. However, the fact that villages in the forest-rich area of the watershed have low income from NTFPs may be due to;

1. the high level of available NTFPs for subsistence consumption reduces the need to buy food, and thus the need to sell NTFPs; and
2. the difficult access to markets reduces the ability to sell NTFP products.

5.3.5.7: *Income from the Sale of Wildlife*

As noted previously, income from wildlife sale is very difficult to estimate due the unwillingness of stakeholders to declare income from this source, much of it being technically illegal.

Sale of invertebrates is very difficult to trace, but the frequency with which wild honey, snails, crickets and various insect larvae are sold in the markets in Lak Xao and Nakai suggest that invertebrates play a role in local economies and livelihoods. As fish resources decline from overexploitation, increased pressure on aquatic invertebrates such as snails and crustaceans can be expected. There is increasing commercial harvest in the forests of Vietnam for showy beetles, for sale to collectors, and it is likely that extraction has been initiated in the NPA.

In addition to being consumed locally, some fish is sold to outsiders, but the extent of this is unstudied. The principal threat to the herpetofauna of the NPA is the collection of reptiles for the international trade. Snakes and turtles are intensively sought and, to a somewhat lesser degree, monitors, agamids and geckos. In 1997 prices realized by villagers were reportedly the equivalent (at 1997 exchange rates) of US\$50/kg for some species of snakes, \$15/kg. for softshell turtles, \$2 each for Indochinese Box Turtles, and \$1 each for geckos.

Very high prices resulting in intense trade has decimated a Critically Endangered species, Chinese Three-striped Box Turtle (or *tao kham*, 'golden turtle'). The following account of the of the trade in golden turtles is taken from the *Saola Conservation Action Plan for Lao PDR* (Robichaud, 1999):

...The other highly sought product is Tao kham, or "golden turtle", probably Chinese Three-striped Box Turtle Cuora trifasciata. The species is valued in Chinese medicine as a cancer cure (Yoon 1999). Virtually all "golden turtles" collected in Laos (usually with the aid of trained dogs) go to Vietnam, and many then on to China. From the mid-1990s, as over harvesting made the species rarer and rarer, the local price for a 1 kg. animal climbed from \$100 to nearly \$700, and can reach \$1200 from dealers in China... "golden turtles" were once fairly common in the Annamites but have been nearly wiped out in the past ten years. As a result, poaching pressure has turned to other commercially valuable wildlife, principally pangolins (now \$100 for a 3-4 kg. animal), other turtles, snakes, primates, and large mammals such as cats, bears and wild cattle. Because the large mammals are usually taken by snares, this shift in pressure poses a great threat to Saola.

To give an indication of the catastrophic nature of the decline, in 1998 an official (and resident) of the Nameo sub-district estimated that five years previously two villages in the area found between them about 300 'golden turtles' annually, but now [in 1998] found only about five per year. The intense turtle trade in NNT is a recent phenomenon, with the market reportedly developing only since the late 1980s. In 1998 the deputy village chief of Ban Makfeuung reported that ten years previously villagers often left Indochinese Box Turtles unmolested, and only occasionally collected them for food. In the previous 2-3 years, however, Vietnamese traders begun buying them, and in response villagers started to actively search for them with dogs. Vietnamese traders also search for turtles directly, probably with at least the intensity that local residents do.

Trade in dead birds to markets in Lak Xao and Nakai, while fairly common, is done in small quantities at low prices and probably makes only a minor contribution to local incomes. Some taxa are captured for the cage bird trade: pheasants, parakeets, doves, mynas, starlings, laughingthrushes, and occasionally, hornbills. By far the most worrisome trade in any bird in the NT2 Watershed/NPA is the live snaring of the globally threatened Crested Argus. This large, rare bird is snared on its habitual courtship display grounds (usually a small opening in the undergrowth of a forested ridgetop). The main trade seems to be to Vietnam (probably to be sold to amateur aviculturists). Vietnamese poachers snare arguses themselves, or resident villagers sometimes catch and sell the birds to them for US \$20 - \$100 each (1997 prices).

The trade value of mammals is much higher in general than for birds. Pangolins, primates, bears, otters, civets, tigers and other large cats, elephants, pigs, deer, flying squirrels, sambar deer, muntjacs, wild cattle and southern serow are captured or killed and sold for either meat, traditional medicines, pets and/or trophies. Ironically, one of the few large mammals that has little intrinsic trade value is one of the rarest, Saola. This is largely because the species is unknown in the traditional Chinese pharmacopoeia. There is a

general trend to send wild meat to nearby Lao towns or to Thailand, and medicinal species to Vietnam. The animals are killed or caught by villagers and sold to Lao middlemen or to Vietnamese traders, or they are harvested directly by transborder poachers, the local military and, to a lesser extent, residents of nearby towns such as Lak Xao and Nakai.

A variety of killing and capture methods are used: guns, snares, crossbows, snap-traps, capturing animals in tree or ground burrows and, for otters, baited hooks set in streams. Although the local provincial and district governments have collected village guns in the area, village militia retain, and hunt with, large caliber rifles. Snaring is widespread and a major threat. The most intensely traded mammal is by far pangolins, and it is unlikely that the species can survive the pressure it is under throughout the Lao PDR. Almost all are captured alive (usually by digging them from their burrows) and sold into neighbouring countries. In mid-2002 Provincial authorities made a single confiscation of 636 pangolins not far from NT2 Watershed/NPA in Khammouane Province while they were being transported by one group of traders in five boats in the direction of the Eastern border.

Relative Importance of Forest Products

Table 5.12 lists the most important plant NTFPs ranked by men and women combined in three villages in NNT (Foppes et al, 2001) and their status as assessed by the respondents.

Table 5.12: Rank order of important plant NTFPs in 3 NPA villages (adapted from Foppes 2001).

NTFP	Women	Men	Combined	Use	Status
1. Palm leaves "Kho"	32%	40%	72%	Roofing, walls	MD
2. Small rattans "Vai"	26%	25%	51%	Handicraft, food	-
3. Pandan leaves "Toey"	38%	11%	49%	Handicraft	MD
4. Rattan shoots "Boun, San"	8%	36%	45%	Handicraft, Food	Boun/MD; San: NC - I
5. Cardamom "Mak neng"	18%	26%	44%	Sale	I
6. Bamboo-shoots "Nor mai"	25%	16%	41%	Food	MD – I
7. Bamboo canes "Mai pong"	1%	36%	37%	Handcraft, food, housing	-
8. <i>Parashorea</i> resin "Khi si"	7%	24%	31%	Sale	NC
9. Big rattans "Thoun"	4%	14%	18%	Sale	SD
10. Agarwood "Po heuang"	4%	11%	15%	Sale	SD
11. Forest vegetables "Phak"	7%	3%	10%	Food	NC
12. Medicinal herb "Wanchod"	5%	0%	5%	Medicine	NC
13. Wild galangal "Houa kha"	0%	3%	3%	Condiment	-
14. Palm shoots "Keuang"	3%	0%	3%	Food	-
15. Edible tubers "Man"	3%	0%	3%	Food	-
16. Fruits "makfai, mak ngen"	1%	0%	1%	Food	-
17. Incense bark "Yang bong"	1%	0%	1%	Sale	-

SD: severe decline, MD: moderate decline, NC: no change, I: increase

Again, the trend in NPA villages – where non-food NTFPs, mainly housing and handicrafts NTFPs are ranked high - is dissimilar to most other Lao villages where food NTFPs are seen as the most important.

5.3.5.8: Riverine Habitats and Resources

Rivers and streams are among the most important habitat features of the NT2 Watershed/NPA for humans, wildlife and aquatic biodiversity itself, and thus restrictions applying to this habitat are likely to affect villagers. Watercourses vary from wide slow-moving rivers, to steep, rushing, perennial or annual streams, and water quality is high. These habitats are a critical source of food for local people (fish, frogs, invertebrates and some edible algae and other plants), and are important sources of water for drinking, cooking, bathing, clothes washing, the maintenance of large livestock and, in some areas, paddy irrigation. Watercourses are also important arteries of travel for most villagers, either by boat or by foot along their banks. Streams also figure prominently as boundaries of spiritual territories and as abodes of some spirits important in local cosmologies. On the Plateau, pools and wetlands are probably an important source of food for local people, and less so where such features occur in the uplands.

5.4: MITIGATION MEASURES FOR RESTRICTIONS TO ACCESS

The remainder of this Chapter identifies linkages between possible resource access restrictions and the mitigation measures in the form of livelihood improvements that are proposed as recompense. This includes:

1. Principle mechanisms for ensuring that access restrictions are avoided or minimized (5.4.1)
2. Identification of village territories and customary use rights (5.4.2)
3. Determination of threats to biodiversity and/or identification of key habitat areas which would require conservation management (5.4.3)
4. A process to agree on access restrictions and compensation measures for these including provisions for secure tenure for land and resources (5.4.4).
5. A process to allow villagers to select adequate mitigation and/or compensation measures (5.4.5 to 5.4.8)

5.4.1: Improved Natural Resource Management Planning

The principle mechanisms for ensuring that access restrictions are avoided or minimized is the village forest and land use planning process embodied within FLUPAM. In practice, planning and implementation of natural resource management is extremely difficult and the mixed success of such initiatives world-wide attests to the many difficulties faced during implementation.

Nonetheless, forest and land use planning, allocation and management remains an essential component of participatory NPA management under SEMFOP. Lessons learned over the past few years in the NNT NPA and elsewhere in the Lao PDR, especially the Nam Et Phou Loei and Phu Xang He NPAs, will be used to ensure improved FLUPAM ⁶ under the SEMFOP program.

Such improved village level FLUPAM will be achieved by processes such as:

- Not rushing or hoping to complete a village FLUPAM in one session, but rather in a series of inputs, often over more than one year.
- Obtaining a better understanding of customary management, use, and tenure-ship of village use lands and their natural resources and providing secure systems of tenure through the VFLMA.
- Extensive use of use of participatory techniques, including social and gender impact assessment, gender disaggregated group discussions, wealth ranking, etc. (See Table 2.1 in Section 2.1.3) to obtain the full and active participation of the entire community.
- Forest zonation based on villages zonation of their forests and biodiversity hotspots, not according to the central forest inventory and planning center's (national level) zonation .
- Detailed and realistic land use planning starting with the traditional agricultural livelihood systems.
- Above all, following a flexible approach, and modifying plans according to the real situation and needs and opportunities presented in each village.

5.4.2: Zonation and Rules and Regulations

NPA zonation under SEMFOP must adequately assess and recognize the land and resource use of communities in the zonation process. This creates the dilemma of how to develop an approach that provides "indicative" or "preliminary" macro zoning to guide broader conservation efforts in priority conservation areas in the short term, while waiting for the rather long-duration community based zoning under FLUPAM to be completed.

SEMFOP will proceed by developing provisional TPZ and CUZ zones under which draft TPZs are defined as "all areas neither claimed or regularly used by villagers", with all other areas defined as CUZs. As FLUPAM proceeds, TPZ boundaries will be amended according to the local resource use information obtained and traditional forest and land use zones will be delineated within the CUZ, along with rules and regulations for each derived zone and agreed upon during the participatory FLUPAM process. After a period of testing, participatory review and refinement, TPZ, CUZ and village use zones will be

⁶ For a full description of the FLUPAM concepts see Annex xxx

formalized. The provision of development assistance and issuance of various use-rights can be tied to each stage of the process, as appropriate.

Within the final definition of TPZs, the hunting of all species and extraction of all plant products will be prohibited, except in special circumstances. Entry into these areas will be necessary for monitoring and patrolling, and research, and possibly for specialized low-impact nature tourism, but as a general rule they are to be left (or regenerated) in a 'pristine' state.

The Controlled Use Zones are more complex. Certain areas in these zones may in fact be biologically important, while some areas may have cultural or biological significance to villagers. In both cases, investigations should reveal if these areas should also be designated as village protection forests within the CUZs, which may or may not be contiguous with the TPZs. These areas will remain under the primary custodianship of stakeholder villagers.

Participatory planning and agreement on defining these zones will be conducted under FLUPAM, one of the three main components of the PICAD approach to NPA management and is fully described in Section 2.2.

5.4.3: Determination of Threats to Biodiversity

FLUPAM includes the identification of the major threats to biodiversity and key habitat areas such as water sources, salt licks and the like that may be found within or near to village customary use areas. Although the process makes extensive use of villager knowledge and experience in this regard, it also incorporates the findings of previous research studies or monitoring surveys conducted. During FLUPAM, villagers are informed about and asked to jointly review the information from research and monitoring for a number of reasons:

- To raise villager awareness in regard to key species and important habitats.
- To confirm (or otherwise) the validity of the research findings
- To obtain villagers' perceptions on the issue
- To obtain additional information from the villagers that may be valuable to the studies.
- To jointly develop appropriate rules and regulations to protect the habitats/species in question.

The rules and regulations agreed to will form part of the VFLMA along with the livelihood development and support activities jointly agreed to as compensation for any restrictions that the rules and regulations might impose on the community, and as part of the general livelihood development objective of SEMFOP. Livelihood development will be undertaken in all NPA and most PIZ villages irrespective of impacts from restrictions, however in cases of adverse impacts from restrictions the procedures of the process framework ensures that the affected villagers will be able to improve, or at least maintain, their livelihoods.

It is important to note that many of the additional threats to the environment that are identified during FLUPAM are also seen as threats to local livelihoods by the villagers themselves. These are dealt with by assisting the community in the development of appropriate management plans for threatened resources and may result in the delineation of a variety of zones within the village customary use area such as watershed protection forests, fish breeding grounds, etc.

5.4.4: Village Forest and Land-use Management Agreements

It is intended that Village Forest and Land-use Management Agreements will be developed jointly with NPA and PIZ communities in a participatory manner and form the basis for securing local tenure rights to land and resources, and for ensuring that the resource access restrictions that are agreed to, and those imposed by national regulations, are compensated for in a fair, equitable and transparent manner.

There is currently only a very limited understanding of the customary land and resource tenure systems practiced by the various ethnic groups in the NPA and the PIZ. A process for achieving an improved understanding of these local systems will be a priority under FLUPAM, and the Ethnic Minorities

Advisors will play a key role in this regard. A better understanding of these systems will be an essential prerequisite prior to agreement on the tenure systems to be incorporated in the VFLMA.

During FLUPAM, it is intended to clearly identify the customary tenure systems of local communities in each and every NPA and PIZ village and incorporate these into the respective VFLMA. This will require an additional series of steps in the FLUPAM process over and above those currently included in the FLUPAM manual (Annex 5 in the Folio of Annexures, SEMFOP Volume 2). This participatory assessment will be conducted concurrently with village land use zoning (and may require that the current list of land use zones is expanded) and identify the customary tenure systems associated with each zone. It will include the following topics.

- Community land: types definitions, descriptions, uses delineation and tenure systems.
- Community natural resources: types, uses, allocation, access and tenure.
- Family land: types, uses, allocation and tenure.
- Family managed natural resources: types, uses, allocation, access and tenure.

Village Forest and Land-use Management Agreement Template

Province:.....District:.....Village:.....

Agreement on rights and responsibilities for the management and use of forest, agricultural and other land and their natural resources by village

And, the rights and responsibilities of the Watershed Management Protection Authority (WMPA) to respect the villagers’ rights laid out in this agreement and to provide the specified development activities and support to the community and individual villagers in recompense for any restrictions imposed on their access to land or resources by this agreement.

In accordance with Decree 164 of 29/10/93 regarding the establishment of National Conservation Forests.

In accordance with the Forestry Law, Article 42 (management of Conservation forests) and Article 63 (rights ad duties of village authorities, especially clause 6).

In accordance with the agreement of village authorities and elders ofvillage, agreeing to develop these village regulations.

In accordance with the objective and functions of the WMPA as laid out in Article 4 (WMPA objectives) and Article 5 (WMPA functions) of PM Decree 25 in regard to the NT2 Project.

Article 1: Introduction and Objective

1.1 These regulations have been developed by participatory review, consultation and agreement between villagers of village.....and staff of District, and staff of the WMPA.

1.2 In order to provide development support, education opportunities, training and an example of the sustainable use of natural resources for future generations.

1.3 In order to confirm the long term usufruct rights of the land and resources within the designated village boundaries to the villagers of village.....

1.4 Following the Government’s establishment of the National Protected Area, there should be the establishment (identification) of areas for i) total protection, ii) controlled use zone and iii) corridor zones.

Article 2: Village boundary, boundary/type of customary use areas and conservation forest in the village.

2.1 The village boundary has been agreed to by the village and neighbouring villages, as signed by village chief and District chief (see attached agreements and maps).

2.2 The customary use areas (zones) of the village have been agreed upon and delineated (see attached maps) by all villagers as follows:

1. Village housing, amenity and community services and function area.
2. Village agricultural land use area including all permanent agricultural areas, swidden fields and fallows, grazing land and areas used for other agricultural production.
3. Village reserve agricultural land not currently farmed to be put aside for future population needs of the village.
4. Village production forest for the managed sustainable extraction of timber and other resources for house construction and other uses (according to the limits prescribed by Lao Law) and as agreed to by common village consent.
5. Village ancestral or 'spirit' forest as defined by traditional custom of the village.
6. Village protection forest, enshrining customary uses, defined by community needs for local watershed protection, and as agreed to by common village consent.
7. Village conservation forest as defined by customary use and as agreed to by common village consent.
8. Other categories of customary land use areas as agreed to by common village consent.

The customary tenure systems for these various land use categories are as follows:

1. Village housing, amenity and community services and function land:
2. Village agricultural land:
3. Etc.

2.3 The area and boundary of the National Protected Area within the village land has been surveyed and agreed to by villagers and WMPA/District staff (see attached agreement and maps).

2.4 Definition and delineation of any totally protected zone (TPZ) in the NPA and within the village boundary (*if identified/ relevant*) has been surveyed and agreed to by villagers and WMPA/District staff (see attached agreement and maps).

2.5 Definition and delineation of the controlled use zone, including all Village forest and land use categories (*if identified/ relevant*) has been surveyed and agreed to by villagers and WMPA/District staff (see attached agreement and maps). Rules and regulations regarding the use and management of each of the village land use categories and the use and management of the natural resources therein (including regard to cropping, animal raising, the use of fire, construction, tourism, hunting, fishing, timber extraction and the collection of NTFPs,) have been agreed to by common village consent and WMPA/District staff as follows:

4. Village housing land:
.....
.....
5. Village agricultural land:
.....
.....
6. Etc.
.....
.....

Article 3: Penalties for offenders

The following penalties for infringements to this VFLMA have been agreed to by common consent of villagers and WMPA/District staff:

3.1: Offences in Village land use areas (as defined in Article 2.2 above).

- First offence
- Second offence
- Persistent offenders

3.2: Authority to levy penalties (as defined in Article 3.1 above)

The Village Administration on advice from the Village Land-Use Planning Committee has the authority and the obligation to levy the above penalties.

3.3: Use of Funds (as levied in 3.2 above)

All funds levied as penalties for the infringements to these regulations shall be paid into the village development fund and used at the discretion of the Village Development Committee.

Article 4: Responsibilities of the WMPA/District Authorities

4.1 The WMPA/District agree to abide by the rules and regulations embodied in this VFLMA and the WMPA/District pledges made in it for development assistance and support contained in Article 5 below.

4.2 The WMPA/District will regularly consult with the village to monitor the conduct of this VFLMA and will, with villagers, jointly make modifications and refinements to it based on the lessons learned to improve its value to both the village and the WMPA/District.

Article 5: Commitments of the WMPA/District Authorities

5.1 The WMPA/District agree to provide the following livelihood development and support activities, to the values specified, that have been designed with and agreed to by the village in recompense for the restrictions imposed on the community by this VFLMA.

Development activity 1.	
	
	
		Cost of activity 1 Kip
Development activity 2.	
	
	
		Cost of activity 1 Kip
Etc.	
	
	
		Cost of activity Kip

5.2 The WMPA/District agree to provide the following public services developed with the informed participation of all villagers, in recompense for the restrictions imposed on the community by this VFLMA.

Public service 1.	
	
	
		Cost of service 1 Kip
Public service 2.	
	
	
		Cost of service 2 Kip

Etc.
.....
.....

Cost of service Kip

5.3 The WMPA/District agree to provide support for establishing, training, equipping and remunerating a Village Conservation Management Unit (VCMU) with personnel, duties, and remuneration as follows:

VCMU staff
.....
.....
VCMU duties
.....
.....
Remuneration rates
.....
.....

5.4 The costs for these activities and funding sources are:

.....
.....
.....

Article 6: Monitoring and Complaint Mechanisms

6.1: The following arrangements have been agreed to for monitoring this VFLMA:

.....
.....
.....

6.2: The following arrangements have been agreed to for conflict resolution and addressing complaints concerning this VFLMA:

.....
.....
.....

Article 7: Signatories to this Agreement

7.1: This regulation has provisional effect from date of the signatures below and will be tested and refined over a period of 2 years, as jointly agreed to by the village and the WMPA/District, prior to its ratification by the District.

Village Chief; dated:.....

WMPA FLUPAM Representative: dated:.....

WMPA LDC Representative: dated:.....

WMPA PPAM Representative: dated:.....

District Representative: dated:.....

Village Land-Use Planning Committee Representatives:

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

The VFLMA will be the primary instrument to recognize the customary rights of local communities, who will have the control over the designated agricultural and forest resource use areas (with some qualifications as agreed to in the VFLMA). By this means, local communities will be able to decide how they want to allocate the land within their territories, and they need not necessarily proceed to the issuance of individual TLUCs. As part of this process, awareness raising will be conducted with local communities in regard to land tenure issues, including their rights under Lao law (which recognizes customary law), and possible adverse impacts of the TLUC system. Materials produced in the Lao language and designed specifically to inform villagers as to their rights in this regard have been produced by the NGO, Global Village and will be used, with some modifications, by the WMPA.

As per the WB and ADB's policy on involuntary resettlement, any resource use agreements which may create impacts from resource use restrictions need to be forwarded to the WB and ADB for review and approval, prior to implementation of these agreements. Consequently, once jointly agreed to with villagers, draft VFLMAs will be translated and provided to the WB and ADB for approval prior to their implementation. By explicitly stating the value of WMPA's development assistance in the VFLMA, it is expected that the World Bank and Asian Development Bank will be able to process this formality in an expedient manner.

The general monitoring and complaint mechanisms for SEMFOP will also apply to the VFLMAs, including participatory monitoring at village level and customary, village conflict resolution.

5.4.5: Sustainable Forest Product Harvests

Forest product utilization is largely unmanaged, and for a few key species this has led to their diminution, By their own assessments, residents of the NT2 Watershed/NPA have over-harvested and drastically reduced populations of several wildlife species, such as muntjacs and gibbons, and several NTFFPs. Part of problem is the 'commons' tenure of resources, in which villagers do not have exclusive rights over, or access to local forest resources, but must compete with other resident villagers and outsiders from nearby towns and neighboring countries. Consequently, they have little incentive to harvest them sustainably.

The other aspect of the problem is the insatiable nature of outside – regional and global – markets. Rattans are a good example. For their own use, villagers will collect only as many rattans as they can eat or use for construction material. But there is no upper limit to the number they can sell (expect, of course the limit on their labor to cut and transport the rattan).

If systems for sustainable forest product management are to be successful, they must be developed in a truly participatory manner with villagers, the essence being, and the difficulty being truly participatory. Management regimes should include sustainable harvest levels, the provision of exclusive rights within their defined territories, protected species, protected zones and enforcement. Remuneration for the enforcement activities of the VCMUs is one means of providing compensation to villagers for the time they spend on enforcement. It is seen in a very positive light by villagers as it also helps to protect their rights to the resources within the customary village use area.

5.4.6: Ensuring Sustainable Land and Resource Use

5.4.6.1: Forest Use and Agriculture

Sustainable agriculture refers to land use which maintains soil fertility and crop productivity at the same time, while not depleting forest resources, and for which significant external inputs are not required. Achieving this in the tropical uplands is fundamentally difficult. Nonetheless, there is a suite of activities which can be progressively developed as alternatives to current practices, which are considered as sustainable in that they lead, progressively, to the destruction of forest resources.

An example of possible restrictions that may be placed on current practices, and possible alternatives, presented as mitigating measures, is presented in Table 5.13 below, which includes suggested ways to facilitate the transition. Such alternatives are not suggested as a recipe. Some may be appropriate or feasible, some not. There may be other options or other ways to approach the transition. It is the role of the WMPA's Executive Secretariat to facilitate the investigation of current agricultural system and work with all stakeholders, with an open mind, in order to identify options and opportunities for sustainable agriculture and natural resource use management.

Table 5.13: Possible restrictions on current forest use, and proposed mitigation measures

Resource	Present Usage/ Management	Possible Change or Restricted Assess	Indicative, Example Mitigation Measures
Land	Swidden cultivation	Stabilisation of swidden in co-operation with villagers	Interventions to improve existing swidden techniques combined with terracing, green and animal manure, etc. and development of wet-rice alternatives where feasible
	Livestock grazing (cattle and buffalo)	Reduction in the number of livestock and reduction in free-range grazing in forests	Introduction of veterinarian services and fodder feeding in certain areas to improve the quality of livestock and decrease the quantity
Forests	Firewood	No change or restriction	No planned interventions except for Zone 1 – through consultations with villagers
	Timber for construction	No change or restriction	No planned interventions except for Zone 1 – through consultations with villagers
	Timber for sale	Commercial logging is now prohibited in the Watershed and therefore unskilled work is no longer available	The loss of income for farmers who worked for BPKP is considered minimal. A possible compensation is employment in conservation schemes and patrols in the NPA.
	NTFPs	Introduction of domestication of selected species and plantations	Training, support and follow-up for domestication using demo farms and technical assistance for establishing domestication of NTFPs in selected areas
	Gathered plants and wild food	No change or restriction	No planned interventions except for Zone 1 – through consultations with villagers
Wildlife	Hunting	Restrictions in all zones in regard to hunting endangered species Restrictions on hunting in Zone 1 through consultations	Conservation of Zone 1 – through consultations with villagers and joint patrolling

5.4.6.2: Stabilizing Shifting Cultivation

Much shifting cultivation in Lao PDR contributes to national level pollutants and has the potential to destroy the forests on which the country is dependant. Thus, the policy to stabilise shifting cultivation is a key development policy for the Lao PDR. Policy in this regard has recently changed, a more detailed account of which is presented in Section 3.5.3.6, recognizing that some forms of shifting cultivation – rotational as practiced in the NPA and parts of the PIZ – can be appropriate and sustainable land and resource use practices under the right conditions. Under current policy, 3 types of cultivation are now recognized and rated as to their acceptability (Table 5.14).

Table 5.14: Current policy in regard to swidden cultivation.

System	Description	Status
1.	Pioneer swiddening (<i>bet hay leun loey</i>)	Unacceptable
2.	Rotational upland cultivation without encroaching on new forest areas or in agreed agricultural zones (<i>bet hay bap moun vien</i>)	Acceptable
3	Sedentary cultivation using conservation farming practices on upland or sloping land areas (and perhaps on allocated land) (<i>bet asip kbong ti</i>)	Preferable

The overview of livelihood systems (Sections 3.5.3.1-5) indicates that 50 percent of the population in stakeholder villages use this form of livelihood system (LS2 – Swidden) while another 35% combine swidden with paddy (LS3 – Swidden/Paddy), which are acceptable and preferable, respectively.

Based on the above definitions of current policy, rotational cultivation in agreed agricultural zones can be considered an acceptable form of land use, which implies that the swidden systems used by the majority of residents in the management area are acceptable providing appropriate land use zoning is undertaken to define the extent of these agricultural production areas. A process of developing land use agreements with clusters of communities that mitigates against future encroachment into undisturbed forest areas would need to be done in parallel to the zoning so that villagers are involved in finding ways to adjust to these new conditions of land and forest resource use and management.

Many of the NPA villages have limited or no suitable land to develop truly sedentary agriculture. Thus, efforts will focus on providing assistance in developing and improving traditional rotational swiddening. Once village agriculture and reserve agricultural land areas have been defined by FLUPAM in NPA villages, slashing of primary forests (indeed, any forest areas outside these zones will be banned.

Concomitant with these forest/land use agreements, participatory assessments of population trends will be undertaken with villagers to increase awareness of the potential benefits to them of family planning. Wherever appropriate, assistance with family planning and related activities (Section 5.5.6.5) will be provided as a key livelihood development activity under the SEMFOP.

5.4.6.3: Wildlife Management

Fishes and frogs, and to a lesser extent other wildlife species are important protein source for NPA villagers and long term management will ensure that they still have the opportunity to subsist on this protein. Within the general zonation framework and the distinction between totally protected and managed wildlife species, the management and sustainable utilization of wildlife will be a central, if not long term program for the WMPA. By right, however, in order to protect an area against biodiversity loss and to maintain a balanced ecosystem, no fauna and flora should be extracted, but given the special circumstances of the protected areas in Lao PDR, some compromise must be achieved. There is a pressing need to develop management strategies for the sustainable, harvest of fishes and frogs, and other predetermined species.. Primary steps would include developing local rules and regulations on the use of selected species. These could include: a) banning the use of unsustainable or destructive method of harvesting fishes, such as the use of explosives, poisons or certain traps that do not discriminate fry and mature fish; b) banning certain traps, or banning harvest in certain areas, or banning harvest altogether (in the case of frogs) during the breeding season; c) allowing snares meant for small rodents to be placed ONLY around agricultural plots that have been recognized by FLUPAM. Apart from consumption by NPA villagers, wildlife is also extracted by transborder poachers and PIZ villagers who either buy from NPA villagers or hunt themselves. In regard to this, the export of all wildlife from the NPA will be halted.

Once this export of wild meats ceases, then the level of wild meats that can be consumed by NPA villages will be more clearly defined. However, a detailed scientific study must be carried out to determine the minimum viable population of permitted consumable species (excluding fishes and frogs), and strict guidelines must be in place before any allowance can be made. These guidelines will incorporate age and sex of the species and seasons when hunting can be permitted. However, no hunting will be allowed if the baseline data and follow-up monitoring data reveal that the permitted species are below the their minimum viable populations..

5.4.6.4: NTFP Management

It is not envisaged that any overly onerous restrictions will have to be placed on NTFPs used by NPA villagers for customary consumption, handicrafts, construction and the like. Nonetheless, opportunities will be sought to develop local management systems for all NTFPs to ensure that forest certification standards are met. Any commercial NTFP collection by villagers will be regulated, based on sustainable off-take and/or domestication, where feasible. Sustainable management systems for NTFP use will be jointly developed with villagers during FLUPAM and agreements reached will be included in VFLMAs. Thus the schedule of FLUPAM activities (Table 2.3) represents a time-bound action plan under which sustainable harvesting systems will developed in all NPA and PIZ villages.

5.4.7: Social Development Compensation Measures

The planned improvements to education, health as well as other infrastructure services such as tracks and electrification, will be part of the LDC activities described elsewhere. These type of activities will be agreed to with villagers, partly to mitigate and compensate for any restrictions on future development options that may be imposed under the SEMFOP, and partly towards SEMFOP's objective of improving the quality of life of NPA and PIX villagers. These are in addition to the livelihood compensatory measures described in Sections 5.4.5 and 5.4.6.

5.4.7.1: Education

Improved education equipment and services will be made available to affected persons to enable them to improve their numeracy, literacy and their ability to adopt new livelihood skills. These skills will be useful not only in developing and then participating in the improved natural resource mangment systems, but also in an incremental increase in their understanding of alternative agriculture and livelihood systems.

5.4.7.2: Health

Similarly, improved health facilities and services will provided to project affected persons, including access to modern medicine, when appropriate, as an alternative to forest or natural medicines, some of which are ineffective, and some of which depend on extraction of legally protected species. However, these activities will also incorporate and enhance, as appropriate, traditional health practices and practitioners. Improvements in overall health status may equip villagers to better concentrate on the development of more sustainable lifestyles.

5.4.7.3: Access Improvement

Improved access within the NPA will be planned and agreed to with villagers according to their needs. In addition, the river boat transport system intended to link NPA villages with Nakai District town described in Section 2.1.6 will benefit villagers in a number of ways, including:

- Provide improved opportunities for marketing and trading.
- Facilitate access to markets for essential household commodities not available within the NPA.
- Enhance access to essential services, such as hospitals, higher education, etc.
- Open new employment opportunities for villagers.
- Create opportunities for communities to participate in village-managed nature tourism.

The service improvements described in this Section are intended not only to mitigate and compensate for restrictions, but will also add value to the more direct mitigation and compensation measures described elsewhere in this Chapter through a better educated, more healthy people with access to markets, education, employment and government services.

5.4.8: Local Economic Opportunities.

The NT2 Project and biodiversity conservation will also create income-generating opportunities for affected villagers in the NPA and provide compensation for any restrictions that the project may impose. In addition to employment as construction workers, WMPA staff, members of VCMUs, which may not

appeal to everyone, opportunities for work in ecotourism and an international biological research will also be created, providing a range of possible jobs that villagers can become involved in according to their individual interests and skills.

5.4.8.1: Community Based Ecotourism

Nature or eco-tourism in the NT2 Watershed/NPA has considerable, even outstanding potential, both before but especially after the reservoir is constructed and operational. While some of the plateau area is degraded, excellent lowland forest still occurs north of the river (in the NPA) and in the proposed “one thousand island” zone. Fishing and boating on the river and then the reservoir can be promoted. Once flooded, the reservoir could be a major water sports, fishing and bird watching area.

The mid and upper watershed presents tourism opportunities for trekking, village stay and canoeing. This could focus on either (a) low budget, village-based activities, or (b) more expensive lodge-based and observation post activities. While the latter will take considerable infrastructure development, the former requires little investment and could be implemented early in the SEMFOP. Consequently, initial development under SEMFOP-1 will focus on community-managed nature tourism to ensure an equitable distribution of benefits amongst villagers, local authorities, and protected area management. The model has been successfully piloted in Nam Ha and Phu Xang He NPAs in Luang Namtha and Savannakhet Provinces, respectively.

An underlying principle of the SEMFOP is that local stewardship of resources plays an important role in sustainable resource use, and the participation of local communities in the management of biodiversity not only promotes conservation but also helps achieve rural economic development goals. Community-based nature tourism provides such an opportunity. Very simply, it can be defined as *‘responsible travel to natural areas which helps to conserve the environment and also improves the well-being of local people’*

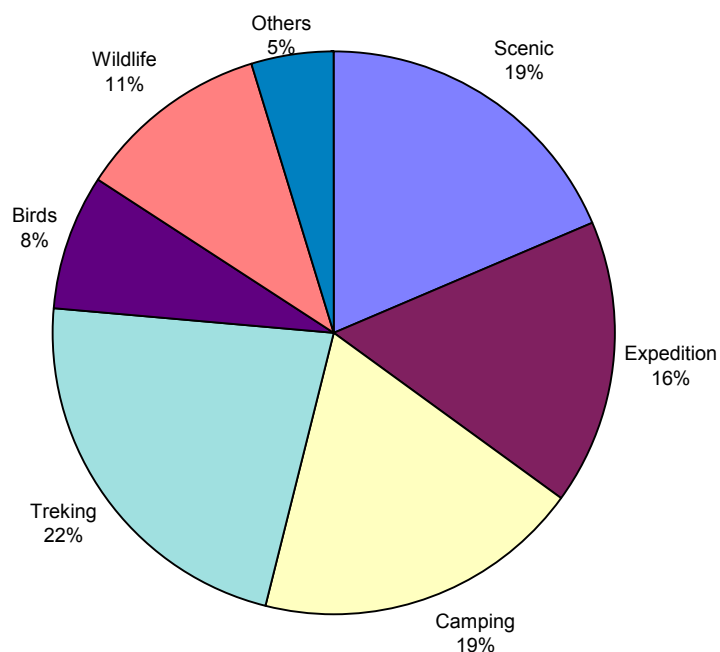
It has the potential to provide a number of benefits in line with SEMFOP objectives:

- It minimises negative impacts on the environment and local people.
- It respects local culture and traditions.
- It builds environmental awareness in local host communities.
- It provides villagers with additional income and other forms of employment as alternatives to forest extraction.
- It provides villagers with a strong and visible economic stake in conserving natural resources in the NPA.

Eco-tourism programs piloted in the Lao PDR have demonstrated a high potential, but because of the comparatively low level of tourism development in the country, Lao PDR receives mainly low-budget tourists, commonly referred to as ‘back-packers’. These pioneer tourists are always the first to appear in any developing tourist market and are essential for tourism development generally. Community-based nature tourism is particularly attractive to this type of low-budget tourist.

A survey of foreign tourists in Lao PDR⁷ revealed a broad interest across all features that the NT2 Watershed/NPA has to offer (Figure 5.6). Most respondents preferred trekking, camping and scenic type activities, but there was fairly broad interest across all categories of nature tourism. Suggestions from respondents for alternative eco-tourism activities included rafting, fishing, cycling and controlled hunting (culling).

⁷ Survey conducted by the Lao Swedish Forestry Program for the design of the Phu Xang He Eco-tourism program, Savannakhet Province, April, 2000.

Figure 5.6: Tourist interest in various forms of nature tourism

Community based nature tourism has the advantage over the more up-market type of ecotourism in that it allows a much greater and more equitable distribution of benefits both (i) between the NPA and villagers and (ii) among and within participating communities. Experience from PXH has shown that both the NPA and villagers can receive significant income from it as capital and operating costs are very low (Craig and Soungnawongsa, 2000). The PXH program developed agreements with participating villages that 20% of all payments received by individual villagers for accommodation, selling local produce, and acting as guides, cooks, cleaners, etc. would be paid into a village development fund. This helped to spread the benefits and also capitalised and maintained a revolving fund that was used for social development, such as the purchase of school books, livelihood development activities. A similar model of equitable distribution of ecotourism revenues will be followed under SEMFOP.

Initial development of the community-based nature tourism related activities will begin with a survey and analysis of tourist numbers, type, demand and market potential focusing on the Lao PDR generally and Thakek in particular. The results of the survey will be used during participatory planning with NPA villagers to identify appropriate activities and programs to capitalise on the tourism opportunities identified. As experience is gained, by year 5 of SEMFOP-1, decisions will be taken, in conjunction with all key stakeholders including villagers, as to the most appropriate strategic approach for future ecotourism development in the NT2 Watershed/NPA.

5.4.8.2: Scientific Research

The establishment of permanent field research stations, via cooperative programs with international research institutions, will be seriously considered. Residents of Ban Navang suggested that a permanent camp for biologists be built at the top of the old logging road near the village. They proposed that villagers help build and maintain it, and serve as paid cooks, housekeepers and guides for visiting scientists. A similar suggestion was proposed by Ban Nameuay, in the Nam Pheo watershed. Another potential site is the wet evergreen forest along Route 8 near the Lao PDR/Vietnam border crossing.

The idea has considerable merit and several potential benefits: The biodiversity of NT2 Watershed/NPA is in acute need of several long and short-term studies, and local residents need non-extractive sources of

income that are linked to the maintenance of biodiversity. Local authorities need to see a direct economic return from the area. A successful research station might comprise these features:

- Lao scientists would be funded to work and be trained at the site.
- Foreign scientists would pay a fee to the Lao government to stay at the station, use its facilities and work in the forest. They would be asked to work, as much as possible, in tandem with the Lao biologists.
- Local villagers would be employed to maintain the facility, and also gain employment as support staff and forest guides or field assistants.
- Protocols would be required to allow limited export of specimens to foreign museums for identification, while ensuring that visitors are engaged only in basic ecological research, not bioprospecting. This will include a research application and approval process for those wishing to study at the site.

A model such as that at Danum Valley Protection Forest Class I in Sabah (Bornean Malaysia) that fosters both scientific research and ecotourism has proven to be highly successful, and could be tested on a smaller scale in the NT2 Watershed/NPA.