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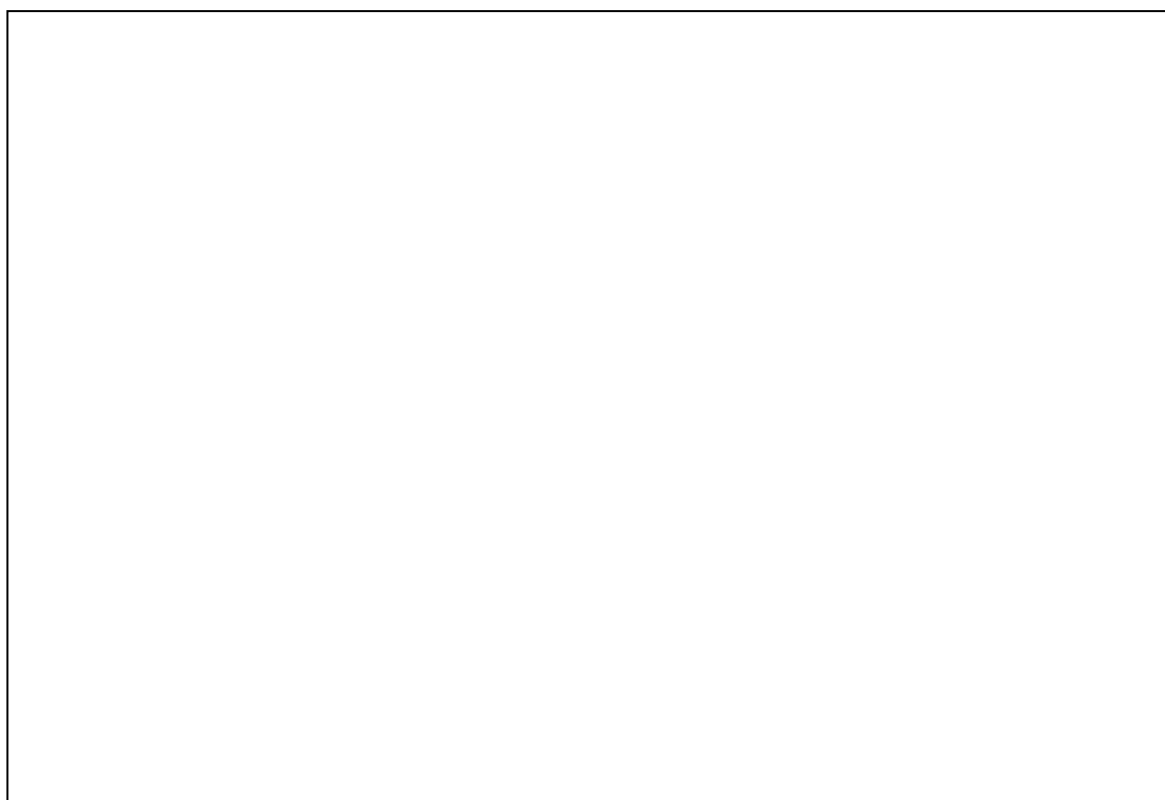
Lao Peoples's Democratic Republic

Nam Theun 2 Watershed Management and Protection Authority

**SOCIAL AND ENVIRONMENT MANAGEMENT
FRAMEWORK AND 1ST OPERATIONAL PLAN**

[1st January 2005 to 30th September 2011]

**Volume 1 of 2:
Management Framework and Operational Plan**



NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

FOREWORD

(DRAFT OF OCTOBER 2004)

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PREFACE

This document describes the Social and Environmental Management Framework and Operational Plan (SEMFOP) for the watershed catchment area of the Nam Theun 2 Hydropower Project. This watershed, with a total catchment area of 4,025 km², comprises the middle and upper reaches of the Nam Theun River extending from high in the Annamite Mountains down to the Nakai plateau. It is composed entirely of legally Protected Areas, which are of national, regional and global significance. The Nakai Nam Theun National Protected Area and its two corridors lie entirely within the watershed and contain a range of critical habitats, which are home to numerous invertebrates, fish, amphibians, reptiles, birds and mammals, many of which are critically endangered and of global conservation concern.

The NT2 Watershed is also home to approximately 6,000 people living in some 31 NPA villages. This indigenous population is of diverse ethnic composition, comprising four main ethno-linguistic groupings of: Vietic, Brou, Tai-Kadai and Hmong backgrounds. The livelihoods of all these different groups rely heavily on the forest, wildlife and natural resources of the NT2 watershed. The area is also surrounded by a large and expanding human population undergoing rapid, and in places unsustainable, development, who are also, to varying degrees dependent on the watershed's natural resource base and its forests.

Thus, the purpose of the SEMFOP is to develop a management framework and operational plans to effectively protect the watershed, and its forests, habitats, wildlife and biodiversity values, and at the same time, safeguard the wellbeing, traditional livelihoods and culture of its human inhabitants. The primary objective of this document is to describe the setting, institutional arrangements and management plans for the sustainable development and protection of the watershed and its inhabitants. It also presents baseline data aimed at providing a better understanding of the NT2 watershed, its natural resource base and the people living within it.

This SEMFOP document is the culmination of a number of years work by many individuals of different backgrounds, from a wide range of organizations. It has benefited from comments and suggestions made by many people from government, NGOs, and the private sector. In particular, the World Bank has given encouragement, and provided invaluable advice and suggestions which are incorporated in the document. We would like to take this opportunity to thank all those involved in the production of this report and the earlier drafts from which it has evolved. Special appreciation for help must go to the Department of Forestry, the Lao National Committee for Energy, Provincial and District Authorities of Khamouane and Bolikhamxay provinces, NGOs and project personnel involved in conservation and development in Nakai Nam Theun and elsewhere in the Lao PDR. In particular, we would like to extend our special thanks to the communities and people living in and around the watershed, who have patiently and good-naturedly given their time to provide much invaluable information based on their unique experience and local knowledge of the area.

We trust that the material presented in this document is informative and useful. We welcome comments and suggestions which will be used to amend plans and improve the social and environmental quality of the NT2 Watershed for the benefit of local, national and international stakeholders in the future.

Chairman of the WMPA Board of Governors

Dr. Siene SAPHANGTHONG
Minister of Agriculture and Forestry

LIST OF ACRONYMS

AIT	Asian Institute of Technology
BOD	Board of Directors [WMPA]
BPKP	Bolisat Phathana Khet Phoudoi
CCM	Council of Ministers [Decree]
CD	Community Development
CDC	Community Development Centre
CDD	Community Driven Development
CITES	Convention on International Trade in Endangered Species
CLCF	Central Lao Conservation Fund
COCA	Community Outreach and Community Awareness [Programs]
COD	Commercial Operation Date
CPAWM	Centre for Protected Areas and Watershed Management
CPCD	Completion of Preliminary Construction Date
CUZ	Controlled Use Zone [within an NPA]
DAFO	District Agriculture and Forestry Office
DFRC	Division of Forest Resources Conservation [of DOF]
DOF	Department of Forestry
DSA	Daily Subsistence Allowance
DSPOE	Dam Safety Panel of Experts [WB]
DUDCP	District Upland Development and Conservation Project (WB LIL)
EAMP	Environmental Assessment and Management Plan
EMDP	Ethnic Minorities Development Plan
EMO	Environmental Management Office [NT2]
EMU	Environment Management Unit
ESMOP	Environmental and Social Management Operational Plan [of May 2000]
ESMP	Environmental and Social Management Plan [of 1998]
ExSec	Executive Secretariat [of the WMPA]
FC	Financial Closure
FINNIDA	Finnish International Development Agency
FIPC	Forest Inventory Planning Centre
FL	Forest Law
FLUPAM	Forest and Land Use Planning and Management
FMAC	Financial Management Adjustment Credit
FOMACOP	Forest Management and Conservation Project
GEF	Global Environment Facility
GIS	Geographic Information System
GOL	The Government of Lao PDR
IAG	International Advisory Group [WB]
ICAD	Integrated Conservation and Development
ICDP	Integrated Conservation and Development Project
ICRAF	International Centre for Research in Agro-forestry

IFC	International Finance Corporation
IK	Indigenous Knowledge
IMA	Independent Monitoring Agency
IUCN	The World Conservation Union
JSDF	Japan Social Development Fund
LARREC	Living Aquatic Resources Research Centre
LDC	Livelihood Development for Conservation
LECF	Lao Environment and Conservation Fund
LIL	Learning through Innovation Loan
LL	Land Law
LNFC	Lao National Front for Construction
LPRP	Lao Peoples Revolutionary Party
LSFP	Lao Swedish Forestry Program
LUP	Land Use Planning
LUPLA	Land Use Planning and Land Allocation
LWU	Lao Women's Union
MAF	Ministry of Agriculture and Forestry
MI&H	Ministry of Industry and Handicraft
MIS	Management Information System
MOD	Ministry of Defence
MOI	Ministry of Interior
NAFES	National Agriculture and Forestry Extension Service
NAFRI	National Agriculture and Forestry Research Institute
NCNP	Nam Chat-Nam Pan [Provincial Protected Area]
NGO	Non-Government Organization
NNT	Nakai Nam Theun [Protected Area]
NOFIP	National Office of Forest Inventory and Planning
NPA	National Protected Area
NT2	Nam Theun 2
NTEC	Nam Theun Electricity Consortium
NTECo	Nam Theun Electricity Consortium (Operating Company)
NTFP	Non-Timber Forest Products
NTPC	Nam Theun Power Company
NTSEP	Nam Theun Social and Environment Project, loan
NUOL	National University of Lao PDR
PA	Protected Area
PAFO	Provincial Agriculture and Forestry Office
PCD	Preliminary Construction Date [of the NT2 dam]
PCPP	Public Consultation and Participation Process
PHRD	Population and Human Resource Development [NTSEP]
PICAD	Participatory Integrated Conservation and Development
PIU	Project Implementation Unit [DUDCP]
PIZ	Peripheral Impact Zone
PMF	Probable Maximum Flood

PMO	Prime Minister's Office
PO	Project Office (DUDCP, Nakai)
POE	Panel of Experts [WB]
PPA	Provincial Protected Area
PPAM	Participatory Protected Area Management
PR&D	Participatory Research and Design
PRA	Participatory Rural Appraisal
RAP	Resettlement Action plan
RDC	Regional Development Committee [in Southern Lao provinces]
RMCO	Reservoir Management Coordination Office
RMO	Resettlement Management Office
RMU	Resettlement Management Unit
RRA	Rapid Rural Appraisal
SALT	Sloping Agricultural Land Technology
SAP	Social Action Plan
SEMFOP	Social and Environment Management Framework and Operational Plan
STEA	Science Technology and Environment Authority
STENO	Science Technology Environment Organization
T&V	Train and Visit
TLUC	Temporary Land Use Certificate
TPZ	Totally Protected Zone [within an NPA]
UNDP	United Nations Development Program
VCMU	Village Conservation Monitoring Units
VDC	Village Development Committee
VDF	Village Development Fund
VFLC	Village Forest and Land [Use Planning and Allocation] Committee
VFLMA	Village Forestry and Land-use Management Agreements
VICAD	Village Integrated Conservation and Development [Committee]
VRC	Village resettlement committee
WB	World Bank
WCDN	[Mini] Watershed Conservation and Development Networks
WCS	Wildlife Conservation Society
WMPA	Watershed Management and Protection Authority

IV EXECUTIVE SUMMARY

I BACKGROUND

THE NT2 PROJECT AND CATCHMENT AREA

The US\$ 1.1 billion Nam Theun 2 (NT2) project plans to dam the Nam Theun river, form a 450 km² reservoir (at maximum level), and divert water to the Xe Bang Fai river for power generation, mainly for sale to Thailand. The NT2 watershed comprises the middle and upper reaches of the Nam Theun river extending from high in the Annamite Mountains down to the Nakai Plateau.

The Nakai-Nam Theun National Protected Area (NNT NPA) lies almost entirely within the watershed and is the largest protected area in the Lao PDR. It is also judged to be one of the most important for biodiversity conservation in the South East Asia region, and is also of global significance. The NNT NPA has been extended by the inclusion of two forested corridors linking it to two other NPAs (Phou Hin Poun and Hin Nam Nor), and these three areas together are known as the NT2 Watershed. This Watershed is approximately nine times the size of the area on the Nakai Plateau to be converted into a reservoir, and contains 31 enclave villages, with nearly 6,000 inhabitants of diverse ethnic origin, whose livelihoods are all heavily reliant on forest resources. The reservoir would flood none of the NPA, and neither would it directly impact the villages within the NPA.

Initial studies on the NT2 project showed that the NNT NPA and the two adjacent corridors, which form the majority of the catchment area for the proposed dam, were progressively being degraded in terms of faunal and floral biodiversity values and of the forest cover due to poaching and other extractive activities by outsiders, and by swidden cultivation and forest extraction by enclave villagers. It was apparent that this degradation would continue and probably intensify unless appropriate controls and management measures were put in place with adequate funding and other resources.

Thus, this confluence of scenarios – a progressively degrading watershed in an important NPA, and a small part of this NPA being flooded by the NT2 reservoir - led the NT2 project sponsors¹ to the logical conclusion that the NT2 Project should ensure the long-term protection of the dam's watershed. Improved protection of the watershed made possible by the provision of funding to the WMPA for PA management would provide compensation for the loss and/or degradation of habitats caused by the project as well as ensure the integrity of the water resources necessary for power generation.

The SEMFOP-1 is the management plan for conservation of the NT2 watershed for the seven year-period which precedes filling of the reservoir and the start of commercial operation, and will also cover the first two years of the operation phase. It was prepared by the Government of Lao PDR (GoL) and includes consideration of biodiversity conservation, social development, ethnic minorities, and institutional strengthening measures. The current version will be the basis for consultations scheduled to take place between May and September 2004.² Results of these consultations will inform the preparation of a final version³ for approval by project sponsors and the GoL.

¹ Sponsors of the NT2 project are Electricité de France, EGCO, and Italian-Thai, and the Government of Lao PDR.

² Three main safeguard documents have been produced for consultations with both the population residing in the project area, and the national, regional, and international communities, on the NT2 project. These documents are the Environment Assessment and Management Plan (EAMP), the Social Development Plan (SDP) and the Social and Environment Management Framework and Operational Plan (SEMFOP).

³ The final version will be complemented by a detailed Operational Plan once the details of the framework have been accepted.

THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR BIODIVERSITY CONSERVATION IN THE NNT WATERSHED

The first 18 protected areas in Lao PDR, including NNT NPA, were established by Prime Ministerial Decree 164, 1993. The broader Prime Ministerial Decree 193, 2000, defined the NT2 Watershed as the NPA plus two corridors linking the NPA with the Hin Nam Nor NPA to the south and with the Phou Hin Poun NPA to the west (Map 1B, Annex 6). The management of the Watershed is by a unique institution, the NT2 Watershed Management and Protection Authority (WMPA) established under Prime Ministerial Decree 25, 2001.

II VISION FOR THE NAKAI NAM THEUN WATERSHED

As confirmed in Decree 25, 2001, the purpose of the Watershed is the conservation and protection of its natural riches and its many cultural groups, and the Vision foresees that any and all development activities within the Watershed should support this. In the short history of the management of Lao protected areas it has been found that problems of cooperation with local inhabitants, resource extraction by outsiders, enforcement of laws and regulations, capacity of staff, and inadequate budgets have constrained effective management. The SEMFOP-1 covers the first five-year phase of management of the Watershed, and responds to a shared vision for a future with secure forest, productive agriculture, secure land tenure, and positive human development.

The Vision recognizes that Watershed inhabitants have legitimate aspirations with respect to improvement of their living conditions and welfare. The SEMFOP seeks to balance conservation imperatives within the Watershed with development needs within and around it through an intensive, participatory planning process, emphasizing systematic negotiation and customary rights, adaptive approaches and the creation of incentives for Watershed inhabitants to participate in the conservation effort. This process will require consistent and long-term support. Activities in the Watershed will be driven by communities within and immediately adjacent to it. Activities should be executed in a way that recognizes that all the ethnic groups (and indeed all villages) are different in important ways. There is thus no short cut through the need for a time-consuming consultative planning and implementation process as a means to establishing a sustainable management plan that is recognized as a fair outcome by the principal stakeholders. It is recognized that, for Watershed inhabitants, certain livelihood options may be foregone or reduced as a result of the management of the Watershed and the measures to ensure conservation of its biodiversity values. Loss or restriction of access to natural resources will be mitigated through the design and implementation of alternative sustainable livelihood programs based on a participatory planning approach. As part of this approach, legal instruments will be used to provide secure land tenure and usufruct rights, recognizing the customary rights of local ethnic minorities⁴.

The Vision for the Watershed includes a system of zones with different categories of land use which reconcile conservation and community development objectives. A de facto zonation with development areas (villages and fields), forested land used by villages, and higher altitude (open access) land not claimed by villages already exists. A formal Zonation Plan, based on the above and incorporating biological values of different parts of the protected area, will be developed through village consultations and mapping, inventories and other methodologies.

The Vision holds that food security is a important issue in the Watershed. Thus efforts will be made to promote environmentally and socially sustainable growth of other crops where appropriate as part of a program of crop diversification with biological pest management to the degree possible. Agricultural development in the area has been a point of contention for some time, but it is now recognized that not all forest-based swidden is damaging although settled rice cultivation is preferred. In addition to agriculture, other forms of development will be encouraged and supported, as long as they are consistent with the conservation goal of the area. Their adoption as part of Watershed plans will depend, to a large

⁴ These rights will also be afforded to certain resettlers until their new livelihoods effectively negate any loss of income due to resettlement

extent, on the track record of enforcement activities related to proscribed activities. A 'conservation impact assessment' will be applied to all development activities planned within the Watershed.

The Vision holds that there should be no net decrease in the area of forested land within the Watershed. No commercial extractive activities, such as logging or mining, will be permitted within the Watershed at any time. The SEMFOP includes an access strategy which encourages entry to the Watershed through Nakai Town via controlled access points and relies significantly on aquatic means of transportation. This will reduce pressures originating from the periphery of the NPA while facilitating the necessary connections for Watershed inhabitants within the NPA and with services and markets not available within the Watershed. No improved road or water access will be developed that might lead to a net loss of natural resources. Access improvement would be permitted only after (i) studies demonstrate that benefits will genuinely accrue to Watershed inhabitants and are consistent with its conservation goals, and (ii) a solid track record of effective management of existing accesses and control of potential encroachment on biodiversity values has been demonstrated.

Within the Vision, all wildlife will be afforded full protection from any exploitation except by watershed inhabitants within the controlled-use zones, for certain non-threatened species, consistent with the agreements made between the local communities and the WMPA in the development of village-level plans. The Watershed inhabitants will have the right and responsibility to report poaching of threatened species and other natural resources, and over-exploitation of non-threatened species, by inhabitants and outsiders. Villagers and militia will patrol the Watershed. Within the Controlled Use Zone, extraction and sale of non-timber forest products are likely to be permitted under agreed village management and monitoring plans. Lessons from the World Bank-financed District Upland Development and Conservation Project Learning and Innovation Loan and other projects within and outside Lao PDR have been incorporated in the proposed patrolling model. They point, for instance, to the need to develop suitable incentive systems to ensure that community members contribute to the enforcement effort. Transnational trafficking of wildlife currently represents an important threat to the integrity of the NPA. The WMPA will continue its dialogue with and among provincial and national authorities to progressively reduce these illegal activities, before the start of commercial operation and beyond, from the Watershed and surrounding protected areas. This will require strengthening the patrolling effort, as well as a continuous investment in cooperation with Vietnamese authorities.

Finally, the Vision includes the development of a sound institutional structure for WMPA to execute the SEMFOP efficiently and effectively, following international standards for accountability and transparency. The WMPA staff will comprise the best available individuals from within Lao PDR, supported initially by high-quality international TA, and that qualified conservation NGOs will partner in the activities. In addition, partnerships or twinning arrangements with conservation authorities from outside Lao PDR that have faced similar problems to those faced by the WMPA may be possible. As stated above, the existing legal framework empowers the WMPA to manage the Watershed. However, the Vision is that the basic instruments will be complemented by additional measures. For instance, explicit provincial-level judicial support for due process of those apprehended as offenders, meaningful but appropriate fines for convicted offenders, and chains of engagement at higher judicial levels, when appropriate and required, all need to be established.

Success of the plan will be wholly dependent on the understanding and active support of the local government of Bolikhamxay and Khammouane Provinces. The SEMFOP has been developed largely among a small group of interested stakeholders, comprised mostly the GoL and the project sponsors. The final stages of preparation of the SEMFOP will seek the backing and commitment of all institutional stakeholders and will be critical to test and further cement the necessary arrangements for effective management of the Watershed. Beyond plan preparation, however, a permanent effort of engagement, awareness raising, monitoring and evaluation, and adaptive planning will be required for the Vision to be ultimately achieved.

III THE SEMFOP

ORGANIZATION OF THE DOCUMENT

The purpose of this document is to present the objectives, approach and institutional and management arrangements for the protection and sustainable development of the NT2 Watershed and its inhabitants. It comprises two volumes, the Main Report and a Folio of Annexures. The main report is organized in seven parts.

Part 1 – *Objectives and Principles* explains the purpose, objectives and strategy of SEMFOP and describes its operational area.

Part 2 – *Approaches and Methods* addresses the major elements of SEMFOP to be implemented under a Participatory Integrated Conservation and Development approach, including (i) Forest and Land Use Planning, (ii) Participatory Protected Area Management, and (iii) Livelihood Development. This part also describes the Public Consultation strategy that will be followed.

Part 3 – *Ethnic Minorities Development Plan* describes the measures put in place to ensure that the rights of indigenous peoples are fully addressed and catered for.

Part 4 – *Biodiversity Management and Conservation Framework* presents the measures to be put in place to protect (and enhance) biodiversity values in the NT2 Watershed/NPA.

Part 5 – *Resource Access Restriction Process Framework* focuses on the potential impact of natural resource management plans, regulations and processes on the livelihoods of local people.

Part 6 – *Institutional and Management Framework* presents a detailed description of the WMPA and the institutional and activity framework for the implementation of the SEMFOP.

Part 7 – (pending) *Operational Plan and Budget* presents the operational plan and budget for the first 6 years of the implementation of the SEMFOP by the WMPA and its implementing partners.

PART 1: SEMFOP OBJECTIVES, PRINCIPLES AND STRATEGY

The major objectives of the SEMFOP are:

- The protection and rehabilitation of forest cover in the watershed.
- Biodiversity conservation and, eventually, National Park development in the watershed./NPA.
- Livelihood development to shift resource use away from unsustainable exploitation, to alleviate poverty, and to create a sense ownership for conservation within enclave communities.
- Capacity building in WMPA staff to take on and manage the above tasks.
- Prudent management of funds received to support the offset for the NT2 Project. SEMFOP's

The SEMFOP is based on an approach to protected area management which is accepted as the most appropriate in the majority of protected areas in the Lao PDR. This approach focuses on the need to find a balance between regulation enforcement and community participation, between sustainable forest and land use planning and conservation and village development, and of building partnerships between local stakeholders in the management of protected areas. Thus SEMFOP's overall strategy is to create an effective watershed management authority that can work effectively with local communities to implement a range of programs to protect the watershed.

The geographical coverage and operational area of the SEMFOP includes the NT2 Watershed (as defined above – Background) as well as the Peripheral Impact Zone inhabited by villagers who enter, or use resources of, the NT2 Watershed. This PIZ is outside the legal authority of the WMPA and so the management of these areas will rely on a partnership between the local authorities and the WMPA.

The SEMFOP operational area does not include:

1. The NT2 Reservoir although small parts may be included, depending on final demarcation.

2. The Resettlement Area on the southern slopes of the Nakai Plateau even though it is physically within the catchment.
3. The Nam Chat-Nam Phan PA which has now been designated a provincial protected area, and will be managed accordingly with independent funding arrangements.

PART 2: APPROACHES AND METHODS

The Participatory Integrated Conservation and Development (PICAD) approach followed by SEMFOP is widely used in Lao PDR. A review of this and other conservation approaches forms part of the SEMFOP, and while it is recognized that no model for integrating the needs of conservation and development is guaranteed to be successful, the PICAD is believed to be the most appropriate model to follow in this case. The SEMFOP has tried to learn from successes and failures elsewhere, and takes an adaptive approach to allow for finer tuning.

PICAD employs interdisciplinary facilitation teams who make use of a number of participatory tools to work with stakeholder villagers on the planning, implementation and evaluation of conservation and development activities. PICAD comprises three main component activities of NPA management:

- A: Forest resources and Land Use Planning, Allocation and Management (FLUPAM)
- B: Participatory Protected Area Management (PPAM)
- C: Livelihood Development for Conservation (LDC)

Forest and Land Use Planning, Allocation and Management (FLUPAM) is now well developed and widely used in the Lao PDR and procedures have been specially developed for its use in NPAs. FLUPAM is a process of resource management planning which has the following major objectives:

- Stabilizing forest and land use patterns under a sustainable management system.
- Ensuring equitable access to forest and land resources for all community members and formalizing land use rights within the existing legal framework.
- Establishing resource use and conservation co-management agreements with local communities.
- Developing a partnership between villages and government for the joint management of conservation activities and community development.

Participatory Protected Area Management (PPAM) recognizes villagers as primary stakeholders and as partners in NPA management. In the longer term, PPAM aims to instill in villagers a sense of pride in and co-ownership of the NPA along with a real understanding of and support for biodiversity conservation. PPAM reflects and systemizes GOL policy of giving villagers a key role in the definition of conservation zones, in the development of rules and regulations for resource use and management, and in policing and protecting these resources. PPAM teams work with villagers on various aspects of biodiversity management:

- Delimiting of Controlled Use Zones and Totally Protected Zones through land use planning
- Development of regulations for the zones through village conservation agreements
- Protection within village CUZs, via obligations in the conservation agreements
- Monitoring and protection of the NPA through the use of Village Conservation and Monitoring Units (VCMUs) and Watershed Conservation and Development Networks.
- Provision of information (particularly historical) on habitat and wildlife during FLUPAM.

The Livelihood Development for Conservation (LDC) program seeks to balance conservation and development and ensure that they are not only compatible but also complementary. The objective is not just support to development *per se*, but to enhance village livelihoods in order to promote conservation and improved NPA management. The LDC approach comprises a number of steps followed in sequence in a participatory manner with villages to identify appropriate development activities. It starts with village orientations to explain the purpose and village roles and benefits. It then moves to identify and prioritize the major problems facing the village, followed by an analysis of their root causes and how they impact on the natural environment. Next, development options are proposed and the linkages of each activity with

conservation (positive and negative) are identified, reviewed and potential activities are modified accordingly.

PART 3: ETHNIC MINORITIES DEVELOPMENT PLAN

The Ethnic Minorities Development Plan (EMDP) presents a framework and strategic approach for the sustainable development of project affected communities in the NT2 Watershed/NPA. Although these enclave villagers will be impacted only indirectly by the NT2 Project, SEMFOP, through a participatory approach, aims to improve their livelihoods, standard of living and quality of life, while at the same time, helping them to shift away from activities and technologies which impact negatively on biodiversity conservation.

A total of 31 enclave villages are located within the NT2 Watershed/NPA, comprising 1,092 families and nearly 6,000 people, all reliant to varying degrees on NPA forest resources. Their ethnic backgrounds can best be described according to the three main groups found in the area:

- Brou (ca. 60 percent), a homogenous group of the Western Katuic language family of the Austroasiatic language family, who are found throughout the region and exhibit a number of livelihood systems;
- Vietic groups (ca. 25 percent of the population), a number of small ethno-linguistic groups belonging to the Austroasiatic language family, formally hunter-gatherers but now sedentary; and
- Upland Tai groups (ca. 15 percent) consisting of the Sek who cultivate irrigated paddy in several villages in the north of the NPA and number of sub-groups such as Tai Men and Tai Moey who have recently arrived from north-west Lao PDR.

The EMDP embodies participatory methods and follows a Community Driven Development approach with the following aims:

- Culturally appropriate development on the local communities' own terms.
- Improved land and resource security based on customary rights.
- Increased family food security.
- Diversification of livelihood options.
- Reduced reliance on unsustainable natural resource use and extraction in the NPA.
- Gradual intensification of land use away from reliance on hunting, gathering and shifting cultivation toward more productive and sustainable livelihood systems.
- Improved social services and opportunities for education, health and alternative employment.

PART 4: BIODIVERSITY MANAGEMENT AND CONSERVATION

As stated above, NNT NPA was established in 1993 as part of a national system which now covers over 3 million hectares or 12.8 percent of the Nation's total land area. As is the case in the other NPAs, NNT has been poorly funded and inadequately staffed, leading to ineffective management and inadequate levels of protection.

NNT is not only the largest of Lao PDR's twenty NPAs, it is without doubt the most important for biodiversity conservation. It is also one of the most important protected areas in Asia and is of important global significance. It forms part of the 'Northern Annamites Eco-region' which is rated as one of the world's 25 most-threatened ecoregions. NNT is dominated by extensive dense semi-evergreen and evergreen broadleaf forest with some areas of high-quality pine forest. It is home to an wide array of mammals that include the recently-discovered Saola (an unusual form of antelope) and Large-antlered Muntjac. It also contains many important and endangered birds, fish, reptiles, amphibians and invertebrates.

The major threats to biodiversity conservation in the NPA and the management strategies developed under SEMFOP to address them can be summarized as follows:

- *Ineffective protected area management.*

A participatory partnership with villagers, managed by a capably staffed and well resourced WMPA, fully supported by TA, infrastructure and equipment.

- *Threats from enclave communities.*
Adoption of the PICAD approach, under which livelihood development activities are carefully designed to be positively linked with biodiversity conservation.
- *Threats from peripheral impact zone villages*
A similar PICAD approach targeted according to the level of threat posed by PIZ communities, following a partnership, cost-sharing approach with district authorities, NGOs and agencies.
- *Unsustainable extraction of wildlife and NTFPs*
Participatory development of sustainable management agreements with villagers which address sustainable harvest limits, harvest seasons, protected species, protected zones and enforcement.
- *Threats from trans-boundary incursions.*
A long-term strategy involving a package of measures including: international dialogue, orienting access and trade via Nakai, re-organized patrolling, stronger enforcement, better border-post management and community empowerment.
- *Threats from uncontrolled access.*
An access strategy focused on establishing a single, well-controlled entry and exit point for people and commodities linked to an efficient water-borne transport system on the reservoir.
- *Uncontrolled increase in enclave populations.*
A population management strategy embodying: (i) safeguards to ensure adequate agricultural land for current and future populations, (ii) awareness raising and capacity development for self-motivated family planning, and (iii) improved education and vocational training to facilitate the out-migration of capable youth and adults to new employment opportunities.
- *Lack of a clear PA zonation system*
A strategy built on the participatory integration of scientifically-derived biodiversity values and customary forest and land use systems leading to the development of village conservation agreements for commonly-recognised CUZ and TPZ zones.
- *Threats posed by NT2 project construction*
Establishing a construction-risks task force, with representation from the WMPA, district authorities, NTPC and main and sub-contractors to develop and enforce rules, regulations and penalties for construction impacts by contractors and illegal activities by their workers.

PART 5: RESOURCE ACCESS RESTRICTION FRAMEWORK

The Resource Access Restriction Framework establishes a process of identifying and mitigating the possible adverse impacts of restrictions placed on natural resource access for NPA and PIZ communities by the rules and regulations applied to NPA/Watershed protection. Members of potentially affected communities participate in the design and implementation of mitigating measures and activities necessary to achieve conservation objectives and offset adverse impacts.

The three SEMFOP technical programs all contribute to the mitigation for access restrictions:

- FLUPAM develops agreements and ensures the rights of villagers to sustainable land and resource use within the NPA.
- Biodiversity conservation through PPAM ensures adequate protection of the natural resource base for its continued sustainable use by villagers.
- Livelihood development under LDC provides improved livelihood alternatives for any traditional practices foregone or limited under the village conservation agreement rules and regulations.

Measures taken under these programs that address resource access restrictions include:

- Ensuring the right of enclave villagers to possess, use, manage and inherit land for housing and agriculture.
- Incorporating the material, cultural and spiritual needs of villagers in jointly-developed village conservation agreements.
- Development of sustainable wild harvest regimes, ensuring access to subsistence timber, plant products and fish and animal protein sources, and the long term viability of NTFP harvests and income.
- Facilitating the transition to improved and more productive farming systems
- Improved education and health hardware and software, and fostering of appropriate traditional medical practices and medicines.
- Improving access between villages and to the District and market center of Nakai
- Effective population management in enclave communities and the control of in-migration from other areas.

PART 6: INSTITUTIONAL AND MANAGEMENT FRAMEWORK

The Watershed Management and Protection Authority or WMPA has been established with responsibility for coordinating and implementing the management and development of the NT2 Watershed/NPA. It is governed by a board of directors, chaired by the Minister of Agriculture and Forestry. Day-to-day management is the responsibility of the Executive Secretariat which comprises a Director, four Deputies responsible for the technical divisions, and a full complement of staff, either seconded from government or hired from the private sector. Although a government agency, the WMPA's operational arm, the Executive Secretariat, has financial, management and staffing independence. The Executive Secretariat comprises a Directors Cabinet, four divisions (Administration, FLUPAM, PPAM and LDC) and support units including GIS and database management, outreach and awareness, and tourism.

The Executive Secretariat will be supported with relevant national and international technical assistance from a variety of fields, with three long-term international advisors for (i) biodiversity conservation, (ii) land use planning and livelihood development, and (iii) ethnic minority issues. Other short-term TA will include conservation ecology, botany and ecological survey, rural engineering, ethnic minorities training, GIS, database management, financial management, and others as may be required.

WMPA partner institutions include district and provincial authorities, village and sub-district institutions, NGOs, national institutions such as the National University of Lao, and international organizations. A cost-sharing, partnership approach is followed with these various institutions under which the WMPA develop joint programs for land use planning, conservation management, biodiversity research, livelihood development, community development, etc..

Internal monitoring and evaluation is the responsibility of the Executive Secretariat; and systems will be developed for each of SEMFOP's three technical programs. M&E will be outcome focused (impact monitoring) where the outcomes of conservation activities are measured against baseline indicators. The framework will emphasize participatory evaluation procedures, particularly for evaluating village level activities. The certification standards for forest management required under the World Bank's Forests Policy will be applied to NPA management. These will be developed during the design of the log-frame.

External monitoring will be conducted by an Independent Monitoring Agency (IMA) who will undertake twice yearly missions to review progress, provide future direction, make sure that activities are consistent with SEMFOP objectives, and ensure that budget is being correctly used and properly accounted for.

PART 7: FINANCIAL AND BUDGETARY FRAMEWORK

The Concession Agreement between NTEC and the GoL specifies that NTPC will provide US\$1 million per year to the WMPA starting on the Commercial Operation Date (COD), for the whole Operating Phase of 25 years. Prior to that, for the seven years from Preliminary Construction Date to about the end

of year 2 after the COD, US \$8,500,000 will be provided to the WMPA in eight installments. The SEMFOP-1 plan is based on this first seven-years , eight-installment budget scenario. A detailed financial administration system with approved practices has been developed for annual, quarterly and monthly budget approval and disbursement, banking procedures, and procurement and bidding procedures.

Funding will be approved yearly based on the Annual Workplan. Procurement will be undertaken by staff of the Admin and Finance Unit of the Executive Secretariat and will follow standard World Bank procurement guidelines to be developed in association with the Institutional and Finance Management Advisor. Responsibility for approving procurement will lie with the administration officer, deputy directors, or the BoD standing member, according to the cost of each purchase. The financial limits for approval responsibility have been set, but these will be reviewed annually, and amended as appropriate.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 1:

SEMFOP OBJECTIVES AND PRINCIPLES

(DRAFT OF OCTOBER 2004)

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1.1: BACKGROUND

The planned Nam Theun 2 Hydropower Project (NT2) involves the impoundment of the Nam Theun near Ban Sop Hia and the creation of a reservoir which, at full supply level, will flood an area of 450 km². Of this area approximately 130 km² was inside the original Nakai Nam Theun National Protected Area (NNT NPA) as designated by Government of Lao in 1993. The boundary of the NPA was modified in 2000 by Decree 193 to excise the flooded area out of the NPA. At the same time, the NPA is experiencing a range of development pressures ranging from unsustainable wildlife hunting to illegal logging to habitat conversion which undermines the long term viability of this ecologically significant area.

This confluence of scenarios – a progressively degrading watershed and a small area of this NPA being impacted by the NT2 Project flooding - led the NT2 project principles (GoL, WB and NTEC) to the logical conclusion and agreement that that the NT2 Hydropower Project would pay for the management of the Nam Theun watershed (including the NNT NPA and expanded to include two corridors zones) as both (a) mitigation for the loss of the 3.6 % of the NPA to flooding, and (b) for the long term sustainable management of its catchment, based on the ‘user pays principle’.

The SEMFOP programs are designed as an offset of all known, unknown or potentially unmitigated biodiversity impacts resulting from the Nam Theun 2 Hydropower project. The priority objective of SEMFOP therefore is the long term protection and conservation of the NNT NPA. The level of funding and time period of assured financial support from the project is unprecedented in Lao conservation. Without this funding the NPA would have no future as an intact Protected Area.

1.2: PURPOSE OF THE SEMFOP

The purpose of the Social and Environmental Management Framework and Operational Plan (SEMFOP) is to ensure the effective, long-term protection of the biodiversity and watershed values of the Nam Theun 2 catchment while at the same time safeguarding the well-being, traditional livelihoods and culture of its human inhabitants. This SEMFOP document describes the baseline setting, institutional arrangements, management planning, program activities and budget framework for the first 7 years of operation of the Nam Theun 2 Watershed Management and Protection Authority (WMPA).

1.2.1: Key Objectives

SEMFOP aims at the progressive achievement of the 5 main Objectives of the WMPA as specified in Article 4 of Decree 25.

1.2.1.1: Protection and Rehabilitation of Forest Cover

Regarding objective 1 – “the protection and rehabilitation of forest cover in the NT2 Watershed/NPA to assure adequate water flows with low sedimentation to the Nam Theun 2 Reservoir” - the 1st SEMFOP will focus on forest protection as a first step, while rehabilitation will be included as a focus in future versions of SEMFOP.

1.2.1.2: Biodiversity Conservation, National Park Development, Tourism and Research

Regarding objective 2 - “Conservation, maintenance and promotion of biological diversity coupled with the development of culturally-rich, national park appropriate for tourism and scientific research”- SEMFOP-1 will certainly focus on biodiversity conservation and promotion, but the development of the area as a national park for tourism will likely be a focus only after the unsettled period of reservoir construction and associated activities. National park development will also recognise and cater for the the livelihood needs and rights of the NPA communities. Scientific research will be initiated during SEMFOP-1, but not at the level envisaged for the reservoir area (under the EAMP but through the WMPA). Research will likely play a larger role in

SEMFOP-2 and after. The WMPA will invite international research institutions as partners and funding agencies to work within its framework from the start of SEMFOP-1.

1.2.1.3: Strengthening the Capacity of the WMPA and Stakeholders

Regarding objective 3 - “Building and strengthening capacity of the Authority and those Stakeholders contributing to management and implementation of the Authority’s activities” – establishing the WMPA and strengthening staff capacity to effectively protect and manage the NPA will receive emphasis in the early years of SEMFOP-1. However, it is envisaged that later SEMFOP’s may see a relative reduction in the institutional and staffing size of the WMPA and a greater role for district and provincial authorities, once capacity in this regard has been strengthened through their hands-on, partnership experience with the WMPA.

1.2.1.4: Livelihood Improvement, Poverty Reduction and Sustainable Development

Regarding objective 4 - “Facilitation of improved livelihoods for inhabitants of the NT2 Watershed-NPA by focussing on poverty reduction through environmentally sustainable development” – will be a focus throughout the life of the WMPA, including this SEMFOP-1. However, such improvements in livelihoods must be undertaken within the framework of integrated conservation and development, and participatory NPA management.

1.2.1.5: Prudent Management and Effective Use of Funds

Regarding objective 5 - “Prudent management and effective use of funds for the purpose of furthering the above objectives” - will also be a focus throughout the life of the WMPA, including SEMFOP-1. While the actual management procedures may change and improve throughout the life of the WMPA, those proposed to be employed during SEMFOP-1 are detailed in Section 7.11.

The implementation of SEMFOP, if successful, would assure the long term protection and management of the Nakai Nam Theun National Protected Area (NNT-NPA): an NPA of national and international importance. The Nakai-Nam Theun NPA is not only the largest of Lao PDR's twenty national protected areas, it is without doubt the most important for biodiversity conservation. It is widely regarded as one of the most important protected areas in Asia.

1.2.2: Aims of the SEMFOP document

The specific objectives of this SEMFOP document are:

1. To consolidate, integrate and update all previous and the currently available documentation concerning the (planned) social and environment management plan for the NT2 WMPA’s Watershed/NPA;
2. To provide a single folio that presents the setting and challenges for biodiversity conservation and sustainable development, institutional arrangements, management framework and strategy, an operational plan and a budget for the management and protection of the NT2 Watershed/NPA;
3. To present baseline data and maps aimed at providing a better understanding of the value of the NT2 Watershed/NPA;
4. To address relevant safeguards policies, especially those concerning Ethnic Minorities and Resource Access Restriction, in order to satisfy the safeguards policy requirements of supporting financial institutions; and

¹ The area of the NT2 Watershed/NPA is 4,240 km², fractionally larger than the current area of the Nam Et Phou Loei NPA which is 4,230 km².

5. To provide an management framework and a detailed operational plan for the operation of the NT2 WMPA for its first 6 years. The framework and plan should ensure the long term sustainable management of the area.

1.3: SEMFOP STRATEGY

SEMFOP's overall strategy is to create an effective watershed management authority that can work effectively with local communities to implement a range of programs to protect the watershed. SEMFOP is built upon three core programs: Forest and Land Use Planning, Allocation and Management at the village and NPA levels; Biodiversity Resource Survey, Monitoring, Research and Protection; and Village Livelihood and Social Development. In addition to these core programs, SEMFOP considers at least three other functions, as important in achieving the goals of SEMFOP: Community Outreach and Conservation Awareness; Reservoir Management and Development; Tourism.

The identification of the functions and tasks of the SEMFOP required to achieve the WMPA's goals is based on a balanced, integrated approach to Protected Area management which is becoming accepted as appropriate in most Protected Areas of the Lao PDR. This approach focuses on the need to find a balance between regulation enforcement and community participation, between sustainable forest and land use planning and conservation and village development, and of building partnerships between local stakeholders in the management of Protected Areas.

The main elements of the development strategy to be applied in the SEMFOP-1 are to²:

- seek to steadily improve food security for NPA and PIZ villagers;
- recognize customary rights by providing villages with usufruct rights of their areas and improve the management of natural resources through realistic and effective land and forest use planning and management;
- foster the diversification of livelihoods and land use patterns towards more sustainable livelihood and farming systems according to villager needs and aspirations;
- avoid development of inappropriate infrastructure such as vehicular roads, electrification networks, and the like;
- develop and support appropriate, water based access into and out of the NPA, and good track access between key village in he NPA; and
- maintain current population levels, or less, by family planning, the control of in-migration and facilitating out migration through upgrading villager capacity;
- improve health and education levels, and village institutions in line with their cultural and ethnic heritage and identify.

Thus, the emphasis will be on development resulting in self sufficiency in rice, and not on promoting cash crops as an alternative to shifting cultivation.³ As elsewhere, all opportunities to open up new paddy fields, or provide supplementary or dry season irrigation to current fields, will be explored and developed where feasible and environmentally appropriate.

In addition, any opportunities to improve and/or modify the current systems of swidden farming – the basis of NPA village rainfed cropping systems – will be identified, tested and/or developed in accordance with the

² See EMDP, part 3, section 7.1

³ currently, the cost of rice in the NT2 watershed-NPA is 4,000 kip per kg, compared to about 2,000 kip/kg on the Nakai plateau and 1,000 kip per kg in the lowlands of the Lao PDR.

wishes of villagers. These may include improved fallows, development of permanent terraces with manure or fodder producing hedgerows, permanent agroforests, and improved integration of grazing and cropping.

The emphasis will not be on shifting cultivation eradication, but the stabilisation of shifting cultivation by the gradual improvement and management of fallow swidden system, with the ultimate goal of avoiding soil erosion (by either long cycles or improved fallows) and absolutely no swiddening of primary forests.

The joint development with villagers of improved practices will require training, study tours and the establishment of participatory on-farm trials. A long term timeframe will be required for this, especially in the NPA villages where the option of cash crops is not realistic.

Another aspect of the development strategy (as outlined in the EMDP) is to take villagers current practices as the starting point and seek to foster gradual improvements, improvements appropriate to the fact that the villagers are within a national Protected Area and the watershed of a major hydropower project, providing essential funds for the governance of the Lao PDR and for the electrification of significant portion of the country as a whole. This analytical approach is summarized in Table 1.1 below.

Table 1.1: Potential to develop alternative/improved practices evolving from current livelihoods.

CURRENT PRACTICES	ALTERNATIVE, IMPROVED PRACTICES
Rice produced by swiddening, or shifting cultivation	<ul style="list-style-type: none"> ▪ Improved or managed fallows ▪ Development of sustainable agro-forestry systems ▪ Seek to open supplementary irrigated paddy fields
Rice from rainfed or supplementary irrigated paddy fields in the wet season	<ul style="list-style-type: none"> ▪ Improve current irrigation systems, ▪ Make temporary irrigation systems permanent ▪ Open new paddy land and irrigation systems ▪ Improve draft power availability
Foraging for non-timber forest products for sale	<ul style="list-style-type: none"> ▪ Improved tenureship of forest areas, and management of NTFPs and their harvest ▪ Semi-domestication of selected NTFPs in Home gardens, swidden fallows and agroforest
Unrewarding and unleveraged sales of NTFPs to itinerant traders at low prices	<ul style="list-style-type: none"> ▪ Organised group marketing of NTFP ▪ Value-added local processing.
Hunting protected wildlife for dietary protein and cash income	<ul style="list-style-type: none"> ▪ Managed wildlife offtake for consumption only. ▪ Semi-intensive production of domestic livestock (vaccination, managed forest or feeds etc.)
Extensive free-range herding of low-quality, disease prone livestock on fire-induced grassland	<ul style="list-style-type: none"> ▪ Improved pastures ▪ Hedgerow contour planting of forage species ▪ Legume pastures undersown into upland rice
Use of child labour for hunting, gathering and swidden farming.	<ul style="list-style-type: none"> ▪ Sustainable and productive agricultural lifestyles which allow children to be educated, thus opening opportunities for off-farm employment ▪ Ensure children participate in the improved education opportunities.

Successful implementation of the SEMFOP programs will require staff, equipment, and financial resources. SEMFOP's approach includes support for staff capacity building, infrastructure, equipment, and technical assistance.

1.3.1: Fundamental Principles of the Strategy

Experience with Protected Area management and rural development in the Lao PDR, and the region, suggest that at least three major principles should guide the development of the strategic approach to the management of the WMPA and operational plan of this SEMFOP-1.

There are 3 main components of Protected Area management, which must be fully integrated under a Participatory Integrated and Development (PICAD) ⁴ approach:

- Forest and Land Use Planning, Allocation and Management (FLUPAM)
- Biodiversity Monitoring, Management and Protection (BMMP)
- Village Livelihood and Community Development (VL/CD)

Under SEMFOP this integration of components will be achieved by:

- stakeholder participation – the participatory approach to protected area management;
- development and implementation of formal instruments such as agreements, contracts and regulation;
- implementation of both conservation and development by the same institution and staff, thus fostering informal and contextual linkages between the components.

Management of an NPA based on all these principles can certainly be effective, but only if the parallel conservation and development functions are clearly presented in activity plans and the linkages between them explicitly understood and incorporated in the programs.

A brief review of these functions is presented in the following.

1.3.1.1: Forest and Land use Planning, Allocation and Management Program

Forest and land use planning and allocation activities in villages in or around the Protected Area focus on villager-forest interactions, on the identification of use, management and conservation zones, and of land suitable for agricultural development. Objectives of this task include:

- i) providing the basis on which sustainable agriculture and agro-forestry development activities can be planned and implemented,
- ii) the development of sustainable management and use of forest resources, incl. NTFPs,
- iii) the encouragement of villager participation in (agreed rights with responsibilities) the management of that section of the NT2 Watershed/NPA that is under village control.

1.3.1.2: Participatory Protected Area Management Program

This program includes biodiversity and ecological surveys and research which must also be undertaken over time to assess the status of the biodiversity, the effect of management on this status and identification of specific ecological niches or biotic interactions which should be considered to improve conservation management zonation and regulations. Especially important is patrolling and the enforcement of regulations developed to protect and conserve the floral and faunal life of the NT2 Watershed-NPA.

Community Outreach and Conservation Awareness

This task is a two way process. It requires the identification of any local concepts or practices of conservation and sustainable resource use, and then to present the rationale and basic aims of conservation to the populace

in a way that can be understood and digested by remote ethnic villagers who have lived there entire lives within the natural system which is now incorporated into an NPA.

1.3.1.3: Livelihood Development for Conservation Program

Livelihood development aims to assist villagers to develop sustainable agricultural and agroforestry production systems which will limit or contain degradation of the biodiversity and natural resources - the primary function of the NT2 Watershed-NPA. The overall aim is more productive farming systems. The focus on livelihood development gives recognition to the fact that villagers may need to modify their previously unrestricted use of natural resources in order to achieve NT2 Watershed-NPA management and biodiversity goals. Development assistance in exchange for help with protection is thus both a demonstration of goodwill and concern by the agency supporting livelihood changes and aims to provide villagers with the necessary means by which they can effect such behaviour changes.

Social development seeks to improve health, education and other social facilities, with the aim of not only reducing mortality, alleviating poverty and improving literacy, but also providing a foundation on which villagers can participate in the long term development process. Essential to these tasks is the training and strengthening of community institutions to manage this development process, which may include village development committees, or their ethnic/cultural equivalent.

Eco-tourism

As in many Protected Area of the Lao PDR, there is considerable potential for tourism based on the natural and cultural features. However, this potential still remains just that - unrealised potential - mainly due to lack of infrastructure (roads, accommodation, access etc.). The implementation of the NT2 project may overcome some of these constraints (improved roads and funds for other infrastructure), and will also result in an impressive, if not complex reservoir which may provide significant tourism potential. The SEMFOP aims to improve (limited) access into the NT2 Watershed/NPA under the management of WMPA which intends to begin tourism development by designing with villagers a community-based nature tourism program targeting the predominant, low-budget tourists found in the Lao PDR. No decisions will be taken on large-scale, up-market tourism development until adequate lessons have been learned from the community based program.

1.4: OPERATIONAL AREA COVERED BY THE SEMFOP

The geographical coverage and operational area of the SEMFOP includes:

- i. The NT2 Watershed: the area of legal authority of the WMPA as defined in Prime Ministerial Decrees 25 and 193; and
- ii. Peripheral impact zones (PIZ) ⁵: areas around the NT2 Watershed inhabited by villagers who enter, or use resources of, the NT2 Watershed and thus have an impact on the NT2 Watershed.

1.4.1: The NT2 Watershed

1.4.1.1: Definition and Location

⁵ Although the NT2 reservoir will be managed by another, as yet undefined authority(s), and is therefore not included in the operational area of the WMPA, it borders directly with the NPA and will therefore be considered as part of the peripheral impact zone. Inclusion of the PIZ, in addition to the legally defined NT2 Watershed, is considered necessary to achieve, and be consistent with the objectives of the WMPA. Notwithstanding this, the NT2 Watershed/NPA will, or course, remain the first priority of the SEMFOP.

The area in which the WMPA is mandated to operate is legally defined by PM Decree 25 (on the establishment and activities of the NT2 Watershed Management and Protection Authority). Decree 25 defines the NT2 Watershed as

*"the area including the Nakai Nam Theun NPA, the southern corridor and the Nam Theun corridor, as set out in Decree no. 193/PM dated 29 December 2000."*⁶

Thus, the legal definition of the NT2 Watershed encompasses;

- (i) the Nakai Nam Theun (NNT) NPA;
- (ii) the NNT - Phou Hin Poun NPA corridor; and
- (iii) the NNT - Hin Nam Nor NPA corridor,

Map 1B indicates the location of these three components of the "NT2 Watershed" while Table 1.2 shows their respective areas.

Table 1.2: Areas of the three protected areas which form the legally defined NT2 watershed.

Protected Area	Total Area (km ²)
Nakai Nam Theun (NNT) NPA	3,439
NNT-Phou Hin Poun NPA corridor	513
NNT-Hin Nam Nor NPA corridor	36
Total	3,988

Map 1B in the Annexes also indicates the actual physical 'catchment' of the NT2 dam and outlet. The legal definition of the 'NT2 Watershed' area:

1. does not include some areas physically in the catchment, especially the reservoir and its southern slopes which will be the focal area for resettlement;
2. does include NPA areas outside the physical catchment but which are contiguous and important in terms of habitats, forests and wildlife movement

1.4.1.2: Administrative Boundaries in the NT2 Watershed/NPA

Maps 4 and 5 in the Annexes show the current administrative boundaries in the NT2 Watershed/NPA, and the area of each District in the NT2 Watershed/NPA is indicated in Table 2.9.

Table 1.3: Analysis of administrative (district) areas in the NT2 Watershed/NPA

District	Total Area of District	Area of District in NT2 Watershed/NPA	Percentage of District	District Percentage of NT2 Watershed/NPA
Nakai District	4,295 km ²	3,169 km ²	73.8 %	80 %
Khamkerd	4,396 km ²	592 km ²	13.5 %	15 %
Gnommalat	1,571 km ²	131 km ²	8.3 %	3.3 %
Boualapha	3,293 km ²	66 km ²	2 %	1.7 %
Total		3,958 km ²		100 %

⁶ The technical definition of a watershed or catchment is 'all that area above a certain point, which collects those rainwater's which eventually flow to the point of concern' differs from the definition used under the WMPA Decree.

1.4.1.3: Southern Boundary of NT2 Watershed/NPA

The southern boundary of the Nakai Nam Theun NPA, and thus the NT2 Watershed-NPA has been an unresolved issue for some considerable time. According to PM Decree 164 (1964) the NPA takes the Nam Theun river course as its southern boundary – due partly to the fact that this river course is clearly definable on a map and on the ground, and that most agricultural fields on the plateau lay to the south of this river. PM Decree 193 defines the new boundary as the high water line of the NT2 reservoir. Although the precise delineation of this will not be clear until reservoir filling, Decree 193 states that the final NPA/reservoir boundary will be confirmed by ground inspection by MAF, the WMPA, local authorities and NTPC once reservoir inundation occurs.⁷

The WMPA proposed various options for the exact delineation of this boundary as shown in Table 1.4. Option 4 represented the most practical solution in regard to the southern boundary and was favoured by the WMPA from a conservation perspective. This issue has now been resolved and option 2, the northern shore of the reservoir (at maximum capacity of 538 masl) as the southern boundary of NPA has been agreed to.

Table 1.4: Options for defining the southern border of the reservoir

Options	Pros and cons
1. Designating the whole reservoir (up to 538 masl) as a mandated, legal component NT2 Watershed/NPA	Provides WMPA full authority to ensure adequate conservation measures are taken. May impose unworkable restrictions on other stakeholders.
2. Designating the northern shore of the reservoir (at maximum capacity of 538 masl) as the southern boundary of NPA – essentially excising the entire reservoir from the NPA.	Tractable and simple and will better accommodate the needs of other stakeholders. This will leave a tract of land between the reservoir and the NPA during draw down each year, where activities detrimental to conservation could occur.
3. Designating the northern shore of the reservoir (at maximum drawdown of 525 masl) as the southern boundary of NPA.	Avoids the no-mans-land problem in '2' above. Difficult to identify and mark the boundary except at maximum drawdown.
4. Designating the boundary as a gently curving line generally following the reservoir northern shore, but leaving all significant inlets, coves and creeks within the NPA.	Easy to patrol (by boat) and demarcate (signs at the mouths of the inlets, and accommodates other stakeholder needs over most of the reservoir
5. Designating the boundary as the navigation channel to run east-west through the reservoir.	Simple, tractable and easy to patrol and demarcate. May infringe on other stakeholders' uses.

In order to retain some of the advantages of option 4, it has been proposed that the WMPA enter into a some form of co-management agreement with the NTPC for the draw-down reservoir area including, water bodies in any major inlets close to the NPA. Although the co-management agreement could and should be enshrined in the revised Decree 25, this should be phrased in wide-ranging terms and the details worked out by the Reservoir Management Authority at a later date. This latter authority (See Section 1.4.3) represents the interests of all stakeholders and is the only body capable of making co-management decisions in regard to the area in question.

1.4.1.4: Adequacy of the NT2 Project Offset

The rationale of the Concession Agreement is that improved protection of the NT2 Watershed/NPA made possible by the provision funding to the WMPA for PA management provides adequate compensation for the loss and/or degradation of habitats as part of the project.

⁷ MAF Order 120. MAF confirmation as to the matter referred to for the Nam Theun 2 Hydro Power Project. 2nd July, 2003.

A Natural Habitats Accounting conducted in 2003 by Malaysian Environmental Consultants (MEC, 2003) estimated that approximately 12,500 ha⁸ or 3.5 percent of the original NNT NPA was lost by the boundary changes created by PM Decree 193. As shown in Table 1.5, the combined total of lower value habitats (agriculture, and unstocked forest) account for over one third of land lost. The mixed broadleaf/coniferous habitat suffers the largest total loss, but on a percentage basis this only accounts for a little over 10% that habitat type. The other higher value habitats (evergreen and mixed deciduous) together account for only about 5% of the area lost. Relative to the entire NPA, habitat loss is small and of comparatively low value.

Table 1.5: Habitat type areas affected by the Nakai Nam Theun NPA boundary changes (ha).

Habitat type	Area of NPA lost	New NPA area	Original NPA area	Percentage loss (%)
Upper dry evergreen	64	189,219	189,283	0.03
Upper mixed deciduous	2,248	48,513	50,761	4.43
Coniferous forest	18	934	952	1.87
Mixed broadleaf/coniferous	7,012	51,261	58,274	12.03
Bamboo	0	45	45	0.00
Unstocked forest	2,588	41,737	44,324	5.84
Ray	194	2,124	2,318	8.36
Scrub	0	2,076	2,076	0.00
Rice paddy	0	1,507	1,507	0.00
Other agriculture	294	1,052	1,346	21.82
Swamp	43	181	224	19.10
Village homestead area	0	63	63	0.00
Total	12,459	338,714	351,173	3.55%

1.4.2: The Peripheral Impact Zone

The NT2 Watershed/NPA has a moderately small population, yet it is surrounded by a large and expanding population undergoing rapid, and in places unsustainable, development. Villagers from these Peripheral Impact Zones (PIZ) adjacent to the watershed are having a large impact on it, and may have an increasingly large influence on the sustainability of the NPA if not managed effectively. Thus, the area surrounding the NT2 Watershed/NPA is included as an integral part of the Operational Plan of the SEMFOP, as provided for under Decree 25.

Unlike the NT2 Watershed/NPA, which has legally defined geographical boundaries, it is difficult to define exactly the geographical or administrative limits of the PIZ. Peripheral Impact Zones (PIZ) are usually defined on a case by case basis, hence in the current context, they are defined as those areas and villages (in the Lao PDR) adjacent to but outside the NPA which harbour humans who enter, or would like to enter, the NPA for the purposes of resource extraction, land cultivation or similar potentially destructive activities. PIZ status is delineated and restricted to those villages who would benefit directly from the long term protection of the NPA through sustainable harvest of NTFPs, the maintenance of watershed values, employment opportunities, and general quality of life issues. The PIZ is thus delineated and limited to those villages that would benefit in this way through active engagement in conservation.

The foregoing definition excludes trans-border encroachers, illegal logging concerns, poaching gangs, would-be concession holders or other individuals/entities who operate from more distant locations but enter and destructively use NPA resources. The difference here is that these groups are entirely exploitive and have no vested interest in maintaining biodiversity values and watershed functions to sustain their livelihoods over the long term, and are thus not likely to be influenced by active engagement.

⁸ This does not include habitat conversion or degradation in the corridor zones caused by road and dam construction.

SEMFOP strategy in regard to this latter exploitative group focuses on improved control and enforcement to keep them out of the NPA and to stop their illegal activities. On the other hand, a partnership approach will be adopted with PIZ villagers through active engagement on awareness raising and alternative livelihood support to reduce their reliance on the NPA and to promote them as protected area ‘gatekeepers’. The ultimate aim is to instil a sense of ownership and establish a network of stakeholder communities forming a buffer around the NPA. The details of this strategy are presented in Section 2.7 of this document.

1.4.2.1: Stakeholder Villages

An initial criterion to be used to determine a village’s role in NPA management and the level and type of support it will receive is its location in relation to the NPA. Four general types of villages can be defined, one within the NPA and three in the PIZ. These are described in more detail in Section 2.7 and are summarised here as follows:

- Type 1:** Villages located totally within the protected area and corridors (NPA villages).
- Type 2:** Villages whose ‘boundaries’ overlap those of the protected area (PIZ villages).
- Type 3:** Villages adjacent to the protected area (PIZ villages).
- Type 4:** Villages distant from, but ‘using’ the protected area (PIZ villages).

Analysis of village type enables a process of prioritisation and level of support. In general, type 1 villages will rate as highest priority and receive high levels of support, while PIZ villages (types 2-4) will normally receive support consistent with their level and type of reliance on the NPA. It should be emphasised that all communities that will be affected by resource access restrictions will be covered by the Process Framework and are entitled to compensation in the form of livelihood development support, however, entitlements will be based on location and customary rights.

On the basis of the foregoing, some communities in the districts of Khamkeut, in Bolikhamxai Province, and Gnomalart and Nakai and Boulapha, in Khammoune Province, are considered part of the PIZ, and the WMPA will actively engage and work in partnership with these district authorities. The number and type of the potential PIZ villages is shown in Table 1.6.

Table 1.6: Numbers and location of PIZ villages

Province	District	Number of Villages	Geographical Location
Khammouane	Nakai	1	Inundation zone
Khammouane	Gnomalart	11	Escarpment
Khammouane	Boualahpa	4	Escarpment and inundation zone
Bolikhamxay	Khamkerd	38	Route 8 and Nam Kata
	Total	54	

The WMPA will be active in the PIZ through a cost-sharing partnership approach with local authorities and NGOs working in the area. The approach will include the same elements as for NPA villages, thus providing livelihood development support as compensation for any access restrictions imposed due to SEMFOP. The approach also aims to promote PIZ villagers as full partners and ‘gatekeepers’ to the NPA through training, capacity-development, awareness-raising and support programs. PIZ villages will be prioritised according to their reliance (and thus impact) on NPA resources and activities initiated first in these high priority villages, some of which have already been identified by the PIZ Village Survey conducted in June and July, 2004. It is the intention under the SEMFOP to eventually provide such assistance and support to all PIZ villages according to the schedule presented in Table 2.3 (Section 2.2.7).

A survey of PIZ villages was conducted in June and July 2004 by a team of independent consultants to collect the information necessary to ensure that their current situation and needs are adequately covered by the SEMFOP (Anon. 2004). The survey covered 54 villages with a total population of 22,504 individuals and

collected information on demography, ethnicity, socio-economic conditions, resource use and their relationship with the NPA. The survey was conducted by 3 field research teams comprising a team leader, one field assistant, and one WMPA staff member. Each survey team spent 1-2 days in each village and collected village level data using a systematic semi-structured interview format with information recorded on standardized data forms. Summaries of the findings of the survey are presented in Sections 3.4.5. and 3.5.5.

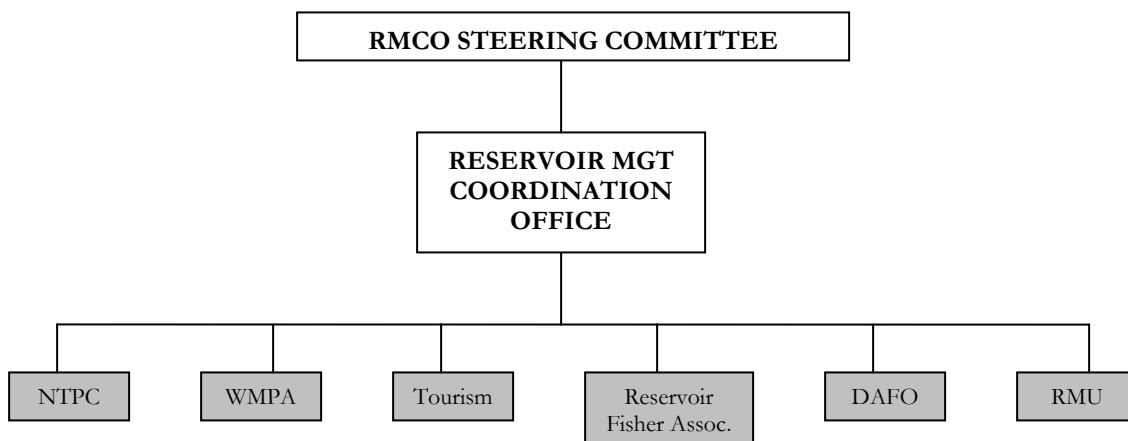
1.4.3: The NT2 Reservoir

The reservoir and drawdown areas are a complex matrix of permanent water, annually flooded areas and non flooded areas (islands). Thus, there may be potential for as yet unknown environmental impacts, such as proliferation of water weeds, water borne diseases or other problems. Water navigation and transportation channels are proposed for villages along the banks of the reservoir, and for fisheries and for access to villages inside the protected area. It will also be the access route to the NT2 watershed/NPA, and maintenance and control of this access will be a major issue in the future. While the zonation and management of the reservoir is likely to be very complex, it is envisaged that zonations will include area's zoned for hydropower water-intake, agriculture, fishing, fish breeding, transport, recreational, etc.

Thus, there will likely be a wide diversity of uses of the reservoir, and a range of stakeholders. Many of the uses will be competitive or even in conflict. Because the reservoir will border directly with the NT2 Watershed/NPA and because power generation, livelihood activities of resettled villagers, and the reservoir transport system, are all likely to have significant impacts on the PA, it is essential that the WMPA, along with other stakeholders, are closely involved in all reservoir management decisions.

In order to manage these diverse interests and functions, a Reservoir Management Coordination Office (RMCO), comprising representatives of all the major stakeholders, will be established to formulate policy and take all major decisions in regard to reservoir management (Figure 1.1). Funding for this office will come from the NT2 Social and Environmental Remediation Fund.

Figure 1.1: Reservoir Management Coordination Office organizational structure



Due to the annual filling and then draw down in the NT2 reservoir, it is expected that the reservoir's surface area will change considerably throughout the year, as follows:

- Reservoir surface area at maximum capacity (November) = 450 km²
- Reservoir surface area at minimum capacity (June) = 75 km²

- Exposed area at maximum drawdown = 375 km², or 83 % of maximum capacity.

Annual drawdown of the reservoir will leave a ‘no-mans-land’ on the southern border of the NPA. This area (See Map 14 in the Folio of Annexures) will present considerable challenges to management from both livelihood and natural resources management perspectives. There may be potential for annually flooded forests, recession rice and crops, floating rice, grazing and fisheries, all of which are specified as potential income sources for resettled villages. It will also be the water source for the proposed irrigation in resettlement village permanent agricultural areas. It has considerable potential for tourism and may also develop into a significant reservoir of wildlife. Clearly, from a conservation perspective, use of the northern drawdown area of the reservoir where it abuts the NPA will have to be very different from those allowed along the southern shore. Rules and regulations for access and permitted uses in these areas will be drawn up in conjunction with the RMCO.

1.4.4: Nam Chat–Nam Phan Provincial Protected Area

The SEMFOP does not include activities or a budget for the area previously called the ‘northern extension’. This is for a variety of reasons.

- i. The northern extension is the upper catchment of the Theun-Hinboun hydro-electric generating facility. This catchment will become even more crucial (for the THPC) once the NT2 reservoir is built and waters diverted away from the Nam Theun.
- ii. The GOL considers the water user pays principle as a cornerstone on current and future hydroelectricity development. Besides this plan for the NT2 project, the developers of the Nam Leuk project, the EdL, are committed to providing funds for the management of the projects watershed and the Phu Khao Khwai NPA of which it is a part (a firm geographical connection of the Nam Leuk watershed and the rest of the NPA). The ADB is working towards a similar principle in the (somewhat more complex) Nam Ngum watershed. This principle should also be followed, if somewhat retrospectively, in the Theun-Hinboun watershed, and certainly in the planned NT3 watershed.
- iii. As noted above, the NT3 hydroelectric facility is now being considered, and this facility will be totally dependant on the previously termed ‘northern extension’ for its upper headwaters.
- iv. The so-called ‘northern extension’ area has relatively marginal physical connections to the NT2 Watershed/NPA. While it may biologically and ecological similar, any connections in terms of cross fertilisation or terrestrial wildlife passage have not yet been identified. Similarly, it has not been demonstrated that inclusion of this ‘northern extension’ in the NT2 Watershed/NPA is all necessary to create a ‘critical habitat range/area’ required to support viable populations of wildlife or flora (in the NT2 Watershed/NPA). On the other hand, other wildlife passages, which may be more viable and necessary, have now been included in the NT2 Watershed/NPA, by designation of the two corridors to the Phu HinPoun and Hin Nam Nor NPAs

Much of the previously proposed ‘northern extension’ has now been designated as the Nam Chat-NamPhan Provincial Protected Area⁹, and a management plan developed for the management of this PPA and the GoL is now seeking funding from appropriate sources (See Section 4.1.3.1).

⁹ Of the 762 km² area of the previously proposed northern extension, 432 km², or 57 % is included in the Nam Chat-Nam Phan PPA.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 2

APPROACH AND METHODOLOGIES

(DRAFT OF OCTOBER 2004)

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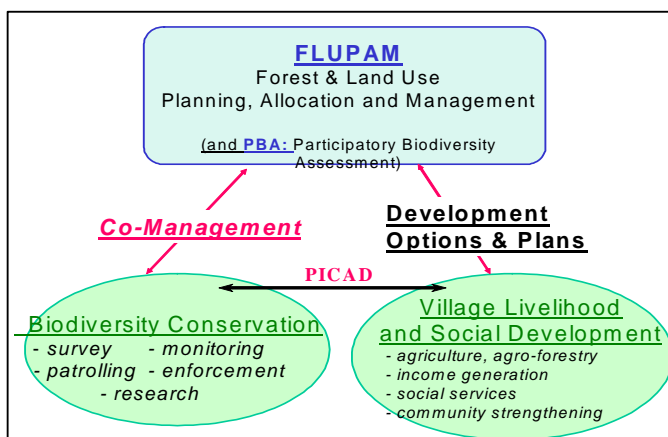
2.1 PARTICIPATORY INTEGRATED CONSERVATION AND DEVELOPMENT

2.1.1: Introduction

The Participatory Integrated Conservation and Development approach (PICAD) adopted under the SEMFOP provides the link between the 3 main component activities of NPA management (Figure 2.1).

- A: Forest resources & land use planning, allocation and management (FLUPAM)
- B: Participatory Protected Area Management (PPAM)
- C: Livelihood Development for Conservation (LDC)

Figure 2.1: PICAD and the relationship of the main components of NPA management.



PICAD is central to the three major SEMFOP programs and the activities associated with each. It has a number of attributes which make it extremely appropriate and directly relevant to the needs of SEMFOP:

- It is generally accepted and already widely used by relevant GoL agencies for resource management throughout the country.
- Its use of interdisciplinary and multi-agency teams facilitates the cooperation between government departments which will be critical to the success of SEMFOP.
- It has been tested and refined for use in NPAs throughout the Lao PDR.
- User-oriented manuals¹ and training materials are available in the Lao language for rapidly developing capacity in WMPA staff in its use.
- It's inherent flexibility makes it amenable to the special and unique needs of SEMFOP.

PICAD will play a key role in developing and promoting a number of important SEMFOP initiatives:

- As an entry point for initiating community rapport and developing participatory processes with villagers.
- Participatory needs assessment and planning of resource use, conservation and development activities and other interventions to be implemented by the WMPA.
- Fostering community organisation and cooperation for community conservation initiatives and the formation of locally-based patrolling and biodiversity conservation teams.

¹ (Anon., 2001) Land use planning and management practices in NPAs – a users manual. Lao Swedish Forestry Program, Department of Forestry, Lao PDR. See General Annex 5, Folio of Annexes.

- Defining forest zones, based on traditional uses, which can later be integrated into a more macro NPA zonation system.
- As a first step in developing community networks for stronger and more effective NPA protection and conservation, particularly from trans-boundary and external threats.

Effective, meaningful local consultation will be central to the success of PICAD and a framework for mainstreaming participation in the SEMFOP has been developed (Section 2.6).

The PICAD approach developed for the SEMFOP draws heavily on both the positive and negative lessons learned from other Integrated Conservation and Development Projects (ICDPs) previously implemented in Lao PDR and the region, in particular, the District Upland Development and Conservation Project (See Appendix 3 of this Volume). A review of the lessons learned from previous ICDP experiences was conducted during the design phase to ensure that it incorporated the lessons learned (both positive and negative) from these ICDPs.

2.1.1.1: Review of Integrated Conservation and Development Projects

Integrated conservation and development as an approach to participatory biodiversity conservation is an appealing concept and has attracted considerable attention in recent years. ICDPs conducted throughout the world have generated a wealth of lessons (both positive and negative) which will be valuable to the SEMFOP. This section reviews the lessons from the following literature sources on ICDP projects from both Lao PDR and the region:

Author	Publisher	Year	Title
Anon.	National Statistics Center	2001	Participatory Poverty Assessment
Berkmuller, V. <i>et al.</i>	Government of the Netherlands	1998	Results of Rules Considerations in Villages Near the Dong Hua Sao NBCA.
Berkmuller, V. <i>et al.</i>	Government of the Netherlands	2002	Coffee or Conservation. Experience from the Dong Hua Sao NBCA
Chazee L.	DUDCP	2002	Farming Systems and Agroforestry Mission Report.
Craig, I.A.	Lao Swedish Forestry Program	2000	Participatory NBCA Management in Lao PDR
Flint, C. and Chantavong, K.	CPAWM/IUCN	1998	Participatory Protected Area Management (PPAM)
Flint, C. <i>et al.</i>	IUCN	2000	Integrating Conservation and Development (ICAD)
Foppes, J. and Ketphanh, S.	IUCN	2000	Non-Timber Forest Products in Lao PDR
In prep.	DUDCP	2003	DUDCP Review Workshop, Thakek. June, 2003.
Kramer, R. <i>et al.</i>	Oxford University Press	1997	Last Stand – Protected Areas & the Defense of Tropical Biodiversity
Lao Swedish Forestry Program	DOF	2001	Review of the National Protected Area System in Lao PDR
MacKinnon, K.	Parks. Vol. 11, No. 2: 1-5	2001	Editorial on “integrated Conservation and Development”
MacKinnon, K.	Parks. Vol. 11, No. 2: 50-59	2001	ICDPs: Imperfect Solutions for Imperiled Forests in South-East Asia
Nurse, M and Soydara, V.	IUCN	2002	Conservation and Development: Finding the Linkages.
Raintree, J and Soydara, V.	Unpublished draft	2001	Human Ecology and Rural Livelihoods in Lao PDR
Raintree, J.	Lao Swedish Forestry Program	2001	Completion Report of the Long-term Research Advisor to FRC in Lao PDR
Sage, N.	ICDP Working Group, Hanoi	2001	Analysis of Constraints and Enabling Factors of ICDP in Vietnam
Wells, S. <i>et al.</i>	World Bank	1999	Investing in Biodiversity – a review of Indonesia’s ICDPs

The common thread underlying the ICDP approach in all the projects is the attempt to link conservation and livelihood development in such a way that rural development activities have positive outcomes on conservation and conservation initiatives benefit and improve the quality of life in stakeholder communities in a tangible and demonstrable way.

By linking conservation to development, ICDPs offer a number of potential benefits:

- Local stakeholders benefit from both the fruits of development and the rewards from the improved conservation of natural resources.
- Local stakeholders become active partners in the conservation process.
- Local stakeholders are compensated for foregoing those livelihood activities that are detrimental to conservation by other livelihood options with positive outcomes on conservation.

ICDPs have a number of potential risks which could have negative impacts on conservation:

- The inefficient use of resources which are diverted from conservation to development.
- Uncontrolled development with negative impacts on conservation.
- Distracting attention away from conservation imperatives to development objectives.

The review reveals a generally more positive experience with ICDPs in the Lao PDR than in other countries in the region, and suggests a healthier 'enabling environment' for such an approach here compared to elsewhere in South-East Asia. An analysis of the current social, economic and political situation pinpoints a number of enabling factors which include:

- the economic importance of forests (including watershed functions) to the Lao economy;
- GoL policy of allowing villagers to remain and reside (and thus assist with conservation) in PAs;
- GoL's commitment to providing secure and equitable land use rights to NPA communities;
- a well established system of participatory land use planning;
- devolved protected area management authority to provincial and district authorities, rather than being centrally-based.

A number of impediments to successful implementation of ICDPs also exist in Lao PDR, including:

- the shortage of staff and financial resources for both development and conservation initiatives;
- the lack of clear laws/regulations in regard to Protected Areas and the use of natural resources;
- poor capacity levels in the agencies and staff involved in conservation and development;
- the political imperative for development which may distract from a balanced ICDP approach.

The review identified a number of recurrent issues which were commonly cited as being key determinants to the success or failure of the project in question. Among the most frequently cited topics, were the need for ICDPs to adequately address:

- (i) poverty and food security issues of protected area stakeholder communities;
- (ii) local participation in planning, implementing and monitoring both development and conservation initiatives;
- (iii) close involvement of district authorities and proactively involve and engage all government agencies active at the local level;
- (iv) providing economic or other incentives (such as secure land use rights) to villagers for participating in conservation activities;
- (v) selecting only those livelihood development activities which have direct linkages to and positive impacts on conservation;
- (vi) identify what villagers have and build on that, rather than what they lack and assuming it should be supplied;
- (vii) the benefits and/or incomes from ICDP activities should be seen as supplemental rather than replacements for traditional practices;

- (viii) the community management of NTFPs, with benefits accruing to villagers in an equitable manner. This was most commonly cited as being of importance in the Lao ICDP context.

The generally positive outcome of the review is not to say that ICDPs have been without problems in the Lao PDR. The World Bank FOMACOP project has come under criticism from a number of quarters, not least from within the Bank itself. The major problems associated with FOMACOP largely reflect many of the key findings of the review described above:

1. Artificial 'project' structures within FOMACOP, meant that real authority was never adequately devolved through normal government channels to the provincial and district level.
2. Delays in releasing funds by DOF was a major constraint in the field, and devolution of authority in '1' above needs to include adequate levels of fiscal authority as well as management control.
3. The problem of the slow release of funds impacted heavily on the project's participatory processes. Promises and deadlines for village development activities were broken time and again, creating serious problems for field staff in building rapport and actively involving villagers in project planning.
4. Because of the poor local participation, livelihood development interventions did not reflect real villager needs and the links between development and conservation were either entirely absent or, at best, rather weak.
5. Protected area management plans for each FOMACOP NPA were written in Vientiane by a short term expatriate consultant, who had no understanding of realities at the field implementation level. The resulting top-down nature of the plans, meant that quite apart from failing to be integrated with village livelihood needs, they were actually in direct conflict in many instances.

In conclusion, the findings of the review support the adoption of an ICDP approach in SEMFOP. At the same time, the review has helped to pinpoint key areas where SEMFOP design has been weak and amendments have been made accordingly. Overall, the findings also suggest that the political, economic, administrative and social conditions in the Lao PDR generally, and in the SEMFOP situation in particular, favor the ICDP approach. At the same time, SEMFOP offers the opportunity to provide further lessons and leverage to overcome the potential drawbacks and weaknesses of the ICDP approach in the future.

At the implementation level, the SEMFOP has taken on board the key issues identified by these reviews. It recognizes the link between food security and forest destruction, which forms the basis for livelihood development under SEMFOP. Local participation is emphasized throughout the major programs (FLUPAM, Livelihood Development and Biodiversity Management). Economic and other (service provision) incentives are incorporated in SEMFOP's development programs. FLUPAM aims to provide villagers and communities with secure land use rights. The proposed Conservation Impact Assessment (CIA) technique for selecting appropriate livelihood development activities helps to identify and ensure direct linkages to and positive impacts on conservation. The community management of NTFPs, is frequently cited as an indicative activity likely to be undertaken by SEMFOP.

2.1.2: Use of Participatory Tools

PICAD makes use of a variety of participatory tools to promote local involvement and ownership. SEMFOP follows a 'basket approach' under which appropriate tools are selected and used according to the situation, the task in hand and the capacity of villagers and WMPA staff. Examples of these are presented in Table 2.1.

The use of these tools is also aimed at promoting the inclusion of all disadvantaged groups, particularly ethnic minorities, women, the poor, youth, etc. Ethnically and gender dis-aggregated groups (plus others where appropriate) are used with many of the tools to conduct the analysis independently and then share and discuss the different outcomes of the groups in a plenary session. This helps to raise awareness and sensitize the dominant group (the major ethnic group, men, the rich, village committee, etc.) to the needs of the minority or less influential elements in the community.

Table 2. 1: Indicative Examples of Participatory Tools Used by SEMFOP

NAME OF TOOL	PURPOSE OF TOOL	USES
Facilitation Tools		
Rapport building	Building trust and promoting local community ownership, in particular fostering trust & the participation of women.	All programs
Group facilitation	Fostering the active participation of all group members, especially women and providing help and encouragement towards desired outputs	All programs
Ethnically dis-aggregated group discussions	Ensuring that each ethnic group is able to discuss issues freely in their own language and making sure that their unique beliefs, needs, and perspectives are considered and incorporated	All programs
Gender dis-aggregated groups	Ensuring that women's needs, views and perspectives are considered and incorporated	All programs
Community empowerment	Enhancing the ability of villagers to participate in project activities and negotiate with government and project authorities	All programs
Community networking	Fostering intra-community cooperation and mutual support, including womens group activities	PPAM LDC
Information Gathering Tools		
Semi-structured interviews/focus groups*	Gathering information/ideas from local people in an unbiased way, allowing in-depth follow-up on key issues relevant to different interest groups including women.	All programs
Forest and land use assessment walks*	Collecting local NRM and NTFP information, stimulating questions & ground-truthing existing information	FLUPAM PPAM
Village geographical mapping	Developing a spatial understanding of resource use and management and prompting questions	FLUPAM PPAM
Village conservation monitoring	Collecting information on flora and fauna and identifying impacts and threats	PPAM
Problem & Needs Assessment Tools		
Wealth ranking*	Identifying different groups/classes in a community and the unique needs and perceptions of each through gender dis-aggregated groups	FLUPAM LDC
Key informants*	Obtaining specific and detailed information on key issues of various interest groups including women's issues.	LDC FLUMAP
Problem-cause diagrams*	Gaining (and generating) a better understanding of the nature & causes of key problems using gender dis-aggregated groups	LDC
Historical profiles	Assessing long-term trends and analysing change and the development of problems	LDC FLUMAP
Comparative Analysis Tools		
Scoring*	Rating or scoring factors/activities for a variety of criteria.	FLUMAP PICAD
Weighting*	Weighting specific factors/activities for different criteria.	FLUMAP PICAD
Pairwise ranking*	To objectively prioritise problems, proposed solutions, activities, etc. by community groups.	PICAD FLUMAP
Solution tree analysis*	To assist in developing and analysing potential solutions to any problem	PICAD
Monitoring and Evaluation Tools		
Gender impact assessment	Assessing the impact of activities, rules, regulations, etc. on men and women separately.	All programs
Conservation impact assessment	Analysing and evaluating the impact of livelihood development activities on biodiversity conservation	LDC
Social impact assessment	Analysing the impact and effects of activities on community cohesion, structure and relationships including gender roles.	LDC
SWOT analysis	Assessing strengths, weaknesses, opportunities and threats of an activity or course of action.	All programs
Innovation assessment	Evaluating the benefits and constraints of an activity.	LDC
* Denotes normal use with gender dis-aggregated groups to conduct the analysis independently and then share and discuss the different outcomes of the male and female groups in a plenary session.		

2.1.3: Community Driven Development

As part of its participatory strategy the SEMFOP will use elements of the Community Driven Development² (CDD) approach in an attempt to further strengthen the mainstreaming of community participation in its programs.

Community-driven development (CDD) and related participatory methodologies gives control of decisions and resources to community groups and should be applicable to management activities within the NT Watershed. CDD treats poor people and vulnerable groups such as women as assets and partners in the development process, building on their institutions and resources. Support to CDD usually includes strengthening and financing inclusive community groups, facilitating community access to information, and promoting an enabling environment through policy and institutional reform. Experience demonstrates that by directly relying on poor people to drive development activities, CDD has the potential to make poverty reduction efforts more responsive to demands, more inclusive, more sustainable, and more cost-effective than traditional centrally led programs. CDD fills a critical gap in poverty reduction efforts, achieving immediate and lasting results at the grassroots level and complementing market economy and government-run programs. With these powerful attributes, CDD can play an important role in strategies to reduce poverty.

According to the Voices of the Poor study (Narayan *et al.* 2000), based on interviews with 60,000 poor people in 60 countries, poor people demand a development process driven by their communities. When the poor were asked to indicate what might make the greatest difference in their lives, they responded:

- (a) organizations of their own so they can negotiate with government, traders, and NGOs;
- (b) direct assistance through community-driven programs so they can shape their own destinies; and
- (c) local ownership of funds, so they can end corruption. They want NGOs and governments to be accountable to them.

These stated needs of the poor have been taken on board in the PICAD philosophy and are embodied in the various methods and tools that it incorporates.

CDD is an effective mechanism for poverty reduction, complementing market and state-run activities by achieving immediate and lasting results at the grassroots level. Experience has shown that CDD can enhance sustainability and make poverty reduction efforts more responsive to demand. CDD has also been shown to increase the efficiency and effectiveness of poverty reduction efforts. Because it works at the local level, CDD has the potential to occur simultaneously in a very large number of communities thus achieving far-reaching poverty impact. Finally, well-designed CDD programs are inclusive of poor and vulnerable groups, build positive social capital, and give them greater voice both in their community and with government entities.

CDD, as a delivery mechanism for community development activities:

- Complements market and public sector activities
- Enhances sustainability
- Improves efficiency and effectiveness
- Allows poverty reduction efforts to be taken to scale
- Makes development more inclusive of the interests of women and other vulnerable groups
- Empowers poor people, builds social capital, and strengthens governance

² Dongier, Philippe, Julie Van Domelen, Elinor Ostrom, Andrea Ryan, Wendy Wakeman, Anthony Bebbington, Sabina Alkire, Talib Esmail, and Margaret Polski Community-Driven Development Chapter in Poverty Reduction Strategy Sourcebook.

These attributes are all considered entirely compatible with SEMFOP's primary objective of biodiversity conservation and prepares communities for their active participation in this endeavour.

2.1.4: Incorporation of Local Knowledge in Planning

Given the rich biodiversity of the NT2 Watershed, there is much to be learned from the accumulated indigenous knowledge (IK) of the local people in terms of scientific study and the practical use of natural resources. The PICAD approach, by 'building on' rather than transforming traditional livelihood systems, aims to mainstream the use of local knowledge in the planning of both livelihood development and conservation management activities. In order for this knowledge to be fully understood and developed for the purposes of biodiversity conservation and livelihood development, certain principles will be followed and steps taken to maximize the use of appropriate IK into SEMFOP planning and management processes:

- Local people must be central actors at all levels of planning, field studies and activity management, at the village level and, preferably, at the Project Management level. This step will require a much slower pace in initial assessments and team building, in gathering information and planning for livelihood interventions. It is essential that working relationships between the WMPA and each village is equitable, transparent and empathetic. This will require significant training for WMPA field officers as well as for village people and committees.
- The International Ethnic Development Advisor will be responsible for incorporating IK into project planning and implementation. He/she must be present for initial assessments in each village, train a national colleague who will be engaged for at least 6 months of each year during the initial phase of the SEMFOP-1, and must coordinate closely with the PICAD Advisor and other TAs responsible for biodiversity conservation and livelihood development.
- Local language must be used whenever possible, meaning WMPA field staff must speak local dialects and/or selected local people must be included as full time team members.
- Detailed surveys and studies of the biodiversity in terms of ethno-biology, that is local categories, classifications and uses for the various species (so-called folk taxonomy), must be conducted with the inclusion of 'specialists' from each of the ethnic groups in the Watershed.
- Chart detailed local knowledge of the area – cultural constructs (time, natural cycles, etc.) and spirit boundaries within the NT2 Watershed, with the participation and leadership of local people.
- Identification of cultural aspects that have a direct bearing on socio-economic development and conservation and integrate these aspects into the overall Plan for the benefit of the PAPs, in particular Vietic groups, the original inhabitants of the Watershed.
- Incorporate measures to protect rights of ethnic groups in relation to potential forest products that may have a commercial value should also be considered in order to ensure that this IK is kept within its original context and thus remains meaningful;
- Cooperative programs with appropriate research institutions such as the Institute for Cultural Research will be encouraged to assist in identifying valuable IK that can be incorporated into SEMFOP programs and activities.
- Finally, with the eventual goal of encouraging all ethnic groups to adopt more productive and sustainable forms of agricultural production, the SEMFOP-1 must use the skills and experience of the groups in the watershed, for example, the Sek, who have already successfully made, or partially made, this transformation. These and other groups with specialist skills or knowledge could be promoted as resource people for neighboring communities. Vietic groups, who are the indigenous people of the area, could be particularly valuable in this respect. However, a cultural and ethnic understanding and sensitivity must underly this approach if it is to be used successfully.

Preliminary studies have already been carried out by a number of researchers (cf Chamberlain 1997b; Culas 2001) but further work needs to be done to consolidate these studies, to cross check the lessons learned with local 'specialists' and to relate findings to implementation plans.

IK has already been a factor in conservation, patrolling and studies in the pilot project villages, and activities that have already been undertaken in the Watershed. This integration will continue for the duration of the project.

IK will also play a key role in activities related to NTFPs, their traditional uses and potential for domestication. It also has a significant, potential role in cultural ecotourism, which if planned and managed properly, could assist in preserving traditional practices and cultural values. It is thus important to ensure that ethnic minorities are fully involved in the planning and management of these activities to ensure that the potential that IK has to offer is fully utilised. It is also important that these groups receive an equitable share of the benefits from such activities through the commercial and employment opportunities that will be created.

2.1.5: Cultural Development

Culture is a complex term that refers to the socially transmitted patterns of behavior that characterizes a particular group. This includes knowledge, spiritual belief, art, morals, laws, customs, techniques and any other capabilities and habits of a society. Cultural development refers to the process of transmission involving considerable continuity of behavioral patterns but also change, modification, adaptations and alterations, both internally and through contact with other groups. In the context of the NT2 Watershed/NPA ethnic minorities, there has already been considerable borrowing, shared cultural values and technology and influences from outside.

These changing cultural dynamics are effecting ethnic identity. The notion of how these ethnic groups may best benefit in terms of 'cultural development' from the project and at the same time how their cultural uniqueness may be protected from adverse effects needs to be taken into account. It would be impossible to insulate these groups from the dominant lowland culture and the growing influence of the nation state and market place economics by attempting to preserve cultural uniqueness. One runs the risk of isolating these groups further and delaying an eventual absorption into the mainstream culture solely on the dominant culture's terms. The groups themselves have expressed a strong desire for integration economically during consultations and yearn for progress in the form of modern technology, infrastructure and improved services.

An alternative approach to preservation is to equip local people with the necessary means and knowledge to participate in the national economic, social and political development. This does not necessarily mean merging with the dominant culture, but rather establishing the economic basis and conditions (education, healthcare, infrastructure and access to resources) so that these groups may compete with the dominant group on a similar level. The political reality in the Lao PDR is a nation still attempting to provide improved infrastructure and services to peripheral areas within the country. The Nam Theun 2 project is likely to increase the tempo of these two processes. Therefore, to equip ethnic minorities with the means to retain control over their own resources and manage them in a profitable and sustainable manner could prove to be the best means of preserving 'their dignity, human rights and cultural uniqueness'. (WB OD 4.20, 6). This can best be achieved through a process of local participation which takes into account the needs and aspirations of the people themselves.

The aim is to combine elements of existing cultural values within the context of an emerging modern state. The bottom line is that without interventions which ensure food security, a sustainable use of natural resources, protected rights and improved livelihood, it is unlikely that these small ethnic minorities could withstand the advance of the better educated, better organised and more advanced dominant culture and the market forces which accompany it. In order to 'preserve' cultural diversity in this region, a realistic plan is needed that ensures socio-economic development through culturally sensitive approaches and participation. The aim of SEMFOP is to ensure cultural development by supporting the communities to retain control over their own resources and decision-making mechanisms to promote biodiversity conservation.

2.1.6: Access Development and Management

2.1.6.1 NPA Access Strategy

Improved access to protected areas can result in more poaching, increased extraction of natural resources, in-migration of shifting cultivators with inherent problems for PA management and biodiversity conservation. However, consultations to date with NPA villages do indicate their desire for improved inter-village and outside communications. It should be noted that the proposals later in this section are merely indicative and no plans will be finalized until full consultations have been conducted with villagers as to their needs in this respect.

Improved access is required to -

- i) market household supplies from Nakai District as an alternative to the current trans-boundary supply route (in this respect, this Plan does not support border markets as proposed in the 1998 ESMP) as the current transboundary traders either hunt wildlife or exchange goods for wildlife ;
- ii) facilitate the transport (export) of produce to the Nakai plateau and beyond;
- iii) facilitate easy and relatively quick travel by NPA villagers to the District centre of Nakai;
- iv) facilitate the provision of rice and other essentials from Nakai;
- v) improve access for development, management and patrolling personnel and goods.

In order to address this dilemma of conflicting needs and threats to biodiversity conservation related to the issue of access, an access strategy has been developed as the basis for detailed planning and design of communications infra-structure development under the SEMFOP. The NPA access strategy aims to reduce the porous nature of the NPA boundary by re-orienting access for both people and commodities through Nakai. The strategy focuses on establishing a single, dominant entry and exit point linked to a well-controlled water borne transport system on the reservoir. By providing a cheap and efficient service, coupled with stringent control and regulation over passengers, their personal possessions and cargo, it is anticipated that current problems of poaching, illegal resource extraction and transborder trade (with the inherent problems associated with it) will be reduced, and at the same time market access, public service availability and the general quality of life of NPA communities will be improved.

The planned, reservoir-based transportation system offers a number of opportunities for improved control and regulation, including:

- A single access point (boat dock) into and out of the NT2 Watershed/NPA which is easy to monitor and regulate.
- Through close cooperation with the RMU from the outset, the WMPA will be able to ensure that the system is designed and implemented in line with SEMFOP's primary goal of biodiversity conservation.
- The highly visible nature of water-transport on the reservoir facilitates the identification and detection of illegal activities.
- The public nature of the transport system makes illegal activities more difficult to conceal.
- Trained boat operators and personnel employed by the WMPA will be able to assist in control and enforcement.

Under this strategy, it will be possible to improve ground-based access routes within the NPA to the benefit of both NPA communities and NPA management, without the concomitant increase in risks from external threats that this normally creates. Improved communications within the NPA, all linking with a single access point via the boat transport system will provide a number of benefits to NPA management and biodiversity conservation:

- Reduced reliance on the currently dominant transborder supply route for household supplies with its inherent dangers for the extraction of NPA resources by the cross border traders.
- Improved access for rangers and enforcement teams for the rapid response to reported impacts, poaching, wildlife trade and other incidents.

- The potential to move larger items of conservation and protection equipment (for fire-fighting, survey, research, development, etc.) within the NPA.
- Easier access for the Village Conservation Monitoring Units and better cooperation and coordination within the Watershed Conservation and Development Networks due to improved inter-village communications.
- Improved market access to Nakai for NPA communities, thus providing alternative economic opportunities in place of their current reliance on forest resources.
- Enhanced access for ecotourism, thereby providing alternative sustainable livelihoods for NPA communities (guides, sale of handicrafts, cultural tourism, etc.).

2.1.6.2 Access to the NT2 Watershed

Thus, the access development planned for this SEMFOP-1 is composed of;

- A. Development and maintenance of a few selected ground/track access routes;
- B. Focus development on river and boat routes. Any vehicle routes may be closed after reservoir impoundment; and
- C. Establish and staff checkpoints at strategic points on these access routes.

Vehicular Access

- (i) The road from eastern Khamkerd District into the Nam Xot valley (Ban Thameuang) of Nakai District will be maintained at a low level, but a mobile military guard team will be stationed in Ban Thaipaban. This road may not be necessary, and will thus be closed if the reservoir impoundment significantly improves the river/boat access via the Nam Sot.
- (ii) The two logging roads into the lower NPA will be closed.
- (iii) The road running from the Ban Houa Phou – Ban Talang road south-west through the corridor to the Nathon-Nabon area of Nakai will be maintained pre-reservoir impoundment, but after the reservoir is filled, the route via Nam Malou will be impassable. An alternate route must be found.
- (iv) The recently opened small, 2.5 m track from Ban Done 9DUDCP), skirting east of the Nam Noy, and almost reaching Ban Hoay Sarn on the Nam Pheo, will be finished and maintained as a power tiller track only. 4 (or more) wheeled vehicles of all sorts will be banned. Upon reservoir impoundment, access to this track from the reservoir may be impossible.

Walking Tracks.

- i) The walking track from Keng Meo to Keng Luang, along the Nam Theun will be improved with small bridges and the like, as it will be a component of the reservoir/river based system.
- ii) Assistance will be provided to annually maintain the B. Sopphen to Navang walking track, up until reservoir impoundment, after which this route may not be feasible

Water Borne Access

To be developed as fully as possible, as water borne transport is:

- a) most compatible with the longer term scenario including the NT2 Reservoir, which will make water transport up both the Nam Thern and Nam Xot considerably easier. In addition, all travel or goods transport to and from Nakai will have to use boats at some stage (to cross the reservoir).
- b) most amenable to control the entry into the NT2 Watershed/NPA which is crucial to the long term viability of the NPA and ultimately the hydropower generation facility.

Development the Nam Theun river route will include the establishment and operation of a public transport system along the reservoir. Up until reservoir impoundment, the WMPA will ensure that a truck service operates daily from Nakai to Ban Sop On, and a boat service from Sop On to Keng Meo, where a warehouse will be established. From Keng Meo. A different type of boat will navigate the rapids up to Keng Luang (including a portage system along the track) after which a private boat operation will be encouraged to operate from Keng Luang, past Ban Makfeuung up to about Ban Thaipaban. After

reservoir filling and operation, a public boat would be operational from the Nakai jetty (or similar) all the way to Keng Meow (or further, when the reservoir level is high).

A public boat service will be organised along the Nam Xot River from Ban Talang to Ban Thameuang. Boat operators will be assisted to annually clear the river route to facilitate transport. Post reservoir impoundment (SEMFOP-2), this route may be more attractive, and navigable in most seasons.

2.1.6.3 Access Within the NT2 Watershed-NPA

The strategy for intra-NPA, inter-village access is to foster the maintenance of current tracks (already built firstly with NTSEP/IUCN and then with LIL/DUDCP assistance) and to open new tracks considered appropriate and feasible. Thus, access between villages within valleys, and between valleys will be improved, in most cases to a standard allowing passage of hand tractors (power tillers).

Thus, tracks of width 2.5 will continue to be cleared and constructed to connect all major villages. The NTSEP/IUCN and then the DUDCP projects have constructed such tracks using food-for-work (paid on a daily, not quantity basis), and the methodology has proved both feasible and useful. While food-for-work is used to pay for the construction of the tracks pavement and of wooden bridges or culverts, some funds and appropriate materials may be supplied for the construction of culverts or small bridges etc, to facilitate hand tractor transport, usually in the form of metal clamps for wooden bridges.

The exact location and alignment of such tracks will be developed in consultation with villagers, overseen by the Executive Secretariat rural engineer, and facilitated by the CD officers.

2.1.7 Demographic Management

The populations of NPA villages are increasing at high rates - the population in NPA villages has increased by 17 % between 1996 and 2002. Such a growth rate threatens to exacerbate the current unsustainable and declining livelihoods of most of the NPA villages and some of the surrounding communities. The improvements in the quality of life in local communities anticipated from the LDC livelihood development activities may even attract additional in-migration, particularly from relatives of NPA villagers, further exacerbating the already acute demographic problems in the NPA. Thus, strong, but fair, equitable and culturally sensitive demographic-safeguards need to be established from the outset.

The SEMFOP strategy for demographic management addresses both natural population increases in the existing populace, and the potential problem caused by in-migration from surrounding areas.

2.1.7.1: Population Control in Existing Communities

The SEMFOP strategy for population management in existing communities embodies 3 major components:

1. Safeguards to ensure adequate agricultural land for current and likely future population in the NPA villages.

FLUPAM provides for the development of land use agreements with communities that mitigate against future encroachment into undisturbed forest areas, while at the same time, taking account of current and future populations by defining village agriculture and reserve agricultural land areas. FLUPAM proceeds simultaneously with clusters of neighboring villages and thus allows for the possible rationalization of agricultural (and reserve agricultural) land areas between villages according to the population needs of each.

2. Awareness raising and capacity development to enable communities to better make their own decisions on family size, and the capability to be able to act on these decisions.

The assessments of population trends conducted during FLUPAM will be undertaken in a participatory manner with villagers in order to increase community awareness of population issues and to table the problems (and the potential benefits of family planning to them) for consideration when designing livelihood development activities. Wherever appropriate, assistance

with family planning will be provided as a key livelihood development activity under the SEMFOP.

Other initiatives in the SEMFOP in regard to helping communities generally, and women in particular, make their own decisions in regard to the sustainable management of population include:

- improved maternal and child health care;
 - capacity development and empowerment programs for women in conjunction with the LWU;
 - supporting female economic activities
 - developing and implementing policy on in-immigration in conjunction with the NPA communities;
3. Improved education and vocational training opportunities to facilitate the out-migration of capable youth and adults to take up new occupations outside the NPA.
- promotion of literacy and numeracy through non-formal education;
 - education of youth, especially girls through improved formal education opportunities;
 - support for vocational development and professional training to enhance career opportunities and allow NPA villagers find employment outside the NPA.

2.1.7..2: In-Migration Strategy.

Although high rates of in-migration to NPA villages are not anticipated, some inward population movement might occur, mainly from neighboring PIZ villages. Any such in-migration is expected to be at least partly balanced by out-migration from the NPA, particularly after capacity levels of local people have been raised by SEMFOP training and development programs, and these villagers are able to seek employment elsewhere. In-migration is likely to be for two reasons:

Type 1 - due to marriage, family re-organisation of existing inhabitants, or other compassionate reasons. This type of in-migration will normally be into existing villages and, under the law requires prior approval from the Village Chief and then ratification by the district authorities.

Type 2 – due to perceived benefits accruing to NPA villagers through the WMPA’s livelihood development program. This type of in-migration could be into existing villages, but may also involve the establishment of new villages which requires approval from the district authorities.

An in-migration control strategy has been developed under SEMFOP which deals with the first type in a fair and sensitive manner, while at the same time imposes adequate checks and controls on the second type.

Under the Law, ‘residency’ is defined by house registration documents (*Bai Ban*) which contain the names of all family members living in each household. These documents are maintained by the Village Chief and ratified by the District Authorities. Identity cards for Lao nationals, currently being introduced in Vientiane, and to be issued in other areas over the coming years, will, in the future, provide an additional means of confirming residency. Under the SEMFOP in-migration strategy, house registration documents (and later ID cards) will be used as the basis for defining NT2 Watershed/NPA residency and thus eligibility for livelihood development assistance.

Because of the key role played by village chiefs and district authorities, the SEMFOP in-migration strategy will begin with an awareness program to explain the potential problems caused by inward population movement and to clarify WMPA policy in this regard.

Land use planning will be used as the entry point to explain and discuss in-migration issues with villagers, and the LUP process will form the basis for their decisions on whether to allow new settlers into the village. During the LUP process, a limited area of ‘reserve agricultural land’ is normally set aside to allow for natural population increase within the community. This land-type initially comes under village

ownership, but can be allocated to individuals or families, based on the collective decision of the community as a whole. Under SEMFOP's in-migration strategy, reserve agricultural land can also be allocated to families or individuals who settle in the village due to compassionate reasons as described for 'Type 1' in-migration. Once again, this will be a collective village decision and any land allocation to newly settled families will have to be weighed against the needs of the existing population and any expected increases. Specific guidelines in this respect, and a clear definition of the types of in-migrants who can qualify for such land allocation will be developed in a participatory manner with villagers during the LUP process.

Similarly, agricultural land becoming available due to out-migration or death (without legal heirs) of existing residents cannot be sold or transferred, but will revert to community ownership and thus become part of the village reserve agricultural land.

Land use planning will also be employed as the major means of controlling the establishment of new settlements, as described under Type 2 in-migration. Village land and forest areas are delineated and zoned during the LUP process, and after a period of testing, will be ratified by the district authorities. Following LUP and official ratification, all land within the NPA which does not fall within these village customary use areas will be defined as Totally Protected Zone and will thus be unavailable for new settlement under the Forest Law.

The stimulus to in-migration that SEMFOP's livelihood development activities in the NPA might create will be off-set, as far as possible, by similar activities in the PIZ. These will be combined with education and awareness programs in PIZ villages, aimed at explaining the importance of the NPA and the reasons for controlling access and in-migration. It is expected that SEMFOP strategy on in-migration will evolve and strengthen over time through the active engagement of villagers and relevant district authorities.

2.2: FOREST AND LAND USE PLANNING, ALLOCATION AND MANAGEMENT

Forest and Land Use Planning, Allocation and Management (FLUPAM) is a process of resource management planning aimed at ensuring equitable access to forest and land resources and providing the basis for their sustainable management by local communities. It has the following major objectives:

- Stabilizing forest and land use patterns under a sustainable management system.
- Ensuring equitable access and to forest and land resources for all community members and formalizing land use rights within the existing legal framework.
- Ensuring customary use rights are respected and not infringed upon
- Establishing resource use and conservation agreements and rights with local communities.
- Developing a partnership between villages and government for the joint management of community development and conservation activities.

There is currently only a very limited understanding of local land and resource tenure systems practiced by the various ethnic groups in the NPA. 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 the introduction of any new tenure systems being considered (particularly TLUCs).

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.

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.

Community and individual rights to land and forest resources are enshrined in Village Forestry and Land-use Management Agreements (VFLMA) and Temporary Land Use Certificates (TLUC), respectively. The types of rights and responsibilities that are guaranteed under VFLMAs are shown in the VFLMA template in the Manual for LUP in NPAs presented in Part 5 of the Folio of Annexures. Essentially the VFLMA formalises the agreements reached during discussions of boundaries, zones and local rules, and ensures the villager's long term usufruct rights rights. This is an exchange of commitments. Villagers receive formal recognition of tenure rights and continued legal access to specific areas and resources. Likewise, they make commitments to respect the rules that they helped to create. These rules are recognized to be in villagers' own long-term interests, even though they may limit use of certain resources in the short-term. In this exchange, the protected area management team acquires a dependable partner, but also takes on responsibilities for support and livelihood development assistance.

FLUPAM is a phased but iterative process which proceeds through five stages run simultaneously in each village with the PPAM and LDC programs by joint teams (Table 2.2). FLUPAM procedures and methods are now well developed and widely used in Lao PDR. However, early attempts to apply these procedures to land use planning (LUP) in NPAs revealed that they were lacking in a number of respects when applied to the unique situation and specific needs of protected areas. In particular, the standard procedures :-

- Did not take sufficient account of specific biodiversity values that may often be unique to individual NPAs.
- Were not entirely compatible with the legal framework and some of the provisions embodied in Prime Minister's Decree 164 pertaining to protected areas.
- Did not adequately encompass the conservation co-management roles and responsibilities of villagers in the Forest and Land Use Agreements resulting from the process.
- Focused on individual villages and did not pay sufficient attention to issues critical at the level of the entire NPA.
- Did not give adequate attention to the collection and analysis of data and information of conservation importance in reaching forest and land use zoning decisions and establishing management agreements.
- Tended to be used to stop shifting cultivation by limiting the area under cultivation allocated to each family.

Although FLUPAM employs many of the methods and tools which are common to standard LUP procedures, the process has been modified in a number of key areas to make it more appropriate for use in Protected Areas:

- It proceeds more slowly than the standard LUP process, thus allowing time for trial, testing and modification to agreements before they are ratified. Formalisation of the agreements only occurs after villagers have shown, through participatory monitoring and evaluation, that they can follow and manage the agreements.
- FLUPAM does not necessarily proceed to formal land allocation to individuals or households. The distribution of agricultural land amongst families is often a community decision which allows for the dynamics of family size and community needs. If desired by the village, formal land allocation can be made to the entire community who then manage individual parcel allocation according to traditional norms. Ususfruct rights are still legally guaranteed, but through an agreement with the entire community rather than by the issue of individual TLUCs.
- It takes careful account of existing norms and current and future land use patterns. Although the opening of new land is not condoned, no attempt is made to reduce the area of fallow swidden and any land in excess of current requirements can be earmarked as reserve agricultural land for future population increase.
- It considers bio-diversity and conservation values throughout the entire planning process. It gives responsibility for and participation in some aspects of conservation management to villagers themselves. Finally, rather than working in one village at a time, it is conducted simultaneously in a number of contiguous villages, which are slowly developed into a community network to promote co-operation in both conservation and development activities.

Table 2.2 Steps and procedures for FLUPAM and simultaneous PPAM and LDC activities

Stage	FLUPAM Steps	PPAM Steps	LDC Steps
<u>Stage 1.</u>	1. Village classification		
Setting priorities	2. Selection of priority villages	Priorities w.r.t. conservation	Priorities w.r.t development
<u>Stage 2.</u>	1. Village FLUPAM orientation & preparation	PPAM orientation	LDC orientation
	2. Village land use data collection	Village biodiversity data collection	Village needs assessments
Land use management planning	3. Village boundary delineation	Village forest and land use zoning	Problem analysis by land use zone
	4. Draft village forest and land use management agreements	Conservation rules and regulations	Draft village development plans
<u>Stage 3.</u>	1. Networking activities	Network conservation issues Establishing/organizing VCMUs	Network development (watershed) issues
Follow-up, support and period of testing the agreements	2. Land use management activities	Participatory conservation activities	Implement livelihood development activities
	3. Monitoring activities	Monitoring activities	Participatory evaluation
	4. Information storage & management	Conservation data	Livelihood data
<u>Stage 4.</u>	1. Land data analysis	Conservation data analysis	Analysis of livelihood outcomes
Land allocation	2. Land allocation decisions	Modifications of PPAM activities	Modifications of LDC activities
	3. Land parcel measurement		
	4. Land use certificate preparation & transfer		
	5. Ratification of land use agreements by District Authorities.	Conservation agreements	Development incentives
<u>Stage 5.</u>	1. Land allocation records	NPA management plan	Village development plan
Information management and monitoring	2. Socio-Economic Information 3. Conservation information		
	4. Ongoing M&E and support	Ongoing M&E and support	Ongoing M&E and support

FLUPAM has a number of important attributes which must be adhered to if it is to achieve its desired objectives. It is:

Participatory:	It involves villagers in every step of the process and encourages them to make their own decisions about sustainable natural resources management.
Empowering:	It strengthens community organisation and capability and provides villagers with the skills and tools to solve their own problems and make improved decisions about the sustainable management of natural resources in the future.
Gender responsive:	It promotes the active participation of women in all decisions regarding resource allocation and management and addresses the unique problems of women by the use of gender dis-aggregated discussion groups with feedback in plenary.
Ethnically sensitive:	It promotes the active participation of all ethnic groups in decision making by the same mechanisms as used for gender and also follows a linguistically sensitive approach by the use of pictures, cartoons and diagrams.
Networking:	It promotes inter-village cooperation to solve resource use conflicts and creates linkages and networks between villages to facilitate mutual support and cooperation in both conservation and community development activities.
Holistic:	It focuses at the level of the entire ecosystem, including community livelihood systems, and addresses the key interactions between habitats, wildlife and people.
Interdisciplinary:	It involves group tasks by teams comprising land use planners, conservationists, agriculturists, gender specialists and district officials who work with villagers in an interdisciplinary manner.
Integrated:	It links conservation with development in an integrated manner through two-way agreements whereby villagers are compensated for curtailing certain resource use practices by government assistance with livelihood development activities.
Stepwise:	It follows an adaptive management approach with a logical sequence of discrete steps and provides ample time for both villagers and Protected Area staff to consider the outcomes and implications of each step in the process.
Iterative and flexible:	As villagers implement agreements and adopt new resource management and livelihood practices, conditions change, new problems emerge and additional lessons are learned requiring that certain steps are repeated in the light of the changed circumstances.

2.2.1: Forest and Land Use Monitoring and Mapping

The status of Watershed/NPA forests and land use will be monitored and assessed on an ongoing basis in order to:

- describe the status of the area's forest resources;
- provide a basis on which to delineate macro level zones, such as the 'totally protected zones' and 'controlled use zones'; and
- monitor the change over time of forest cover and land use for agriculture, and thus the effect of NPA management on these and other parameters.

This monitoring and mapping is achieved by (the parallel activities of) (i) review and mapping from aerial photos and (ii) field/forest level verification. The data collected and maps produced to date are not sufficiently accurate or diagnostic enough to be considered as "baseline data". Thus, a basic forest inventory and forest cover (and land use) mapping exercise needs to be re-done during SEMFOP-1. This will be conducted through two major tasks.

Task 1: A baseline forest inventory, requiring at least 10 months of field (forest) work by experienced and dedicated staff, such as from DOF's Forest Inventory and Planning Centre (FIPC), and villager team. This will be done over a period of 2 or 3 years.

Task 2: A forest cover and land use mapping exercise, using (a) aerial photos of 1998/99 at 1:50,000 and (b) recent satellite data, printed at 1:50,000, to provide up to date information for the aerial photo interpretation. Both the experience of the forest inventory team and of local staff and villages will be used to reach agreement on the appropriate forest categories and land use types that will be used (not necessarily those categories used at the national level), now and in the long term (in order to make valid comparisons of change of forest cover and land use over time).

These tasks will be undertaken by the Executive Secretariats FLUPAM Division and the GIS Unit in cooperation with FIPC, via a sub-contract specifying that the office work will be undertaken at the Nakai HQ, not in Vientiane. The resultant data will be added to the GIS database, maps produced, and will effectively become the baseline data.

This forest cover and land use mapping will be repeated every 5 years, using satellite photos (or aerial photos, if new flights are undertaken) as the basis for monitoring land use changes and as a means of checking that village land use agreements are being followed.

2.2.2: Socio-Economic Data Collection and Mapping

Concurrent with the development of a forest and land use baseline data set and maps, relatively detailed socio-economic data must be collected from all villages in and around the NPA, to be added to the baseline data set, to aid in planning LDC activities, and to facilitate GIS thematic mapping.

There are various methods and approaches to the collection of village level baseline socio-economic data, and the choice of these may often dictate the type, quantity and quality of the data collected. In this case, the data should be detailed but not to the detail required for village/family level development or land use planning. The process should also be as participatory as possible, although this requires time and innovation. Qualitative data is interesting and necessary, but it must be able to be quantified to be able to form part of the base line data. This process will include basic yet moderately accurate mapping of village administration and resource use boundaries, a task which requires special skills, to be transferred from the TA team. This Task will be undertaken with implementing partners, especially the District offices and their staff.

2.2.3: Floral Biodiversity Data – Collection and Mapping

Flora biodiversity is more difficult to assess than wildlife biodiversity (if only because of the vast number of species, and difficulties in identification), and thus there is very little concrete data currently available. A detailed understanding of the NT2 Watershed/NPA floral biodiversity in terms of species, numbers and distribution, will take a long time to develop, and can only come from recurrent field trips and compilation of data gathered, at both the village and forest level, over many years.

The NUOL Botany Department, assisted by an international/regional expert, will be contracted to undertake botanical and ecological surveys so that, by year 3 a first baseline data set will be established. This activity will be linked to the forest inventory and mapping exercise (7.7.1 above) and be compiled with the GIS database.

2.2.4: Fauna Biodiversity Data – Collation and Baseline Surveys

A more detailed understanding of wildlife biodiversity in terms of species, numbers and distribution, will also take considerable time to develop, if it is only to come from the recurrent field surveys and the compilation of data gathered by the VCMUs, and the army conservation monitoring units. However, a start must be made, and a baseline benchmark will be established in the first year of SEMFOP by the proposed biodiversity monitoring survey and baseline described later in Section 4.3.4.

A first step will be to compile, computerize and, where possible, map all the wildlife survey information collected to date, over the last 10 years or so. Analysis of this data will reveal any major gaps, and a two to three year survey program will be planned to gather sufficient data to establish an acceptable baseline database.

Specialist organizations will also be invited to assist and undertake such baseline studies, under the auspices of the WMPA Executive Secretariat.

2.2.5: Zonation and Regulations Development

It is intended that the entire Watershed will be divided into either CUZ or TPZ, giving a macro-level zonation for the NPA. Initially, all areas outside village customary use areas will be categorized as TPZ, and all village use areas as CUZ, with some possible excisions in areas of high biodiversity value such as salt-licks, but only with the agreement of the village concerned. Initially, all CUZ/TPZ zonation will be provisional and will be modified and refined according to the lessons learned during a trial period of testing under FLUPAM of around 3 years.

2.2.5.1: Preliminary Macro-level Zonation

The FLUPAM Division will delineate provisional controlled use zones (CUZ) and totally protected zones (TPZ) based on:

- areas of priority flora and fauna biodiversity importance;
- village and family customary land use and socio-economic data;
- forest inventory, forest cover and land use maps;
- discussions with and consideration of the concerns of all stakeholders.

Within this framework, other micro-level zones will be further delineated. Parallel to the forest and land use zonation, the drafting of regulations relevant to the CUZ and other specific zonations delineated within them, will be conducted. These regulations thus give effect to the rationale for the 'zonation'. These regulations will include:

- protected and managed wildlife species, and management of the same;
- forest and land use zones, permissible practices and management agreements;
- NTFP and forest products management and extraction;
- rights and responsibilities of stakeholders to implement the regulations; and
- penalties for infringement and the treatment of offenders.

These zonations and the description of their management and the rules and regulations applying to them will constitute the first 'NPA forest and land use management Plan'. It will provide the framework within which the Executive Secretariat will work, and within which villagers will seek to develop their livelihoods and participate in the management of the NPA.

2.2.5.2: Stakeholder Consultation on Zonation

The various NT2 Watershed/NPA stakeholders will then be presented with;

- a compilation of the baseline socio-economic, biodiversity and forest cover and land use data;
- a clear map of the proposed controlled use zones, totally protected zones and other special management zones within these; and
- the proposed regulations relating to each of the zonations.

for their review and discussion. The zonations, and the proposed regulations will also be put on public view in all affected villages and in the Executive Secretariats headquarters library and display room.

Public comments on this zonation and their regulations will be elicited and received, and the issue discussed at the annual BoD meeting. Assuming consensus is found, the zonations and land use plans and regulations will be promulgated as legal zones and regulations, with the proviso that amendments to the zonation or regulations can be proposed by any party for consideration at each annual BoD meeting. In addition, the NPA forest and land use management Plan will be fully reviewed every 5 years, in parallel with the recurrent assessment of forest cover and land use, and re-collection of socio-economic data.

2.2.6: Family/Village Level Data Collection and Assessment

In cooperation with district authorities, family level socio-economic data will be collected in order to assist village development planning and village level FLUPAM, and also to contribute to the baseline data set for measuring project influence over time.

The first step will be to review data currently collected, although this is likely to be inadequate to serve as a baseline. On this assumption, a plan will be made to progressively conduct Participatory Village Assessments (PVA) in all NPA and peripheral impact zone villages. PVA requires the project team reside in each village for at least 5 days to collect both qualitative and quantitative data from all. Employment of group participatory investigations and analysis techniques will be used for some issues, while family level interviews will be standard. Field and forest walks will also be undertaken in order to develop base maps of the village and surrounding agricultural land and forest lands, including hill and stream names, and village boundaries. The resultant data, information and maps will be progressively be added to the WMPA database

2.2.7: Schedule of FLUPAM Activities

To date, the protected area management team, assisted by IUCN, and then the DUDCP have undertaken land and forest allocation in a number of villages. However, these activities probably do not approach the quality required by Executive Secretariat (SEMFOP-1) for FLUPAM and PICAD planning. They will however, have provided good experience on which staff and villagers can more effectively participate in more realistic forest and land use planning in the future.

Thus, to ensure consistency and long term understanding of all stakeholders, these villages will have to go through another cycle of forest and land use planning, allocation and Management (FLUPAM), linked to integrated conservation and development planning. Care must be taken to ensure the process is participatory, does not infringe on customary rights, and above all realistic and does not expose villagers to unworkable land use plans or plans that would lead to increased poverty or hunger.

Experience to date suggests that FLUPAM under a PICAD approach will take at least 1 month per village and usually need to be done in the dry season to allow supporting agricultural livelihood activities to be implemented without a delay of a whole year as would be the case if plans were not in place before the onset of the rains. In addition, it must not coincide with any major farming activities, or important festivals. Thus, the period in which these activities can be undertaken is restricted to 6 months from December to May. This means that a team of about 15 staff can only do 5 or 6 villages per year. A tentative schedule for initiating FLUPAM planning exercises in villages is given in Table 2.3.

Table 2. 3: Indicative schedule for initiating village FLUPAM activities

Area	No. villages	Year of the 1 st SEMFOP						
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
NPA Villages :	31							
1: Nakai District	31							
Khet Navang zone	9	5	0	4	0	0	0	0
Khet Makfeuung zone	9	0	5	4	0	0	0	0
Khet Dteung zone	13	0	5	5	3	0	0	0
PIZ villages:	54							
2: Khamkeut District	38	0	3	3	6	7	11	8
3: Gnomalart Dist.	11	0	2	0	5	4	0	0
4: Boulapha District	4	0	1	0	0	3	0	0
5: Nakai	1	0	0	0	1	0	0	0
<i>Total</i>		5	16	16	15	17	11	8

- Notes:**
- 1: Nakai villages will be undertaken by a Nakai/WMPA team;
 - 2: Khamkerd villages will be undertaken by another team for Khamkerd/WMPA District;
 - 3: Gnomalart and Boulapha villages will be undertaken by a separate team, with WMPA assistance; and

A number of issues regarding village level FLUPAM implementation should be noted, as follows.

- i) the exercises should be conducted in a group or cluster of villages;
 - ii) FLUPAM planning and implementation must take full account of ethnic differences both within villages and between villages in the cluster to ensure full inclusion, eliminate any ethnic dominance and to cater for any special cultural needs or disadvantages;
 - iii) the exercise could be undertaken in a few steps, stretching over the whole dry season for any particular village cluster, if considered desirable;
 - iv) FLUPAM is an on-going process which must be reviewed and modified over time. Thus, the schedule shown in Table 2.3 is actually the schedule for the 1st phase of the process. Monitoring is required annually, while a re-iteration (of the forest and land use zonations and agreements) is preferable every 5 years or so.
- i) Forest resource allocation will be based on developing sustainable forest product harvesting in specified CUZ forests, and on allocating village control over these resources. This is based on the assumption that ownership of the resource will result in responsible management. It is assumed that timber will be harvested for dwellings only, while commercial NTFPs will be harvested according to negotiated and agreed-upon regimes.

PICAD activities are normally planned during the first stage of FLUPAM, with implementation beginning soon thereafter. Because of the key role it plays in establishing trust, developing a partnership and building community capacity, FLUPAM is necessarily a slow and careful process and it will take some years before it can be completed in all villages (See Table 2.3 in Section 2.2.7). In order to ensure a rapid and equitable response to villager problems and to demonstrate, at an early stage, WMPA's commitment to their needs, a sum of \$2,500 per village has been earmarked for development activities in all NPA villages in year 1 of SEMFOP.

These funds will be used to fulfill any outstanding commitments promised under either the JDSF or DUDCP projects or to meet any urgent needs as perceived by the villagers themselves. In order to ensure that these development activities are compatible with conservation objectives, they will emphasise community-centred development such as education, health, village revolving funds, etc. and a basket of appropriate activities will be assembled from which they can take decisions and make their selections. In addition, CIA techniques (See Section 2.4.1.1) will be used to ensure that the activities proposed will have positive outcomes for conservation.

This program will be implemented by the LDC Division and will act as an initial entry point for SEMFOP while also demonstrating WMPA's good faith and commitment to villager needs. It will provide the opportunity for:

- Village orientations to SEMFOP and an explanation of planned activities, expected benefits and the respective roles and responsibilities of both villagers and the WMPA.
- Providing continuity and maintaining the momentum generated by the initial round of public consultations already conducted throughout the NPA (See Section 2.6.7).
- Explanations on the schedule of proposed activities and when each villages will participate in FLUPAM and other programs.
- Establishing and actively engaging Village Integrated Conservation and Development committees (See Section 6.4.3) in preparation for future planned activities.
- Activating and capitalizing village development funds.

The program will be implemented by the LDC Division with the assistance of the FLUPAM and PPAM Divisions for orientation on their future activities.

2.3: PARTICIPATORY BIODIVERSITY MANAGEMENT AND MONITORING

Participatory Protected Area Management (PPAM) recognizes villagers as NPA management partners. The approach gives all stakeholders an integral role in the planning and management of Protected Areas, the term stakeholders usually referring to:

- a) Villages living in and around the Protected Area;
- c) Government agencies such as DAFO, PAFO, and District and Provincial Authorities; and,
- d) the Military and the Constabulary.

The exact nature or system of 'participation' is guided by the respective rights and responsibilities of these stakeholders, which may depend on various factors, such as:

- the stakeholders location (w.r.t the NPA);
- the nature and history of their interest in the NPA;
- their use of, or dependence on resources in the NPA; and
- their administrative, customary or professional duties and rights as recognized or directed by the government.

Villagers as Primary Stakeholders

In most cases, PPAM reflects and attempts to systemize the Governments policy of giving villagers a focal role in the definition of boundaries and zones, in the development of rules and regulations guiding resource utilization and management, and responsibilities to implement such regulations and management procedures. It devolves both responsibilities and privileges to the local level. It is consistent with the Government policy of transferring (or allocating) rights and responsibilities regarding land and forest use and management to local villagers, commonly referred to as Land/Forest Allocation.

The prominent role for villagers in NPAs is both necessary and logical for various reasons, including :

- i) Villagers have, usually for many generations, been born in and sought a living from the land and forests, and thus management practices that are developed by them are likely to be appropriate and realistic. If they are meaningful to villagers then they will support them, and the NPA 'function' is likely to be sustainable.
- ii) NPAs are national reserves and thus part of the national estate. Villagers are that segment of this nation state closest to this particular national resource. Thus, they logically must have a key responsibility in its management.
- iii) Village boundaries, both customary and those recognized by the Government, often overlap into the NPA. In many cases villages were given areas/boundaries to protect in times of war, or for the general protection of society, and now these boundaries can also be used and patrolled to protect national biodiversity assets.

In the long term, PPAM hopes to instill in villagers a sense of pride in and co-ownership of the Protected Area, along with a real understanding of and support for biodiversity conservation. Full, official recognition of village (stakeholder) tenure rights and responsibilities would appear to be an important pre-condition for PPAM. The role of Government staff would then shift from a focus on resource protection to that of monitoring of PPAM, helping resolve disputes between villages and especially upholding village rights against outside incursions. PPAM seeks to develop appropriate links between the Government and village communities.

There are usually large numbers of villages and other stakeholders with diverse interests in the NPA and its resources. Additionally, there is usually a complex, if not unknown, biodiversity resource base. Considerable time and effort is required to develop participatory management procedures and practices,

and link them to resource assessment and protection, plus the necessary development needs of the rural populace.

It is useful to recognize and define three(3) main phases in the development and implementation of participatory protected area management. It is important to note that these phases are integrated with run in parallel to FLUPAM and LDC and many of the steps and activities are the same for each.

Phase 1: participatory planning and negotiation phase;

In this first Phase, staff and villagers work together to collect and review information on (i) land and forest resource use by villagers, and (ii) the biodiversity status of the resource in the village area. Problems could be identified and solutions suggested (as such, this phase is a type of PRA). At the same time, more accurate definition of village and NPA boundaries is reviewed and mapped and, if possible, zones are *tentatively* identified in the NPA.

Rules and regulations are then developed to not only guide resource utilization, entry and protection, but also to allocate responsibilities and privileges to villagers. Ideally, this planning phase could result in a strategy/plan to develop both (i) agricultural productivity, and (ii) the sustainable utilization of forest resources such as NTFPs and wood products. The villages' role in patrolling or enforcement must be clarified, while incentives and community development initiatives could also be reviewed at this stage.

Phase 2: Collation of data, maps, agreements etc.

This Phase is primarily be the responsibility of WMPA and District Authority staff, who must collate and organize information, documents and agreements (preferably computerization of this information), getting all appropriate signatures. Maps (important but problematic) must be drafted to show relevant boundaries, zones etc., All the documents and maps must then be copied and (i) filed in an organized manner, and then (i) distributed to relevant agencies and stakeholders/villagers.

Returning all information and maps to village leaders is particularly important. If possible, the WMPA will make a small 'management manual' for each village, containing agreements, results of surveys, regulations, maps etc, while large maps would be displayed on village notice boards.

Phase 3: Implementation of participatory management of the NPA, including:

- i) *sustainable forest product utilisation and management (wood, NTFPs etc);*
- ii) implementation of forest use rules and regulations;
- iii) joint monitoring, patrolling and enforcement;
- iv) implementation of cooperative activities through the WCDN network
- v) implementation of extension activities; and
- vi modifications to rules, regulations, boundaries etc, as required.

2.3.1: Methodology Overview

The establishment of a regular and effective biodiversity monitoring and protection program is a high priority of the SEMFOP-1. Activities started during the NTEP/IUCN project and carried on by the DUDCP, and the emergency activities funded by NTEC and the PAFO and local security agencies will be reviewed, and good aspects of these activities continued and strengthened.

The main methods to be employed in the on-going biodiversity monitoring management and protection will include;

- joint monitoring whereby staff, villagers and the military all participate in forest level wildlife surveys and monitoring (of impacts etc), the respective role of each dependant on the area or zone of concern. The gathering of information during these exercises must be standardized, and information collated in the GIS data base;

- gates will be established (or continued) at key transit points to check persons and goods, usually manned by the constabulary, assisted at times by the military
- “mobile” checkpoints set up by staff (military, police, villagers) to be conducted at posts and gates;
- regular data collection by the VCMU regarding wildlife usage at the village level.

2.3.2: Implementation Partners

2.3.2.1: Village Institutions

Monitoring of biodiversity resources near villages will be undertaken by joint teams of village militia and village security staff. The transformation of village militia into Village Conservation Management Units has already been initiated, and will be continued and expanded. As a general rule 3 to 6 villagers may be part of this team, but only about 3 would go out on patrols at any one time, sometimes accompanied by WMPA staff or military partners. On days patrolling, dsa’s of 25,000 kip/day would be paid. The teams will also be issued with shared field equipment such as tents, binoculars, cameras etc, and sets of personal field equipment such a sleeping bag, shoes, backpacks etc.

2.3.2.2: District and Provincial Military.

These agencies have the mandate and ability not only to monitor resource use violations but to take action to enforce laws and regulations. The need for official inclusion of the military as implementing partners is due to;

- a) the large area of forests which are not controlled by, or contained within the boundaries, of villages who thus have insufficient means to patrol the areas alone; and
- b) the extent and nature of the poaching problem (in some cases, well armed poachers), which is beyond the capacity of villages alone to control.

Patrolling in the larger TPZ areas, far from village boundaries, will be primarily the responsibility of military units, assisted by village militia as required or feasible. They will be designated as Military Conservation Monitoring Units – MCMU's. The only problem with the military being engaged as partners in this activity is the tendency for them to change or rotate staff, and the young age of some new recruits. Nonetheless, the approach and coverage if the military is very consistent with the need to protect a Protected Area.

Both village and military patrolling groups (VCMUs and MCMUs) will receive training in technical subjects related to wildlife and plant biodiversity, and the systematic recording of observations. Thus, these teams will not only patrol but also function as biodiversity monitoring groups, providing regular reports which will be used to develop the ecological data base. They will also act as guides for biodiversity research groups which are supported by implementing partners or other organisations.

2.3.2.3: District/Provincial Police and Provincial Border Police.

Police are primarily concerned with personnel and goods security (rather than land and forest protection) and thus they will be the main implementing agency monitoring resource extraction at NPA entry and exit points, and in the ad-hoc establishment of mobile checkpoints.

2.3.3: Patrolling Infrastructure

A network of permanent field stations, patrolling posts and gates will be developed by the WMPA to facilitate biodiversity monitoring, management and protection, and to facilitate research. While the configuration of this network will require detailed review, discussions and planning with local implementing partners, an indicative configuration of the network is presented in Table 7.13.

In regard to the Posts and Gates, it is not considered that such a network of 'buildings' will automatically result in effective biodiversity protection – far from it. By themselves such gates and posts may merely provide a convenient location to be avoided by parties intent on illegal biodiversity extraction. However, it

is necessary to provide physical shelters and a locus for patrolling and monitoring staff, and for mobile gates, in what is a difficult physical environment.

Table 2. 4: Indicative Configuration of Biodiversity Monitoring and Protection Infrastructure

Zone	Location	Type of station, post etc,	Type of activity
<u>Nakai District</u>			
1: Nam Pheo	1.1: above Ban Kunaie	Post near village	patrolling, border post
2: Nam Noy	2.1 Ban Dteung	Zone office	coord & patrolling
	2.2 Ban Maka	Post in village house	border post, patrolling
	2.3: Nam Noy headwaters	Forest hut,	Patrolling, mobile checkpoints
3: Nam Theun	B. Makfeuung	zone office	coord & patrolling
	B. Vangchang	village house (need boat)	patrolling & post
	Nam Theun headwaters	Forest hut, mobile checkpoint	Patrolling
4: Nam Mon	B. Navang	zone office	coord & patrolling
5: Nam Xot	B. Thameuang	Village house	coord & patrolling
	B. Thameuang	road gate post	24 hr gatekeepers
	Huay Kanin	Forest hut	patrolling
	Nam Xot headwaters	Forest hut	Patrolling
6: Nam On and Nam Yang		No permanent post	Patrolling
7: River/Reservoir	Gang Meo/Nam Theun	Gate post	gatekeeping and river reservoir patrols
	Talang	Gate post	gatekeeping, land and water patrols
	Nam Nian	Gate post	gatekeeping, land and water patrols
8: PhouHinPhou corridor	Ban Donkeo	No permanent post	patrolling
	Ban Nabon	No permanent post	patrolling
<u>Khamkerd District</u>			
9: Downstream corridor	Ban Phamuang	Village house	patrolling
10:Downstream corridor	Ban Khamoune/Dtarn	Village house	patrolling
11:western buffer/road	Ban Nam Kata	Gate post	gatekeeping
12: road into NPA	Ban PhuPieng	Gate post	gatekeeping, patrolling
13: northwestern buffer	B. Nameuang (upper Kata)	Village house	
<u>Boualapha District</u>			
14: HinNamNor corridor	Ban Napha	Village house	Patrolling, and mobile checkpoints
15: HinNamNor corridor	Ban Jalor	international gate	
16: Upper Nam On	access from B. Napha	No permanent post	patrolling
<u>Gnommarlart District</u>			
17: southeast PIZ	Ban Khilek	Village house	patrolling

2.3.4: Patrolling Equipment

Communications Equipment:

The current radio communications systems (of the Government, army, and the DUDPC) will be reviewed to ascertain if it is the most appropriate system to be adopted and integrated into the WMPA. The systems required must facilitate at least:

- voice communications from the main posts and stations to Nakai,;
- voice communication from mobile teams or small posts to stations or Nakai.

A plan will be made and agreed upon as to how to improve and expand this system for the shared use with the WMPA, or, if it is not appropriate, to design a better and more useful system.

Field Equipment:

Purchase of field equipment to be shared (and keep on the durables inventory) will include tents, binoculars, cameras, camera traps, gps units and the like. Some items of field equipment will be issued directly and permanently to staff (core and seconded) including durable items such as sleeping bags, backpacks, cooking tools, compass, and less durable items such as shoes, torches, etc.

Transportation:

Motorbikes and boats will be used in certain areas to assist patrolling. Off-road, 4-stroke motorbikes are quite effective, but they are also heavy. Some staff or areas may prefer smaller, non-offroad bikes because they can be lifted over obstacles. The exact type of boats required will be decided in the future.

2.3.5: Monitoring and Patrolling

Monitoring and patrolling will be conducted by the VCMUs comprising joint teams of villagers, military and WMPA staff, sometimes termed 'joint patrolling'. The tasks required to develop and implement this program will include;

- Task 1: Review and assess the activities and success of Village Conservation Monitoring Units already formed by the NTSEP/ICN project and then followed up by the DUDCP project.
- Task 2: Review the implementation (and effectiveness) of those official Government documents regarding these VCMUs, including;
 - a) "Village Conservation Monitoring Unit Guidelines" Issued By the Nakai District Agriculture and Forest Office in October 1998;
 - b) "Additional Recommendations" issued by Nakai DAFO, 15 December 1998; and
 - c) any other documents,
- Task 3: Conduct a workshop – of at least 3 days – including all stakeholders to discuss these reviews, the recommended network of posts and teams (below) and to develop a plan for joint monitoring and patrolling.
- Task 4: Finalize the Joint Monitoring and Patrolling Plan. The likely plan will include VCMUs established in all villages, military CMU's established at the District level, and border police and other police included in the program. The teams would be allocated areas on work, similar to the indicative plan presented in Table 2.5 below.

The establishment of this joint monitoring and patrolling network will take several, if not many years. Thus the PPAM Division and its partners must decide which areas to concentrate on in the early years.

- Task 5: Ensure that the village component of the joint monitoring arrangement are included in the FLUPAM and PICAD planning exercises
- Task 6: Provide training, as and when required, to partners in the LMP. Part of this training will focus on improving or developing monitoring and patrolling plans and techniques, and the standardized recording of observations.
- Task 7: Ensure teams have adequate and appropriate equipment. Ensure teams have appropriate maps. Ensure smooth payment of dsa or rice rations to teams, as agreed.
- Task 8: Ensure the compilation of all monitoring forms and reports and make sure these are returned to the WMPA PPAM division office as described in 'Task 9' below..
- Task 9: Develop a routine scheme for forwarding completed monitoring forms and reports through the coordination system described in Section 6.4.3, as follows: (i) VCMU to VICAD, (ii) VICAD to sub-district, (iii) sub-district to district for collection by PPAM Division during the monthly WMPA partner meetings.
- Task 10: With the assistance of the WMPA's GIS and Database Unit, develop a dedicated GIS/attribute data storage system for conservation monitoring data.

Table 2.5: Indicative plan for participants in joint monitoring and patrolling

Area	Location	VCMU's	MCMU's	Police
Nakai District				
1: Nam On – lower		B. Done and B. KhonKean	3 Nakai staff	
Nam On – upper	(see no. 17)	Gnomalart/Boualapha	3 Prov staff ?	
2: Nam Yang		(as required)	3 Nakai/Prov staff	
3: Nam Pheo	B. Kunae	Assist		Border police
	Forest patrol	5 villages	3 Nakai staff	
4: Nam Noy	2.1 Ban Dteung	9 villages	3 Nakai staff	
	2.2 Ban Maka and Nam Noy headwaters	1 village (3 hamlets)	3 Nakai staff	Border police
5: Nam Theun	B. Makfeuung	9 villages	3 Nakai/Prov staff	
	B. Vangchang, Nam Theun headwaters	3 villages	3 Nakai/Prov staff	
6: Nam Mon	B. Navang	6 villages	3 Nakai/Prov staff	
	Upper Nam Mon	(as required)	3 Nakai/Prov staff	
7: Nam Xot	B. Thameuang	5 villages	3 Nakai/Prov staff	
	Nam Xot headwaters	(as required, Atel families)	3 Nakai/Prov staff	
8. Rout to Luk 20	Ban Talang	B. Talang		
	Ban Nam Nian	B. Nam Nian		
8: NNT-PHP corridor	Ban Donkeo	?		
	Ban Nabon	?		
Khamkerd District				
9: D'stream corridor	Ban Phamuang	Village house	patrolling	
10: D' stream corridor	Ban Khamoune/Dtarn	Village house	Patrolling	
11: western buffer/road	Ban Nam Kata	Gate post	gatekeeping	
12: road into NPA	Ban PhuPieng	Gate post	gatekeeping, patrolling	
13: northwestern buffer	B. Nameuang (upper Kata)	Village house		
Boualapha District				
14: NNT-PHP corridor	Ban Napha	?	?	
	Ban Jalor	?	?	
16: Upper Nam On	(see no. 1 above)			
Gnomalart District				
17: Road No. 12	Ban Khilek	13 villages		

2.3.6: Posts and Gates

Checkpoints and gates are, or will be manned by either border police or District police.. These staff will be fully involved in the review and planning of Biodiversity monitoring and patrolling to date and the planning for the program to be funded and managed by the WMPA.

Checkpoints and gates will be of four main types

1. border checks, where visitors and goods get stamped, and visitors and exports get stamped out [usually manned by border police];
2. boat dock access checkpoint where all reservoir ferry traffic (people and goods) will be subject to checks
3. internal checkpoints along roads to check to traffic of commodities [usually manned by District or provincial police];

4. mobile (temporary) checkpoints, established by combined military, police or other officers in any location, usually based on information re the proposed transport of illicit goods or some other illegal activity.

2.3.7: Control of Transborder Poaching and Wildlife Trade.

While the depletion of wildlife and some NTFPs in some areas of the NT2 Watershed/NPA is due to over extraction by residents, in the northern, eastern and southern areas (where some of the most globally threatened wildlife lives, such as Saola) depletion of biodiversity is by transborder poachers. Both survey reports and anecdotal evidence suggests that intense transborder poaching is the principal threat to the biological integrity of the NT2 Watershed/NPA.

This problem will be resolved, not only to stop depletion of biodiversity, but also because transborder poaching hinders efforts by NPA management to bring the hunting and snaring practices of Lao residents in line with NPA regulations. For example, Lao villagers may be understandably reluctant to follow rules against snaring if commercial snaring by foreign poachers continues unchecked within a few kilometers of their villages. It is unfair to ask concessions and sacrifices of Lao residents of the NPA without applying energy and resources towards protection of wildlife from illegal incursions into the protected area.

Transborder incursion is also a local development problem, as upper catchment villagers are afraid to travel very far into their villages' own traditional use areas for fear of encountering armed incursionists. This reduces their access to subsistence and cash income from forest resources, at a time when some villages are already quite impoverished. Some commercially valuable NTFPs, such as rattan, have already been depleted in part by crossborder pressure. There are also occasional thefts of livestock (including water buffalo) by transborder poachers.

Furthermore, the poaching from NNT of commercially valuable wildlife, luxury woods, rattan and timber represents a loss to the Lao national economy. A strategy for dealing with the transborder issues are covered in more detail in Section 4.5.1.2. The major elements of the strategy include the following.

Transborder dialogue. Maintaining a proactive dialogue with Government and related agencies and authorities in Vietnam in order to share information and experience and develop appropriate control measures.

Improving trade links with Nakai. Improve trading links between NPA villages and Nakai District Center to reduce their reliance on transborder traders who may trade in or barter goods for wildlife and are also often poachers.

Improving border post operation. Improvements will be made to the operation and effectiveness of the border post at (near) Ban Maka to help control wildlife and NTFP trade and the activities of crossborder visitors, and also to provide a base for patrolling and enforcement teams.

Improved patrolling. Control of poaching by outsiders will require a strong enforcement and patrolling capacity as outsiders are not susceptible to PICAD, not susceptible to behavior modification through the provision of rural development benefits.

Possible closure of the border crossing in the NPA. A more drastic measure would be the closure of the border crossing to all travelers. Obviously staff would be maintained but would provide patrolling and enforcement functions rather than issuing border passes. This option should only be considered following thorough consideration, and only after essential household supplies for villagers can be guaranteed via the Nakai market.

Establishing Watershed Village Conservation and Development Networks. This strategy aims to link and coordinate villages along mini-watershed boundaries into networks to assist each other in both conservation and development initiatives. It is anticipated that the WCDNs will give villages a greater combined strength in which individually they currently lack. The areas of responsibility of existing VCMUs, would be expanded to cover the entire sub-watershed, and the patrol and enforcement units would be re-organised along the same watershed lines and linked more closely with the network. Through this coordinated system of monitoring, patrolling and enforcement, covering the entire NPA, the identification, control and enforcement of cross-border poaching will be strengthened.

2.3.8: Biodiversity Research

2.3.7.1: WMPA Collaborative Research Programs

It is extremely likely that international organisations with biodiversity expertise and their own funds will seek long term collaborative programs with the WMPA. With or without this scenario, the WMPA will undertake relatively modest biodiversity research, by the conduct of the following tasks;

- Task 1: Establish a biodiversity database - starting with collation and organisation of all previously collected data.
- Task 2: In the 1st year of implementation conduct a biodiversity baseline survey.
- Task 3: Ensure that a basic understanding of wildlife species and the survey of the same is included in joint monitoring and patrolling training and implementation.
- Task 4: Ensure all the data gathered by JMP teams – the VCMUs, the MCMUs and Police Posts - are continually added to the database.
- Task 5: WMPA staff and Wildlife ecology TA plan a simple wildlife biodiversity research program, probably focussing on key species.
- Task 6: Joint monitoring teams undertake tasks required by the wildlife ecology research program.

Invitations will be offered to regional and international organisations (and individuals) with expertise in biodiversity and ecological research, and the funds to support such research apply to establish long term cooperative programs under the umbrella of the WMPA, closely linked to (integrated with) WMPA activities. Thus, the WMPA will activity solicit such participation from interested and appropriate organisations. The WMPA will offer such organisations the following services and facilities:

- Trained and knowledgeable villagers and military staff to act as guides and forest assistants.
- A biodiversity database, which the collaborating organization or project would be expected to contribute to.
- Use of the transport facilities of the WMPA, although the collaborating agency would be expected to pay for fuel, and operation and maintenance.
- Use of offices, and in the field, use of field posts and forest huts etc.

Organizations with faunal biodiversity expertise will be expected to assist in two major areas:

- a) research into the occurrence and ecology of endangered species, into the dynamics and resolution of species and human contact and conflict, and into management strategies; and
- b) research into those species commonly consumed by villagers, and the development of sustainable off take levels and other management parameters

Most of this work would be conducted with the already established monitoring and patrolling units, and WMPA staff. It would be preferable if some of this work was initiated in the first year of SEMFOP, that is pre Financial Close, so as to provide some background to the reservoir fauna research and development of mitigation measures, for elephants for example.

Organizations or individuals with floral biodiversity expertise will be expected to assist in;

- a) research and surveys to catalogue all the plant species occurring in the NPA;
- b) research into the ecology of key species, and to identify if any species are endangered;
- c) research to fully catalogue and describe the use of flora by villagers, and to contribute to the development of sustainable off take levels and other management parameters;
- d) research to identify any species whose genetic properties have commercial value, and thus should be copyrighted for commercial gain.

2.3.7.2: Student Thesis Field Work

The WMPA will provide funding support to up to 6 students per year, usually from NUOL's Faculty of Forestry, to undertake their field studies in the NT2 Watershed/NPA area. The results of such studies would either contribute to the NT2 WMPA database or provide guidance for the implementation of activities. Such a program would also contribute to the national development of human resources in the field of NRM and NPA management .

2.3.7.3: Reservoir Biodiversity Monitoring and Research

In conjunction with the Reservoir Management Authority, reservoir biodiversity research and mitigation activities may be conducted, prior to, during and after reservoir-filling. The WMPA will only conduct research and mitigation activities in the reservoir area for high priority, key species, possibly such as the White Winged Duck. Other activities in the reservoir area may be introduced if clear needs and priorities arise. Such programs might include:

- wildlife and biota inventories;
- study of the ecology of specific key species of flora and fauna;
- monitoring key species populations, and their habitats;
- programs to analyse the new ecosystem and the projected impact of the reservoir on key species;
- a program to manage elephant populations.

2.4: VILLAGE AND LIVELIHOOD DEVELOPMENT

The Livelihood Development for Conservation (LDC) program will follow a balanced approach that uses livelihood development activities to enhance conservation in the management of the NT2 Watershed/NPA. It strives to seek an appropriate equilibrium between conservation and development, treats both aspects proactively, and ensures that they are not only compatible but also complimentary. The aim of integrating conservation and development is to ensure that: (a) development has positive outcomes for conservation, and (b) conservation has positive outcomes for development.

The objective is not just support to development per se, but to improve village livelihoods in order to promote conservation and NPA management. Rather than providing development assistance and hoping it will benefit conservation, the approach emphasizes the careful provision of development assistance for:

- i) villages (or other stakeholders) participating in NPA management
- ii) poor villagers or groups who depend on or extract significant NPA resources;
- iii) providing alternatives to traditional activities which are detrimental to the NPA;
- iv) providing new livelihood activities identified by villagers, which have positive impacts on biodiversity conservation or NPA management.

Why integrate conservation with development ?

- Because stakeholder villages are living closely with and dependant on the natural environment, sustainable development in and around an NPA requires a balance with, and the management of natural resources and the environment. For example, water for irrigation and drinking depends on good Watershed/NPA management and NTFP production from natural forests depends on effective forest management.

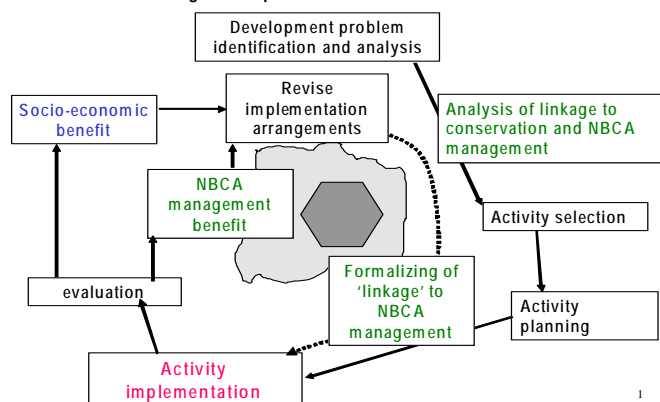
Why integrate development with conservation ?

- Villagers rely on natural resources for food and income. By developing village livelihoods we hope to either (i) reduce reliance on natural resources, or (ii) ensure that natural resource use is sustainable. Indeed, the NT2 Watershed/NPA will have legally defined “controlled use zones” where sustainable development is encouraged, and linked to (integrated with) conservation and NT2 Watershed/NPA management objectives. In addition, village development will require and foster improved village organization and capacity. Such local level organisations are absolutely vital if villagers are to effectively participate in the co-management of the NT2 Watershed/NPA and thus ensure the long terms success of the NPA as a Protected Area.

2.4.1: Planning and Implementing Livelihood Development Activities

The LDC approach comprises a number of steps followed, in sequence, in a participatory manner with villages, to identify appropriate development activities (Figure 6.2). The process runs in parallel with FLUPAM and PPAM process (See previous Table 2.2) starts with village orientation to explain the purpose of LDC and villages role and benefits, within the context of conservation and sustainable development. It then moves to identify and prioritize the major problems facing the community, followed by an analysis of their root causes and how they impact on the natural environment (if any).

Figure 6.2: simplified illustration of the process of planning, implementing and evaluating development activities



Next, development options are reviewed and potential activities selected. Activity linkage to NPA management objectives should be clarified. Once implemented, both the activities benefit to the community and their impact on NPA management should be jointly evaluated with villages. The evaluation may lead to modifications of the activities or identification of new activities which are then implemented in further cycles of the process.

Thus, two important LDC planning tasks include;

- (i) The identification and selection of development options, and then development activities; and
- (ii) Identifying key linkages of each activity with conservation and then planning how to integrate these development activities with conservation and NPA management

The aim of (ii) above is to ensure that development has positive outcomes for conservation, and conservation has positive outcomes for development. In many cases, development activities that enhance current practices will benefit biodiversity conservation. For example improved fallow management that allows faster regeneration will provide valuable habitats more quickly. There are various direct and indirect ways in which any development activity can be linked to conservation, and thus have the potential to be integrated with NPA management.

I) Direct linkage by production of direct substitutes: Activities can produce direct substitutes for resources otherwise extracted from the NT2 Watershed/NPA, such as:

- domesticated animals as a substitute for wildlife;
- planted NTFPs and timber as a substitute for NTFPs and timber extraction.

The goal here is not complete replacement of the resource, but a level of substitution sufficient to take pressure off the resource so that it can continue to be used and managed in a more sustainable manner.

II) Indirect linkages – production of alternatives: Some activities can provide produce or livelihood alternatives to dependence on NPA resources. The aim is to resolve the reason for excessive resource extraction or dependency – often a lack of rice, food or income. Thus, if the development activity is successful, it has the potential to take the pressure off NPA resources. Examples of such ‘alternative’ activities include:

- paddy rice (and food) production, as an alternative to natural resource extraction for food or more usually for bartering for rice or sale as cash, to buy rice;
- income generating activities, to provide cash for rice purchase.

III) Indirect linkages – employment alternatives: Extractive activities that degrade biodiversity values such as hunting and logging tend to be quite seasonal, occurring when villagers have time

on their hands. By providing alternative, productive employment opportunities at these times destructive activities in the NPA can be reduced. Examples of such 'alternative' employment include;

- handcraft production and marketing
- income generating activities, such as eco- tour guides, etc.

IV) Bio-ecological linkages: PICAD linkages can be found in activities whose success depends on an intact and productive ecosystem, and where the maintenance of such productivity depends on good NPA management by local stakeholders. Examples include;

- irrigation, whose watershed is the NPA, and intact forest cover is important;
- community fisheries programs where fish catches are sustained at high levels through appropriate village management regulations and agreements.

V) Bio-economic linkages: Strong linkages can also be found in activities which promote a villager-perception of the value of forests and natural habitats, whereby villagers receive an economic return from intact and productive ecosystems. Examples include;

- eco-tourism, which depends on intact natural environments and high biodiversity values; and
- NTFP types which depend on intact (or sustainably modified) natural ecosystems.

VI) Contextual or 'social' linkages: The proactive support to development by NPA management demonstrates concern for villager livelihood and poverty alleviation. Stakeholders then, will be more willing to consider conservation issues. Similarly, activities which require community cooperation and organization can also increase community awareness of environmental and conservation issues.

VII) 'Carrot and stick' linkages - provision of incentives: Whereby NPA management may propose to villagers "...we will help you (by providing material incentives) if you agree to assist in NPA management and conservation". However, such an approach may lead villagers to focus on the short term material benefits of co-management. It also depends on NPA management being able to provide incentives. If these incentives cease, so may the villagers support. This approach does not consider villagers as equal partners, and is the least preferred.

These LDC methods, tools and criteria will also be applied to the provision of infrastructure and services improvements in the health and education sectors.

2.4.1.1: Conservation and Social Impact Analysis (CIA)

Conservation and Social Impact Analysis (CIA) is a simple assessment technique that will be used with villagers during LDC participatory planning exercises to analyze conservation and development linkages and assess the impact of proposed livelihood development activities on conservation. By this means, CIA helps to ensure that development contributes positively to conservation goals.

A number of other criteria which are likely to determine the success or otherwise of livelihood development activities are also considered during the selection process. Thus, other factors being equal, priority will normally be given to activities which:

- 'build-on' rather than transform traditional livelihood systems,
- are attractive to and target those groups most reliant on hunting and unsustainable forest extraction,
- have inherent capacity building and educational components,
- encourage local cooperation and promote community organization.

These LDC methods, tools and criteria will also be applied to the provision of infrastructure and services improvements in the health and education sectors.

CIA assesses the potential positive and negative impacts of each proposed activity by posing, analyzing and answering a series of simple questions according to the following pro-forma:

1. List all the proposed activities
2. Discuss each activity in turn and identify the development problem(s) or opportunity(s) it addresses, the expected benefits, and the effect it will have on local livelihoods and way of life
3. Identify the potential positive consequences on conservation of the widespread adoption/use of the activity in place of the traditional practices in the community
4. Through discussion, explore how these positive impacts can be further enhanced
5. Identify the potential negative consequences on conservation of the widespread adoption/use of the activity in place of the traditional practices in the community
6. Discuss how can these negative impacts be eliminated or reduced

If desired, the results of the analysis, can be used to give a rating/score for each activity using an appropriate participatory tool such as scoring or ranking techniques.

The results of an illustrative Conservation Impact Analysis for the indicative LDC development activities presented elsewhere in this document are presented in Table 2.6.

The proposed CIA methodology will be combined the with a similar social impact assessment tool (See Table 2.1) to assess possible social impacts on various community groups, in a particular, village (women, men, young, old) and the village as a whole from likely changes in livelihood systems. Indicative examples of this, using some of the interventions from Table 2.6, are presented Table 2.7.

Table 2.6: Outputs from an example CIA conducted for indicative LDC activities.

Intervention type	Potential negative impacts on conservation	Potential positive impacts on conservation	Linkage (rating)
Paddy land expansion	Habitat change	Reduction in swidden area Reduced soil erosion/siltation Improved food security Reduced reliance on forest extraction	II (++)
Paddy rice intensification	Potential for increased agro-chemical use	Reduction in swidden area Improved food security Reduced reliance on forest extraction Opportunity for crop diversification	II +
Swidden improvement	Habitat change	Reduced fallow period Reduced swidden area Reduced soil erosion/siltation Improved food security	I/II +
Improved rice varieties	Potential for increased agro-chemical use Exotic varieties	Reduced reliance on forest extraction	II (neutral)
Agroforestry systems	Introduction of exotic species Habitat change	Improved habitat in fallow fields Reduced reliance on forest extraction Provides year-round employment	I/II/III (+)
Home garden intensification	Introduction of alien species	Reduced reliance on forest extraction Improved food security	I/II (+)
NTFP development	May produce a market orientation for forest products Potential for increased forest extraction of NTFPs	NTFP production depends on effective forest management and habitat maintenance. Promotes sustainable harvesting principles Perceived value of forest to villagers	I/II/IV/V ++
Handicrafts development	Potential for increased forest extraction	Reduced time for hunting/extraction High value product easily transported to market without need for extensive road construction.	II/III (neutral)
Improved livestock breeds	Potential for interbreeding with wild species Spread of animal diseases to natural pops. Predation by predators	Reduced reliance on bushmeat Increased food security	I -
Livestock vaccination	Increased grazing requirement due to lower mortality rates.	Reduced disease transmission risk to wild pops.	I (neutral)
Buffalo banks	Increased grazing area requirements	Addresses the needs of vulnerable groups	II (neutral)
Livestock grazing management	Changed habitats	Reduced cattle migration to forest Encourages community organisation	I/II/VI (+)

Intervention type	Potential negative impacts on conservation	Potential positive impacts on conservation	Linkage (rating)
Cut-and-carry forage systems		Reduced cattle migration to forest	I (+)
Wild fish conservation and management.		Demonstrates rapid improvement from conservation measures Improved food security Encourages community organisation	I/II/IV/VI (++)
Aquaculture development	Introduction of alien species High potential for release to natural fish populations	Less reliance on natural populations Improved food security	II (-)
Apiculture development	Introduction of alien species	Provides labour opportunities High value product easily transported to market without need for extensive road construction.	I/II (neutral)
Ecotourism	Increased disturbance to wildlife Potential for over-commercialisation	Encourages community organisation Perceived value of the forest by villagers Provides equitable labour opportunities Develops management skills in villagers Promotes changed perceptions (hunter to tour-guide)	II/III/IV/V /VI (++)
Provision of roads	Facilitate access by poachers/others Habitat destruction	Potential to lead to community conservation agreements.	VI/VII (--)

Table 2.7: Indicative example of a social impact assessment conducted for a sub-set of potential LDC activities.

Intervention type	Potential negative impacts on the community	Potential positive impacts on the community	Linkage (rating)
Paddy land expansion	Labour required for paddy field development Inequalities produced by lack of sufficient land for all families Disruption of social organization and cultural practices from changes in resource use and work-life cycle	Increased rice self sufficiency Improved nutritional status of children	II (++)
Paddy rice intensification	Ill-health from agro-chemical use Reduced time available for family/community activities	Improved food security Reduced reliance on forest extraction Opportunity for crop diversification	II +
Swidden improvement	Indebtedness More labour for women and the old	Improved village water quality (less run-off)	I/II +
Improved rice varieties	Potential for increased agro-chemical use Reduced eating quality of rice	Increased rice self sufficiency	II (neutral)
Agroforestry systems	Reduced swidden area More labour for women and the old	More balanced diets Improved nutritional status of children	I/II/III (+)
Ecotourism	Disruption to social organization and cultural practices Health problems; introduction of new diseases, prostitution	Employment and economic benefits Potential to benefit local culture and traditions	
Provision of roads	Increased pressure on community resources from outsiders Disruption to social organization and cultural practices Health problems; introduction of new diseases, prostitution	Increased access to markets and social services	

The main objectives of village livelihood development will be to:

- support the primary objective of biodiversity conservation in the N2T Watershed/NPA;
- improve food security, especially rice sufficiency;
- improve tenure over and management of natural resources; and
- foster the improvement and diversification of sustainable livelihoods.

The emphasis will be on food self sufficiency, not on the promotion cash crops (as an alternative to shifting cultivation) as these require transport and marketing – both difficult in the NPA villages. As elsewhere, all opportunities to open up new paddy fields, or provide supplementary or dry season irrigation to current fields will be explored and developed where feasible and desired by the villagers.

In addition, any opportunities to improve and/or modify the current systems of swidden farming – the basis of NPA village rainfed cropping systems – will be identified, tested and/or developed. These may include improved fallows, development of permanent terraces with manure or fodder producing hedgerows, permanent agroforests, improved integration of grazing and cropping and the like. The emphasis will not be on shifting cultivation eradication, but the stabilisation of shifting cultivation by the gradual improvement and management of swidden system, with the ultimate goal of avoiding soil erosion (by either long cycles or improved fallows) and absolutely no swiddening of forests.

Development of improved practices will require training, study tours and establishment of participatory on-farm trials and, in most cases, a long timeframe, especially in the NPA villages where the option of cash crops is not realistic.

2.4.2: Extension and Development Approaches

The livelihood development extension aims to;

- i) identify improved and sustainable livelihood practices, mainly agriculture, farming systems, forest management and utilisation practices and other income generation activities which build on rather than replace traditional livelihood systems;
- ii) facilitate the adoption of these practices by villagers; and
- iii) build up the capital, assets or savings base of villagers so that they can adopt and maintain these improved practices (most of which requires improved capital and assets base) and become self sufficient.

Out of the various approaches and methods used by rural development programs in an attempt to achieve these aims, PICAD has been identified as the most appropriate approach for the SEMFOP.

2.4.2.1: Villager Based On-farm Trials and Action Research

While research institutions can play a crucial role identifying and improving production and natural resource management technologies, in situations of poor access and variable indigenous livelihood systems, the trailing of improved techniques, new inputs, modified management systems etc, is best undertaken with the villagers themselves as the primary planners and managers of such trials. In addition, it is usually more effective if investigations are based initially on the current skills and knowledge base of locals, including those practices or activities which they themselves consider have potential. Ownership of the trials and consequent motivation of the participants is the key. WMPA staff must facilitate such process's, provide suggestions to the villagers, seek required inputs and generally foster the step by step development of improved, and more sustainable land and forest use practices.

2.4.2.2: Demonstrations and Field Days

The WMPA will foster the establishment of demonstrations, which may include on-farm trials, cross farm walks and field days in which villagers can review the new practices under development.

2.4.2.3: Training

Adoption of new practices also requires that knowledge, understanding and skills of potential participants – adopters – are improved, usually via training or study tours (in addition to the actual conduct of trials and field days as in 2.4.2.1 and 2.4.2.2 above). Thus, the WMPA will facilitate training at, generally, three levels:

- i) training in Nakai or nearby, conducted by WMPA staff or more likely engaged experienced trainers, often from NGOs. Participants will include WMPA and partner staff and leading villagers;
- ii) training undertaken in the NPA villages, conducted mainly by WMPA staff. Participants will include villagers, and actual site activities will be the focus of the training;
- iii) study tours for leading or innovative villagers (and villagers most likely to spread their experience to others on their return) to local or provincial areas, or to key national sites.

Training activities will be coordinated and facilitated by a training coordinator, an Executive Secretariat staff dedicated to training for both staff and villagers,

2.4.2.4: Assistance to Develop Villager Capital and Assets Base

A variety of methods can be used to capitalize community funds for a range of activities. The options in the following sections will be introduced for consideration by villagers as possible methods for the equitable introduction of alternative livelihood systems to the village. Their use/selection will be at the discretion of the villagers themselves, and will also depend on the type of technology to be introduced, as some alternative livelihood systems do not lend themselves to such schemes.

Village Development Funds

This is an approach often used by donor or development programs whereby the program channels its assistance by providing seed funds to a village development fund, the funds then to be used for the development of public facilities, or as loans to individuals or families. This method requires the training and development of planning and accounting skills, upgrading decision making capacity and establishment of appropriate village committees to effectively link the economic development of the village to its community development. Village development revolving funds can be capitalized by LDC activities through a program under which all inputs for seed, fertilizer, materials, etc. are provided ‘free’ to the community, but individual cooperators are required to pay these back, either in cash or kind, into the revolving fund.

Savings Groups

A similar approach is the establishment and operation of village savings groups (village banks) which may be one of the best, grassroots level approaches to steadily developing the assets base of poor rural villages. This method requires that villages first deposit a small amount of money into the village bank account which also may receive seed capital for the assisting organization. Villages start by taking small loans from the bank, at moderately low interest rates. These can be production loans of medium term or they can be personnel/family loans to cover social commitments or family occasions (weddings, dowry, deaths, accidents etc) or emergencies due to unexpected loss of productive assets, such as the death of a buffalo, etc. These bank thus have the dual functions of (a) providing production loans at the village level; and (b) providing a cushion against economic shock in times of emergencies or disaster (in the absence of the village savings bank, villagers usually quickly sell of assets, at a cheap price, thus taking them further backwards in terms of self sufficiency, further into poverty). Such savings groups can be linked to a village development fund.

Micro-Credit

Although the majority of livelihood development activities will focus on self-sufficiency for family subsistence needs, the SEMFOP does offer new opportunities for income generation which may require assistance with credit. The development of small village shops to supply basic materials such as rice, salt, medicines, etc. might be considered to reduce the current dependence on cross-border trade and the negative biodiversity impacts associated with it. As the reservoir transport system develops, there may be a need for small feeder-boat routes up rivers from the ferry landing points, which would present

opportunities for commercial exploitation by villagers. Similarly, as access to the Nakai market is improved by the SEMFOP access strategy, opportunities for local handicrafts, etc. will be created. The proposed community based ecotourism program will not only provide a potential market for locally produced goods, but will also require basic tourism infrastructure in participating villages. These and other potential income-generating activities will all require some form of credit.

SEMFOP strategy in this respect will be to explore possible income-generating activities with villagers under the LDC program, and where appropriate, assist villagers to develop their own business plans. Credit for these plans could be considered from WMPA funds or approaches made to other formal lending institutions, and/or micro-credit oriented NGOs.

Subvention Funds

Due to difficulties in villager motivation and in enabling all villages equal access to development funds, the DUDCP project initiated what it terms a 'subvention fund' (managed family grants), whereby villagers are given the option of taking/receiving grants for specified or approved production-related activities.

The current system under test provides, in 3 pilot villages, 10,000,000 kip per family over three years (year 1: 4,000,000, year 2: 3,000,000 and year 3: 3,000,000). If, in any particular year the family does not take funds for that year, they are not carried over to the next year, ie, they are not accumulated. The activities funded by this scheme must be those approved, and undertaken during the appropriate season and in the appropriate fashion. This scheme is attractive in that it gives equal opportunity to each family (although it is not 'means tested' against family size) and ensures that the participants are fully responsible for taking the decision to undertake the activity.

However, in assessing the applicability of this approach to the WMPA and SEMFOP-1, various issues must be considered, as follows:

- i) it is a sinking fund, with no concept of a loan, and consequent repayments which could then be used to provide funds to other families (This is probably due to the recognized poverty of the villages and lack of economic generation opportunities);
- ii) if US \$1,000 per family is applied to all the 750 families in the NPA villages, this equates to US \$750,000. or 7.5 % of the WMPA's budget over 10 years.

In terms of funds for family level development (ie. not including public facilities development and training) the WMPA could possibly commit a maximum of US \$35,000 per year. Thus, reaching all of the areas villages would require 20 years. The other alternative is to decrease the limit applicable to each family, to about US\$ 400 per family.

If such a scheme is adopted by the WMPA, other development methodologies must also be implemented, as pre-conditions to receiving the 'sub-vention fund' grant, including;

- (a) villager participation in a rice bank;
- (b) villager membership of a savings group; and
- (c) entering into a family level PICAD agreement with the WMPA.

Food for Work

The payment of rice as a daily wage - as an incentive - for providing labor for the construction and development of (generally) public facilities is another method, especially applicable in a chronically rice deficit area like the NT2 Watershed-NPA (unlike less poverty stricken areas where villagers are expected to freely contribute their labor to public activities such as school building and roads maintenance etc).

Food for development work is the more commonly used incentive method for providing rice in exchange for labor input into the development of both family production facilities - fish ponds, paddy fields etc. - and for public infrastructure, such as roads, villager water supply etc. Rice payment is made on the basis of quantity of work completed (not a daily rate). It can be a particularly effective method of enabling villages to find free time (from food growing or gathering activities) which they then invest in developing their

own base of production assets. Such a 'buffer' is extremely important for swidden cultures whose labour is their most important commodity. The only drawback of the scheme is the amount of time and paperwork required to plan, undertake quantity surveys and measurements and then disburse the rice, which may all be constraints in isolated NPA villages.

Rice Banks

Rice is the number one concern for many villagers, and a means whereby the lack of rice can be buffered is particularly useful. Facilitating the establishment of rice banks is a long tested and useful way to improve the management of family and village level rice stocks, and to provide a means to cushion against rice deficiencies in a way that villagers can control more effectively.

Animal Banks

Revolving animal banks - buffalo, cow, pig or chicken – can be another point of entry for the program, although often fraught with difficulties, generally caused by death of the livestock for reasons which are often disputed. Buffalo banks are probably the highest priority as a means to increase draft animal power, usually the major constraint to paddy field opening and utilization of the uplands of Lao PDR.

2.4.2.5: PICAD Contracts

In all instances where the program will provide assistance to villagers, be it for private productive facilities or for public infrastructure, a PICAD contract will be drafted and signed. Such contracts will lay out, in simple terms, the rights and responsibilities of each party i.e. the recipient (community or individual) and the WMPA (in providing support, input materials, follow-up, etc.). As a precondition, the recipient will agree to abide by the rules and regulations of the NT2 Watershed/NPA, as they relate to wildlife and NTFP utilisation and sale, and to forest and land use. This then provides the formal basis for integrating conservation and development.

2.4.2.6: Family Socio-Economic Monitoring Book

Participating families in would be required to maintain a family socio-economic monitoring book. This book, with entries on a monthly basis, would serve various functions including;

- i) establishment of an on-going database of family socio-economic development which can be used to measure the effect of the program in the medium and long term. If NPA village families are required to stop or limit their rice production from shifting cultivation fields, this book will be monitor each families rice production, needs and short fall. It will also monitor if cash or battered income can make up for the rice shortfall, and thus provide a basis on which to estimate food aid required by each family;
- ii) provides a basis for decision making in the case of sub-vention funds, village savings groups etc.;
- iii) stimulates improved adult literacy and numeracy; and
- iv) developing family level socio-economic planning, thus enhancing the role of women who are responsible for domestic economics and planning.

2.4.3: Indicative Extension and Development Activities

2.4.3.1: Scope of Activities and Choice of Target Villages

An important element of the development and extension approach is the scope of activities and the choice of which villages to work with in any particular year. For example, the two extremes possible are:

- (a) not specifying target villages, but working in all 31 NPA villages at once.; or
- (b) working in a certain number of target villages (6, for example) for a set number of years (usually about 3 years), then progressively moving to new target villages while continuing to foster activities and monitoring in prior target villages.

The option and choice of target villages also will depend on the activity and the extension approach used. For example, establishment of rice banks and use of the family socio-economic monitoring book may be undertaken in nearly all villages in the one year, while on-farm trials and irrigation development must be

undertaken only in selected villages in any one year. However, the most likely approach will be to focus 'most' development effort on a set number of target villages per year, probably about 10-15.

Irrigated Rice Development

and the ability to develop irrigated paddy rice fields depends on the geographical and topographical potential for such development. The WMPA will help to identify such potential areas (with villagers) and then assist villagers to open paddy fields and develop irrigation systems, if they so desire.

Paddy field opening and development will be achieved by guarantees of food for work rice, assistance with simple tools, and some form of assistance to ensure draught power is available such as a buffalo bank. The village savings groups loans (or possibly sub-vention funds) can also be used.

Smaller scale irrigation systems, and villager systems already in place but requiring works to ensure their durability and water supply will be the first priority in terms of infrastructure. Development of completely new systems and fields is usually much more expensive and may be environmentally damaging – and thus will be approached with caution.

Besides infrastructure development, irrigated paddy development will also require (i) training, (ii) provision of or access to appropriate inputs (new cultivars, etc), (iii) on-farm trials, and (iv) the development of water user groups to operate, maintain and manage the larger systems. This last issue may require training and monitoring over a number of years.

Rainfed Cropping Development

Any opportunities to improve and/or modify the current systems of swidden farming – the basis of NPA village rainfed cropping systems – will be identified, tested and/or developed with villagers. These may include improved fallows, development of permanent terraces with manure or fodder producing hedgerows, permanent agro-forests, improved integration of grazing and cropping and the like (See Section 3, EMDP).

Development of these practices requires training, study tours and establishment of participatory on-farm trials - and a long timeframe, especially in the NPA villages where the option of cash crops is not realistic and rice production must continue to be the main objective .

Fruit Tree Orchards

Any opportunities for the development of fruit tree cultivations will be explored with villagers. However, the option to develop markets for fruit products is limited due to the cost of transport of such heavy commodities. For reasons of access, markets will likely be restricted to villages in Khamkerd District (for Nam Xot area) and the villages on the plateau during and after reservoir impoundment. Thus, the focus will probably be on small orchards for the internal (NPA) market and for improved family nutrition.

Industrial Crops and NTFPs

Export crops such as coffee may be feasible to grow in the NPA villages (and promotion of these has been tried in the last 10 years), but this area does not appear to have any comparative advantage in terms of soil and climate. Also, their marketing could be a major problem. Nonetheless, opportunities must continue to be explored as such crops may be able to provide a small but reliable contribution to supplementary income.

Forest-Based NTFPs

Opportunities for improving the extraction, processing and marketing of naturally occurring commercial NTFPs will be explored and developed as appropriate. Improving ownership of the NTFPs – either group or individual – is a precursor to improved management and regulated extraction. Opportunities for value-added post harvest processing should be investigated and developed where possible. Finally, access to markets at prices providing optimal returns to the growers must be facilitated by the program.

Cultivated or Domesticated NTFPs

Some NTFPs lend themselves to semi-domestication, whether in the forest or in agroforestry gardens. The potential for this will be investigated with interested villagers and opportunities exploited, again by a combination and FLUPAM, on-farm trials, provision of key inputs, training and study tours.

Livestock

Program intervention in improved livestock production is inevitably fraught with difficulties, due to the fact that;

- (a) more livestock requires that more forage and feed is found, or produced;
- (b) livestock are susceptible to disease and death, resulting in swift loss of the assets; and
- (d) livestock predation by wildlife, ranging from civets, weasels, to small cats and larger cats is a major concern for NPA villagers.

Nonetheless, increasing livestock numbers and productivity could be valued by villagers for 3 reasons:

- (i) more draft power is required even for the current paddy area, and will also be required where villagers decide to open new paddy fields, and conduct double cropping;
- (ii) animal protein alternatives to declining wild meats may be desired by villagers;
- (iii) large livestock are an important capital assets of the rural villagers. They can be easily transported - walked - to market, a major concern for NPA village produce. Thus, they can be a vital component of village development and security.

Program intervention may include funds for a buffalo bank (or as an option for subvention funds), training in animal care and nutrition, and the establishment of a veterinary medicine network, if required.

Managed Wildlife Harvesting

Currently, protein intake from wild meats is more important than domesticated meats. The relative effect of this 'harvest for consumption' as compared to the 'harvest for sale and export' must be investigated. Harvest for export will definitely be banned (it already is) and enforced, but family consumption of managed species will be allowed. However, the sustainability level of wild meats harvest for consumption, the seasonality of such harvests and the zones in which such harvest are allowed, must all be developed with villagers. This may take many years, but a participatory process will be initiated early in SEMFOP-1 as the level of wild meat harvest allowable will affect the need or otherwise to foster improved domestic livestock production.

Community-Based Nature Tourism

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. However, community-based nature tourism is particularly attractive to this type of low-budget tourist. A survey of foreign tourists in Lao PDR (Craig, 1998) reveals a broad interest across all features that the NT2 Watershed/NPA has to offer (See Section 5.4.9). Most respondents preferred trekking, camping and scenic type activities, but there was fairly broad interest across all categories of nature tourism. Suggestions for alternative eco-tourism activities included rafting, fishing, cycling and controlled hunting (culling).

Although there is considerable potential for nature tourism in the NT2 Watershed/NPA, certain precautions and safeguards will need to be put in place under the SEMFOP. These will include:

- Tourist carrying-capacity needs to be assessed to ensure that the level of tourism does not begin to adversely impact on habitats, the environment or traditional culture and customs.
- The development of tourist infrastructure needs to be carefully controlled to avoid unnecessary or inappropriate construction.
- Tourist can be an economic attraction for in-migration of traders and others and this will have to be carefully monitored and controlled.
- Careful consideration will have to be given to the equitable distribution of the economic benefits both within and between NPA communities.

The tasks required to initiate community-based nature tourism related activities will include:

Task 1: Survey and analysis of tourist numbers, type, demand and market requirements.

Task 2: Participatory planning with NPA villagers to identify appropriate opportunities for responsible tourism.

Task 3: As experience is gained, in year 5 of SEMFOP-1 develop a strategic approach, agreed to by all stakeholders for tourism development.

Task 4: Towards the end of SEMFOP-1, if funds are residual from other activities (i.e. funds disbursement is lower than expected or planned), then the Executive Secretariat will develop a small visitor centre at or near its HQs in Nakai.

Task 5: If further funds are residual or become available from another source, visitor accommodation will be built and operated on a commercial basis, to match privately developed accommodation, in an environmentally friendly manner. This could be aligned to the District Conservation forest near Nakai District centre.

Task 6: Develop cooperative projects with private enterprise for the development of tourism facilities around the reservoir and in selected areas in the NPA.

2.5: COMMUNITY AND SOCIAL DEVELOPMENT

While community development needs are moderately well known, further participatory review is required, especially as they relate to each ethnic group, and the modalities for sustainably addressing them. This will be achieved through the FLUPAM process (Section 2.2). Nonetheless, it is assumed that improved access to education and health facilities, improved villager literacy and skills and the training of locally born teachers and health workers will be required to raise local capacity and self reliance.

Strengthening of village institutions to enable them to manage the development and 'change process' will also be required, especially in the NT2 Watershed/NPA with its multiplicity of ethnic groups living, in many cases, in recently established and/or amalgamated villages. Such strengthening can be fostered by facilitating management groups such as rice bank, savings funds, irrigation water user groups, and NTFP management and marketing groups.

Another objective of social development must be to avoid population increase, which would exacerbate the current unsustainable and declining livelihoods of most of the NPA and some of the surrounding communities. The overall goal must be a self-motivated limitation to population increase via a sensitive suite of activities that have already been described under Section 2.1.7 on demographic management.

2.5.1: Cultural and Ethnic Development

Activities aimed at cultural and ethnic development will be based on the Ethnic Minorities Development Plan, (Section 3 of the SEMFOP-1), and tasks required will include;

- Task 1: A Deputy Manager of the Village Livelihood and Community Development Division is appointed, as responsible for community and cultural development. This officer becomes familiar with EMDP.
- Task 2: Review the current situation regarding community and cultural development, and experiences of recent projects.
- Task 3: The Ethnic Minorities advisors, relevant WMPA staff and relevant Government agencies will conduct investigations at village level, and develop a participatory plan for progressive and appropriate cultural development in NPA villages.
- Task 4: Contribute to the development and use of the family level socio-economic monitoring system.
- Task 5: Implement the plan, which may include components of;
 - a) recording of ethnic oral history, beliefs, social calendars etc,
 - b) activities to support the continuation of certain ethnic customs and beliefs
 - c) other activities, such as sports, child nurseries, etc.
- Task 6: the advisors and IMA review the implementation of the cultural and ethnic development plan, and advise on modifications.

2.5.2: Education

The Japan Social Development Fund has recently been granted to support the continuing development of education for NPA villages. Once the SEMFOP is initiated, the plan for, and the actual usage of these funds by the DUDCP project will be reviewed, and the conduct of future activities dependant on this review. Thus, the tasks for education development will include;

- Task 1: Consultations with villagers to solicit their views and priorities concerning education, including issues pertaining to language of instruction, curriculum, teachers' quality, costs, school calendar and schedule etc. In addition, investigations and a review of the current status of :
 - education facilities (buildings);
 - availability and use of education materials: blackboards, textbooks, exercise books, pens etc;
 - school age demographic and school attendance;
 - teachers – level of education etc.; and

- literacy levels of children and adults.

Task 2: Devise the strategic approach to improving education, by taking the current DUDCP and JSDF plans as a point of departure.

Task 3: Plan and budget for improving education, literacy and numeracy.

Task 4: Implement the plan, which is likely to include:

- 4.1: participatory construction of more permanent schools;
- 4.2: provision of better teaching equipment (blackboards, etc);
- 4.3: provision of textbooks, other materials, school books and pens;
- 4.4: provision of, or support to, on-going training of teachers (in Nakai and Thakhek), and activities that support ethnic minorities, such as hiring and training local teachers;
- 4.5: stipend payment to teachers and dsa payments to villager teacher assistants.
- 4.6: development of a locally relevant curriculum that might include awareness and appreciation of local languages a school agriculture program, NPA biodiversity issues, and training teachers in using local languages in education

2.5.3: Health

The JSDF grant is also covering the development of health and public sanitation, again through the DUDCP. Thus, once the SEMFOP is initiated, the plan for and actual usage of these funds, by the DUDCP project will be reviewed, and further health development activities will be based on this. This will involve the following steps:

Task 1: Conduct consultations with villagers to solicit their views and priorities concerning health services. The investigation and consultations will also assess the role of traditional health practitioners, and ways to incorporate these into project health activities as traditional health practices will be altered with the introduction of modern health care—with both positive *and* negative impacts.

Task 2: Conduct investigations to gain a more detailed and subtle understanding of health problems (including sanitation, hygiene and family planning) and current coping mechanisms. This review will establish the current status of:

- health problems of watershed holders;
- causes of these health problems;
- current parameters of sanitation and hygiene
- current family planning methods, if any;
- traditional knowledge in addressing health problems;
- extent, availability and use of medical facilities and drugs.

Task 3: Devise and get stakeholder agreement on a strategic approach to improving health, sanitation and family planning, including partner arrangements.

Task 4: Draft a plan and budget for health, sanitation and family planning improvements.

Task 5: Implement the Plan. Ensure equipment is supplied. Ensure stipends and per diems. Ensure village development fund components are available.

2.5.4: Electrification

Currently, the only electrification systems in any NPA villages are family level hydropower micro-generations sets (produced in China or Vietnam). They are cheap but inefficient, powering only one, maybe two weak lights. In addition, they cannot be used in the wet season due to quickly changing river flows and heights.

Opportunities to improve family level basic electricity will be explored with villagers as a development option, if they so desire. Such assistance could include support micro to small scale hydropower schemes

or family level solar power units or community systems for recharging car batteries that are then used in individual households. No decisions on electrification will be taken until the issue is explored with villagers during FLUPAM and their priority needs are agreed-to.

In any case, large hydropower schemes, involving inter-village electricity and power line networks will not be considered as an option. Electrification for public meeting places and video displays can use solar power. In addition, WMPA field teams will be equipped with mobile generators, as required, or hand tractor engines can be used as generators for special public meetings.

2.5.5: Access Infrastructure

2.5.4.1 Access Into and Out of the Watershed-NPA

Experience throughout the world has shown that improved access to protected areas can result in more poaching, increased extraction of natural resources, in-migration of shifting cultivators with inherent problems for PA management and biodiversity conservation.

However, improved access is required to -

- vi) market household supplies from Nakai District as an alternative to the current trans-boundary supply route (in this respect, this Plan does not support border markets as proposed in the 1998 ESMP) as the current transboundary traders either hunt wildlife or exchange goods for wildlife ;
- vii) facilitate the transport (export) of produce to the Nakai plateau and beyond;
- viii) facilitate easily and relatively quickly travel by NPA villagers to the District centre of Nakai;
- ix) facilitate the provision of rice from Nakai;
- x) improve access for development, management and patrolling personnel and goods.

In order to address this dilemma of conflicting needs and threats to biodiversity conservation related to the issue of access, an access strategy has been developed as the basis for detailed planning and design of communications infra-structure development under the SEMFOP. The NPA access strategy aims to reduce the porous nature of the NPA boundary by re-orienting the access for both people and commodities through Nakai. The strategy focuses on establishing a single, dominant entry and exit point linked to a well-controlled water borne transport system on the reservoir. By providing a cheap and efficient service, coupled with stringent control and regulation over passengers, their personal possessions and cargo, it is anticipated that current problems of poaching, illegal resource extraction and transborder trade (with the inherent problems associated with it) will be reduced, and at the same time market access, public service availability and the general quality of life of NPA communities will be improved.

The planned, reservoir-based transportation system offers a number of opportunities for improved control and regulation, including:

- A single access point (boat dock) into and out of the NT2 Watershed/NPA which is easy to monitor and regulate.
- Through close cooperation with the RMU from the outset, the WMPA will be able to ensure that the system is designed and implemented in line with SEMFOP's primary goal of biodiversity conservation.
- The highly visible nature of water-transport on the reservoir facilitates the identification and detection of illegal activities.
- The public nature of the transport system makes illegal activities more difficult to conceal.
- Trained boat operators and personnel will be able to assist in control and enforcement.

Under this strategy, it will be possible to improve ground-based access routes within the NPA to the benefit of both NPA communities and NPA management, without the concomitant increase in risks from external threats that this normally creates. Improved communications within the NPA, all linking with a single access point via the boat transport system will provide a number of benefits to NPA management and biodiversity conservation:

- Reduced reliance on the currently dominant transborder supply route for household supplies with its inherent opportunities for the extraction of NPA resources by the cross border traders.
- Improved access for rangers and enforcement teams for the rapid response to reported impacts, poaching, wildlife trade and other incidents.
- The potential to move larger items of conservation and protection equipment (for fire-fighting, survey, research, development, etc.) within the NPA.
- Easier access for the Village Conservation Monitoring Units and better cooperation and coordination within the Watershed Conservation and Development Networks due to improved inter-village communications.
- Improved market access to Nakai for NPA communities, thus providing alternative economic opportunities in place of their current reliance on forest resources.
- Enhanced access for ecotourism, thereby providing alternative sustainable livelihoods for NPA communities (guides, sale of handicrafts, cultural tourism, etc.).

The major factor in the long term planning for improving and managing access into and out of the watershed is NT2 reservoir impoundment. Thus, access management needs to be planned for in phases. Phase 1 will be prior to any impoundment, a period of 4 to 5 years in which the current geographical influence on access will remain. Then there will be a second phase during impoundment of up to 1 year (3 to 8 months depending on which month impoundment begins), up until COD. While the reservoir is filling during phase 2, there may be too little water for boat access but enough to impede vehicle and possibly even access by foot from Nakai, across the plateau. During this period the deep water channel supplying water to the hydropower turbines will be open and have sufficient water for boat passage. It is intended to use this method for interim access to the NPA during the reservoir impoundment period.

Phase 3 is the long term and permanent scenario, after COD, when the reservoir is in full operation, and access from Nakai into the Watershed-NPA will be reliant on the reservoir. All access will have to start from the outer southern reservoir edge, and be by boat. As to whether access (by passengers or goods) continue by boat into the mid watershed, or transfers to land access on the northern reservoir edge, remains an issue. A number of planning tasks will need to be conducted under SEMFOP, as follows:

Task 1: Consultations with villagers to solicit their views and priorities concerning access infrastructure, which would feed into Task 3 (development of a plan).

Task 2: Conduct investigations (at village and family level) to assess the current usage of the 2 main Water borne access routes: The Nam Theun route (Sop On to Keng Meo to Keng Luang to Makfeuang, and the Nam Sot route (Ban Talang to Ban Thameuang) in terms of:

- a) the season in which the routes are used;
- b) the types of boats used;
- c) the owners of the boats;
- d) the persons using the boats/routes (type of person, village of origin, no. per year etc);
- e) how much they pay, how they organise the timing etc;
- f) the maintenance undertaken on the routes; and
- g) stakeholder ideas for improving the routes, the boat service etc,

Task 3: Conduct investigations (at village, family level and track level) to assess the current usage of the land access routes, including the following routes;

- i) vehicle and walking track from Khamkerd into Ban Thameuang and Ban Navang;
- ii) walking route from Nakai to Ban Sopphen and on to Ban Navang;
- iii) walking route from Ban Sop Ma up Phu Laem to Ban Phung/Makfeuang;
- iv) walking route along the Nam Theun (Keng Meo to Ban Makfeuang);
- v) walking route along the Nam Noy;
- vi) walking route from Ban Khonkaen to Ban Huay Sarn (Nam Pheo) in terms of:

- a) the season in which the routes are used;
- b) people using the routes (type, reasons, village of origin, no. per year etc.);
- c) the maintenance undertaken on the routes; and
- d) the stakeholder ideas for improving the routes,

Task 4: Develop an integrated access development and management plan to improve and regularise river access along the two routes, the plan being based on:

- i) an understanding of the current situation;
- ii) an understanding of probable post-COD situation and demand for transport.

The Nam Theun route would originally (up until COD) start from Ban SopOn, but post COD it would start at the Nakai jetty (or a jetty location to be identified that would give year round access to the reservoir and navigation channel). Thus, pre-CoD, land transport from Nakai to SopOn will be regularised and supported by the WMPA who will lease or purchase of a truck to establish a regular public bus.

The Nam Xot route would begin at Ban Talang - both pre and post COD. Transport from Nakai to Ban Talang would be linked to the resettlement activities which should see upgraded roads and sufficient private or RMU/RO public transport.

This access development and management plan may include support from the WMPA to:

- a) Improve the water based access routes. Improvement of the water-based access routes does not envisage any physical improvements in the difficult (rapid) sections of the river stretches. Large river height fluctuations in these areas precludes consideration of this. In addition, the effect of the reservoir on these rapids sections must first be observed before physical improvements (such as blasting of rapids, building of winches or other methods) can be considered. Thus any such developments would not be contemplated until SEMFOP-2.
- b) Establish and manage a river based public transportation system_for passengers and light cargo, to ensure regular, i.e., daily service from Nakai up the two valleys.
- c) Ensure a heavy cargo river transportation system_is established – mainly for rice, cattle etc, which could be linked to the passenger and light cargo system.
- d) Ensure land portage is available for difficult sections of the water based route.
- e) Improve and upgrade to selected land routes which link with the boat transport system.
- f) Provide seed funds to annually maintain selected land routes.
- g) Ensure checkpoints (stationary and mobile) are established and operational to manage entry of persons and export of goods on these routes, especially at the boat jetty and other strategic points.

Task 5: In year 5 and 6 of SEMFOP-1, review the success of this plan, and develop an improved, or new plan for incorporation into SEMFOP-2, post COD.

Task 6: Close the two ex-logging roads north of Nam Theun (the upper plateau), the road starting between Ban Talang and Ban Nam Nian, and the north, north west road from Ban SopOn (unless required for essential vegetation clearance of the reservoir ?).

Task 7: Assist investigations into an alternate route from Nakai to the Nathon-Nabon area (NNT-PHN corridor), as the current road thru the Nam Malou will be flooded by the reservoir.

2.5.4.2: Access within the Watershed-NPA

Access routes between villages and between sub-catchments (between Nam Theun, Nam Noy and Nam Pheo, and between Nam Xot and Nam Mon) will be improved to the standard of approximately 2.5 m to facilitate both walking and hand tractor passage. Tasks required will include;

Task 1: Survey (alignment, quantity, culverts and bridges) all currently upgraded tracks, and tracks or alignments proposed (by local stakeholders) to be upgraded.

Task 2: Develop a plan for internal access improvement and maintenance, to include - tracks, basic design, types of culverts and bridges etc,

Task 3: Stakeholder workshop to accept or modify the plan

Task 4: Implement internal access track development:

- 4.1. final design and quantities;
- 4.2. develop plan for and ensure access to “food for work” rice;
- 4.3. procurement of basic construction equipment;
- 4.4. supervision and monitoring of the track construction;
- 4.5. payment of food for rice.

Task 5: Implement the track maintenance program

2.5.6: Community Outreach and Conservation Awareness

Community outreach and conservation awareness (COCA) raising aims, by the use of language, visual tools, plays and other participatory methods to;

- i) facilitate villagers expressing their own views and understanding of natural resources conservation and sustainable development; and
- ii) inform villagers of the objectives of watershed management, biodiversity conservation and sustainable development.

It seeks to provide a platform on which villagers can really ‘participate’ in biodiversity, forest and land use management planning. It seeks to enable villagers (and other stakeholders) to better understand the background to the role which they will be expected to play in the planning and then implementation of PICAD based Protected Area management. The task required to implement this program will include;

Task 1: Enquire and review COCA methods used previously and currently in other parts of the Lao PDR

Task 2: The COCA team purchase and produce posters, pamphlets, videos and other materials for general distribution to villages and agencies in and around the NT2 watershed,

Task 3: The COCA team produce simple COCA messages and captions for use by local radio, [local radio dissemination may be the best means of communication with the scattered and isolated villages in the NT2 watershed]

Task 4: Conduct COCA events in villages, on the average 2 days and 3 nights per villages, and 4 to 6 village per months, where possible coordinated with the PVA and FLUPAM events.

Task 5: Assist the (external) public relations

Task 6: Assist the development of information for tourism, including visitor centre development and operation, developing guide notes.

The effective development of a COCA team will be fostered by the complimentary input from specialist partner organisations with experience in this field, in the Lao PDR or elsewhere.

2.6: PUBLIC CONSULTATION STRATEGY

2.6.1: Background and Objectives

The objective of the Public Consultation and Participation Process (PCPP) is to develop and maintain avenues of communication between the Project and stakeholders in order to ensure that their views and concerns are incorporated into project design and implementation with the objectives of reducing or offsetting negative impacts and enhancing benefits from the SEMFOP. The feedback from consultations will be important in formulating the mitigation measures for all stakeholders, and in particular, the 31 villages in the NT2 Watershed/NPA.

Consultations and preparatory activities throughout the preparation period of SEMFOP have emphasized a participatory and consultative approach for surveys, information gathering, data collection, planning and program design. Indeed, the only source of most of the information collected and used in program design is from Project Affected People and other stakeholders.

Public outreach and awareness raising in regard to the NPA and the NT2 project has and continues to be conducted at the local level by the WMPA. This has been through public meetings involving over 70 stakeholder villages from all 4 SEMFOP districts, local TV and radio broadcasts and the erection of signboards in and around the NPA. This preparatory phase of public consultation will continue until SEMFOP implementation begins and will then be continued as a fully participatory process for planning, implementing and evaluating all project activities throughout the life of SEMFOP.

2.6.1.1: Stakeholder Workshop

In March, 2003 a stakeholder workshop was held involving over 70 participants from government, mass organizations, and affected individuals from the national, provincial, district and village levels. The workshop provided key background information on the SEMFOP and addressed a number of topics, covering most of the issues raised by the WB on the first draft of SEMFOP. Consensus on 4 key issues was reached:

- (i) conservation is SEMFOP's primary objective, but appropriate capacity and livelihood development in the 31 NPA villages will be necessary to achieve this;
- (ii) development will be linked to and provide concrete benefits to conservation;
- (iii) GoL swidden stabilization goals will be followed, but changes will be phased and dependant on villager's aspirations and traditional land-use systems;
- (iv) WMPA will hold discussions with NTEC to resolve reservoir management issues and, if it is agreed that the WMPA is responsible, conservation budgets will not be used and additional funding will be sought.

These and all other outputs from the workshop provided excellent feed-back and have been analyzed and fully incorporated in the appropriate sections of this SEMFOP draft.

2.6.1.2: Local Public Consultations

In June and July 2004 a series of public consultations were conducted in NPA and PIZ villages. This preparatory process of public consultation was conceived to initiate an on-going self-correcting means for the WMPA to interact meaningfully with affected villagers and other stakeholders with respect to the various sets of issues that concern the respective areas. The initial consultations were intended to inform villagers generally about the NT2 Project and the WMPA's management plans for the NNT-NPA, to explain the possible impacts on their livelihoods and to obtain feedback and ideas in regard to their concerns. These consultations are seen as the first step in the consultation and disclosure process, which will continue throughout implementation.

Villages where consultations were carried out in the NNT-NPA were selected purposefully to include all major river valleys (sub-watersheds) and all ethnic groups. These were as follows:

Geographical and ethnic distribution of NNT-NPA public consultations

Subwatershed	Vietic	Katuic	Lao-Tai	Villages
Nam-Noy/Pheo	Kri, Phong	Brou	Sek	Maka, Tong, Teung, Meuy, Koune, Vang Khouay
Theun	Thémarou	Brou		Vang Chang, Mak Feuang, Thaphayban, Peung
Sot-Mone	Malang, Arao, Atel, Maleng	Brou	Xin et. al.	Na Vang, Kaching, Na Hao, Songkhone, Tha Meuang

Feedback from NPA villagers varied according to their ethnic background and sub-watershed in which they reside. The major concerns expressed are summarized here by sub-watershed.

Nam Noy-Nam Pheo

On the Nam Noy and Nam Pheo, all ethnic groups expressed a fear of confronting Vietnamese poachers in the implementation of their role of patrolling the NPA. The Vietic groups, the Kri and the Phong, related their concern at not understanding modern agricultural methods that were being discussed by the resource teams during consultations. The Brou at Koune voiced concerns similar to the Vietics, adding that they were likewise afraid to confront the Sek, whom they perceive as their more powerful neighbors. The Sek fear that they will lose land during the land use planning process.

Nam Theun

On the Nam Theun, the predominantly Brou population are concerned primarily with food production and the threat posed by the NPA to reduce swidden agriculture. The promise of returns from cash crops raised concerns related to marketing, and protecting some wildlife species that are considered pests of swidden crops, increased villager concerns in regard to adequate food supply.

The Thèmarou, a Type I (hunter-gatherer) Vietic group pose special consideration. The Thèmarou reside officially in the village of Vang Chang, the last village on the upper Nam Theun river. The village is predominantly ethnic Brou. In addition to their houses in the village, the Thèmarou also maintain a residence at Keng Parang, where they say they are carrying out swidden cultivation.

The Thèmarou are traditionally hunter-gatherers who traveled cyclically around the region of the upper Nam Theun. In about 1969-70, the group was struck by an epidemic in which most of them died (out of more than 100 only 30 or so remained). They were left without the old leaders, and began to live at Keng Parang, practicing rudimentary swiddening in imitation of the Brou whom they say they were consciously trying to emulate. In 1996, the government began to move them into the village of Vang Chang where 10 families now remain with a population of 47 (19 are children under age 10).

The Thèmarou consider they are too few to return to their former way of life, and prefer to stay where they are, with one foot in both worlds as it were, continuing their swiddening at Keng Parang, and maintaining their relationship with the Brou at Vang Chang, even though they acknowledge the relationship as one of dependency. They voiced a great fear at the consultations of losing their swidden fields. At the present time their children are not attending the school, although the children appear to be speaking more and more Brou language among themselves.

Nam Sot-Nam Mone

The major issues on the Nam Sot-Nam Mone are more ethnic specific. As in the Nam Noy basin, a village of more lowland-oriented Tai speakers who practice paddy cultivation tend to dominate the area and were able to express their ideas more readily to the lowlander resources team. They fear the loss of the road which connects them economically to the Khamkeut District seat at Lak Xao, and are concerned with the irrigation of paddies which they would like to expand.

The Brou at Vang Chang, who are beginning to modernize (as opposed to developing), likewise fear the loss of the road. But they are also concerned with the proposed reduction of swidden cultivation and transition to paddy-based agriculture.

The Vietics at Tha Meuang and Song Khone fear that assistance will not be equal and that black magic will be used in inter-ethnic disputes. They generally feel inferior to both the Tais and the Brou. They are also concerned that they will not be able to adjust to paddy cultivation, which in some cases has been tried and abandoned in the past.

In summary, the main concerns along the Nam Sot-Nam Mone concern access to the outside and equity of benefits. All groups fear confrontations with Hmong poachers as well as Vietnamese.

Overview

A number of important issues emerged from the consultations as key problems and concerns that the SEMFOP must take into account. The following describes these issues and explains how the SEMFOP will incorporate measures to address these concerns or intends to make changes

1. It was recommended to separate the river sub-watersheds into manageable units for implementation purposes:
 - a. Nam Noy
 - b. Nam Theun
 - c. Nam Sot

SEMFOP measures that address the concern:

- This is addressed in the SEMFOP's plan to develop Watershed Conservation and Development Networks (WCDNs) involving all villages in each sub-watershed who will receive WMPA support to cooperate in both livelihood development and conservation activities (4.3.1.4).
 - It is also intended to organize and link individual VCMUs around these sub-watershed lines to ensure full coverage and improved integration of effort.
2. Within each sub-watershed, the importance of ethnicity should be fully recognized.
 - a. language and communication
 - b. inter-ethnic relations and hierarchies
 - c. different sets of concerns
 - d. the Vietic Type I peoples in the NPA and the PIZ need special attention and consideration
 - e. need for ethnic advisor to begin ASAP

SEMFOP measures that address the concern:

- This is addressed by a number of elements of the SEMFOP as follows:
 1. WMPA recruitment policy emphasizing local and ethnic peoples (Section 6.2.7)
 2. The inclusion of long term international and national EM advisors in the technical assistance team (Section 6.3).
 3. A special program for Vietic groups in both the NPA and the PIZ in collaboration with a specially qualified NGO in this field (Section 3.4.1.3).
 4. Cultural sensitivity awareness raising and training for all WMPA staff (Section 3.8.1).
3. The need to integrate the findings from consultations into SEMFOP as an on-going dynamic process, not just a one-off event

SEMFOP measures that address the concern:

- This is embodied in the PICAD process which follows a community driven development approach and the use of participatory methods as described in Sections 2.1.1. 2.1.2 and 2.13.

4. How to deal with the livelihood development transition process

- a. livelihood (adaptive) changes
 - i. swidden concerns
 - ii. livestock concerns
- b. social structure concerns

SEMFOP measures that address the concern:

- This concern is addressed by LDC's approach of ongoing incremental development to existing livelihood practices rather than a transformational approach of introducing entirely new (and often inappropriate) systems as described in Section 2.4.
- In addition, it is intended to offer revolving funds to villages, both as a means of technology transfer and as a source of loan funds for individual households during the transition period and beyond for family emergencies (See Section 2.4.2.4).
- Social structure concerns are dealt with in the cultural development plans described in Section 3.6.5.

5. How to impose regulations while maintaining ownership – the essence of community involvement.

SEMFOP measures that address the concern:

- This issue lies at the very heart of the FLUPAM/PICAD approach which through a truly participatory process, seeks to reach mutually beneficial agreements in the form of VFLMAs which are initially trialed, tested, evaluated and jointly refined with villagers as described in Section 2.2.

The specific concerns of villagers, villager proposals and the WMPA responses to these concerns and proposals are presented in Appendix 5 of this Volume of SEMFOP.

2.6.1.3: International Public Consultations

A series of Public Consultations on the NT2 Project were held at international venues across the world during August and September 2004. These one-day workshops, complementing the local consultations described in Section 2.6.1.2, were held in Bangkok, Tokyo, Paris and Washington and focused around 4 themes:

- The GoL development framework and the IFT's decision framework
- The NT2 Project's technical, environmental and social safeguards
- The local public consultation outcomes
- Economic analysis and revenue management

The broad spectrum of issues raised and responses to them are now summarized on the World Bank's website (www.worldbank.org/laont2). Those key comments and responses of direct relevance to the SEMFOP are described in the remainder of this section..

2.6.2: International Guidelines on Stakeholder Participation

The World Bank's Safeguard Policies on Environmental Assessment (OP 4.01), Involuntary Resettlement (OP 4.12) and Indigenous Peoples (OD 4.20) all require that affected groups (especially villages), Government agencies, local NGOs and all other stakeholders be consulted in a meaningful way during the preparation and implementation of the SEMFOP.

The consultation strategy described here is based on the specific needs and nature of the SEMFOP but also follows the recommendations made in the World Commission on Dams Report, which include:

- participation in consultation of indigenous and tribal people is a process of communication and negotiation, spanning the planning and Project cycles;
- effective participation requires an appropriate choice of community representatives;
- consent of affected indigenous and tribal people should be sought prior to key points in the decision-making process;
- the manner of expressing consent will be guided by customary laws and customs, and by national laws;
- at the beginning of the process the affected people will state how they will express their consent to key decisions;
- the integrity of community processes should be guaranteed, they shall not be divided or coerced, and be free of manipulation; and
- independent dispute resolution mechanism should be agreed with the other stakeholders at the beginning of any process.

2.6.3: Framework for a Comprehensive Participation Process

Public Consultation can be defined as the process through which the views and opinions of all interested parties or stakeholders are integrated into project planning, implementation and monitoring. Participatory consultation is a type of communication that specifically establishes an ongoing ‘feedback loop’, integrating stakeholder views and opinions into various project activities. Communication also consists of information dissemination to stakeholders on options and potential project impacts, often the first step in establishing the feedback loop.

Dialogue has already been established with all stakeholders in the NT2 Watershed/NPA via consultations at the local, regional, national and international levels. This is ongoing and will continue throughout the duration of SEMFOP. In order to ensure that this process is community-driven and participatory, several components will be put in place from the initial phase. Because none of the villages, with the exception of the 3 NPA villages involved in the DUDCP project and some PIZ villages who have received NGO support, have previously been involved with projects of this type, full-time leadership and support to create a framework for mainstreaming participation at all stages of the project is necessary.

For this reason, the SEMFOP-1 will include the involvement of a long term PICAD advisor with responsibility to mainstream participation across the FLUPAM, Livelihood Development and Biodiversity Conservation programs. In addition, 2 Community Development advisors (international and national) will be engaged to assist with mainstreaming ethnic issues and to ensure that the project better understands indigenous knowledge and local livelihood strategies in ethnic communities and integrates these into the participatory planning process. This will be further strengthened and supported by an Ethnic and Cultural Development Professional, WMPA staff member who will work with the EM advisors (See Table 6.1, Section 6.2.7). A gender strategy, built around the use of gender empowering tools (See Section 2.1.2) will help to ensure the active involvement of women and other vulnerable groups in the decision making process. The gender strategy will be supported by the engagement of a Gender Specialist Professional as a WMPA staff member attached to the LDC Division, but also working closely with the FLUPAM and PPAM Divisions See Table 6.1, Section 6.2.7. These initiatives, in coordination with other strategies for participation introduced by the SEMFOP, should create a foundation upon which the project fully embraces local participation rather than merely paying lip service to this fundamental principle of community-driven development.

Other themes to ensure a participatory and effective process will include:

- A focus on capacity-building in participatory methods for stakeholders, with particular emphasis on members of Village Development Committees, District Department staff, WMPA technical assistance personnel, and village women’s groups. A number of skills trainings, to be defined by the TA and WMPA, are critical in this regard
- A proper process to ensure that stakeholders take ownership of the project at the earliest possible date, rather than participate as willing or unwilling parties in a government-led initiative;

- All aspects of SEMFOP must be transparent to villagers and other stakeholders, including analysis, planning, implementation, evaluation and funding
- A holistic, systems approach is required that encapsulates the technical, institutional, social and political dimensions of the project;
- Team building initiatives involving the WMPA, Technical Advisors and Village Development Committees and special interest groups;
- Coordination between different sections of the WMPA and government agencies to avoid confusion in stakeholder communities caused by duplication and mixed messages;
- Balanced software and hardware inputs;
- Flexibility in project planning, implementation according to changed circumstances and local conditions.

Incorporating these themes will make the SEMFOP more responsive to local circumstances and needs leading to an improved likelihood of project sustainability.

The following framework is an attempt to standardize the process to ensure full participation of all stakeholders throughout the project. This participation strategy is relevant in regard to the Ethnic Minority Development Plan (Part 3), the Biodiversity Management and Conservation Framework (Part 4), and Resource Access Restriction Process Framework (this Part 5). Table 2.8 identifies participation methods by key stakeholders, and Table 2.9 identifies key participation activities by project component. An indicative summary of the tools to carry out these participation strategies have previously been presented (See Table 2.1 in Section 2.1.2) and these will be further refined and developed by the WMPA and the TA.

Table 2.8: SEMFOP-1 Participatory Framework and Stakeholder Consultation Process

Stakeholders	Key Resource Use/Stake	Minimum Consultation/Participation Methods
31 Watershed Villages (resident users)	Swidden and paddy farmers, foragers, hunters, wildlife traders	<ul style="list-style-type: none"> • General Socialization³; • Meetings with village leadership (official); • Meetings with village elders and traditional leadership; • Large village meetings; • Small focus group meetings; • Meetings with women ; • Participatory Mapping of Village Boundaries and Management, Use Zones; • Ongoing consultations with WMPA staff; • Village Planning Teams and sub-committees established, with inclusion of women; • Systematic HRD and capacity building trainings; • Information disseminated through innovative and appropriate methods (i.e. meetings, information boards, video and broadcast messages); • Feedback and Grievance Systems and Conflict Resolution Strategy established; • Participation in monitoring and enforcement of resources within village boundaries.
Peripheral impact zone Villages (non-resident and secondary users)	Swidden farmers, hunters, wildlife traders, foragers	<ul style="list-style-type: none"> • WMPA/district officials and Watershed enforcement officials meet with village officials; • Use and access restriction regulations developed with villagers during FLUPAM; • Information disseminated by innovative & appropriate methods (meetings, information boards, video, broadcast, etc.); • Establish ongoing consultations with WMPA and district officials; • Develop alternative livelihood strategies for PIZ villages (in cooperation with NGOs and local authorities) to take pressure from external encroachment.
Local Authorities: -district -sub-district -mass organizations	Normal service providers for healthcare, education, agriculture, etc.	<ul style="list-style-type: none"> • Workshop meetings for appropriate officials; • Skills trainings; • Integration into WMPA technical assistance(?).
Resource User Groups (hunters, foragers,	Wildlife, edible and non-food forest products	<ul style="list-style-type: none"> • Facilitating formation and involvement of village forest associations; • Village meetings with WMPA TAs; • Production of village boundaries, maps &

³ Socialization is the promotion of the project and its principles, processes and procedures to villagers, government officials, facilitators, consultants, NGOs and other stakeholders. This is done in order to promote broad-based participation, transparency and monitoring throughout the project. The socialization process will take the form of meetings at the national, provincial, district, and village levels, visits to watershed villages, and with the support of information and education materials such as brochures, posters, maps, radio spots and other communications materials.

Stakeholders	Key Resource Use/Stake	Minimum Consultation/Participation Methods
women, etc.)		resource management plans <ul style="list-style-type: none"> • Training, education and information materials.
Traders, Middlemen	Forest products, wildlife	<ul style="list-style-type: none"> • Meetings with WMPA and district officials, including law enforcement, immigration.
WMPA: -overall management -technical assistance -law enforcement	Management, support and enforcement responsibility for the watershed	<ul style="list-style-type: none"> • Meetings and workshops with all stakeholders; • Ongoing meetings and interaction with all watershed villages.
NGOs in Lao PDR	Interest in biodiversity conservation and community development; Potential to provide support services to village people, government officials and WMPA	<ul style="list-style-type: none"> • Small group meetings for consultations; • Visits to watershed villages; • Possibly recruited to assist with village consultations, facilitation trainings, etc.
NGOs International	Interest in biodiversity conservation and community development	<ul style="list-style-type: none"> • Formal meetings, workshops; • Written material or WB/NTEC website.
Donors and Financial Institutions	Interest in biodiversity conservation and community development; financially invested in watershed protection	<ul style="list-style-type: none"> • Meetings with WMPA and the GoL; • Meetings with NTEC; • Visits to watershed villages; • Written materials and reports.

Table 2.9: Participatory Framework Activities by Project Component

Project Component	Key Activities	Stakeholder /Responsible Party	Time Period
1. General Consultation “start-up” Phase			
	Further mapping of stakeholders and analysis of roles, interests and situation;	WMPA	Within 1st year of Operation Phase
	Assessment of institutional capacity to manage ongoing disclosure of information and consultation	WMPA	Within 1st year of Operation Phase
	Hire and train team responsible for consultations – including WMPA and TA - for information dissemination and participatory strategies throughout project period	WMPA	Within 1st year of Operation Phase
	Review lessons learned from the DUDCP (LiL) project	WMPA	Within 1st year of Operation Phase
	Identify and/or create tools to disseminate information and translate if necessary	WMPA	Within 1st year of Operation Phase
	Create strategy for Village Consultations in local dialects (either hire local translators or – even better – put local speakers on consultation teams)	WMPA	Within 1st year of Operation Phase
	Finalise strategy to simplify key messages	WMPA	Within 1st year of Operation Phase
	Determine to whom, when, and how key information is to be disseminated, taking account of their seasonal livelihoods and social calendar.	WMPA	Within 1st year of Operation Phase
	Adapt Feedback and Grievance Framework and Conflict Resolution strategy	WMPA	Within 1st year of Operation Phase
2. Ongoing Consultation in “Implementation” Phase			
a. Collaborative Management Approach	Socialization	WMPA with assistance of TAs representing of the core technical disciplines	Initiated within 1st year of Operation Phase and ongoing throughout
	Informed agreement on roles, responsibilities of Village Planning Teams, Sub Committees, Patrol Units, etc.	Village Leaders with WMPA representatives and NGOs if appropriate	Initiated within 1st year of Operation Phase

Project Component	Key Activities	Stakeholder /Responsible Party	Time Period
	Participatory design of Village-appropriate Grievance Mechanism and Decision-making procedures	Village Leaders with WMPA representatives and NGOs if appropriate	Initiated within 1st year of Operation Phase
	Open consultation about Grievance Mechanism and Decision-making procedures	Village People with Village Leaders, WMPA, NGOs	Initiated within 1st year of Operation Phase and ongoing throughout
	Revise Procedures and mechanisms	Village People with Village Leaders, WMPA, NGOs	Initiated within 1st year of Operation Phase
b. Conservation Management ⁴	Socialization	Local authorities	Initiated within 1st year of Operation Phase
	Participatory collection of information on Natural Resources as related to socio-economic conditions	WMPA (PPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Land Use Planning and Zonation (VFLMA development)	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase
	Village and forest field surveys (rapid assessments)	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing until complete
	Land/Forest Allocation Support: Finalize boundary agreements/maps and develop village regulations, rights and duties, including the creation of Monitoring and Enforcement Units	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase
	PICAD – forestry, agricultural and village development planning ⁵	WMPA (LDC), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	The creation of Incentives and Benchmarks linking conservation to development	WMPA (PPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Review of Land Use mapping exercise within and between all villages	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing until complete

⁴ Each step in the process includes multiple tools

⁵ This is closely tied to c. below and should be done in coordination with the PICAD team.

Project Component	Key Activities	Stakeholder / Responsible Party	Time Period
c. Alternative Sustainable Livelihoods ⁶ or PICAD ⁷	Socialization, including a discussion of the direct link between development activities and the accomplishment of conservation benchmarks	WMPA (PPAM/LDC), partner organisations and villagers	Initiated within 1st year of Operation Phase
	Introduction/Entry into the village to build trust and relationships	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase
	Creation of Village Development Committee & Sub-Committees (livelihood, health, education, credit/business schemes, etc.), including in-village monthly meetings with WMPA	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Participatory information gathering about village society and economy	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Participatory Land Use Mapping and Monitoring	WMPA (FLUPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Participatory workshop on Understanding Forest and Natural Resource Use and Management	WMPA (PPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
	Village/household contract agreements for good conservation practice	WMPA (PPAM), partner organisations and villagers	Initiated within 1st year of Operation Phase and ongoing throughout
d. Macro level zoning of watershed ⁸	Watershed/NPA Level Forest and Land Use Assessment and Mapping	WMPA (FLUPAM), partner organisations and villagers	2 to 3 years
	Village Socio-economic Data Collection and Boundary Mapping with all Villages	WMPA (FLUPAM), partner organisations and villagers	2 years
	Floral Biodiversity data – Collection and Mapping	PPAM; NUOL; botanical specialist; Districts; villagers	3 years
	Fauna Biodiversity data – Collation and Baseline Surveys	PPAM; Village CMUs; Army CMUs; villagers	2 to 3 years
	Preliminary Macro-level Zonation	FLUPAM; Districts (including	Within 3 years

⁶ Shelter & Energy (housing + fuel); Clothing + Bedding; Health needs; Educational needs; Recreational / Ceremonial needs; Obligations to Nation (Tax & Laws), etc.

⁷ Closely related to activities done in Conservation Management above.

⁸ See Section 2.2 for details of FLUPAM.

Project Component	Key Activities	Stakeholder / Responsible Party	Time Period
		consultation with all stakeholders	
	Regulations Development for Macro Zones	WMPA; Districts (inc. preliminary consultation with all stakeholders)	Within 3 years
	Drafting of Proposed NPA Forest and Land Use Management Plan	WMPA; Districts (inc. preliminary consultation with all stakeholders)	Within 3 years
	Stakeholder Consultations on Preliminary Zonation, Regulations and Proposed Management Plan	All stakeholders	Within 3 years
e. Micro level zoning in villages during FLUPAM process ⁹	Village Classification	Villagers, WMPA, Districts	Within 3 years
	Selection of Priority Villages	WMPA, Districts	Within 3 years
	Forest and Land Management Planning	Villagers, WMPA, Districts	Within 3 years
	Community Orientation	Villagers, WMPA, Districts	Within 3 years
	Village Data Collection	Villagers, WMPA, Districts	Within 3 years

⁹ See Section 2.2 for details of FLUPAM

2.6.4: Phases of the PCPP Strategy

The SEMFOP Public Consultation and Participation Strategy comprises 3 distinct phases, but because it is ongoing and iterative, these will tend to overlap and be repeated.

Phase 1: Information collection and dissemination:

This initial phase aims to promote awareness using a two-way flow of information. Awareness is attained through collection of data relating to both human and physical characteristics that facilitate evaluation and planning for project implementation. Additionally, information is disseminated to stakeholders detailing project features, project impacts and implications for altered social and physical environments.

Phase 2: Eliciting Stakeholder Concerns:

Comments from stakeholders in response to information gained during Phase 1 are actively sought and discussion of alternatives and suggestions for mitigation activities encouraged. In this way, issues that may have been previously overlooked or outstanding concerns of stakeholders are given a forum for review. This represents a needs-assessment, and provides a base from which decisions can be made.

Phase 3: Active involvement in Project Design and Implementation:

Based on the decisions made in Phase 2, requirements for education, training, financial and institutional strengthening are identified and integrated into SEMFOP program design. The process will continue throughout implementation, ensuring that stakeholders are fully involved throughout this first and future SEMFOPs.

Transparency and openness during the PCPP will be a priority, and in this respect, it will be important to take into account the following:

- communication techniques will need to be simple, as visual as possible and also culturally sensitive and appropriate;
- the language used during consultations will need to recognise the different ethnic dialects used in the NT2 Watershed/NPA;
- any media used should be appropriate, and recognize the high rates of illiteracy among key stakeholders at the local level;
- participation in consultation activities should not be dominated by local authorities or appointed leaders;
- special attention will be required to promote the participation of women and vulnerable groups and ensure adequate consideration of their special needs and circumstances.

2.6.5: Intended Target Groups of the PCPP Strategy

The PCPP strategy will involve consultation at the local, regional, national and international levels. Key stakeholders at these various levels will include:

- People directly affected by the Project.
- Government officials at the district, provincial and national levels.
- The broader interested community.
- NGOs operating in the Lao PDR and particularly those in the Project area.
- Lao PDR mass organizations
- National research institutions
- International NGOs, international organizations and other interest groups, including the local, regional and international media.

More specifically, stakeholders will include the following groups:

Local

- All households and villages within the NT2 Watershed/NPA.
- Communities in the Peripheral Impact Zone around the NPA.
- Communities and individuals remote from the NPA, but whose livelihoods are to some extent dependent on NPA resources.

Regional

- Community leaders.
- GoL Agencies at the district level.
- GoL Agencies at the Provincial level.
- Businesses and contractors.

National

- GOL Ministries.
- The People of the Lao PDR.
- National NGOs.
- National media.

International

- International NGOs.
- The international conservation community.
- International media.
- Other international power utilities, in particular EGAT.
- World Bank.
- NTEC investors and Financial Institutions.
- Other hydroelectric dam developers.

2.6.6: Tools and Methods for Consultation and Disclosure

The specific techniques, methods and tools to be used for public consultation will be selected to suit the individual needs of each target audience. Selection will be made from a wide range of available methods (Table 2.10) and will often involve a number of different methods being used concurrently or in a variety of combinations.

Table 2.10: Methods and tools to be used under the PCPP.

Method or Tool	Explanation/Description
Visual representations	<ul style="list-style-type: none"> • Use of visual representations including pictures, diagrams and posters, models, especially at the local and regional levels. • Particular valuable in instances where local dialects are used
Village meetings	<ul style="list-style-type: none"> • First round of public consultations in 31 NPA villages. • Orientations prior to major events or the initiation of PICAD, etc.
Focus group meetings	<ul style="list-style-type: none"> • For use with key informants such as hunters, fishermen, paddy farmers, etc.
Direct consultations	<ul style="list-style-type: none"> • For conflict resolution and specific issues in regard to LUP, LDC, VCMU patrolling, etc.
PRA and RRA	<ul style="list-style-type: none"> • For all aspects of participatory analysis and planning. • Particularly valuable for information collection and planning during PICAD.
Surveys and questionnaires	<ul style="list-style-type: none"> • Can be used for environment, socio-economic, health , land use, etc.
Special studies	<ul style="list-style-type: none"> • For follow-up on important issues identified for a broad range of ecological, agricultural, economic, social, etc. issues
Seminars and workshops	<ul style="list-style-type: none"> • Local or regional Seminars and workshops and forums on specific issues. • National and international workshops and seminars
Translated project documents &/or summaries	<ul style="list-style-type: none"> • These are used in particular for local leaders, regional officials and national stakeholders
NPA Visitors Centre	<ul style="list-style-type: none"> • To promote awareness and understanding on the NPA, biodiversity and wildlife issues for both local residents and visitors.
Exhibits, models and demonstrations	<ul style="list-style-type: none"> • E.g. 3-D terrain models for use in LUP. • On farm demonstrations for improved farming technologies
Mass media	<ul style="list-style-type: none"> • Information to the general public radio and television interviews
Field trips and study tours	<ul style="list-style-type: none"> • To the Project area for international stakeholders • Out of the project area for local residents to inform them of of new techniques or opportunities.
Public Meetings	<ul style="list-style-type: none"> • Particularly useful at the district, provincial and national levels
Newspapers	<ul style="list-style-type: none"> • Useful for issues of provincial, national or international significance.
Videos	<ul style="list-style-type: none"> • Extremely popular with NPA villagers and thus very useful for orientation, awareness and improving understanding
Radio Programmes	<ul style="list-style-type: none"> • Useful in reaching a large audience, often even in areas without electricity.
Website	<ul style="list-style-type: none"> • Particularly useful for international stakeholders and of growing significance for national audiences.
Posters	<ul style="list-style-type: none"> • Public awareness raising. • Can be useful for data collection e.g NTFPs, wildlife and flora.

2.7: PERIPHERAL IMPACT ZONE STRATEGY AND OBJECTIVES

For the purposes of SEMFOP the Peripheral Impact Zone (PIZ) is defined as those areas and villages (in the Lao PDR) adjacent to but outside the NPA which harbour humans who enter, or would like to enter, the NPA for the purposes of resource extraction, land cultivation or similar potentially destructive activities. PIZ status is delineated and restricted to those villages who would benefit directly from the long term protection of the NPA through sustainable harvest of NTFPs, the maintenance of watershed values, employment opportunities, and general quality of life issues. The PIZ is thus delineated and limited to those villages that would benefit in this way through active engagement in conservation.

The foregoing definition excludes trans-border encroachers, illegal logging concerns, poaching gangs, would-be concession holders or other individuals/entities who operate from more distant locations but enter and destructively use NPA resources. The difference here is that these groups are entirely exploitive and have no vested interest in maintaining biodiversity values and watershed functions to sustain their livelihoods over the long term, and are thus not likely to be influenced by active engagement.

SEMFOP strategy in regard to this latter exploitative group focuses on improved control and enforcement to keep them out of the NPA and to stop their illegal activities. On the other hand, a partnership approach will be adopted with PIZ villagers through active engagement on awareness raising and alternative livelihood support to reduce their reliance on the NPA and to promote them as protected area ‘gatekeepers’. The ultimate aim is to instil a sense of ownership and establish a network of stakeholder communities forming a buffer around the NPA. As such, PIZ communities are seen as a valuable asset to the NPA and important WMPA partners in the task of biodiversity protection. Indeed the greatest problem of incursion into the NPA by outsiders is likely to occur in those areas where there are no villages adjacent to the boundary. In these areas, protection will be the sole responsibility of the protected area authorities.

Section 1.4.2. describes how potential PIZ villages have been identified. These are located not, only in Nakai, but also in Khamkeut, Gnomalart and Boulapha Districts (Table 1.6).

2.7.1: Prioritisation of Support to PIZ Villages

Given the need for rapid but effective action and the limited resources available to the WMPA, some means of prioritising and setting the type and level of activities in each is required. A two-pronged approach has been adopted in this respect based on (i) geographical location in relation to the NPA and (ii) the level and type of threat posed by each village.

2.7.1.1 Geographical Location of PIZ Villages

The initial criterion to be used to determine a village’s role in NPA management and the level and type of support it will receive is its location (and its boundaries) in relation to the NPA. Four general types of villages can be defined, one within the NPA and three in the PIZ, as shown in Table 2.11.

Table 2.11: Stakeholder village types in the NPA and PIZ.

Category	Village type	Description
NPA Villages	Type 1	Villages located totally within the NPA. Often termed ‘enclave’ villages, their location suggests that they will have a major impact upon, and role in the NPA management.
PIZ Villages	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 a significant geographical feature such as a mountain ridge or a river defines both boundaries.
	Type 4	Villages distant from, but ‘using’ the NPA. Although these village types do not overlap or share a common border with the NPA and may be some distance from it, villagers regularly enter the NPA and have impacts on its natural resource base. They thus have a stake in NPA management.

Analysis of village type enables a process of prioritisation and level of support. In general, type 1 villages will rate as highest priority by the WMPA and be supported with the full FLUPAM package (See Section

2.2). Type 2 and 3 villages will receive support for land use planning in areas within and abutting on to the NPA, while type 4 villages will not normally conduct land use planning. All village types will be eligible for LDC and PPAM activities, consistent with the level and type of threat that their current practices pose to the NPA.

2.7.1.2 Level and Type of Threat Posed by PIZ Villages

Concurrent with the public consultation phase, the WMPA will undertake a broad survey and inventory in PIZ villages to assess social and economic status and the level and type of threat posed to the NPA by each community. Intervention priorities will then be established according to the level of threat posed by each village and resources allocated and programs initiated accordingly. The precise nature of the programs in each village will vary depending on local conditions and the type of threat posed to the NPA, but the overall program will be essentially the same although usually less intensive as that for enclave villages.

2.7.2: PIZ Village Support Strategy

Although the SEMFOP strategy in regard to PIZ villages is similar in all respects to that for enclave villages (Sections 2.1 - 2.6), the level and nature of WMPA support will be dependant on the specific threats posed to the NPA by each individual PIZ village. The WMPA will undertake support in the PIZ to ensure that PIZ development is compatible with and conducive to the effective management of the NT2 Watershed/NPA, with sustainable protection as the principle objective. The strategy here is two-fold:

1. To raise awareness in PIZ communities of the importance of the NPA, create incentives for their cooperation, and provide them with support to reduce their reliance on the unsustainable extraction of NPA resources. This will be achieved through public awareness and education programs, and also by the provision of assistance for alternative livelihood systems to replace currently destructive activities. Village Conservation Monitoring Units will also be established, where appropriate.
2. Through a participatory partnership approach, promote PIZ communities as 'gatekeepers' to create a surrounding buffer against the external and usually more pervasive elements who enter the NPA from further afield.

A partnership with relevant district authorities is being developed through ongoing discussions on appropriate mechanisms for cost sharing and capacity development to enable districts to take the lead in the PIZ strategy. Budget has been allocated under SEMFOP for livelihood development activities specifically targeting alternatives to any current villager practices which negatively impact on the NPA. These funds will be used to supplement existing district budgets to support appropriate development activities, based on WMPA/District agreements. In addition to providing funding and training support to the districts, the WMPA will actively seek additional funding and assistance for the PIZ program from both central government and other donors.

The cost sharing, partnership approach with district authorities in the PIZ was adopted for two major reasons. Firstly, through partnering, the WMPA will be able to ensure the improved targeting of district development budgets and ensure that activities are in line with SEMFOP's conservation objectives. Secondly, if the WMPA proposed to fund the entire PIZ program, it is likely that district authorities would divert their own development budgets to other non-PIZ villages in the district, thus effectively withdrawing district support for PIZ communities.

Table 2.11: Indicative activities in NPA and PIZ by villages category.

Nature of support	Type 1 Village	Type 2 Village	Type 3 Village	Type 4 Village
Forest and land use planning, allocation and management	Full LUP package with TPZ/CUZ zonation after a period of testing	LUP in NPA areas and NPA boundary delineation	LUP for NPA boundary delineation	LUP responsibility of district authorities
Participatory protected area management	Conservation agreements CUZ/TPZ zonation VCMU establishment Conservation networks	Conservation agreements in NPA Zonation in NPA VCMU if desirable Checkpoints at NPA boundary	Conservation agreements for NPA resource extraction Checkpoints at NPA boundary	Conservation agreements for NPA resource extraction
Livelihood development for conservation	High intensity Alternatives for all destructive livelihood activities	Medium intensity Alternatives for destructive livelihood activities in NPA	Lower intensity Selective alternatives based on threat to NPA	Low intensity Selective alternatives based on threat to NPA
Community and social development	Health Demographic mgt. Education Infrastructure Appropriate access	Community strengthening Public awareness Education (as app.) Demographic mgt.	Community strengthening Public awareness Education (as app.) Demographic mgt.	Community strengthening Public awareness
Public consultation	Full public consultation	Full public consultation	Full public consultation	Full public consultation
Partnership with district authorities	Partnership led by WMPA	Equal partnership with WMPA and district authorities	Partnership led by district authorities	Partnership led by district authorities

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2004 to 30th September 2011]

PART 3:

ETHNIC MINORITIES DEVELOPMENT PLAN

(DRAFT OF OCTOBER 2004)

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3.1: OBJECTIVES OF THE EMDP

3.1.1: Purpose of the EMDP

This Plan aims to present a framework and strategic approach to the sustainable and ethnically sensitive development of Project Affected People (PAPs) in the Nam Theun 2 Watershed (the Nakai-Nam Theun National Protected Area (NPA) and its Peripheral Impact Zone (PIZ), in relation to World Bank (WB) Operational Directives OD 4.20 on Indigenous People. Although several reports address issues related to OD 4.20, recent developments in WB policy interpretations and a reassessment of project planning to date now point to a need for a comprehensive document addressing key issues relating to indigenous people and their livelihood protection and development.

Many of the issues relating to OD 4.20 were addressed in the Social Action Plan (IUCN 1998) and subsequently integrated into the Environmental and Social Action Plan for Nakai-Nam Theun Catchment and Corridor Areas (IUCN, 1997, revised May 1998 and currently being updated in the SEMFOP). However, the need has arisen for a separate document that addresses issues relating to local people and ethnic minorities in the catchment area of the Nam Theun 2 Project. Concerns relating to restrictions on access to natural resources and livelihood changes (OP 4.12 on Involuntary Resettlement) are addressed in Chapter 5, entitled 'Resettlement – Resource Access Restriction – Process Framework'. In addition to summarising existing reports, efforts have been made to integrate work that has been carried out in the NT2 Watershed Area since 1998.

Within this overall EMDP objective, it should be emphasized that the primary goal of the NNT watershed project is to conserve and enhance the biodiversity values of the watershed, and all initiatives with regard to ethnic minorities and livelihood development should be undertaken within this context.

3.1.2: Specific Objectives

A number of specific objectives are addressed in this Plan, and these elaborate and consolidate findings of previous plans, reports and the ongoing planning and implementation:

- An assessment of the definition and legal definition of 'indigenous people' as required by OD 4.20 is proposed, and its applicability to the Project Affected Peoples (PAPs) of the NT2 Watershed is analysed – indirect project impacts
- To review specific planning initiatives (livelihood, health, education and institutional strengthening) in terms of ethnic minority development as a result of indirect project impacts and livelihood development planning
- An assessment of the land tenure and resource use rights and ongoing consultation process in terms of 'meaningfulness' of the process, transparency and future arrangements
- design appropriate measures to address issues pertaining to ethnic minorities to ensure that they benefit from the project in meaningful ways and that they are not adversely affected by the project.

3.1.3: Definition of Area

The WMPA, the primary agency responsible for implementing the plan, has the mandate to oversee management of the NT2 Watershed. Article 1 of PM Decree 25 (2000) defines the NT2 Watershed as:

the Nakai Nam Theun NPA; and
the two Corridors set out in PM Decree 193 (2000) between NNT NPA and – Phuo Hin Poun NPA and Hin Nam No NPA.

Villagers in the Peripheral Impact Zones (PIZ) adjacent to the watershed are also reliant on and having a large impact on NPA resources. Consequently, will they have an increasingly large influence on the sustainability of the NPA if not managed effectively. Thus, the area surrounding the NT2 Watershed/NPA is included as an integral part of the Operational Plan of the SEMFOP, as provided for under Decree 25. The WMPA and the SEMFOP will work with these villages, and the principles underlying the EMDP also apply to activities undertaken with these protected area impact zone communities.

3.1.4: Peripheral Impact Zone Communities

The WMPA will be active in the PIZ through a cost-sharing partnership approach with local authorities and NGOs working in the area. The approach will include the same elements as for NPA villages, thus providing livelihood development support as compensation for any access restrictions imposed due to SEMFOP. The approach also aims to promote PIZ villagers as full partners and 'gatekeepers' to the NPA through training, capacity-development, awareness-raising and support programs. PIZ villages will be prioritised according to their reliance (and thus impact) on NPA resources and activities initiated first in these high priority villages, some of which have already been identified by the PIZ Village Survey conducted in June and July, 2004. It is the intention under the SEMFOP to eventually provide such assistance and support to all PIZ villages according to the schedule presented in Table 2.3 (Section 2.2.7).

A survey of PIZ villages was conducted in June and July 2004 to collect the information necessary to ensure that their current situation and needs are adequately covered by the SEMFOP (Anon. 2004). The survey covered 54 villages with a total population of 22,504 individuals and collected information on demography, ethnicity, socio-economic conditions, resource use and their relationship with the NPA. The survey was conducted by 3 field research teams comprising a team leader, one field assistant, and one WMPA staff member. Each survey team spent 1-2 days in each village and collected village level data using a systematic semi-structured interview format with information recorded on standardized data forms. Summaries of the findings of the survey are presented in Sections 3.4.5. and 3.5.5.

3.2: WORK CONDUCTED TO DATE

3.2.1: Reports and References

The work that has already been carried out in directly affected project areas has been extensive. The following reports form the basis for this consolidation exercise and the discussions presented in this Chapter:

- Sample surveys of health and socio-economic situation by SMEC for the Environmental Impact Assessment (EIA) in 1990-91
- Socio-Economic and Cultural Survey – Nam Theun 2 Project Area (CARE Int. 1996)
- Health surveys carried out by the University of Chiang Mai (Pholsena 1997) in 1994-96
- 'Indicative work plan for conservation and management of the resources of the Nakai-Nam Theun Watershed Conservation Area and Buffer zones' (EcoLao 1997)
- Nature and Culture in the Nakai-Nam Theun Conservation Area (Chamberlain, 1997)
- Environmental and Social Action Plan for Nakai-Nam Theun Catchment and Corridor Areas – Cultural Diversity and Socio-economic Development in the Context of Conservation: Social Action Plan (Second Draft, Chamberlain, July 1997)
- Nakai-Nam Theun Conservation Area Nakai-Nam Theun Conservation Area – Report of the Socio-Economic Survey Team: Final Draft (Alton and Sylavong, July 1997)
- Khammouane Province: A Preliminary Environmental Inventory (IUCN, 1997)
- Environmental and Social Action Plan for Nakai-Nam Theun Catchment and Corridor Areas (IUCN, 1997, revised May 1998)
- Social Action Plan for the Nakai-Nam Theun Conservation Area (IUCN, May 1998)
- Nakai-Nam Theun Conservation Project – Progress Report #1, 8 May-20 June 1998 (IUCN, June 1998)
- Nakai-Nam Theun Conservation Area Programme – Phase 2: Community Development and Biodiversity Conservation: Pilot Field Activities Final Report (IUCN October 1999)
- Bolikhamxay Province Environmental Inventory (Ministry of Communication, Transport and Construction, GOL and IUCN, March 2000)
- Nam Theun 2 Hydroelectric Project Environmental Assessment and Management Plan (EAMP) (Seatec International, April 2001)

- Operational Plan for the Environmental and Social Management of the Nakai-Nam Theun 2 Watershed and NPA (Ministry of Agriculture and Forestry, GOL, May 2000)
- Inception Report (15 May – 15 June 2000) Nam Theun Social and Environmental Project Year 2000 Activities (IUCN)
- Farming System and Agroforestry Mission (9 October – 11 December 2000) – District Upland Development and Conservation Project (Laurent Chazée for Khammouane Province)
- Annual Activity Report (2nd Annual Work Plan) for the District Upland Development and Conservation Project (DUDCP) – IDA Credit 3186-LA by the Project Implementation Unit, Thakhek
- WP3 Interim Progress Activity Report for the Period October 1, 2001-February 13, 2002 for the District Upland Development and Conservation Project (DUDCP) – IDA Credit 3186-LA
- Anthropologist Report by Christian Culas, DUDCP, December 2001 - review of anthropological considerations for Ban Navang and Ban Makfeuang.
- NTFP Report by Joost Foppes, DUDCP, June 2001 - review of NTFP use and recommendations for sustainable development and conservation
- DUDCP review and lessons learned, 2003.
- Public consultations and feedback in NPA villages, completed May 2004.
- PIZ village survey, WCS, June – July 2004.

Most of the studies and research on the socio-economic and cultural situation in the catchment area was conducted by consultants and experts for IUCN in 1996-1998. The results were incorporated into both the Environmental and Social Management Plan for Nakai-Nam Theun Catchment and Corridor Areas (IUCN, 1997, revised May 1998) and then updated in the overall Nam Theun 2 Hydroelectric Project Environmental and Social Management and Operational Plan (ESMOP, 2000). Preliminary interventions, demonstration farms and other activities were started up in late 1998 under the WB funded NTSEP program and are presently being continued under the DUDCP (WB Learning and Innovation Loan [LIL]).

3.2.2: Preparation of a Culturally Appropriate Plan

Measures have been taken to prepare a culturally appropriate plan for the ethnic groups of the catchment area in accordance with OD 4.20 with regard to livelihood development. These can be summarized as follows:

- A review of existing laws, customary practice and rights to utilise natural resources. (Section 3.3.7)
- Careful consideration of the existing cultural patterns and charting of ethnic history and relations with other groups. The available literature on these groups is limited to a number of anthropological and social studies (see CARE Int. 1996; Chamberlain 1997a, 1997b; Alton and Sylavong 1997; SAP 1998, Culas, 2000) and is summarised in Sections 3.4 and 3.5.
- Public Consultation with affected groups using methods that have been adapted to the needs and understanding of these groups, including cultural-sensitivity, local-language, gender and use of visual aids for illiterate members of these societies (See Public Consultation Strategy in Section 2.6).
- Consideration of existing livelihood systems in developing programs to meet the needs and aspirations of villagers as well as identifying challenges and areas for training and support (Section 3.7)
- Strengthening of institutions and ensuring participation of local administrative units (village leaders and local organisations) (Section 3.8)
- Pilot projects to test assumptions of plans and interventions have been underway since 1998 and continue to the present day (see IUCN 1999 and DUDCP)

3.2.3: Anticipation of Adverse Trends

An important aspect of planning and implementation of measures for ethnic minorities in relation to livelihood development and change is the anticipation of adverse trends.

The main adverse trends for large dam projects and experiences with resettlement and livelihood development are summarised in the Table 3.1. These issues have been taken from a number of leading papers and books on adverse trends (Cernea and Guggenheim (eds.) 1993; WB 1994; Cernea 1996;

Scudder 1997) and have been adapted to the context of development interventions in the Nam Theun 2 Watershed/NPA.

Table 3. 1: Anticipation of Potential Adverse Trends on NT2 Watershed/NPA EMs (Arising from Implementation of NT2 Project) and Counter-Measures

Potential Adverse Trends	Counter-Measures
i: In-migration into developed areas of the catchment and more efficient utilisation of new opportunities by outsiders	<ul style="list-style-type: none"> • Some in-migration may occur but there is a greater possibility of out-migration into the Nakai Plateau where resettlement and livelihood development will occur closer to roads and electricity supply (see EMDP for the Nakai Plateau, NTEC 2002) i. No construction of roads • Strengthening village institutions and village management • Population monitoring by government authorities
ii: Lack of information or understanding of project impacts	<ul style="list-style-type: none"> • Consultations have taken place since 1997 and are ongoing at present • Several forms of internal and external monitoring are already functioning to verify effectiveness of communication and progress • Pilot interventions serve as concrete examples of the kinds of interventions for communities in the catchment and familiarise them in advance
iii: Women could be excluded from decision-making processes	<ul style="list-style-type: none"> • Consultations have been carried out using gender-sensitive approaches • LWU members and female sociologists and anthropologists have been involved in data collection, consultation and other aspects of planning • Training, skills development, literacy and other initiatives aim to improve women's decision-making powers • A Gender Specialist Professional will be hired as an WMPA staff person
iv: Creation of social difference that marginalises weaker households in terms of socio-economic and political power	<ul style="list-style-type: none"> • The livelihood interventions are based on a careful consideration of labour inputs and resources • There are a number of livelihood options that depend on available resources, location and household compositions • Consideration of risks for vulnerable households and poor (eg. lack of able-bodied adults) are to be taken into consideration in detailed planning of interventions
v: Cultural beliefs and practices not taken seriously	<ul style="list-style-type: none"> • International and local anthropologists have been involved in the socio-economic and cultural surveys as well as the consultation process • A close examination of all culturally relevant practices related to livelihood development has resulted in the integration of many aspects, such as utilisation of forest resources, existing level of technology and skills and reliance on NTFPs
vi: Misuse of cash compensation and subsequent threat to livelihood restoration	<ul style="list-style-type: none"> • Cash compensation will not be a component of livelihood development and enhancement, rather development <i>in situ</i> in the catchment area will consist of direct interventions • Interventions (e.g. establishment of pilot schemes and demonstration farms) may require labour inputs which will be compensated in terms of rice for work programmes
vii: Economic marginalisation due to inadequate skills to manage new resource situation and lack of confidence	<ul style="list-style-type: none"> • Training programmes and pilot projects are already operational and interventions are planned in stages according to the capacity for communities to absorb change • The emphasis is on livelihood enhancement, that is interventions that build directly on existing livelihood systems and local knowledge • Present economic exploitation of resources does not favour communities in the catchment such that interventions aim to improve income generation (trading with other communities outside the catchment)
viii: increases in morbidity and mortality due to social stress, insecurity and health changes, mostly affect the aged, children and the weak	<ul style="list-style-type: none"> • Social stress should not occur due to a gradual approach to livelihood change through ongoing consultations with communities • Health services will be improved and health status will be monitored throughout the livelihood development period • Educational services and infrastructure will be improved – in many cases there are inadequate or lacking services
ix: Loss of access to common resources such as the forests and grazing areas of the NPA due to the introduction of controlled access	<ul style="list-style-type: none"> • The loss of access will be offset by improved management of forest resources • Enhancement of tenure security and recognition of village boundaries. • There are also provisions for the domestication of NTFPs. • These modifications in livelihood have been discussed with NPA villagers during consultations and first tried in a series of pilot projects.

Potential Adverse Trends	Counter-Measures
Anticipated Adverse Trends	Counter-Measures
x: Threats to the social fabric of society, break up of kin ties and social networks ('social capital') that could lead to social disarticulation	<ul style="list-style-type: none"> • Villages will not be relocated • Development will be <i>in situ</i> and in gradual stages that does not alter existing practices dramatically
xi: Livelihood adjustment, especially to forest management may require a long time and continuous support	<ul style="list-style-type: none"> • The existing support programme is for 30 years of the operational life of the project • The Operating Company (OC) is committed providing funding for the NT2 Watershed Area at a cost of ca. one million USD per year for the duration of the Concession Agreement for biodiversity and community development • Support will be given for ensuring food security if this becomes necessary
xiii: Local institutions and government organisations may find it difficult to cope with new responsibilities and lack skills, funds and experience	<ul style="list-style-type: none"> • An extensive training, institutional strengthening and capacity building programme is outlined in the SEMFOP • All involved organisations, including village authorities, LWU and other support groups will receive support and training as required • Pilot Field Activities from 1998 to present are providing opportunities to hone skills, assess effectiveness of programmes and fine-tune livelihood interventions

Lessons learned about poverty alleviation are outlined in the WB review on resettlement and development (1994). This was based on a review of numerous projects and lists the following important aspects:

- Incentives that ensure that affected communities are motivated to participate in development programmes – catchment communities will continue to be consulted for a long period of time and have already, to some degree, shown a willingness to participate in programmes in order to improve their economic situation and standard of living.
- Decentralisation of government's role in the planning, implementation and monitoring of programmes – all interventions have occurred and will occur with the co-operation of local and district organisations with capacity building and institutional strengthening being central aspects.
- Institutional policies and procedures that ensure adequate government assistance and accountability – NT2 has been instrumental in facilitating legislation and guidelines not only for the project itself but also influenced development of policy and practices for the whole country in relation to a range of social development and environmental issues.
- Ensuring that ethnic minorities have a stake in the planning and implementation that aims to improve their economic potential and quality of life – the EMDP provides an opportunity for sustainable economic development through livelihood enhancement and improved services.

3.2.4: Avoidance of Dependency

Avoidance of dependency is an important issue in relation to working out development strategies for ethnic minorities. Attempts at livelihood development have not always lead to viable and sustainable economic systems for ethnic minorities. The failure to provide culturally sensitive approaches and long-term follow-up has often created dependency on aid or government assistance. This problem relates to present reliance on food donations in the NT2 Watershed and the potential reliance on interventions for improving livelihood systems as a result of ongoing and planned interventions.

Socio-economic data collected from selected villages in the NPA (Alton and Sylavong 1997: Chapter 4) outlines the performance of the local, traditional livelihood systems. The performance of swidden agriculture can be generally characterised by low productivity with little or no surplus. There are frequent droughts, floods, erratic rainfall, pests and ecological imbalances. The fact that there have been rice relief programmes carried out by BPKP and CARE International throughout the NPA (92 tons delivered in 1997 alone by CARE) indicates a lack of sustainability due to high population growth rates in the river valleys, existing technology and know-how, and various socio-economic pressures from outside the Watershed.

The development of local ownership of project interventions and activities is one of the best ways to counter balance the fact that an outside agency is in fact donating goods and services. Related to this is to initiate activities that require local input in the form of time, labour and local resources. Contributions also facilitate a sense of ownership. Features that aim to avoid dependency and promote sustainable growth include:

- Improved food production based on participatory approaches and consultations with local residents.
- Development of agricultural improvements using participatory methods and trial basis.
- Establishment of organisations that protect the interests of local communities and promote conservation of their environment.
- Enhanced land and resource tenure security.
- Staffing of health and educational facilities with locally trained personnel.
- Improved access (paths and waterways) to markets to facilitate trade of local products.

All interventions should be designed in co-operation with local stakeholders in order to ensure that they are in line with their perceived needs and desires and manageable in terms of their capacity and experience. Local ownership occurs when the people perceive the benefits themselves and are thus motivated to create, operate and maintain programmes.

3.3: POLICY AND LEGAL FRAMEWORK

3.3.1: World Bank Policy on Indigenous Peoples

The WB Operational Directive OD 4.20 provides a guideline for development that takes into consideration groups that have a distinct social and cultural identity from the dominant society¹ and aims to ensure that policies and programs related to rights, language, cultures, social organization and modes of livelihood are adequately addressed in development plans. The basic assumption is that 'indigenous people' are often more vulnerable and may be disadvantaged in relation to development processes. Hence there is a need to address the following issues directly in any large infrastructure development:²

- Identification of specific needs and aspirations through prior direct and culturally-appropriate consultation
- Consultations with affected people that are timely, complete and culturally-appropriate that create conditions for participatory planning, implementation and monitoring/evaluation of the project
- Minimizing potentially adverse effects on indigenous/vulnerable groups
- Encouraging developments in the private sector and government organizations that maximize benefits through employment opportunities, training and economic development of indigenous/vulnerable groups

OD 4.20 includes definitions of which groups qualify for these initiatives, prerequisites for development, contents of an Indigenous Peoples Development Plan (IPDP) or in this case an Ethnic Minorities Development Plan (EMDP), legal issues and documentation. It is necessary to review these aspects in relation to the project and the general development context of Lao PDR.

3.3.2: Definitions of Ethnic Groups in the Lao PDR

In the Lao PDR, ethnic groups are defined in two main ways, namely (i) their ethno-linguistic characteristics and (ii) their geographical-livelihood characteristics.

3.3.2.1: Ethno-Linguistic Grouping:

For centuries, scholars, governments and even mythologies have attempted to regularise the categories of ethnic groups residing in the Lao PDR. Pre-history myths relate to two major groups, one probably identifiable with the Khmer race from the south and the other the Lao-Tai races from the north. The first official list appear in Luang Prabang in the 16th century which noted 12 races in the region, and again in the 17th century the Lane Xang kingdom divided the races into three main groups. Possibly the first comprehensive list was drawn up by pre-liberation Lao Patriotic Front which in the 1960's recognised 68 ethnic groups within the three major groups (see below) This was more narrowly defined into 37 ethnic groups by the National Ethnic Committee of the new government in 1975. The most recent review of ethnicity was undertaken by the National Edification Committee during the "Lao national ethnic classification conference" of August 2000, which agreed on a two tiered system, identifying 49 ethnic groups, as detailed in Table 3.2, and 160 sub-groups.

The fact that some of the small, Vietic ethnic groups identified in the IUCN ESMP of 1998 do not appear in this 'official' list of ethnic groups highlights difficulties and differences in social scientist opinions.

¹ In the Lao PDR, there is really no clearly dominant society but rather a marked difference on the level of development between the lowland areas with access to roads, electricity and ,markets, and the upland and highland areas, with little electricity few roads, distant to markets and other opportunities

² These objectives are taken from the International Finance Corporations' Policy on Indigenous People (1999). Although the original planning for the Nam Theun 2 Hydropower Project was undertaken in relation to OD 4.20 (1991), it is believed that the planning was sufficiently culturally sensitive to fulfil the requirements of later policy revisions by the WB as outlined in this section.

Table 3. 2: Ethnic groups and groupings, according to the Institute for Ethnic Studies, 2000

Lao-Tai ethno-linguistic group – 8 ethnics	
1	Lao Phouen <i>Kaleung</i> <i>Bo</i> <i>Yoi</i> <i>Gno</i>
2	Phou Tai
3	Tai <i>Tai Dam</i> <i>Tai Deng</i> <i>Tai Khao</i> <i>Tai Meny</i>
4	Lu <i>Khun</i>
5	Gnuan <i>Kalom</i> <i>Ngiao</i>
6	Yang
7	Sek
8	Tai Neua

Mon-Khmer group: 30 ethnicities	
9	Khmu Kasak <i>Ou</i> <i>Lu</i> <i>Gnuan</i> <i>Kbrong</i> <i>Kheun</i> <i>Me</i> <i>Chuang</i> <i>Rok</i>
10	Pray <i>(Pray)</i>
11	Sing Mul <i>(Sing Mul)</i>
12	Phong <i>Piat</i> <i>Lan</i> <i>Fen</i> <i>Chapuang</i>
13	Then
14	Eudou
15	Bit
16	Lamet
17	Samtao <i>Doi</i>
18	Katang <i>Phakeo</i>
19	Makong <i>Trui</i> <i>Phoua</i> <i>Maroib</i> <i>Trong</i>
20	Tri
21	Yuru <i>Kong</i> <i>Yimr</i>
24	Yeh
25	Brao <i>Kavet</i> <i>Halang</i>
26	Katu <i>Triou</i> <i>Dakang</i>
27	Harak
28	Oi <i>Sapuan</i> <i>Sok</i> <i>In Thi</i>
29	Krieng <i>Chatong</i> <i>Kob</i>

Mon-Khmer group - continued	
30	Cheng
31	Sadang <i>Kayong</i> <i>Sadang Duan</i>
32	Suey
33	Gnaheun
34	Lavi
35	Pako <i>Kado</i> <i>Kanai</i>
36	Khmer
37	Toum <i>Liba</i> <i>Thai Cham</i> <i>Thai Pong</i>
38	Nguan
39	Muang
40	Kri <i>Maleng</i> <i>Labri</i>

Sino-Tibertan group – 8 ethnicities	
41	Akha Oma <i>Kheu</i> <i>Muteun</i> <i>Chicho</i> <i>Puli</i> <i>Pana</i> <i>Fe</i> <i>Mukei</i> <i>Luma</i> <i>Eupa</i> <i>Chipia</i> <i>Muchi</i> <i>Ya eu</i> <i>Kongsat</i>
42	Singsri <i>Phou Gnot</i> <i>Tapay</i> <i>Ban Tang</i> <i>Cha Ho</i> <i>Lao Seng</i> <i>Phay</i> <i>Lao Pan</i> <i>Phong Kou</i> <i>Phong Set</i>
43	Lahu <i>Lahu Dam</i> <i>Lahu Khao</i> <i>Kui</i>
44	Sila
45	Hani
46	Lolo
47	Ho

Hmong Iumien Group	
48	Hmong <i>Hmong Khao</i> <i>Hmong Lai</i> <i>Hmong Dam</i>
49	Iumien <i>Lanten</i> <i>Yao Phomdeng</i> <i>Yao Khao</i>

3.3.2.2: *Geographical-Landscape Grouping:*

Officially ethnic groups in Lao PDR are categorised into ethno-linguistic groupings. In addition, it has been generally observed that the livelihoods and geographical distribution of the groups, and their preference in general for certain landscapes, can be observed in a simpler, three (3) category system being commonly used, as follows:

- Lowland Lao (*Lao Loum*), groups living in the lowland regions of the country that for the most part cultivate paddy, practice Buddhism and are integrated into the national economy (Tai Lao, the dominant group, and various related ethnic groups such as the Tai Dam, Tai Lüe, Phuan and other Tai-speaking groups (approximately 50% of the population).
- 'Slope Dwelling Lao' (*Lao Theung*), groups living in the middle hills that practice swidden agriculture, are reliant on forest products and relatively isolated from the dominant lowland culture. These groups are the original inhabitants of SE Asia and consist of Austroasiatic (Mon-Khmer) family of ethnic groups such as the Khmu, Lamet, Brou, Salang, Atel and many other smaller groups spread throughout the country (approximately 35% of the population)
- Highland Lao (*Lao Soung*), groups dwelling in the highland areas that practice swidden agriculture and include the Hmong, Lao Huay and Yao (Hmong-Yao ethno-linguistic family) and representatives of the Tibeto-Burman ethno-linguistic family (Akha, Lahu, Lisu and Pounoy among others). These groups are recent arrivals from Southern China and form about 15% of the population.

These geographic cum cultural categories are based on observations from the 1950s, and while they are still relevant, the changing socio-economic context of Lao PDR is resulting in significant realignments of ethnic groups in relation to livelihoods, location and adaptation. This dynamic situation also makes it difficult for scholars and authorities to agree on the actual number of ethnic groups.

The term 'indigenous peoples' is not used in Lao PDR, as is the case in Vietnam and China. Rather the term 'ethnic groups', which corresponds to the Lao term, *xon phao*³ is used to describe all ethnic groups in the country. The challenge, therefore, in terms of application of OD 4.20 is to define which ethnic groups (minorities) are covered under its provisions and requirements and which represent examples of the dominant mainstream culture.

3.3.3: Ethnic Groups in the NT2 Project Area and OD4.20

- The NPA and PIZ villages in the catchment area are all considered to be covered by the World Bank (OD 4.20) and ABD's policies on indigenous peoples. They exhibit all the characteristics of vulnerable social groups covered by the policies; i.e. reliance on the natural resources, ancestral territory, having a distinct cultural identity that is different from the dominant lowland culture, primarily subsistence-oriented economies and some degree of culturally unique institutions and language. Although the extent and magnitude of potential impacts on communities in the catchment are indirect, all measures are being taken to ensure that livelihood development is in accordance with WB and ADB standards on indigenous peoples.

3.3.4: Legal Status of Ethnic Groups in Lao PDR

- The Lao PDR Constitution (1991) and other legislation recognize the unity and equality of ethnic groups in the political process and protect their right to preserve and improve their unique traditions and culture (Const., Articles 1, 2, 3, 8 and 22). All ethnic minorities have the right to Lao citizenship, to possess family books and identity cards, to use native language and to practice traditional customs and religion (Const., Articles 8 and 9). The Constitution prohibits any act that discriminates against or divides ethnic groups (Article 8). Ethnic groups maintain land tenure

³ The Lao term, *xon phao*, is derived from two words: *xon*, meaning 'together' and *phao*, meaning 'clan', 'family', 'line' or even 'race'. Hence the usual translation of ethnic group in official parlance. The expression implies a sense of common identity based on kin relations, marriage and racial background. The Lao also use the expression *xon phao noy* (ethnic minorities) and *xon phao nyai* (larger ethnic groups).

- user rights equal to all Lao citizens and even preferential access and customary user rights to certain forest products (Forestry Law, Article 30; MAF Regulation 535; MAF Orders 54 and 377).
- As the primary legal document in Lao PDR, the Constitution provides a framework and minimum rights to be implemented in legislation. However, since the court system remains underutilized, it is difficult to enforce such rights or resolve conflicts between ethnic groups and the government or other stakeholders. Legislation in Lao PDR recognizes primary land tenure and resource user rights for ethnic groups, but most of them remain unaware of these rights under national legislation due to the inability of the government to provide extension to remote ethnic villages such as those within the NNT NPA.
 -
 - The National Assembly has a special Committee on Ethnic Affairs to draft and evaluate proposed legislation to ensure that the concerns of ethnic minorities are incorporated and not infringed upon. The lead institution for ethnic affairs in Lao PDR is the Lao National Front for Construction (LNFC), which has an Ethnic Affairs Department. Research on ethnic groups is the responsibility of the Institute for Cultural Research under the Ministry of Information and Culture.

3.3.5: Polices and practice regarding cultural diversity

Lao PDR policy has prioritised national unity with cultural diversity focused on improvement of livelihoods of ethnic groups. Specifically, the Resolution of the Party Concerning Ethnic Minority Affairs in the New Era (1992) focused on improving the lives and protecting the cultural identity of ethnic groups as a cornerstone of government policy. In 1996, a national workshop concluded that the 1992 policy had not been sufficiently implemented and established a new work plan to address these issues. The current National Social Economic Development Plan (2001-2005) does not specifically recognize ethnic groups, however, the national policy for poverty alleviation among ethnic populations in remote areas remains a cornerstone to development

While the process of integration into the mainstream economy and the Nation State does threaten the cultural diversity of the country to some extent, there are a range of mechanisms in place for protecting cultural diversity and vulnerable groups. For example, serious and successful efforts are made to ensure all or most groups are represented in the Government. Thus, the large majority of Provincial and District Governors throughout the country are from relevant ethnic groups, or 'minorities' in that particular area. Even at the civil service level, many provinces and especially Districts agencies are staffed with persons from ethnic groups resident in that areas, and to some extent reflect the local ethnic mix.

3.3.6: Legal Status of the Land

WB Operational Directive 4.20 requires that the EMDP contain an assessment of the legal status of the ethnic groups relating to land rights and recognition of traditional land tenure systems of indigenous peoples (Paragraph 15(a)). At this time, the 31 villages within the NT Watershed have no explicit legal recognition of their land or resources and access and use has been traditionally based on usufruct patterns in the case of swidden and home-gardens.

As a general principle in the Lao PDR, the State is the owner of land and forest resources on behalf of the national community (Const., Art. 15; Land Law 1997, Art. 3; Forest Law, Article 5). However, the State has initiated national programs to allocate:

- Residential land to individuals as private title or "*Bai Ta Din*;
- Degraded forestland to individuals and village households under a "Temporary Land Use Certificate" (TLUC) or "*Bai Yang Yeurn Tee Din Sua Khao*"; and
- Natural forest within village boundaries and under village control through forest land management agreements.

These programs are consistent with government policies to raise tax revenue, stop pioneer shifting cultivation and comply with the ongoing transformation from a socialist-oriented centralism to private ownership and market principles (Kirk, 1996). The various type of land tenure in the Lao PDR are shown in Table 3.3.

Table 3. 3: Scope of Land Tenure Allocation

Legal document	Land use rights	Land eligible	Who can qualify?
Permanent Title * Valid for life of holder, unless transferred or lost in Court.	Full rights: <ul style="list-style-type: none"> • Possess; • Use; • Manage; • Transfer; • Inherit; • Collateral; • Compensation for state condemnation 	Non-forestland used for house/settlement, paddy or permanent agriculture. No title issued for natural forest. Titles have only been issued in urban areas.	Lao citizen
Land Survey Declaration (with Tax Certificates) * Valid until cancelled or title is issued and is typically issued in urban or residential areas	<ul style="list-style-type: none"> • Possess; • Use; • Manage; • Inherit; 	Non-forestland used for housing, permanent agriculture. No title shall be issued for land categorized as natural forest.	Lao citizen
TLUC * Valid for only 3 years	<ul style="list-style-type: none"> • Possess; • Restricted use; • Manage; • Inherit; 	Degraded land suitable to convert to grass for livestock, fish and crop production, or fruit propagation Degraded forestland used for tree planting	Household in a village may receive_ ha for each labor force: Grazing (15 ha) Rice/Fish (1 ha) Fruit tree propagation (3ha) Upland cropping (3 ha) Tree planting (3 ha)
Village Forest and Land-use Management Agreement (VFLMA) * No term stated	<ul style="list-style-type: none"> • Possess; • Restricted use; • Limited management 	Natural Forestland zoned within village traditional boundary	Village Community
Lease * Valid for 20 to 75 years	<ul style="list-style-type: none"> • Possess; • Commercial use; • Limited management 	Any type of land, including natural forest	Individual; Households; Domestic and Foreign Investors; State or social organizations

The GOL land-titling project under the Ministry of Finance oversees the issuance of private title to Lao citizens for residential land in urban and peri-urban centers, but this program has yet to address forestland or land in rural villages. Although this program does not directly relate to ethnic groups in the NT Watershed, it is an option in the Resettlement Area to secure private title to villagers (see Resettlement Plan). Private title provides full ownership rights to use, receive benefits, transfer and inherit the land upon payment of annual land tax (Land Law, Article 5).

TLUCs⁴ provide the right to use and inherit land, but not to transfer or use the land as collateral (Land Law, Article 48). The provincial land office has the authority to convert TLUCs to permanent land title after three years upon a showing of good management and payment of taxes (LL, Art. 22; FL, Art. 13; and MAF Instruction 822), however, none of the 600,000+ TLUCs issued over the past decade throughout the Lao PDR have yet been converted to permanent title. Despite the advantages provided by secure tenure over land and resources, many ethnic groups have been reluctant to be subjected to the land use

⁴These documents are further approved by the District Governor and called "Sit nam si to din" (rights it land use).

planning process⁵ and its associated documents that i) they may not be able to read; ii) state that their rights are temporary; iii) require them to pay tax; and iv) may restrict traditional land use practices.

Within the NT2 Watershed/NPA, land and forest resources are State property (PM Decree 164, PM Decree 25; MAF Regulation 524) with occupancy and user rights for land within the village boundaries allocated to villages and individuals in the form Village Forest and Land-use Management Agreements (VFLMA), and Temporary Land Use Certificates (TLUC), respectively. No permanent title would be issued although TLUCs allocated to individuals could be converted to permanent title, after the initial three-year term, as provided for under the law, if and when implementation of this becomes GOL practice. Such legal recognition of land-use rights for individuals and villages is likely to be seen as a positive step by NPA villagers as it will give them legal security for the first time.

However, there is currently only a very limited understanding of local land and resource tenure systems practiced by the various ethnic groups in the NPA. 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. Thus, the immediate instrument for recognizing the usufruct rights of the local villages is the VFLMA. The details of FLUPAM in regard to tenure systems and a draft template for VFMLAs is discussed in Section 5.4.4.

3.3.7: Rights to Resource Use

The customary rights of all Lao citizens, including ethnic groups, to resource use in the NT2 Watershed/NPA are, to varying degrees, restricted by the Forest Law (1996), Prime Minister's Decree 164 (1993) which established the National Protected Areas (including the Nakai-Nam Theun NPA) and subsequent MAF promulgations on rules and regulations for NPAs.

3.3.7.1: The Forest Law

The Forestry Law permits all Lao citizens and organizations, including ethnic groups, "to possess and use trees, natural forests and forest land when authorized by authoritative agencies" and provides the framework for the customary rights of ethnic groups over such forest resources. Article 5 states that "Individuals and organisations shall be entitled to possess and use trees, natural forests and forest land only when authorised by the authoritative agencies".

Legislation clearly recognizes the long-standing, traditional use of forests by ethnic groups in Lao PDR (Forestry Law, Article 30; MAF Regulation 535, Articles 7 and 8; MAF Orders 54 and 377). Villages in the NT Watershed have open access to forestland and resources within their village boundaries either identified by the FLUPAM process or traditionally recognized between villages.

Customary user rights include:

- 5 cu/m/yr of timber from natural forest zoned for village production for non-commercial household and public purposes;⁶

- Hunting of non-protected wildlife and aquatic species

- Collection and sale of non-protected NTFPs.

(*Forestry Law, Articles 28, 30; MAF Reg. 535, MAF Orders 54 and 377*).

Customary user rights 'shall avoid causing damage to the forests or forest' and may be restricted by protected area and land use legislation (Forestry Law, Article 30). For example, hunting and NTFP collection may not occur during closed seasons (MAF Reg 524; MAF Reg 221). Access and user rights are prohibited within core protection zones in a NPA and corridor zones connecting NPAs and user rights may be limited within protection forest areas (PM Decree 164; MAF Reg 524; MAF Reg 535).

The emphasis is on encouraging alternative lifestyles to the exploitation of forestlands, which must be approached carefully in the case of the NT2 Watershed where hunting, gathering and trapping as well as

⁵ See the ADB report on *Participatory Poverty Assessment in Lao PDR (2002)* for discussion how land use allocation has increased poverty in certain villages by reducing available land for traditional agriculture.

⁶ Villagers have full ownership and user rights over trees planted on their land with their own labor and expense.

swidden agriculture are the norm. Thus, regulations specific to the Watershed will be developed (see part 5), and it will be necessary to ensure the continuation of traditional uses of the forest, to allow for increased and more sustainable cultivation of NTFPs, and a more productive use of the land surrounding villages. Despite the contradictory nature of the present legislation, there is ample scope for working out solutions combining traditional rights and long-term rights to utilise resources in a sustainable manner in the NPA.

3.3.7.2: Current Policy on Resource Use in NPAs

Regulations on National Protected Area Management, Aquatic Resources and Wildlife drafted by DFRC and promulgated by MAF (2001) define rules and regulations for management and resource use in 3 land use zones in NPAs:

- i. Totally Protected Zones – TPZs – include areas designated specifically for conservation of flora, fauna and habitats. These are to be managed for wildlife and ecosystem conservation by the NPA authorities and other stakeholders partners through participatory monitoring and patrolling. Natural resource extractions are in general totally prohibited except in special circumstances following consultations and the development of specific management permits.
 - 'Managed Use' or Controlled Use Zones – CUZs—are areas which can be used for subsistence or productive purposes, but only following management guidelines, rules and regulations, Thus, they include managed, reserved forest areas, consisting of little-disturbed forest areas or other significant habitats but utilised by villagers (customary rights) for the extraction of NTFPs and other forest products. The objective is to conserve the existing ecosystem biodiversity, but to allow communities to practice traditional activities in a sustainable manner.
 - Village Agricultural areas, is a sub-zone of the CUZ, and refers to two general zones: a) areas of regenerating forest within a swidden cycle and adjacent areas of forest (livestock grazing) and other habitats subject to frequent use by residents of the NPA.. Village authorities are responsible for managing these areas in a sustainable manner in co-operation with the NPA authorities, and b) settled agricultural areas, such as paddy land, gardens etc.

The 3 zones are delineated jointly by the relevant GoL authorities and local communities based on a number of criteria and processes, including:

- Existing community uses and customary rights claims
- The existing situation in relation to conservation needs and priorities;
- The development of rules and regulations to enable the management of these zones by village level institutions appropriate for the local situation;
- Co-management of the wildlife protection zones by the NPA authority and local communities.

3.3.8 Current Policy on Shifting Cultivation and its Implications

GoL policy on shifting cultivation has evolved over recent years, from one that implied the elimination of all forms of shifting cultivation by the year 2000, to a more pragmatic approach which now recognises three types of shifting cultivation^{7/8} (Table 3.4).

Table 3. 4: Current Policy in Regard to Swidden Cultivation.

System	Description	Status
1.	Pioneer swiddening (<i>bet hay lenn 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 khong ti</i>)	Preferable

The overview of livelihood systems in Section 3.5.3 indicates that 50% of the stakeholder-village population practice rotational upland rice farming (LS2) while a further 35% combine this with paddy (LS3). These two livelihood systems are acceptable and preferable, respectively according to GoL policy.

⁷ Notification No. 0350/AF, 2001: Definition of "Hay" and "Upland Agriculture Area"

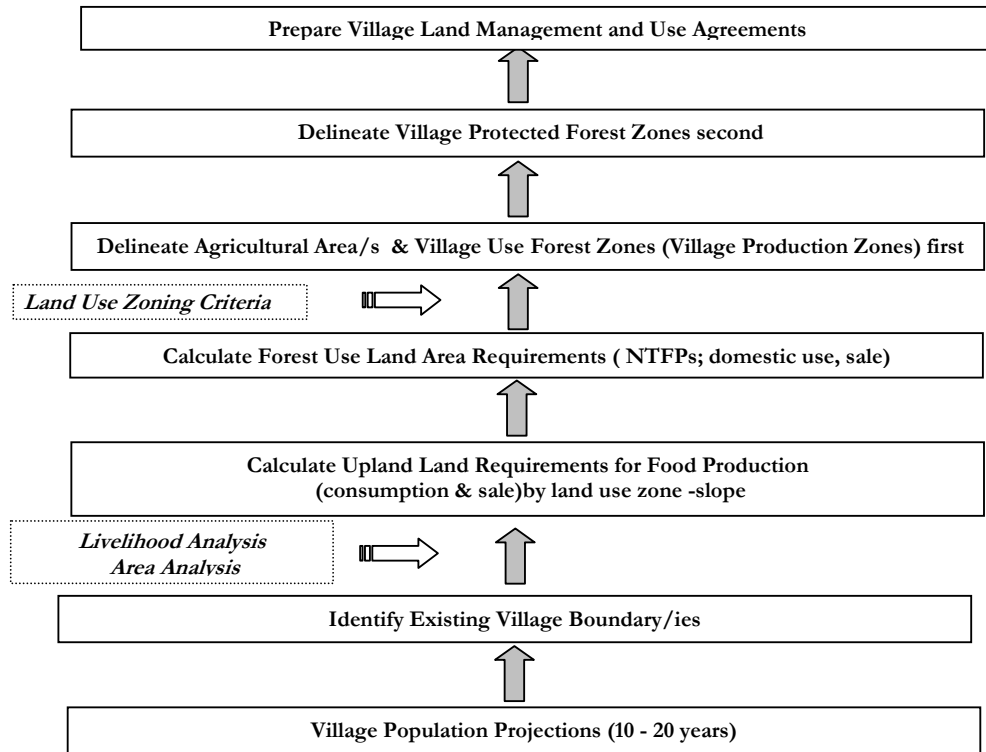
⁸ Address to the National Assembly, by Deputy Minister of MAF, October 2001.

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.

An approach to assess the nature of current livelihood systems and how these can form the basis for long-term sustainable land and resource management would include:

- i. An assessment of village land carrying capacities and land requirements for swidden systems for projected populations. This assumes that the swidden system would remain the mainstay of the livelihood system while new approaches to agricultural production are gradually introduced and adopted.
- ii. A procedure for ensuring adequate village upland agricultural production areas (swidden or rotational agriculture) and village forest use production areas are delineated. A proposed procedure is presented in Figure 3.1.

Figure 3.1. Proposed Procedure for Zoning Village Forest and Land Use Areas.



Therefore at the village level it would be essential to initially undertake “balanced zoning” to adequately support the populations, in the following order of priority:

- i. swidden or rotational upland (agricultural production)
- ii. village production forest zones (economic, food, household and medicinal production)
- iii. village protection forest zones (some forest production and environmental protection)

This, at least in the short term, would be preferable to placing a dependence on the gains from improved agricultural production methods of a more permanent nature.

3.3.8: Nam Theun 2 Watershed Management and Protection Authority (WMPA)

PM Decree 25 (2001) established the NT2 WMPA as a special authority of GOL responsible for overseeing the management, development and protection of the Nam Theun 2 Watershed Area. This decree describes the objectives and role of the WMPA and the membership of the Board of Directors, who first met in Vientiane in August, 2001.

The objectives of the WMPA are:

- to assure an adequate water flow with low sedimentation into the reservoir of the NT2 Project;
- the conservation, maintenance and promotion of biodiversity of the NPA in relation to tourism and scientific research;
- the building and strengthening of the capacity of NT2 WMPA and stakeholders in managing and implementation of activities;
- the facilitation of improved livelihoods for the inhabitants of the NT2 Watershed;
- the prudent management and effective use of funds

It is important to note that the WMPA is ultimately responsible for the implementation, management and monitoring of all ethnic minority activities as part of its role as the co-ordinating agency for all social and environmental activities in the NT2 Watershed.

The establishment of the Nam Theun 2 WMPA is unique in Lao PDR and is an enormously important step that provides a legal framework for integrated conservation and socio-economic development in the Watershed. Work is ongoing at present, parallel to activities that address urgent issues of conservation and programmes for livelihood development. An Operational Plan to guide the activities of the Executive Secretariat was first drafted in May 2000. It has been updated and is included as Part 7 of the Social and Environmental Management Framework and Operational Plan (SEMFOP).

3.4: BASELINE DATA: ETHNICITY AND CULTURAL SITUATION

3.4.1: Ethnic Groups in the NT2 Watershed/NPA

3.4.1.1: Review of OD 4.20 Definitions for the NT2 Watershed

The World Bank and ADB's Safeguard Policies on Indigenous Peoples apply to the ethnic groups in the NT2 Watershed/NPA (See section 3.3.1 for a complete review of the WB Safeguard 4.20):

- Attachment to the natural resources of the area and a sense of ancestral territory. All villagers have a strong sense of belonging to the region and attachment to the resources available in the forests and rivers. In addition, there are demarcations of territory according to the range of influence of territorial spirits (*phi meuang*).
- All groups define themselves, to some degree, as distinct cultural groups by name (Brou, Phong, Ahoe, etc.) but there is still a tendency for villagers to class themselves as *Lao Theung* (mid-hill dwellers) in relation to the dominant culture of the lowlands (*Lao Loum*), according to previously used Lao Government classifications. However, there is considerable dynamism and cultural assimilation and change .
- Many different languages/dialects are spoken in the NT2 Watershed/NPA, including language families used by relatively small groups of Vietic-speakers in the upper catchment, and languages spoken by groups on the Nakai Plateau and in the lowland areas, such as Brou, Sek and Tai dialects. Many individuals are bilingual or even multilingual, and some languages are in the process of disappearing.
- The number of customary social and political institutions have been somewhat reduced due to an ongoing integration into the Lao State. There are, however, councils of elders (*thao khun*) who oversee socio-cultural events such as marriages, funerals and collective rituals. In addition, in several villages there are hereditary positions of mediums (*mau thiem*) and ritual priests (*mau*) who perform local rituals and ceremonies that differ from lowland cultures but are similar to cultural practices on the Nakai Plateau.
- All the communities affected by the proposed livelihood development have primarily subsistence-oriented economies, consisting of upland rice, livestock and non-timber forest products. Surpluses of forest products and livestock are sold to middlemen or in Nakai town for cash or bartered for rice. Few families have much in the way of consumer goods but demand is growing.
- Many areas of the NT2 Watershed/NPA are being exploited by groups from outside, primarily swidden farmers on the periphery such as the Hmong and Tai to the northeast, trans-border traders and poachers from the east and the north and groups from the lowlands and Nakai Plateau exploiting natural resources in the catchment.

Thus, the ethnic groups of the NT 2 Watershed should be considered as 'indigenous peoples'. The distinctions between groups are not nearly as significant as the distinction between them and the dominant cultures or those cultures presently making inroads into the area. Thus, livelihood improvement and enhancement are approached in terms of the different levels of technology and skills, in addition to the different cultures and practices of the ethnic groups. These different levels do not correspond with the classifications of ethno-linguistic groups as will be detailed in the following sections. The discussion of ethnic identity and culture in this Section explores the dynamic aspects of culture in the project area.

3.4.1.2: Classification of Ethnic Groups in the NT2 Watershed

In 1996, international and local anthropologists and sociologists conducted a socio-economic and cultural survey in the NT2 Watershed/NPA to assist in the preparation for resettlement and social interventions for the Nam Theun 2 Hydropower Project. The aim of the study was to detail existing socio-economic and cultural conditions in order to facilitate planning to offset possible negative impacts and enhance potential benefits. The study explored the ethnographic, cultural, archaeological and socio-economic aspects of the various ethnic groups in the whole project region, including the lowland areas of the Xe Bangfai River, the Nakai Plateau and the NT 2 Watershed, by means of surveys and Rapid Rural Appraisal (RRA).

Four main ethno-linguistic groupings were identified:

- **Vietic** (a branch of the Austroasiatic or Mon-Khmer ethnic groups) with at least 12 relatively small sub-groups of languages.
- **Brou** (Western Katuic branch of Austroasiatic), also known as Sô or Makong.
- **Tai-Kadai**, including the Sek, an archaic language that differs from the rest of the Tai groups.
- **Hmong** (members of the Hmong-Mien ethno-linguistic family), recent arrivals from the north, inhabiting the peripheral impact zone but not the NT2 Watershed Area.

Estimated populations of the NT2 Watershed-NPA villages as reported by Nakai District in early 2001, and the ethnic groups as identified by IUCN social scientists (1998) is presented in Table 3.5.

Table 3. 5: NPA village population (2001-Nakai District) and ethnic groups (IUCN '98)

	Village Name	Persons	Female	Families	Ethnolinguistic Branch	Ethnic Group
	<i>Khet B. dTeung</i>	<i>2,103</i>	<i>1,067</i>	<i>402</i>		
1	B. MaKa	230	115	47	Vietic	Kri, Phong1
2	B. Dteung	262	134	50	Tai- Kadai	Sek
3	B. Seuk	89	51	17	Katuic	Brou
4	B. ThongNoi	148	76	24	Vietic	Phong 2
5	B. VangLae	119	59	24	Vietic	Phong 2
6	B. Phoung	145	76	28	Vietic	Phong 2
7	B. Peu	107	55	17	Katuic	Brou
8	B. Dtong	139	77	28	Vietic	Phong 2
9	B. Vangkhouay	116	58	21	Vietic	Phong 2
10	B. HuaySarn	141	70	27		
11	B. Beuk	140	68	31	Tai- Kadai	Sek
12	B. NaMeo	153	75	29	Tai- Kadai	Sek
13	B. NaMouy	314	153	59	Tai- Kadai	Sek
	B. Kutnae				Katuic	Brou
	<i>Khet B. Navang</i>	<i>1,861</i>	<i>932</i>	<i>328</i>		
14	B. Thameuang	420	224	72	Vietic	Arao, Malang, Atel
15	B. SongKone	204	102	32	Vietic	Malang (Brou)
16	B. NaHao	206	103	41	Tai- Kadai	TaiSin, PhuTai
17	B. Navang	310	149	52	Katuic	Brou
18	B. Kajing	175	88	31	Katuic	Brou
19	B. HuayMaxong	88	45	24	Katuic	Brou
20	B. FangdaengNeua	137	69	20	Katuic	Brou
21	B. Fangdaengatai	165	89	30	Katuic	Brou
22	B. ThongXart	156	63	26	Katuic	Brou
	<i>Khet B. Taipaiban</i>	<i>1,836</i>	<i>916</i>	<i>362</i>		
23	B. Vangjang	205	96	38	Katuic (Vietic)	Brou (Themarou)
24	B. Sorklek	292	144	61	Katuic	Brou
25	B. Singthong	132	66	27	Katuic	Brou
26	B. NaGhang	186	85	44	Katuic	Brou

	Village Name	Persons	Female	Families	Ethnolinguistic Branch	Ethnic Group
27	B. Thaipaban	240	119	44	Katuic	Brou
28	B. Gorbong	202	111	39	Katuic	Brou
	B. Makmi					
	B. Hang'					
29	B. Nava	142	71	27	Katuic	Brou
30	B. Makfeuung	322	168	59	Katuic	Brou
31	B. Peung	115	56	23	Katuic	Brou
	Villages Total	5,800	2,915	1,092		

3.4.1.3 Vietic Groups

The Vietic groups consist of a number of small pockets of ethno-linguistic groups throughout the NPA, mostly in relatively isolated areas where pressures to adapt to other, more technologically advanced and larger, groups have been less pronounced than on the Nakai Plateau, as is the case with the Bo. These groups can be considered as the 'original' inhabitants of the area since all other groups have entered the area at a later date, according to historical evidence (Chamberlain et al. 1996: 21-22). It appears that these groups have been displaced by others with agricultural practices such as the Brou and Tai. Originally, the Vietic groups were hunter-gatherers and were spread thinly over the whole area; low population density being necessary for a sustainable hunter-gatherer livelihood. They now comprise approximately 25% of the population in various locations in the Watershed (see Map 8, Folio of Annexures). Several groups have not been classified before the studies carried out for this project. Groupings generally follow the geographical delineation of the river systems:

- The Atel-Maleng group is found along the Nam Sot
- The Kri-Phong along the Nam Noy
- The Slang-X along the upper regions of the Nam Theun
- The Ahoe, Ahlaaw and Phong-3 in the lower regions of the Nam Theun
- The Cheut are found far to the south and on the other side of the Vietnamese border, split by a series of Brou villages on the Nam One

The Vietic ethnic groups can be classified into four categories, based mainly on linguistic characteristics and the degree of sedentary agricultural practices (Table 3.6).

Table 3. 6: Vietic Cultural Typology

Type	Eco-spatial Type	Vietic Group
Vietic I	Small groups only recently or partially sedentary with some difficulties adjusting to this lifestyle (classified as 'most vulnerable')	Atel, Thémrou, Mlengbrou and possibly Cheut
Vietic II	Originally collectors and traders who have become emergent swidden sedentists	Aro, Maleng, Malang, Makang, To'e, Ahoe, Phong
Vietic III	Swidden cultivators who are still moving between pre-existing village sites	Kri
Vietic IV	Combined swidden and paddy sedentism	Ahao, Ahlao, Liha, Phong and Toum

The Vietic groups represent the most diverse group, ranging from, until recently, foraging nomads to wet rice cultivators. This will, no doubt, be a very challenging group since many have suffered from forced relocation and maladjustment to new agricultural techniques and lifestyles over the past twenty years. However, as will be explained below there are indications that the categories in Table 3.6 are breaking down to a certain extent with increased contact and sedentism.

There are also examples of exploitation and patron-client relations between the Vietic groups and other ethnic groups in the catchment area. Chamberlain's detailed linguistic work (1997b) emphasises

differences and unique characteristics (cf. Vietic zoological classifications) but, there are similarities in languages and beliefs as well as originally similar material cultures, and these are key attributes to consider in the formulation of this Ethnic Minorities Development Plan. The emphasis is thus on common livelihood characteristics in order to design practical and feasible interventions.

Another characteristic of the Vietic groups that makes them distinct from the other ethnic minorities in the catchment area is their knowledge of the forest. Many rely on the forest for much of their food (protein and starches) and therefore have a wealth of knowledge about this environment. There are two points to be made here that could combine traditional knowledge and development in constructive ways. The first deals with recording and analysing the local knowledge about the environment, which, as Chamberlain puts it, is 'irreplaceable' (1997a: 1-3). As is the case with the tropical forests of the Amazon, knowledge about plants especially could prove to be valuable for alternative food sources and materials and for medicine. This work would combine the skills of the ethnic minorities and botany advisors in the field and could become an important activity in the overall development of some Vietic sites. The second point also concerns their knowledge of the forest and their potential to turn that knowledge into use for conservation. The Vietic groups are most suited as guides and could be trained to work as conservationists and rangers in the National Protected Area (NPA). Both these developments could help to preserve the intimate relationship the Vietic groups have with their environment and at the same time integrate them into the wider socio-economic reality surrounding them.

In the past, the Vietic groups were referred to as *Kba*, a term used for many Mon-Khmer groups, indicating that these were hunter-gatherers and without the 'signs of civilisation' (Buddhism and rice cultivation, according to the lowland Lao). The designation of *Lao Theung* distinguishes them from the lowland Lao (*Lao Loum*) and the highland groups (*Lao Suung*).

Many of the Vietic groups have inter-married with Brou and adapted various forms and degrees of sedentary lifestyles. Some groups, such as the Salang-X consist of a band of only 12. In addition, recent attempts by the government of settling the Vietic groups into villages have resulted in high mortality rates and unsuccessful attempts at sedentary agriculture. However, there are examples of some groups that have managed to adapt as will be examined below. The Vietic groups are the least integrated into the national economy (lowest average household income) and rely heavily on wildlife, fishing and collection of NTFPs for trade.

3.4.1.4 The Brou

In contrast to the Vietic groups, the Brou represent a homogenous ethno-linguistic group (Western Katuic language of the Mon-Khmer language family) ranging from the Vietnamese border to the lowland areas below the Nakai Plateau in Gnommalath and Bualapha. Their homeland was probably in Vietnam near the headwaters of the Nam Pheo (Vargyas 1996; Chamberlain 1997b: 17). However, there is evidence that the present Brou population migrated from the lowland areas via the Nakai Plateau in the nineteenth century

The Brou are the most numerous ethnic group in the catchment area (ca. 60%) and are experiencing a dramatic increase in population, especially in the Thaphaiban area, which is threatening their livelihood based on swidden cultivation of dry rice. The Brou, however, are an ethnic group which extends from Vietnam to the plains surrounding Thakhek, and as a group utilise a wide range of agricultural methods from heavy reliance on the forests for food and income (parts of the NPA) to paddy cultivators similar to the lowland Lao. There is also much variation in cultural and religious practices from animism along the northern stretches of the Nam Theun to a mixture of Buddhism and traditional practices in the Gnommalath and Mahaxai areas. The degree to which the Brou language is used also varies from 'pure' Brou speakers along the Vietnamese border to the Brou on the Nakai Plateau who have lost or are in the process of losing their language. Most of the Brou are bilingual in the NT 2 Watershed Area.

3.4.1.5: Tai-Kadai Groups

The Tai-Kadai groups (ca. 15%) in the NT2 Watershed can be divided into two: early and late migrations. The Sek were the first group to arrive from Vietnam via Khamkeut in the north. The Sek have inhabited the region for some time, at least since the beginning of the nineteenth century, since it is reported that

the Siamese attempted to forcibly relocate them to Thailand after their defeat of the Lao in 1832. The Sek are found in small groups in northern Vietnam and with their closest relatives in southern China. In general, the Sek practise irrigation and have the highest yields of all the groups in the NT2 Watershed, with many families being self-sufficient. Although there was previously a Buddhist temple in one Sek village, the majority practise animism, that is ancestor and nature spirit worship.

The Upland Tai groups are relatively recent arrivals from Bolikhamxay Province to the north of the Plateau. Some Tai, Yooy, Phu Thai and possibly Lao Kaloeng, originally arrived in the Khamkeut area as a result of Khmu rebellions in the late 19th century (Chamberlain et al. 1996: 18), but most that have recently moved into the northern areas of the Nakai Plateau and NT2 Watershed from densely populated area around Lak Sao, in search of land and sources of income. These Tai practice swidden for the most part and have similar mix of livelihood options as other Plateau occupants. The Tai groups are patrilineal and animist with only minor Buddhist influences, sharing many of the same cultural traits as other Tai in northern Lao PDR and Vietnam, such as the Mène, Moey and Pao further down stream on the Nam Theun (see Ovesen 1993). In addition, some of the Tai, especially at Ban Nam Nian, have been working for Bolisat Phathana Khet Phoudoi (BPKP) as drivers and loggers.

3.4.1.6: Ethnic Groups in the Peripheral impact zone and Adjoining Areas – the Hmong

All of the above mentioned groups also inhabit areas adjoining the Nam Theun 2 Watershed. However, the Hmong to the west of the NT2 Watershed deserve special attention due to their considerable impact on the forests. The Hmong are perhaps one of the most challenging of the ethnic minority groups that rely partly on the NT2 Watershed for food and trade in wildlife and forest products. As of yet the Hmong live on the periphery only but have made significant inroads into the forest and harvest it systematically, with highly effective hunting, trapping and fishing methods. The Hmong have also been practising pioneering shifting cultivation for centuries, which would not be condoned in the NPA, due to its destructive effect on forest habitats. It is therefore imperative that appropriate livelihood alternatives be developed with the Hmong in order for the conservation area to be preserved and in order to avoid serious conflicts of interest in regard to the utilisation of natural resources.

The Hmong are highly organised into clans (*sing*), have relatively high level of technology in the form of metal tools, firearms and housing and their own distinct language, customs and religion that is primarily based on Chinese Taoism. They fulfil the classic definition of 'ethnic minority' from an anthropological point of view with almost no cases of inter-marriage with other groups. The challenge for this development plan is to utilise these strengths in a positive manner.

The Hmong themselves have shown interest in trying paddy and growing cash crops but have stated that they lack the resources, skills and time to establish alternative lifestyles (Alton and Sylavong 1997: 3). There are many examples of how the Hmong have adapted to paddy cultivation (the village of Thong Pe on the periphery of the NT2 Watershed). Elsewhere from Northern Thailand to Guizhou in southern China, there are thriving Hmong communities that cultivate paddy or cash crops of various types. PRA discussions and trial projects would be the best way to interest the Hmong in viable alternatives to primary swidden. Experience shows that once a Hmong community is convinced that new methods or a modification of their traditional lifestyle is beneficial and sustainable, the community, as a whole will opt for improvement. The fact that the Hmong villages are nearer markets and roads is an advantage since cash crop alternatives also become a viable option.

3.4.2: Ethnic Identity

An investigation of ethnic identity in the NT 2 Watershed requires a review of a number of aspects that constitute 'ethnic identity' in order to consider whether the differences in ethnic identity are significant and whether these differences constitute separate interventions, strategies and approaches to proposed livelihood developments. In anthropological terms, the following characteristics have been used to identify ethnicity and are used as key considerations in the sections that follow:

- Nomenclature, that is a particular name to distinguish the group from others;
- Language;
- Sense of belonging to a specific territory;
- Material culture, including clothes, textile production, utensils, handicrafts, etc.;

- House designs;
- Kinship structures, including inheritance, residence patterns and intermarriage;
- Ritual practices and religious beliefs, including cosmology;
- Livelihood systems

Both livelihood systems and ethnicity play a role in the daily lives, social organization, culture, relationship to the forest etc. and as such will be taken into account during SEMFOP implementation. The differences in livelihood systems and social and cultural organization will be addressed in the detailed participatory approach and implementation level. All characteristics are reviewed in this section except livelihood systems, which will be examined in detail in Section 3.5.3 since proposed SEMFOP interventions are primarily in the form of livelihood development.

3.4.2.1: Nomenclature

Each of the ethnic groups in the Watershed area has been identified in previous studies (cf. CARE Int.1996; IUCN 1997). However, how each group identifies itself varies to a great extent. Due to the fact that there are parallel systems of naming the groups (official three categories and *xon phao*), considerable confusion among the groups themselves as to their 'ethnic name' and a dynamic and changing situation on the ground, one has to evaluate how these various terms are used in some detail.

The Sek and Tai groups have the clearest sense of their own identity in terms of how they refer to themselves. However, these groups also identify themselves as *lao loum*, that is part of a larger group that includes the Tai Lao or Lao Lao, the dominant group due to similarities in language and, for the Sek, cultivation of paddy. Many Tai do not distinguish between the various sub-groups such as Tai Men, Tai Moey, Tai Phao, Tai Kwan, etc. Other groups usually identify the Sek and Tai correctly, but rarely as *lao loum*.

The Brou used different terms and gave explanations of who they are. The term 'Brou' is a term from their own language whereas 'Makong' is what the Lao tend to use when referring to this group. The term 'Sò' is also used interchangeably with the two above terms. There is a clear sense of identity as a single group that is found from Thakhek in the lowlands to the Nakai Plateau, to the Watershed and to Vietnam on the other side of the Sai Phou Leung⁹ mountain range. However, many Brou referred to themselves as *lao theung*, using the previous officially recognised term, since many are bilingual and in some cases, speak Lao as their first language. Like many of the groups in the Watershed, there is a move towards identification with the dominant group.

The Vietic groups exhibit a changing sense of identity. Many individuals and groups had difficulty in identifying the name of their ethnic group. The Phong of the Nam Noy claimed that they were *lao theung* or Makong, identifying with the old official Lao status as 'Lao of the middle hills' or the larger Brou communities along the Nam Theun. Some Vietic groups could not specify their *xon phao* while others used the somewhat negative term of *kha*, originally meaning 'slave' and used by the Lao to refer to all non-Lao or non-Tai speaking groups. The various Vietic groups do not distinguish between themselves to the same degree as between themselves as a whole and the Brou, Tai or Sek.

3.4.2.2: Language

The situation with language is similar to that of nomenclature. The Sek and Tai groups still speak their own languages to a large extent. This is due to the fact that these languages are similar to Lao, the national language. Sek villages are more homogeneous than many of the other villages in the Watershed although there is evidence of Lao vocabulary. Sek and Tai dialects can absorb aspects of Lao without fundamental change since these languages are related.

The situation regarding the Brou is mixed. At Ban Navang, villagers spoke mostly Lao, with only elders speaking Brou except when speaking to other ethnic groups or in official circumstances. Middle-aged adults used Lao when speaking to their children or among themselves but Brou when addressing elders.

⁹ Also commonly known as the Annamite Mountains.

Brou children were conversant in Lao and had only a passive knowledge of Brou. This illustrates a generation shift in language usage and a gradual ascendancy of the Lao language. Brou villages along the Nam Theun, however, revealed a greater tendency in using Brou with children speaking Brou among themselves despite the fact that Lao is the language of instruction in primary schools.

Many of the Vietic groups have not retained their languages and are in the process of adapting dialects of Tai or Lao. In many cases, only the eldest members of communities are conversant in Vietic languages and dialects. This is due to a number of factors:

- Relatively small group that are intermarried with other Vietic groups, Brou and Lao/Tai speakers - Lao becoming the common language
- A conscious effort to learn Lao and identify with the dominant ethnic group - Lao has become a sign of modernity
- Lao is the language of trade, education and administration
- Vietic languages are not written and spoken by relatively small groups

There is a stigma attached to speaking ethnic languages and switching to Lao in official contexts, when in the presence of outsiders or dealing with officials. The Lao language is the language of government and learning. Many, if not most, villagers in the Watershed are multi-lingual with smaller groups like the Vietic speak three or more dialects or languages. Language usage changes depending on context, but the general trend is that Lao is replacing Vietic languages and to some extent Brou as well as influencing Tai and Sek languages. However, it is more difficult to generalise about language with the Vietic groups. Most are fluent in Lao, but many still use Vietic languages to some extent.

3.4.2.3: Sense of Belonging to a Specific Territory

All ethnic groups in the Watershed have a sense of belonging to a specific territory, an attachment to the natural surroundings and a reliance on the resources in those surroundings. However, there are some differences due to historical developments and resource utilisation. Those villages that have been longer established, such as the Sek villages on the Nam Noy, or the original inhabitants of the watershed, such as the various Vietic groups, have a sense of belonging to a specific territory for a greater period of time; Vietic groups originally being hunter-gathers in large territories in the Watershed. The Brou have been resident in the Watershed for many generations but there has been movement up and down the river valleys in search of swidden land, frequent relocations of villages and continued contacts with the Nakai and downstream areas. The Brou and the most recent arrivals, the Tai groups, inhabit the traditional territories of the different Vietic groups.

Illustrative of these differences is the notion of territorial spirits: *phii muang* in Lao, *mae jileng* in Phong (Vietic) and *kamut yang* in Brou. However, the Watershed seems to consist primarily of Vietic spirit territories with the Atel, Arao and Malang peoples having their own spirit areas based on a traditional village where the spirit resided. The Brou today have their own ritual specialists (*chao cham yang*) to carry out these rituals.

3.4.2.4: Kinship and Social Organisation

Kinship structures, intermarriage between ethnic groups and inheritance and residence patterns are typical markers of ethnic identity among many ethnic groups. In the Watershed, there is considerable similarity between the various ethnic groups in respect to all of these characteristics. All groups reveal tendencies towards practising patrilineal inheritance and patrilocal residence patterns. No taboos against marrying outside of villages or with other ethnic groups were recorded.

There are, however, some minor differences to be noted. There is a considerable amount of pragmatism regarding inheritance and residence. Many villagers claimed that the choice of which child would inherit the parents' house or fields depended to some extent on relations between children and parents and between daughters-in-law or, in some cases, sons-in-law as well as considerations of available resources. Gender plays a role since with all groups there are strong patrilineal tendencies with women leaving their natal homes to move in with their husband's families for a period of two or more years before establishing

their own homes or permanently residing in that home. This contrasts with the matrilineal tendencies of the dominant lowland Lao ethnic group.

Intermarriage is recorded in all villages to some extent but the degree varies considerably. Among the mixed villages of Vietic groups (e.g. Phong-Krii along the Nam Noy) there is considerable intermarriage among the groups, sometimes to the extent that these groups cannot 'identify' themselves as belonging to one particular group. There is certainly some intermarriage between groups along each river valley (proximity factor), Sek-Vietic (Nam Noy), Brou-Vietic (Nam Theun and probably formally along the Nam Mone) and Tai-Vietic (Nam Xot). Intermarriage is governed to a certain extent by economic considerations, with the relatively wealthy Sek villages having a higher degree of endogamy than other groups.

3.4.2.5: Material Culture

Material culture consists of objects that are produced by a community or objects that are purchased or borrowed from other groups. Tools, handicraft objects, clothing, utensils and weapons are typical examples of material culture. I shall consider house designs as a separate item in the next section. In general, all groups of the Watershed have a common technology and resource base so that it is perhaps not surprising that there are many similarities in tools, gear, utensils and other items that are required for swidden cultivation, collection of forest products, hunting and fishing.

In addition, the Vietic groups have recently become sedentary, some involuntarily resettled at the end of last century, and have borrowed much of the material culture from their neighbours, leaving few distinguishable traits that are particular from the point of ethnic markers. To an even greater degree, textiles and clothing is uniform throughout the Watershed with men and women wearing cheap items of clothing bought in the markets of Nakai and Lak Xao. The Brou still continue to weave their own cloth in other parts of the country but there were no examples of this in the Watershed. The same can be said of the Tai groups along the Nam Xot although it is uncertain whether this tradition has died out completely.

3.4.2.6: House Designs

There are many types of structures of houses in the Watershed. The differences in size, types of materials and number of sections and elaboration, however, depends more on family size, economic status and how long the community has resided at that particular village site. The most elaborate houses are those of the Sek in the northern parts of the Nam Xoy and Nam Pheo whose villages are more than 150 years old. The Vietic and Brou communities have less elaborate structures in general due to the fact that they have only recently been settled or have traditionally moved their villages every 10-15 years in search of more suitable land for cultivation or after a natural or supernatural event. More permanent housing tends to be made of wooden plants with roofs covered by wooden shingles. Other houses are constructed of bamboo matting and thatch. Except for some details in the interior of the houses such as the arrangement of sleeping quarters and location of spirit posts and altars, all houses tend to have the following characteristics:

- All houses are built on stilts due to flooding and keeping animals outside the living quarters and where food is located - the height will vary from 1.5 to 2 metres on average
- Odd number of steps to an open veranda (sometimes partially enclosed or divided into two sections depending on the size of the house and the number of members)
- Two doors, one used exclusively by the parents or eldest couple residing in the house, so as to symbolically separate the generations living under the same roof
- One window or at most two windows located at the ends of the house (shorter sides) but never in the bedrooms or facing the veranda
- Kitchen area separate, either on the right or left side of the veranda where a fire is located for cooking, considered a female domain (window to let the smoke out is located opposite the door)
- Washing area usually located between the kitchen area and the main part of the house
- The interior consists of an open section and sleeping quarters with larger houses have an open hearth and open sleeping area for guests

- In older houses (not newly established nuclear families) there is often a spirit post (*sao phii* in Lao) or a spirit altar where rice and flowers are presented to ancestors on festive occasions

One reason why there is considerable conformity in house designs throughout the Watershed is that many of the Vietic groups and the Brou seem to have borrowed features from Sek and Tai house designs. The former groups are hunter-gatherers and more mobile and hence less likely to construct permanent and elaborate structures. Recently, villages have become more sedentary.

3.4.2.7: Cosmology

A preliminary investigation into the elements of the spirit world reveals a certain degree of similarity among the main cosmological features. The following aspects are common to all groups in the Watershed and shared by many groups in Lao PDR¹⁰:

- Main territorial spirit (*phii muang* in Lao, Tai and Sek dialects, *mae jileng* in Phong (Vietic) and *kamut yiang* or *yang su* in Brou) that receives offerings at the start of the agricultural season and before any large communal feast and previously when the village is to be relocated
- Ancestral spirits (*phii phau phii mae* in Lao, Tai and Sek dialects, *kun peu kun me* in Phong (Vietic) and *kamut mbe kamut bia* in Brou) are informed and given offerings during any ritual, rite de passage or communal event in order to obtain blessings, approval or benign supernatural intervention related to those events.
- Forest spirits (*phii paa phii dong* in Lao, Tai and Sek dialects and *kamut chuk* in Brou)
- 'Visiting spirits' (*phii thiem* in Lao) that possess people in the village, revealing supernatural events or causing harm in the form of diseases or accidents.

It is clear that the latter two categories of spirits are complex and further investigation would be required to understand how they form part of the cosmology of the people. Especially important are the nature spirits that may reveal aspects of utilisation of resources that are of importance for livelihood development. The Brou also have a god who rules over the soil and natural elements (Earth God) called *yang su* (cf. Yargyas 1996) who is directly related to human and natural fertility. This is probably also the case with Vietic groups but more studies need to be done to determine how these forces affect farming practices and how people relate to their natural world.

Many ritual features that are similar, including the festival to the territorial spirit at the onset of agricultural activities in January or February each year, periods of rest for women after giving birth (*yuu fai* in Lao) and food taboos, marriage payments and feasts first at the brides house, followed by a procession to the house of the groom, burial of dead in an area outside the village (*dranup kamut* in Brou) and accidental deaths being buried without ceremony at the actual location of death or far away from the village. One difference that has been noted is that the Sek alone celebrate Vietnamese New Year (Tết), revealing their origins as being on that side of the Sai Phou Leung mountains. Some Brou villages have also been influenced by Buddhism or have contacts with Brou villages in the lowlands that have been influenced by Buddhism. There are few Buddhist monks in the Watershed (the monastery at Thaphaiban being the largest) and this form of Buddhism is heavily influenced by traditional beliefs in spirits.

It was difficult to acquire information on myths of origin and myths relating to important events and natural phenomena. Due to considerable assimilation and adaptation, many aspects have probably been lost over the past 100 years. This knowledge is esoteric and only elderly ritual specialists may be able to recall myths and rituals associated with a particular group. This is especially the case for the various Vietic groups who have had a close relationship with nature.

3.4.2.8: Summary of Ethnic Identity Significance

Table 3.7 summarises the significance (low-medium-high) between the three main ethnic groups, Sek-Tai, Brou and Vietic groups.

¹⁰ The transliterations of the various names of spirits, specialists or cosmological features are approximations due to the complexity of dialects, influences from Lao pronunciation and a lack of opportunity to check features with a number of ritual specialists.

Table 3. 7: Ethnic identity comparisons among ethnic groups.

Aspect	Sek-Tai groups	Brou/Makong	Vietic groups
Nomenclature	High- medium	Medium-low	Low
Language	High- medium	Medium-low	Medium-low
Territory	High-medium	High-medium	High-medium
Material culture	Low	Little or none	Little or none
Kinship	Low	Little or none	Little or none
House designs	Low	Little or none	Little or none
Cosmology	Low	Little or none	Little or none
Livelihood	Low	Little or none	Little or none

It is important to note that ethnic identity is more marked among the Sek -Tai groups in terms of nomenclature and language and to some extent in relation to territory (limited area of four Sek villages on the Nam Noy and Tai settlements on the Nam Xot) and lower degree of intermarriage in relation to other groups. The Brou/Makong are a large group that exhibit some degree of uniformity and identity awareness despite many shared characteristics with Vietic groups. The Vietic groups illustrate a changing sense of identity, merging with other groups and sharing characteristics to some extent.

3.4.3: Vulnerable Groups and Cultural Change

3.4.3.1: Vulnerable Groups and Adaptation

The Vietic I Group, which consists of Atel (16), Themarou (30+) and Mlengbrou (9), have been described as populations 'on the verge of extinction' by Chamberlain (1997a:1-3). The Vietic groups are recognized as the most vulnerable communities in the NPA and PIZ, particularly the Vietic I Group. Implementation of SEMFOP will require special attention to the circumstances of the Vietic groups.

The general participatory approach of SEMFOP, embodying the concept of "informed participation," will be adapted for the Vietic groups to allow them to participate on their own terms and at their own pace. Such an approach implies both participation, capacity building and awareness raising of the different options and the possible impacts of these on their customary lifestyles and rights. In addition, special assistance will be sought from an experienced NGO or ethnic minorities expert to design and facilitate an appropriate consultation and participation process for the Vietic, discussed further in the section on the peripheral impact zone below. This will ensure that a beneficial programme of livelihood development is implemented, taking into consideration cultural preferences, livelihoods practices and their particular customary rights to land and resource use.

3.4.3.2: An Approach to Ethnic Minorities in the Context of Development

Now that the various groups are classified as ethnic minorities according to WB OD 4.20 guidelines, it is important to address the issue of how they may best benefit from the project and at the same time how their cultural uniqueness may be protected from adverse effects. It would be impossible to insulate these groups from the dominant lowland Lao culture and the growing influence of the nation state and market place economics. By placing undue emphasis on preservation of cultural uniqueness, one runs the risk of isolating these groups further and delaying an eventual absorption into the mainstream culture solely on the dominant culture's terms.

An alternative approach is to equip indigenous peoples with the necessary means and knowledge to participate in the national economic, social and political development. This does not necessarily mean merging with the dominant culture, but rather establishing economic bases and conditions (education, healthcare, infrastructure and access to resources) so that these groups may compete with the dominant group on a similar level. The political reality of the Lao PDR, a nation state still attempting to bring peripheral areas under central control with improved infrastructure and services, and the increasing role of market forces in the country since liberalisation in the early 1990s are important factors to consider. In addition, the Nam Theun 2 project is likely to increase the tempo of these two processes. Therefore, to equip these ethnic minorities with the means to retain control over their own resources and exploit them in a profitable and sustainable manner could prove to be the best means of preserving 'their dignity, human rights and cultural uniqueness' (OD 4.20, 6). This can best be achieved through continuous public participation as outlined below in Chapter 5.

Certain approaches to the issue of indigenous communities of the Watershed have focused on ethnic and linguistic identity (Chamberlain 1997a, b). This approach focuses on the differences between languages and, to a limited extent, cultures rather than on the ongoing processes of change, ethnic assimilation and merging which has occurred over a long period of time in the NNT Conservation Area and in other places in Lao PDR. It would be wrong to claim that the NT2 Watershed be classified as a 'melting-pot' culture as is the case with the downstream Nakai Plateau (Sparkes 1997), but it is useful to think of both culture and language as dynamic rather than in terms of static categories. There is ample evidence to suggest that these various groups have been in contact with each other over a long period of time and that there has been adaptation of different cultural values—which could be referred to as Brouisation or Laoiation—as well as agricultural techniques. It is considered a more fruitful approach to think of cultures as ever changing and to design interventions that will foster a positive development and integration into some aspects of the mainstream society, while preserving aspects of their indigenous cultures while taking part in national development. Examples of how the different groups can adapt to different situations and use similar agricultural techniques are discussed later in this section.

A more constructive approach is to combine elements of existing cultural values within the context of an emerging modern state. The bottom line is that without interventions which ensure food security, a sustainable use of natural resources, protected rights and improved livelihood, it is unlikely that these small ethnic minorities can withstand the advance of the better educated, better organised and more advanced dominant culture and the market forces which accompany it. In order to 'preserve' cultural diversity in this region, a realistic plan is needed that ensures socio-economic development through culturally sensitive approaches and informed participation.

3.4.3.3: Indigenous Knowledge

Defining the term 'indigenous knowledge' (IK) is challenging since distinguishing between what is local knowledge of one's surroundings and what is specific knowledge held by a particular ethnic groups is almost impossible to disentangle. In the SEMFOP, 'indigenous knowledge' will be defined as unique and important knowledge and understanding about the flora, fauna and socio-ecological interactions in the NT2 Watershed/NPA. The following characteristics of such knowledge (adapted from Ellen *et al* 2000: 4-5) should be kept in mind when devising ways in how further studies in the Watershed can capture this knowledge for the benefit of local people's livelihood development. Indigenous knowledge can best be characterised as:

- Local and rooted in the surroundings of a particular place (transferring it will result in dislocating it and possibly lead to its disappearance);
- Orally transmitted and passed on through demonstration – it is a 'fluid tradition', constantly changing and being reproduced; not static;
- Involved in a practical engagement in daily life (enforced by experience, trial and error, etc.) – it is geared towards practical responses;
- Based on empirical observation rather than theoretical knowledge and involves a high degree of repetition;
- Shared knowledge but its distribution is asymmetric regarding gender and age;
- Linked with symbolic and ritual constructs and integrated into a people's world view or religion;
- Holistic and integrated into the broader cultural tradition

Preliminary studies have already been carried out by a number of scholars (cf Chamberlain 1997b; Culas 2001) but further work needs to be done to consolidate these studies, cross check the lessons learned with local 'specialists' and to further identify the wealth of IK that exists in NPA and PIZ communities that will be valuable for implementing SEMFOP through the 'adaptive learning' process it embraces.

All three technical programs of the SEMFOP (FLUPAM, PPAM and LDC) will benefit from, and indeed be highly reliant on indigenous knowledge. The mainstreaming of cultural awareness and sensitivity in all WMPA staff from these programs will be an important precursor to ensuring that IK is identified and incorporated into the implementation of these programs. The community development advisors will be

responsible for awareness and capacity building in this regard as a priority at the outset of SEMFOP implementation. This will be further supported with the full participation of these advisors in first round of FLUPAM/PICAD field activities in the 5 villages prioritized for implementation in year 1 (Table 2.3, Section 2.2.7). As the field program expands in years 2-5, the advisors will not be able to participate in every village, but will provide follow-up support on a regular rotational basis with all FLUPAM/PICAD field teams.

A more detailed description of the approach to incorporating IK in the planning, implementation and evaluation of SEMFOP programs is provided in Section 2.1.4.

3.4.4: Peripheral Impact Zone

A survey of 54 PIZ villages was conducted in June and July 2004 to collect information. The survey covered villages with a total population of 22,504 individuals and collected information on demography, ethnicity, socio-economic conditions, resource use and relationships with the NPA (Anon. 2004). A summary of the findings on ethnicity and demography are presented here and results in regard to socio-economic status and livelihood patterns are presented later in Section 3.5.5.

The average village population in the entire PIZ was 417 people, with villages ranging in size from 77 people (Ban Bung Sang) up to 1,331 people (Ban Thongpe). 78% of villages reported an increasing trend in population over the last ten years. Of these, four had more than doubled in size over this period. Notably two villages (Nam Niam and Phamuang) were four times larger than ten years ago. Only four villages (Na Hang, Na Kadok, Nam Dern and Vang Pha) reported declines in population over the same period and eight villages reported little change in population.

Villages reported the presence of at least 25 different ethnic groups across the Peripheral Impact Zone (Table 3.8), in some cases up to ten groups were reported from one village. Given the variation in complexity of reporting on ethnic composition, further analysis of these data will be conducted by the Community Development advisor to verify the main groups and the ethnic composition within them and determine additional surveys and/or studies to achieve a thorough understanding of the ethnic minorities in the PIZ (and NPA) to feed into the general planning process of SEMFOP. .

Table 3. 8: PIZ village demography and ethnicity.

Village Name	Pop.	10 year trend	Names of ethnic groups reported present by the village
B. Beung-Naa	328	Increasing	Yooy
B. Bung Ngam	139	Stable	Meauy
B. Bung Sang	77	Increasing	Meauy
B. Dongbang	281	Increasing	Nyor, Phou Thay
B. Donsat	310	Increasing	Meuay, Njoy, Phou Thay, Sek
B. Hangkan	317	Increasing	Yooy; Kaleung
B. Huai Laeng	417	Increasing	Thaeng
B. Ka-oy	178	Increasing	Ma-kong; 1 Kaleung
B. Khamhe	383	Increasing	Yooy
B. Khammouane	660	Increasing	Nyor
B. Khilek	266	Stable	Makong
B. Khonken	305	Increasing	Hmong Khao, Sène Kap
B. Korhai	1,250	Increasing	Hmong Khao, Meuay, Man, Tai Phouan
B. Na Dee	300	Stable	Thaeng, Meuay, Khamu
B. Na Hai	218	Stable	Meauy
B. Na Hang	221	Decreasing	Meauy
B. Na Kadok	879	Decreasing	Sek, Chie Verr, Atop/Makang
B. Na Meuang	199	Increasing	Meauy
B. Na Nang	148	Increasing	Meauy, Bo
B. Na Thon	229	Increasing	Tai Thaeng, Atop
B. Naa-Bo	375	Increasing	Yooy
B. Nacat	419	Increasing	Brou
B. Nam Dern	269	Decreasing	Thaeng
B. Nam Ngoy	384	Increasing	Hmong Khao, Hmong Laai, Hmong Vang, Sène Kap, Nyor, Bo, Meuay
B. Nam Nian	135	Increasing (4)	Nyor, Phuthai, Thaeng, Aheu, Tai Khao, Tai Bo, Sek, Nyouan, Lao Tai, So (Brou)
B. Nammouane	84	Stable	Yooy
B. Nape	1,169	Increasing (2.4)	Tai Daeng
B. Naphong	276	Increasing	Tai Bo
B. Nathin	177	Increasing	Yooy
B. Nong Mek	496	Stable	Meauy, Vietic
B. Nongbua-Naphao	448	Increasing	Brou, Yooy; Cheut (Salaang)
B. Phakatan	247	Increasing	Malang (To'e)
B. Phamuang	795	Increasing (4.3)	Hmong Khao, San Kap
B. Phon	456	Increasing	Brou
B. Phon Chaeng	406	Increasing	Hmong Khao
B. Phon Keo	261	Stable	Meauy
B. Phon Khoun	208	Stable	Thaeng, Vietic
B. Phon Sie	433	Increasing	Meauy

Village Name	Pop.	10 year trend	Names of ethnic groups reported present by the village
B. Phon Vilay	1024	Increasing	Hmong Laai, Meauy, Khmu
B. Phone	254	Increasing	Nyor
B. Phonekeo	397	Increasing	Hmong Khao, Hmong Laai
B. Phonethong	602	Increasing	Meuay, Man Khmu, Kuan
B. Phonsaat	466	Increasing	Hmong Khao, Hmong Laai
B. Sang-Phoungbon	529	Increasing	Yooy, Mlengbrou
B. Sop Hia	315	Increasing	Vietic (Ahoe and Phong), Men, Meauy, Kouan, Phong, Hmong, Pao, Brou, & Bo
B. Sophouan	296	Increasing	Meuay, Khmu,
B. Talak	145	Increasing	Yooy
B. Thong Ke	855	Increasing	Meauy, Thaeng, Putthai, Bo, 1 Pouak
B. Thongkham	413	Increasing	Brou
B. Thongkong	404	Increasing	Youi
B. Thongpe	1,331	Increasing	Hmong; Thaeng; Tai Bo
B. Thonsan	365	Increasing	Nyor, Phou Thay
B. Vang Pha	638	Decreasing	Meauy, Hmong Khao
B. Xiangdao	327	Increasing	Brou

3.5.4.1: *Bolikhambxai Border Villages*

Of the PIZ villages 38 are in Bolikhambxai Province. Many of these rely on natural resources within and near the NPA, and thus have potential impact on the NPA. Access restrictions imposed by SEMFOP may affect the livelihoods of these villagers, especially the Vietic groups in the PIZ. In addition, a number of Vietic groups require additional attention as discussed below. Thus, nine villages were identified as high priority in the PIZ as follows (others may be identified during early implementation):

Village Name	Pop.	10 year trend	Ethnic groups reported present by the village
B. Khonken	305	Increasing	Hmong Khao, SèneKap
B. Na Kadok	879	Decreasing	Sek, Chie Verr, Atop/Makang
B. Na Thon	229	Increasing	Thaeng (Tai Theng), Atop
B. Nam Ngoy	384	Increasing	Hmong Khao, Hmong Laai, Hmong Vang, SèneKap, Nyor, Baw , Meauy
B. Phamuang	795	Increasing	Hmong Khao, SèneKap
B. Phonekeo	397	Increasing	Hmong Khao, Hmong Laai
B. Phonethong	602	Increasing	Meuay, Man Khmu, Kuan
B. Sang-Phoungbon	529	Increasing	Youi, Mlengbrou
B. Sophouan	296	Increasing	Meuay, Khmu

Of particular conservation concern in the Bolikhambxai border area is incursion by traders and hunters from some of these villages into the NPA. Interventions to stabilise agricultural production systems along the populated border areas of the Watershed are essential.

The trade links between the Watershed, in particular the western portions, are oriented towards the markets of Lak Sao in Khamkeut District. This is likely to change somewhat with improved transportation across the reservoir and access to Nakai Town and the markets in the lowlands.

The particular circumstances and challenges of the Hmong groups in the area is described in section 3.4 on ethnic groups in the Watershed. Another set of ethnic groups that warrant particular attention in the PIZ, as well as in the NPA as described earlier, are the Vietic groups. These are the “Yellow Leaf People” (Tong Leuang), also generally categorized as Vietic Type I groups, referring to several very small groups of hunter-gatherers, some of which are variably located in the transition to more sedentarized agriculture, but with some difficulties adjusting to this lifestyle. They usually refer to themselves simply as “Forest People.”

These groups have traditionally relied on forest resources in the catchment area, and to varying degrees continue to do so, with livelihoods based on hunting and collection of wild plants, and fishing, without domestication of animals or plants, with the exception of the dog. Typical hunter-gatherer traits include under-production, lack of material possessions, routine food sharing, and egalitarianism. Perhaps most importantly, hunter-gatherers have demonstrated an ability to flourish for thousands of years in a single area without destroying the environment. Ecologically, as well as culturally speaking, there is much to learn from such people.

The vulnerabilities facing these groups have been reported in various project-related documents. A preliminary study prepared by the IUCN (first revision, May 1998, Section 8.3.1) states that the “upper river system Vietic groups” are most at risk of vulnerability and hardship. Some of these groups have been subject to relocation under the government’s village consolidation program and have been unsuccessful in adapting to village life, even after years of attempted sedentary residence. In addition to having been relocated to live next to villages belonging to other ethnic groups, they are typically looked down upon as being the epitome of backwardness by local villagers and government officials. Even when individuals are capable of speaking Brou or a Lao-Tai language, there are still difficulties in communication.

To date, these groups appear to vary in their adaptation to new surroundings. Some appear to be stabilizing, perhaps because of relatively good continuing access to traditional forest resources. In general, however, many appear to be in severe decline – their numbers are diminishing through high mortality rates and cultural attrition, with remaining populations showing clear signs of growing dependency and listlessness. In general, and for varying reasons, these groups are not benefiting from improved access to public services following their relocation. Moreover, most have lost control over productive resources and now survive through periodic wage labor for dominant neighboring groups. Their future access to forest resources depends in large part on final designation of the watershed protected area and the adjacent peripheral impact zone and wildlife corridors. Some (e.g., Vang Chang, Tha Meuang and Ban Na Phao) continue to reside within the designated protection area while others live in the PIZ.

It has been assessed that additional measures are needed for their protection, and to provide them with opportunities to participate on their own terms and pace and benefit from the project in a culturally appropriate manner. To ensure that this will take place, special assistance will be sought from an NGO and/or ethnic minorities expert experienced in working with such groups to design and facilitate an appropriate consultation and participation process for the particularly vulnerable Vietic Type I groups in the NPA and PIZ and the Hmong groups in the PIZ. This work will be undertaken under the guidance of the Community Development / Ethnic Minority Advisor and may be done under separate contracts and by separate experts (i.e. one for the Hmong and one for the Vietic groups). Experts from organizations such as the Lao Front for National Construction and the Institute for Cultural Research should also be asked to participate.

This “community participation support” will first seek to understand the particular circumstances and cultures of the Hmong and Vietic to design a consultation and participation process that will be culturally and socially appropriate for the respective groups.. The NGO and/or expert will subsequently lead the consultations and participatory planning activities with the respective communities during the FLUPAM process, alongside WMPA staff. By this means, the exercise will provide important capacity development for the WMPA in regard to ethnic issues.

The objectives of the consultations will be to assess the particular circumstances and vulnerabilities of the respective communities, to identify their needs and priorities and to assist the communities in proposing appropriate project interventions and assistance under the various SEMFOP components. The careful planning measures identified during the consultations will be incorporated into the project interventions and would aim to improve their chances for cultural survival.

The consultations will also identify the respective communities' current and previous territories and resource use practices. The extractive activities of these small groups do not constitute a significant threat, if any at all, to watershed environmental sustainability, and previously relocated Vietic groups will be allowed to return to their traditional territories inside the NPA if they so wish with assistance provided by SEMFOP and possibly the District authorities. Where warranted and desired, areas for rotational swiddens inside the protected area or PIZ should be designated for their use. However, it should be noted that although involuntary resettlement in the past has generated adverse impacts, and though administrative relocation has not resulted in any discernible improvement in attainment of services such as health care or education, the Vietic Type I groups may not necessarily desire a complete return to traditional hunter-gatherer lifestyles (e.g. younger generation). It would appear that any arrangements that would be satisfactory to the affected groups may need to blend elements of new and old. So this option should be devised in a manner that allows access to public services, notably education (including means to enhance the Vietic language) and health care (possibly including sustainable detoxification from opium addiction and advise on health issues, including possible poisoning from toxins used in gold mining).

Some group members (e.g., younger members with different expectations, or those already more familiar with sedentary agricultural practice) may prefer access to rotational swiddens or paddy land. If any options to promote lifestyle transition are to be provided, however, they should ensure direct provision of the necessary land and/or other resources.

Studies and findings from the consultations during preparation suggest that the Vietic groups have unsurpassed local knowledge about forest areas and local resources. This indigenous knowledge will be explored, enhanced and supported if so desired by the communities. Employment as rangers or in some other capacity allowing them to utilize this knowledge for the benefit of the protected area could also be provided.

Regardless of whether these groups eventually reside within the protected area or the PIZ, they will be provided explicit rights to traditional forest resources in a specified area of reasonable proximity. In other words, their customary rights to such resources will be recognized in a manner giving them a priority claim, in the event that it is necessary to restrict access for others, particular more recent arrivals to the areas. In this way the consultation process will also inform the FLUPAM process.

While the above options are likely intervention, the emphasis will be on the need for consultation and the informed participation of affected people – no a priori plans are established because the affected people are to play a direct role in devising plans and mitigation measures during implementation. Accordingly, the “appropriate alternative arrangements” envisioned in SEMFOP should be devised with the informed participation of the Vietic Type I groups themselves, and build on current resource use practices and indigenous knowledge rather than replacing these. Interventions should not be undertaken until the project has a thorough understanding of the communities, their needs and desires, and before the respective communities have a thorough understanding of their rights and opportunities and possible impacts, positive and negative, from project interventions.

3.5: BASELINE DATA: LAND USE, LIVELIHOOD AND SOCIO-ECONOMIC SITUATION

3.5.1: Methodologies

Various methodologies were employed in assembling the baseline data for the inhabitants of the NT2 Watershed and the PIZ area. A list of the reports and surveys that were used to collect baseline data on ethnic minorities is provided in the Preface to this report. A number of different approaches were used for data collection, as follows:

- Socio-economic surveys of selected villages in the NPA were carried out in 1996 and 1997 using semi-structured interviews as part of a Rapid Rural Appraisal (RRA) approach. This involved focusing on relevant topics and open-ended questions that allow respondents to express opinions and develop discussions. An initial set of topics or guidelines was used and informants were then encouraged to reveal knowledge about subjects. Probing questions on key areas were also used frequently to clarify issues during data collection.
- Resource management techniques of various types were used to improve understanding of local resource use. These included village sketch maps, cross-sections from transect walks across village land, crop or animal calendars showing seasonal variation, labour schedules, activity sequences of resource use, decision-making patterns of representative families.
- Demographic surveys were carried out first in selected villages and then by the assistance of trained STEA (previously STENO) and district staff in the whole of the NPA and bordering villages. This was to obtain crude birth and death rates for accessing population growth and this was compared with GOL census information from 1995.
- In-depth Interviews of individuals and families were carried out on several occasions concurrent with RRA in order to obtain additional information relating to individual household economics, social organisation, cultural practices, gender relations, language classification and resource use.
- Discussions with local leaders were carried out on several occasions throughout the consultation process and during all surveys in order to update statistics on village population, migration patterns and relationships between traditional and formal positions of power within the villages.
- Public consultations were conducted in across NPA and PIZ villages in May 2004 an on-going means for the WMPA to interact meaningfully with affected villagers and other stakeholders with respect to the various sets of issues that concern the respective areas. The initial consultations were intended to inform villagers generally about the NT2 Project and the WMPA's management plans for the NNT-NPA, to explain the possible impacts on their livelihoods and to obtain feedback and ideas in regard to their concerns. These consultations are seen as the first step in the consultation and disclosure process, which will continue throughout implementation.
- Semi-structured interview surveys were carried out in the PIZ in June and July 2004 under a contract with WCS to collect information on demography, ethnicity, socio-economic status, resource use patterns and PIZ village interactions with the NPA.

3.5.2: Customary Tenure and Land Usage

3.5.2.1: Land Tenure Systems

It is acknowledged that only a very limited understanding of traditional tenure patterns exists in the NPA. Procedural steps in the FLUPAM process have been put in place to rectify this situation prior to making any decisions on appropriate tenure systems with villagers. These have been described previously in Section 3.3.6.

The majority of villages, and perhaps all, the individual families in the NPA have no legal land documents. Access to land was traditionally based on usufruct patterns in the case of swidden and gardens and customary patrilineal inheritance in the case of paddy (Alton and Sylavong 1997). The Vietic represent a special case since some have only recently begun to practice agriculture and many are reliant on the forest as a major source of food and of goods for trading.

Swidden cultivation, for the most part, depends on finding new plots every year, either on a rotational basis (some Vietic, Brou and Sek-Tai groups) or a search for primary forest areas (some Vietic, Brou and

Hmong). In the case of the Nakai Plateau, Brou and Tai Bo families had swidden fields within the village boundary (spiritual and land use) and reserved access to about a dozen areas, the average cycle being between 10-12 years (Sparkes 1997). If families wish to use land outside their traditional village boundaries, they have to ask permission from the neighbouring village. Neighboring villages usually grant approval for a number of years (sometimes in return for a small percentage of the harvest or fee) depending on the availability of land. Most of the Brou villages at the southern end of the Plateau are related and there are few problems. There seems to be a similar situation in the NPA and although the swidden systems may be sustainable under current population levels, there is a need for more productive and less environmentally destructive forms of swidden to protect the NPA's natural resource base under increasing population pressure (Chamberlain 1997a: 2.2).

The same system of usufruct seems to function for vegetable gardens along the riverbeds and around the village. Certain families have used the same patch for decades. However, once a family moves out of the village, the right to use these areas seems to disappear after a short period of time. Hence these land-use patterns can be described for the most part as usufruct.

The situation in regard to the collection and use of NTFPs involves the recognition of certain forest areas as a community resource for this purpose. With some exceptions, such as the recognition of individual rights to resin-producing trees, these forest use areas are considered the common property of one, or in some cases, a number of villages.

It is thus important to obtain correct village boundaries and land use maps through the FLUPAM process before livelihood development begins. These village boundary and forest and land use maps will inform planners as to the resource potential of each village or area and confirm estimates of resource use information gathered in previous reports. Demarcating these boundaries would be the first step in ensuring usufruct rights, equitable access and sustainable use of resources. If each village becomes responsible for the resources within their boundaries and is given the authority to enforce rules regarding their management, intruders, poachers and illegal hunters may also be halted to a certain degree. There is already a notion of village boundaries and several incidents have occurred in the Watershed, demonstrating village recognition and protection of their resources (refer to IUCN Project Report on Phase 1 Pilot Activity at Nam Phonkeo). In addition, there have been several cases of arrests made of cross-border traders by village militia in the NPA over the last few years.

It is important to note that these boundaries have both a material and spiritual dimension that are mutually enforcing. As has been documented on the Nakai Plateau (Sparkes 1997), the sense of belonging to a particular territory infers a relationship between a spirit (*phii muang*) that allows exploitation of the resources and offers protection for the inhabitants in that particular area in exchange for annual rituals (*kin seng*) and respect.

3.5.2.2: Population and Land Use

The relationship between the population and land use in the Watershed is related to issues of the performance of livelihood systems. There has been a substantial increase in the NPA population (and by implication adjacent areas) since the end of the last Indo-China war in 1975. The current NPA population in the NPA is approaching 5,000 and the issues of increased productivity and improved sustainability are primary for these communities. Sustainability is related directly to food security and indirectly to the means of supplementing diets and/or earning cash from other agricultural activities or from forest products.

There are few villages in the Watershed that have anything approaching self-sufficiency in rice production, that is cultivate enough for themselves without having to rely on trade in forest products and wildlife. Both paddy and swidden rice yields are poor due to a combination of poor soils and lack of knowledge or technology and in some areas, high population density (shortened swidden cycle). This is not to say that more general food security, when forest product and other food substitutes are considered, is necessarily such a widespread problem. However, by increasing rice self sufficiency, not only does this stabilize the communities and improve their nutritional status, but also reduces their direct reliance on the forests. Thus the main goal of the EMDP is to improve food security through both increased agricultural

productivity and more sustainable systems of NTFP management which are developed in a participatory fashion in accordance with the wishes of villagers.

Overall food security is directly connected to poverty relief since food shortage leads to a general vulnerability and an inability to improve one's lot. The average annual household cash incomes in the Watershed are well below the Lao PDR average (cf. Chamberlain 1997a: 3-20):

- Vietic (159,448 kip)
- Brou (194,330 kip)
- Tai/Sek (218,280 kip)

Doubling the cash income to include estimated imputed income (see Income Sources in Section 3.5.4.1 – 300, 380 and 480 USD respectively) to compare these statistics with the Lao Poverty level, which was set at 750 USD in 1997, we see that all ethnic groups are well below this level. However, the general need to improve the standard of living for these communities should be seen primarily as an issue of food security and quality of life, rather than in strictly economic terms.

Any changes to agricultural production or NTFP harvesting methods raise both cultural and technical issues and require careful joint consideration with the communities involved and long-term monitoring and training. There must be continuous feedback and follow-up work to ensure that such transitions are successful in the long term. With the expected increase in population (over 4% per annum for the Brou), there is a likelihood of the over-exploitation of resources and the consequent degradation of NPA forest resources. In the long run, this will reduce the communities to an even lower level of poverty and greater dependence on a diminishing forest resource base. Hence, the productivity of the ecosystem must be increased through sustainable management to offset population increase. This is described as 'pre-demographic transition' (Alton and Sylavong 1997: 3-8).

3.5.3: Livelihood Systems and Interaction with Ecology

This section describes existing land and resource use patterns in the Watershed and organizes them into four livelihood systems. These livelihood systems cut across ethnic divisions since no ethnic group has one particular adaptive technique. Thus rather than thinking in strictly ethno-linguistic terms, these generalized livelihood systems allow for an analysis of the present situation which can then lead to developing appropriate strategies and interventions. It must be understood that the proposals in this Section are merely indicative, and final plans will be developed in a participatory fashion with villagers according to their needs and aspirations (Sections 2.1.2 and 2.1.3). How these interventions are developed on the ground will thus involve knowledge of the different values, local concepts and worldviews of the different ethnic groups in the Watershed (Section 2.1.4).

This section concludes with a discussion of the three types of shifting cultivation currently practiced in Laos, and includes a practical assessment of the nature of these livelihood systems and how they can form the basis for long-term sustainable land and resource management.

3.5.3.1: Overview of Livelihood Systems

At this point, it is necessary to present an overview of the NT2 Watershed in relation to the different indigenous groups, agricultural techniques and geographical areas before elaborating on the different livelihood systems. Vietic groups are distinguished according to Chamberlain's categorisation (Chamberlain 1997a: 3.3.1).

Figure 3.1 outlines the five generalized livelihood systems for the NT2 Watershed. Four of these are currently being practised and will be the starting point for identifying problems and interventions later on in this report. It is important to note that no single ethnic group utilizes just one type of livelihood system at present. This reveals a flexibility and adaptability within all of these cultures in relation to their environment.

With the emphasis on livelihood development and more sustainable utilization of resources in the NPA, one can assume that the more productive the agricultural method, the less reliant the communities are on the forest as their main source of food and cash income. Most of the Vietic groups settled in the area over a long period of time, including Vietic I communities (Atel, Themarou and Mlengbrou) which were

resettled after the last Indo-China war that ended in 1975 (ESMP 6.1.1). Although these groups have had serious problems in adapting to sedentary life, the proactive approach in the current situation is to improve their agriculture by working with their current livelihood (LS1 Table 3.9: swidden and reliance on forest products), giving full regard of their cultural preferences.

The other livelihood systems (LS2 - LS4 in Table 3.9) combine different elements of agriculture in progressively more complex ways which lead to more intensified settled agriculture and at the same time reducing direct reliance on the forest. The mix of the various livelihood systems in regard to use of resources is illustrated in both Figure 3.2 and Table 3.9. There is considerable scope for enhancing the sustainability of livelihoods within each ethnic group, as each group straddles several livelihood systems, thus allowing for trade-offs among the different resource use systems.

Figure 3.2: Range of Livelihood Systems practiced by Major Ethnic Groups

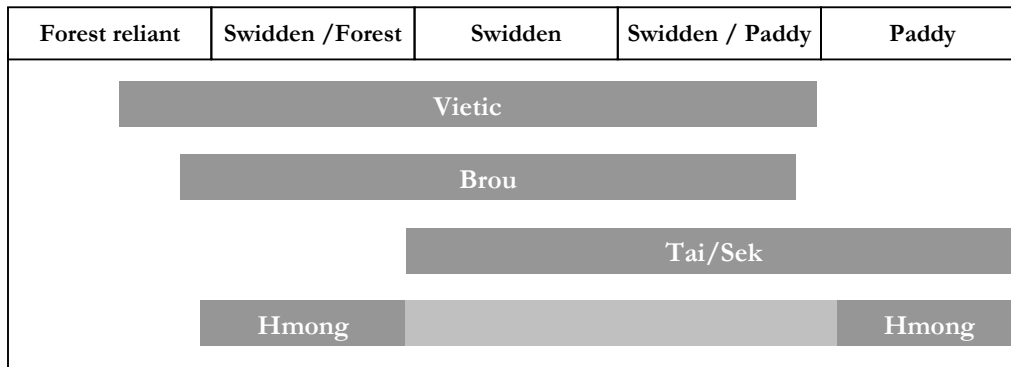


Figure 3.2 illustrates the range of livelihoods practiced by each ethnic group and reveals that various development strategies could be devised with the Vietic groups since, as a group, they span a broad range of agricultural development. The aim would be to increase productivity relative to where each group or village is located in the mix of livelihood systems. Although, the Brou are primarily swidden cultivators there is evidence to suggest that they may be receptive to paddy development and alternatives (for instance, cash crops, sustainable collection of NTFPs, terracing and improved livestock) that would result in reduced reliance on the forests. Sek and Tai groups in the NPA and in the PIZ may well require improved technology for their irrigation schemes and paddies that would reduce their secondary reliance on swidden cultivation and forest products. The Hmong in the PIZ present a special case since they are pioneering swidden cultivators, although not overly destructive. The Hmong, who tend to be highly innovative, might be to develop alternatives such as the paddy land or the introduction of viable cash crops, as in the case with the very successful Hmong village of Thong Pe. While Figure 3.2 provides generalizations, more detail regarding different livelihood options is presented in Table 3.9, however, it must be understood that these are merely indicative and planning will involve the active participation of all stakeholders.

Table 3. 8: Overview of Livelihood Systems in the NT2 Watershed/NPA

Indicator	Livelihood systems				
	Forest Reliant	LS1 Swidden/Forest	LS2 Swidden	LS3 Swidden/Paddy	LS4 Paddy
Description	Hunter-gatherer – totally reliant on the forest	Sedentary but still reliant on the forest to a large extent, some swidden	Primarily swidden cultivators with NTFPs and livestock for cash income	Combining swidden, paddy and dependency on the livestock and NTFPs	Primarily paddy cultivators with cash crops, livestock and trading
Approximate % of NPA population (1998)	Nil	5%	50%	35%	10%
Ethnic groups	Formerly Vietic group I	Vietic groups I and II	Vietic groups II and III, Brou, Hmong, Tai	Vietic groups I and IV, Brou, Tai, Sek	Brou, Tai, Sek, Hmong
Location	Formally all river systems	Nam Xot	Nam Theun, Nam Xot, Nam Noy, Peripheral areas	Nam Xot, Nam Mone, Nam Noy, Nam Pheo	Peripheral areas; Upper Nam Theun
NPA Villages Surveyed in Previous Reports (Care Report 1996; Alton and Sylavong 1997)		Tha Meuang (Arao, Malang and Atel – Vietic I & II)	Thaphaiban (Brou) Kou Ne (Brou) Song Lek (Brou) Song Khone (Malang – Vietic II and Tai) Maka (Kri–Vietic III +Phong–Vietic II) Vang Re (Phong – Vietic II)	Na Vang (Brou) Vang Chang (Brou and Themarou – Vietic I) Toeng (Sek) Na Moey (Sek)	Beuk (Sek) Na Hao (Tai and Brou)
Peripheral Villages Surveyed in Previous Reports (Care Report 1996; Alton and Sylavong 1997)			Phon Sa-at Kao (Hmong)	Suan Mone (Liha – Vietic IV) Phou Lan (Liha – Vietic IV) Phon Keo (Tai) Muang Cham (Phong – Vietic IV) Nam One (Toum – Vietic IV)	Thong Pe (Hmong)

3.5.3.2: Swidden/Forest Livelihood Systems (LS1)

This livelihood system can be characterised as heavily reliant on forest products for food and income, with some cultivation of swidden rice as a staple. Only Vietic groups I and II belong to this livelihood system classification. Tha Meuang, typical of this livelihood system, is the only village that has undergone a detailed survey in previous reports (Care Report 1996: Appendix VI -5). There are, however, other communities in the NPA that could be classified as having a similar livelihood system. Chamberlain (1997a) explains that the Atel, Themarou, Mlengbrou and Cheut groups (Vietic Goup I) have adjusted badly to sedentary life and are still basically reliant on the forest for much of their food staples, supplements and cash income. More information is required on these groups, but the example of Tha Meuang indicates that these Vietic communities have adapted to village life to some extent.

The village of Tha Meuang on the upper Nam Xot was established in its present site in 1973, but some Arao families had been living in a permanent location nearby. As part of a government drive to settle nomadic and semi-nomadic groups, other Vietic groups (Atel and Malang) were settled there in the late 1970s and 1980s. The total population in 1996 was 257 in 60 households.

Although they have probably only been practising shifting cultivation since the 20th century, their rice yields are a representative range for the NPA: only one household was completely self-sufficient, 19 households had rice for 6-8 months, 30 household for 2 months and 10 households had a deficit for the whole year. The Care Report concludes that rice productivity is relatively good but villagers utilise their time hunting and gathering instead, supplying a major portion of their livelihood.¹¹ Staples include wild tubers, roots and sago palm, which is the main supplementary starch. In addition, fishing and hunting are very important; much of which is sold in the market in Lak Sao or to Hmong traders. In other parts of the NT2 Watershed, trans-boundary traders buy wildlife and NTFPs in exchange for goods such as batteries¹². The main sources of cash/barter income are buffalo, wild animals and NTFPs (damar resin, rattan and cardamom). The standard of living is low and the main concern of villagers seems to be food self-sufficiency which is far less reliant on rice than in other livelihood systems.

As was previously mentioned in Section 3.4, the Vietic groups represent the greatest range and some of the most fragile communities. All programs involving improved livelihood models for Vietic communities should be undertaken slowly, with caution and a sensitive understanding of the cultural needs and aspirations of each particular group or village.

'Social dependency' is listed as the main problem or area of focus by Chamberlain (1997a) since the Vietic groups are not self-sufficient and are exploited by others. This implies that increasing the Vietic groups' control over their own resources and providing the means to manage them in a sustainable manner must be primary strategy under SEMFOP. This can only be achieved through consultation, long-term planning with the communities and extensive exposure to and training in alternative techniques. It would be both unrealistic and undesirable from a cultural point of view, to make the majority of the Vietic groups fully reliant on agriculture. Although their worldview and cultural values are closely linked with forest life, this does not mean that they could not achieve better food security through new agricultural techniques. But if 'social dependency' is an issue, establishing clear rights and sustaining resources in traditional village territories will be equally important in eliminating patron-client relationships with other groups.

Figure 3.1 illustrates two important aspects of the Vietic groups as a whole. Firstly, it shows that there is great variety as to the type of agricultural production and the level of technology. This means that there are variable starting points and a variety of approaches for the different communities when initiating interventions. It will be important to learn their goals, abilities, and willingness to adopt new methods and

¹¹ *There are no precise data on village population in the peripheral areas but there is every reason to believe that a similar population increase has occurred in these regions due to proximity and similar socio-cultural and historical developments. In the whole of the NNTCA the present population is approximately 25,000 with only 5,000 residing in the Conservation Area proper. There will be no populations in the northern extension and possibly only one small enclave in the Nam Theun Corridor.*

¹² *While visiting Ban Maka in January 1998, several trans-boundary traders passed through the village carrying sacks full of car batteries. Upon being questioned, they stated that they were in Laos to buy pigs and chickens, items that are readily available in Vietnam and hardly worth trekking two to three days for. They were not willing to admit to the fact that they were trading in wildlife products, and villagers backed their story.*

local environmental conditions. Secondly, it shows that there is a certain amount of flexibility and ability to learn new techniques from their neighbours in the NPA.

It is necessary to reiterate that the swidden cropping systems of many of the Vietic groups are characterised by poor yields, and some groups are even experiencing a population decline. This is because many groups have been forced to take up a sedentary life against their will as recently as 20 years ago. Their poor agricultural performances contrast with their effective hunting, gathering and fishing techniques (Alton and Sylavong 1997: 2-8). Consultations with villagers about agricultural development and their understanding of various methods will be imperative. Careful monitoring of improvements from an agricultural/technical and anthropological point of view will be necessary because of this recent transition. Special considerations should be given to certain Vietic groups at this and other levels, and these will be suggested in Sections 3.6 and 3.7.

3.5.3.3: Swidden Livelihood Systems (LS2)

The second livelihood system is characterized by a heavy reliance on swidden cultivation of upland rice. The largest group using this adaptation is the Brou although the Hmong in the periphery and many Vietic groups practice primary swidden and there is even one example of a Tai ethnic group (Lao Kaleung) reverting back to swidden. Upland rice cultivation by rotating swidden is by far the most common rice production system in the NPA. Swidden cycles vary greatly from 5 to perhaps up to 15 years depending on a combination of soil types and population density, and as a general rule of thumb, 8 year or longer cycles are considered sustainable. Although swidden cultivation is a useful and, at times, efficient means of growing upland rice, the evidence presented in many reports concludes that population pressure will force further expansion and shortened fallow periods, thus threatening the sustainability of these systems.

Ban Thaphaiban (population: 267 in 1996) on the Nam Theun is a typical example of a village with this livelihood system (Care Report: Appendix VI-17; Alton and Sylavong 1997: NPA Appendix-3). The Brou have been living in this area for about 100 years and are heavily reliant on swidden agriculture. No household was rice sufficient in 1996, the majority having only enough rice for 2-3 months. It was unclear whether this represented a trend or was the result of a disaster year. Although rice is the most important food item, the Brou are forced to plant corn, cassava and sweet potatoes in cleared swidden gardens or along the banks of the Nam Theun to make up the shortfall.

Livestock are also an important source of cash income, with buffaloes being sold in Nakai. This means several days of walking the animals down to the market and returning with cash, consumer goods or rice. Most of the wildlife caught in the area was reportedly eaten in the village¹³ but some rattan and other NTFPs were sold or exchanged for rice. There are also occasional trips to Lak Sao to trade and purchase consumer goods.

Although the majority of Brou villagers in the Thaphaiban region can be classified as primarily swidden cultivators, during years of crisis (1996-98), they became more reliant on harvesting forest resources. This most recent crisis period was brought on by a combination of heavy rainfall (a regular problem for swidden fields) and the flowering of a particular type of bamboo, which resulted in an enormous increase in the rodent populations.¹⁴ In 1998, large areas of the banks of the Nam Theun were used for growing cassava because there was no rice to be found in any of the villages. Men and women came down to the river with chickens and NTFPs when they heard boats arrive in order to trade these products for rice. One can conclude that groups that are reliant on swidden have adopted a 'rice mentality', that is they value rice as a staple above all else. This was often expressed in conversations in which villagers stated that maize and cassava were no substitutes for rice. These groups, for the most part, rely on agriculture for 60-70% of their food and cash barter income and the remaining part directly on the forests (NTFPs,

¹³ Villagers are no doubt reluctant to admit that they hunt in order to trade with trans-boundary merchants who often come down the Nam Theun. Thus, estimates and records of hunting need to be confirmed by long-term stays in the area.

¹⁴ While visiting the NPA in January 1998, Dr Tim Whitmore of the Panel of Experts proposed a theory as to why the rodent population had suddenly increased in 1996-97. He observed that a species of bamboo (*mai phai*) flowered in 1996. It does so every 17 years. The fruit of this bamboo provided ample food for the rodent populations. Upon discussing this with villagers, many agreed. One even provided an expression that connected the two phenomena: *mai phai khii dole, nuu ma lai* (when the bamboo flowers, the rodents appear in large numbers).

gathering wild foods and hunting and fishing, some of which is sold in markets or to traders). However, the vital importance of forest resources as a buffer against climatic and environmental risk must be recognized in any livelihood development strategy.

In the case of the Vietic groups reliant on the forest and practising a limited amount of swidden, as described in the above section, it is possible to detect a gradual evolution towards sedentary agriculture. However, there is at least one example of a group reverting back to upland rice from a paddy system, revealing the complex changes in livelihood systems and the flexibility of the different ethnic groups in the NPA. Ban Song Khone on the Nam Xot consists of Maleng and Tai (Lao Kaleung). These groups practiced paddy 20 years ago but are reported to have reverted back to swidden because of the poor water holding capacity of the soils (Care Report 1996: Appendix VI-6).

The majority of the groups in the NPA and in the PIZ express interest in wet rice cultivation with its promise of higher yields and less demanding work. However, few who now practice swidden have either the time or the knowledge to begin paddy development without proper support and training. The Hmong of Phon Sa-at Kao have expressed their desire to learn but are reluctant to do this on their own because of the initial risk to food security. Paddy cultivation, however, is not always an option due to topography, water supply and inappropriate soils. In certain locations, for instance Thaphaiban and perhaps for other parts of the NPA, a more practical approach may be an intensification of existing swidden and alternative sources of income, which are less directly reliant on the forest.

3.5.3.4: Swidden/Paddy Livelihood Systems (LS3)

Many villages in the NPA and the PIZ combine swidden and paddy cultivation. This strategy optimises food security since often one technique will fail to produce a good harvest due to a number of factors: swidden fields produce lesser yields and may be susceptible to flooding and drought depending on the weather, while rain-fed paddy often suffers from a lack of water. Again, these villages also rely on income from livestock, fishing, NTFPs and the sale of wildlife but to a lesser degree than the two livelihood systems already mentioned. This combination of elements depends less on the ethnicity of a particular village than the actual location.

Vietic groups, Brou, Tai and Sek utilise this combination of dry and wet rice cultivation. What is interesting from the point of view of development and adaptation is how these groups change livelihood systems. Two examples illustrate this well.

Ban Na Vang is located on the Nam Mone and is linked with Lak Sao by a seasonal road (Alton and Sylavong 1997). It is a fairly large village and its inhabitants are ethnic Brou who moved into an abandoned Sek village in the nineteenth century from the Thaphaiban area, augmented by more Brou from other outlying areas in the 1970s. The Brou have made use of the paddy terraces that had been constructed by the Sek. The village cultivates 12.8 hectares of paddy and approximately three times that of upland rice, and also makes use of the surrounding forests and river for food and trade items. The Brou had originally practised swidden in Thaphaiban but have seized an opportunity to acquire paddy land. The land was abandoned by the Sek due to the Siamese invasion and subsequent occupation in the nineteenth century. The name of the village means 'vacant paddy land' and illustrates a tendency in the NPA of a gradual adaptation of paddy cultivation by the Brou and Vietic groups.

Developing potential paddy areas in the NPA will not only reduce reliance on swidden and forest products in relation to food security, but will in many cases be regarded as a positive development by different groups, since wet rice cultivation represents the most desirable livelihood system in many villagers' minds. It is important to note that paddy is not restricted to one particular ethnic group such as the Sek or Tai groups, but has been practised by all groups in various forms for many years.

3.5.3.5: Paddy Livelihood Systems (LS4)

The villages in the NPA and periphery that are primarily reliant on paddy cultivation derive approximately 80% or more of their livelihood from agriculture. This livelihood system, if properly understood and functional, provides not only the best form of food security and subsequently the highest standard of living, but is the most attractive option from the point of view of conservation. Paddy cultivation

combines high productivity with good sustainability and stability but requires considerable skills in water management and maintenance. Traditionally the Tai and Sek communities have had paddy livelihood systems whenever the terrain has permitted it. But there are examples of Hmong and Brou groups who are also heavily reliant on paddy cultivation while some Vietic groups are developing in that direction. This evolution towards wet rice cultivation has probably been an ongoing process in the region for centuries but it has accelerated this century due to increased mobility and contact with neighbouring groups.

An example is Ban Beuk on the Nam Phaeo is an old Sek village consisting of 143 inhabitants (Alton and Sylavong 1997: NPA Appendix-5). The Sek have been practising paddy cultivation in the area for as long as can be remembered, but what is interesting is that they have recently (13 years ago) started dry season irrigated rice and have claimed to have completely discontinued swidden practices.¹⁵ The irrigation system consists of earthen weirs. The differences in yields are significant:

- irrigated dry season rice 2.5 t/ha,
- irrigated wet season rice 1.0 t/ha,
- rainfed wet season rice < 1.0 t/ha
- upland rice 0.5 t/ha.

It should be noted that, even if rice yields can be increased by improved techniques, storage losses and rodents remain serious and perennial problems which will also have to be dealt with.

Similar to all the other livelihood systems, the Sek at Ban Beuk rely on income from livestock, fishing and hunting to supplement family diets but it seems there is little in the way of trade. This is difficult to gauge since villagers are somewhat reluctant to talk about these issues, knowing full well that the government is trying to discourage such activities. Even so, there is reason to believe that there are fewer incentives to hunt and harvest NTFPs when food security is virtually assured every year and when income can be generated from the sale of buffalo and rice. Achieving food security through agricultural development and improved management systems for NTFPs will be a primary goal under SEMFOP as it will help to sustain current livelihood systems in a manner consistent with conservation objectives.

3.5.3.6: Assessment of Livelihood Problems

A variety of problems have been identified that affect the different livelihood systems previously described (Table 3.10). However, it should be stressed that these are only a first indication of some of the problems, and the actual situation will be explored in much more detail with villagers before undertaking any livelihood development activities or imposing any access restrictions through the VFLMAs.

Table 3. 9: Principal Problems of Current NT2 Watershed/NPA Livelihood Systems

Current Problems of Respondent (Villager Perception of Problems)	Livelihood System of Respondent			
	LS1 Forest/Swidden	LS2 Swidden	LS3 Swidden/Paddy	LS4 Paddy
Lack of knowledge and experience with sustainable swidden cultivation	✓			
Low levels of agricultural technology	✓			
Rodent and insect problems	✓	✓	✓	✓
Decreasing wildlife & NTFPs	✓	✓	✓	
Distance from markets	✓	✓	✓	
Poor yields, overworked land and population pressure		✓	✓	
Livestock Diseases		✓	✓	
Lack of knowledge on irrigation			✓	
Water supply regulation/flood control			✓	✓
Floods	✓	✓	✓	✓
Post-harvest grain storage		✓	✓	✓

¹⁵ In fact the report notes that as many as 21 families, that is more than half the population do not have adequate paddy and supplement this with upland rice but only 8 ha were cultivated in 1996 as opposed to more than 40 hectare of paddy.

3.5.4: Socio-Economic Status

There have been two socio-economic studies undertaken in the NT2 Watershed. The first study was carried out by CARE International in 1996 as part of a general assessment of the socio-economic situation in the whole project area (CARE 1997). The second study was commissioned by IUCN to cover the social aspects of the ESMP (1998). The results of the second study are analysed below since they build upon the first study and provide a more detailed analysis. This is supplemented by the ongoing work of the District Upland Development and Conservation Project (DUDCP) and shorter visits by specialists.

3.5.4.1: Income Sources

Given the difficulties in obtaining reliable data on family income, any calculation can only be indicative of the average income levels. Data have been collected from 189 households inside the NPA and 210 households on the periphery of the various ethnic groups and is presented in a series of tables in the appendices of the IUCN Draft Socio-Economic Report (1997). These data are summarised in Table 3.11.

Table 3. 10: Household Income and Percentages for Households inside the NPA

Ethnic Group	Average HH income (Kip)	Fishing %	Hunting %	Gathering %	Agriculture %
Brou	194,330	1.38	49.13	28.42	20.33
Vietic	159,448	9.71	10.15	49.64	23.29
Tai/Sek	218,280	0	1.82	43.74	54.44
Averages	202,694	0.9%	23%	35%	42%

The data in Table 3.11 indicate that income sources vary considerably among the different ethnic groups reflecting the degree of integration into the mainstream economy (Tai and some Brou with good access to markets), level of technology (Sek with wet rice paddy and food surplus and Brou relying on hunting) and knowledge of the environment (gathering among the Vietic groups as opposed to hunting). These differences will be further elaborated on in the following sections. Since there is no data on consumption of agricultural and forest products it is difficult to generalise on what the total households incomes really might be, but there are indications to suggest that the Vietic groups obtain more food stuffs from the forests due to their knowledge of the environment while other groups (not strictly speaking 'indigenous') are far more reliant on hunting and extracting of NTFPs for sale or, in the case of the Sek, irrigation.

The average household income is calculated at 202,694 Lao Kip, or approximately 200 USD in 1996-1997 when the data were collected. If these data are compared with the more detailed data collected on the Nakai Plateau (EMDP, 2002), one can estimate the imputed income as approximately the same or a little less than the cash income. This would mean a total income at approximately 400,000 Kip or 375 USD per household per year. However, one can conclude that the household income of the residents of the NPA is significantly lower than the Lao Poverty Line put at 750 USD.

Interpreting the data from the relatively small sample of households in the peripheral impact zone (PIZ) is even more problematic (Table 3.12). One can only conclude that the location of the villages and the level of technology play an even more important role. The Hmong village of Phon Sa-at has extensive irrigated paddy and hence their strong reliance on agriculture, whereas the Vietic villages are far from markets and some are only recently settled, and are therefore more reliant on forest products and fishing. The difference in livelihood systems will therefore be a key factor in implementing the proposed livelihood development strategies to be elaborated on in Section 3.7.

Table 3. 11: Household Income and Percentages for Peripheral Households

Ethnic Group	Average HH income (Kip)	Fishing %	Hunting %	Gathering %	Agriculture %
Hmong	972,185	0	0	24.08	75.92
Vietic	69,050	0	12.36	10.00	77.63
Tai/Sek	514,308	25.51	6.40	32.44	35.65
Average	405,659	5.08	2.43	24.44	68.05

It is recognized that the foregoing discussion is based on data from a 1997 report, and is therefore rather outdated. It is planned to collect more detailed data under the SEMFOP M&E baseline (See Section 6.5.1) which, once available, will be used to re-analyse income levels.

3.5.4.2: Demographic Status

The general trend regarding population in the NPA is high growth. The average growth for the country as a whole was estimated at 2.6 percent in 1995. Estimates for the NPA are averaged at 3.79 percent, with some villages recorded at as high as 6.25 percent (Chamberlain 1997a: 3-3). However, there are some considerable differences among ethnic groups with lower rates among the Sek who rely less on labour because of irrigated paddy in relation to the Brou with their labour-intensive swidden cultivation. Some of the smaller Vietic groups are even experiencing a population decline or very slow growth rates. This could be due to maladjustment to sedentary lifestyle from a previous semi-nomadic life in the forests and the psychological and social stress associated with such an abrupt transition.

In general, population growth is a major factor when considering land use development. The Brou areas especially can be classified as in a state of 'demographic transition', that is to say, a population growth rate that is yet to stabilise with decreasing mortality rates but without the social mechanisms to lessen the pressure on the land.

Growth rates are also high in the peripheral impact zones and this threatens the viability of some of the livelihoods of groups inside the NPA since encroachment in search of resources will put further pressure on livelihood systems.

3.5.4.3: Health Issues

Sustained healthcare is lacking in the whole of the NT2 Watershed/NPA with malaria, respiratory diseases and gastro-intestinal diseases found everywhere. Infant mortality rates are very high, drinking water is rarely boiled and general sanitation very poor. Most people rely on the local ritual specialists for cures based on a combination of spiritual intervention and herbal medicines. It has been reported that the only medical treatment that some villagers have received over the last few years was irregular visits by some ex-military medics (Alton and Sylavong 1997). The nearest clinics and small hospitals are located in Lak Sao and in Oudomsouk (Nakai town).

Any improvement in the lifestyles of the communities of the NPA will have to involve a basic healthcare programme, combined with education regarding sanitation, disease prevention, use of mosquito nets and eventually birth control. The LWU could also play an important role in community healthcare as well, since many issues, such as childcare and nutrition, are women's responsibilities.

Health interventions will consider how to work with traditional health practitioners, incorporate traditional medicine, needs for training of health staff, and other design features which will produce more culturally sensitive interventions (See Section 2.5.3). One objective of SEMFOP is to hire and train staff from the local communities to provide health services. (See Section 3.7.3). In addition, the WMPA will explore opportunities for cooperating with the WB Ethnic Group Development Plan (a health project targeting poor and ethnic minorities currently under preparation) in the development of health care services specifically tailored to the needs of ethnic minorities.

3.5.4.4: Education

Schools are lacking in most of the villages in the NT2 Watershed and wherever there are schools the level of teaching and facilities are poor. Many villages have previously had schools but often teachers, usually from outside the village or area, have left for better jobs in towns due to low salaries and poor conditions. The result is that the majority, including nearly all the women in the Watershed, is functionally illiterate. The leading positions in villages are often occupied by men who can read and write the Lao language, something that they have acquired during military service or from working outside the area.

Education is another issue that has important implications for the development of ethnic communities in the NPA and PIZ. Basic literacy and numeracy will be absolutely essential for further integration into the market economy, that is increased trading of products, and for a better grasp of issues relating to a range

of topics such as healthcare, improvements in agriculture and conservation. Improved education levels will empower the people and give them a better understanding of the processes involved in developing their own lives in harmony with the NPA and ensure a greater involvement and participation in these processes.

It should be noted that special measures to address the particular education issues of the different ethnic groups have been included in SEMFOP (Section 2.5.2) and will be refined during the planning and implementation of education activities. These education interventions will seek to consider language and curriculum, and explore how education interventions may be adapted to the particular circumstances of NPA and PIZ villages.

3.5.4.5 Gender Issues

The cultivation of upland rice or swidden and to a slightly lesser extent, paddy, is highly labour intensive work as are most of the livelihood activities followed by the ethnic minorities in the NT2 Watershed/NPA. Although both men and women are active in agricultural tasks, often dividing the work between themselves, it should be emphasised that women, in addition, are responsible for the domestic sphere. This involves fetching water, cooking, pounding (de-husking) rice, cleaning, washing clothes, looking after young children and the elderly as well as looking after the kitchen gardens, vegetable plots along the rivers, small livestock and gathering edible plants, fish and small animals in nearby streams and rivers. It would be incorrect to conclude that there is a strict segregation of tasks along gender lines, but women have far more responsibility in the domestic sphere, although they may receive periodic help from their husbands or male relatives.

Problems Specific To Women In Ethnic Minority Groups:

- Although lowland Lao women face a range of health, education and livelihood problems, ethnic minority women, as a general rule, face even greater challenges. These issues affect the women of different ethnic groups in the NNT Watershed/NPA to varying degrees, depending on their remoteness, cultural values, traditions and other factors, but all are faced with the following and other challenges:
 - Lack of education: until very recently, reasonable educational opportunities for girls/women was almost non-existent.
 - Lao language: since few girls attended school until recently, and few women are allowed to deal directly with traders from outside the village, few females have been able to learn Lao language;
 - Lack of information/training regarding health: despite the fact the women are given the responsibility for the care of children, few have any knowledge of, or access to, health care information outside of traditional beliefs;
 - Access to information in general: women, as well as men, have very limited access to information of any kind that can be of use in livelihood development, health care, agriculture, etc.;
 - Completely dependent on husband: almost all decisions regarding family, village, livelihood, etc. are made by the husband. Women are generally powerless to act without the consent of their husband.
 - Forced to get married early: women are generally expected to get married between 15-20, as 20 is already considered too old to start a family. This eliminates many potential opportunities for training and education, since the duties of wife and mother come very early for most;
 - Restrictions on giving birth: some ethnic groups have specific restrictions on giving birth, which may lead to health dangers for the woman and the child.

Economic Roles/Status Of Women:

- In the NNT Watershed/NPA, as in most other ethnic communities in the Lao PDR, money is either in the hands of the husband or controlled by the husband.
- For all ethnic groups in the NNT watershed, the use of or control over all land is in the hands of the husband. In many cases, if the husband dies, the land reverts back to the family of the husband, putting the woman in an even more powerless situation;
- Sale of any resource – livestock, forest resources, etc. – is in hands of husband

Community Support Structures for Women:

- There are very few support structures available to women. In fact, the only social support seems to happen during daily work carrying water, gathering forest products, pounding rice, doing laundry, etc. Experience from special projects would indicate that women rarely get involved, although sometimes develop a reason and mechanism to meet and talk together.

Status And Social Standing Of Women

- Women are rarely, if ever, elevated to positions of status in the village. An exception to this general rule is the witch doctor or shaman who is sometimes but rarely a women.

Role Of Women In Village Administration

In most cases, the involvement of women in village administration is limited to taking care of guests – providing water, food, smoking material, etc.

Role of Women in Decision-Making

There appears to be almost no female role, or certainly very little role, in decision making, regarding the use of money, going outside of the village, or in local administration. In the case of special projects, women are beginning to give their input on what kind of support the family needs (mosquito nets, tools, etc.).

LWU Roles and Activities:

The Lao Womens Union (LWU) is responsible for all aspects relating to women. Every village, at least in theory, has an LWU representative who is elected by the villagers and approved by the Party. The LWU is responsible for:

- creating an LWU organization in every village;
- economic development activities – providing support/loans for families for weaving or basket making;
- health care support (birth spacing, etc., vaccination support)

Unfortunately, the lack of training and resources of LWU personnel, together with the requirement of membership dues and other responsibilities of members (the traditional of gift giving during meetings) limit the number of members or the enthusiasm of villagers to participate. The LWU's power in regard to protecting the rights of women is further eroded due to the fact that all reporting is generally done through the Village Headman who will generally only take action after consulting with the male dominated village committee or with his peer group.

Other agencies and organisations relevant to women's needs at the district and village levels include: health, education, agriculture, youth union and forestry.

3.5.5: Peripheral Impact Zone*3.5.5.1: Socio-economic status*

Paddy rice was reported to be the dominant form of rice production. 14 villages use only paddy fields for rice production, while 27 villages reported that the majority of households used paddy fields. In 9 villages only a few of the households use paddy fields, and only 3 villages reported having no paddy rice.

Only 7% of villages surveyed reported having no shortage of rice during the year. Nine villages reported that up to 25% of households in the village experience some shortage of rice during the year. Fifteen villages said that 26-50% of households report rice shortages. Ten villages estimated that 51-75% of their households experience annual rice shortages. Almost one-third of villages reported that 76-100% of households are short of rice at some time during the year. Rice shortages reportedly last from 1-12 months with the majority of villages reporting shortages less than seven months in duration.

Table 3.12: Duration of Rice Shortages.

Rice shortage duration	Percent of all villages
1-3 months	49%
4-6 months	41%
7-9 months	8%
10-12 months	2%

Residents in 51 villages reported largely 12 different types of income sources including sales of livestock and agricultural crops, forest and aquatic resources, textile products and sundries as well as employment with government and private companies.

The most frequently reported source of income across all villages was livestock sales (83% of villages). Many villages reported that livestock sales had increased over the past ten years as a source of cash. Other frequently reported sources of income included sundry sales (76% of villages), government work (67% of villages; as teachers, health care workers, or soldiers), and NTFP sales (61% of villages). With the exception of livestock sales, the sale of native forest and aquatic resources (plants & plant products, fish, and wildlife) was reported by more villages than sale of cultivated agricultural products (such as rice, vegetables, silk, and cotton).

3.5.5.2: Natural resource exploitation

Fish and aquatic animals

Fish are an important food source in the majority of villages (98%) and frogs, snails, shrimp, crabs and eels are also important food sources in many villages. Fish and aquatic animals are also an important source of cash income in 21% of villages.

The majority of villages reported that the abundance of most of their aquatic resources had dramatically declined over the last ten years. Most large-bodied native fish species have declined and some villages reported declines of up to 70% in their native fisheries. Many villages indicated that they had sold fish in the past but no longer had sufficient fish surplus to sell. While native fisheries have dramatically declined, several villages reported increasing numbers of introduced fish species (tilapia and carp) within their village area. 80 percent of villages indicated the existence of some community-based management system. This frequently included rules that banned the use of explosives and poison for fishing and closed access to certain zones of the river or ponds during fish breeding seasons or to ponds during the dry season.

Terrestrial wildlife

Although several villages reported that a variety of species were caught for food, the majority of these were reportedly rodents (rats, squirrels or porcupines), pigs, or small-bodied animals with relatively high natural densities or rates of reproduction (common songbirds, junglefowl, common civets, etc). Monitor lizards, muntjac, and sambar deer were also periodically reported as important food items but in many villages were harvested infrequently due to rarity.

When asked about the sale of terrestrial wildlife for income, 59% of villages indicated that terrestrial wildlife had been an important source of cash income in their village over the last decade. Pangolin was the most frequently reported as important for cash income (45% of villages), followed by turtles (35% of villages), primates (22% of villages), and monitor lizards (12% of villages). To a lesser degree, pythons and bears were also reported important for sale. Many villages reported that sale of wildlife was secondary to the use of wildlife for food or that sales were opportunistic if a buyer came to the village (some villages said traders come 1-2 times per month) or if the household needed cash.

The majority of villages reported that overall abundance of most species of terrestrial wildlife had declined considerably over the last decade. Several large-bodied and frequently sold species where the most frequently reported as exhibiting the most severe declines, to the point of extirpation in some areas. These species included pangolin, bear, sambar deer, turtles, hornbills, and langurs.

One-third (33%) of villages surveyed (n=49) indicated the presence of regulations in the village that prohibited use of guns, trade of wildlife and/or harvest of terrestrial wildlife to some degree. In several cases, these were said to be district government rules that were being applied by the village. In some cases, villages indicated that these regulations had come into practice in the village only within the last five years. In some villages, they reported that gun collection had been effective in curbing wildlife harvest.

Plants and plant products

When asked about the harvest and consumption of plant and plant product, 96% of villages indicated that many of the edible species were still an important food source for households in their village. The three most important edible plant products are bamboo shoots (96% of villages), rattan shoots (55%), and forest vegetables (39%), which included largely ferns and to a lesser degree, mushrooms. In addition to food, 20% of villages indicated that small rattan species were very important for household and furniture construction.

98% of villages reported that plants and plant products were important for cash income. The majority of villages (73%) said that cardamom was an important source of income. Other important sources of income are damar (51% of villages), eaglewood *Aquilaria* sp. (49%), and rattan (43% of villages).

While most villages reported that many plants and plant products were declining across the PIZ, reports of their present abundance varied considerably. Many villages reported that the more valuable species for cash income (especially eaglewood, many species of rattan, and damar) had declined widely and were increasingly scarce or extirpated from most areas. To a lesser degree, scarcity of cardamom was also reported. More recently, three villages in Gnommalat District (Khamhe, Nammouane, and Beung-Naa) reported that they have just started selling orchids to Vietnamese traders.

Most villages reported that populations of more common and less valuable species of plants remain stable and that edible species, such as bamboo & rattan shoots, ferns, and nuts, are still widely harvested and consumed by the majority of villages.

Many villages reported having rules for management of plants. The most common management system reported was that for controlling cardamom harvest. Many villages reported only harvesting cardamom collectively on a specified day. In some villages, this same rule was reported for controlling damar harvest.

3.5.5.3: Large scale resource extraction

Two villages (Ban Bung Sang and Ban Na Kadok in Khamkeut District, Bolikhamxay Province) reported large gold mining activities. Villagers in Ban Bung Sang reported military-operated gold mining operations approximately seven kilometers away from the NPA that may indirectly put pressure on the NPA through improved road access or through demands for natural resources in the area. Although the mining quota was awarded to the Ministry of Defense, the investment was reportedly that of a private Vietnam-based company.

Villagers in Ban Na Kadok reported gold extraction along the Huai Namhuai. Here a Chinese gold mining company had entered into an agreement with the village to award 20% of their mining quota to the villagers. Villagers reported that the history of gold extraction in the area is causing the riverbank to collapse and reducing the water quality. Several households in the village are engaged in gold panning as a source of income.

Another village, Ban Nongbua-Naphao in Balapha District, Khammouane Province reported that a Lao company had started collecting red earth to make bricks in 2004 in an area c.1.5km north of the village and 1.5km outside the NPA boundary. Six villages in Khamkeut District reported having large scale logging in the past but none at the present time.

3.6: STRATEGY FOR LOCAL PARTICIPATION

3.6.1: Consultation Process

3.6.1.1: Definitions of Consultation

Public Consultation can be defined as the process through which the views, opinions and active participation of all interested parties or stakeholders are integrated into project planning, implementation and monitoring. Consultation is a type of communication that specifically establishes an ongoing 'feedback loop', integrating stakeholder views, opinions and ideas during the planning, implementation and evaluation of all project activities. Effective communication also requires information dissemination in an appropriate language and/or format, including discussions with non-stakeholders and media presentations of the project. Information provided to stakeholders on options and potential project impacts is often the first step in establishing the feedback loop.

Public Relations implies communication regarding all aspects of the project to the general public, including all forms of media representation and the availability of reports and documents concerning the projects. It does not necessarily involve feedback although this could be an outcome of media presentation of the project and is an integral part of the transparency of the project.

A framework for mainstreaming participation at all stages of planning, implementation and evaluation will be necessary if a truly participatory consultative process to succeed under SEMFOP. This strategy is described in detail in Section 2.6.3 of this document.

3.6.2: Review of Local Consultations To Date

Stakeholders at the local level are those indirectly affected by the NT2 Project, who are residing in villages in the NT2 Watershed/NPA or the PIZ. Although no formal public disclosure on the SEMFOP has yet been undertaken, two phases of consultation have been carried out in the NPA and adjacent areas, including the NT2 Watershed Area: (i) consultations during the socio-economic surveys carried out in 1996-1997, and (ii) consultations that are ongoing as part of pilot projects, and conservation initiatives and development of the SEMFOP.

3.6.2.1: Consultations in 1996-1997

Consultations in this period were carried out by teams of consultants from CARE International (1996) and later by IUCN (1997) using RRA techniques as part of socio-economic survey work. These consultations correspond to the first two phases outlined above, that is dissemination of information and eliciting villagers' concerns and needs. This information was then incorporated into strategy and planning documents, including the *Social Action Plan* (IUCN 1998). The following aspects were covered:

- i. Semi-structured interviews with individuals and small groups based on pre-selected topics and focus areas considered relevant for project interventions
- ii. Eliciting villagers to engage in dialogues on indigenous knowledge of the environment and resource usage, including open-ended questions
- iii. Special attention was given to resource use to ascertain understandings of local resource use. These included village sketch maps, cross-sections from transect walks across village land, crop or animal calendars showing seasonal variation, labour schedules, activity sequences of resource use, and decision-making patterns of representative families.
- iv. Key informants such as village leaders, traditional leaders and ritual practitioners were interviewed for information on local history and cultural practices

Information collected was assessed based on the various methods of data collection and co-related with individual accounts and project objectives. It is important to note that interviews were carried out in a sensitive manner with ample consideration given to soliciting opinions and avoiding outside interference in steering the conversation. The survey teams consisted of international sociologists and anthropologists as well as local consultants and district and national government staff. Some training was provided in RRA techniques prior to the survey.

3.6.2.2: Consultations 1998-2000

Consultations since 1998 relate to all phases outlined above but the emphasis is on active Involvement in Project Design and Implementation, the third phase. This has involved a regular contact between specialists and GOL staff on the one hand and villagers in designing interventions in the area of livelihood improvements (pilot village projects) and conservation. PRA training was carried out for a number of NPA staff in 1998 with emphasis on soliciting villagers' priorities in relation to resource utilisation and planning.

Participatory Land Use Planning has been the main strategy relating to improving livelihood systems. This consists of the following steps:

- ii. Assessment of the socio-economic situation
- iii. Identification of village boundaries
- iv. Surveying of swidden areas
- v. Measuring of reserved agricultural land
- vi. Obtaining feedback from villagers and representatives from the area
- vii. Assessment of potential forest and land-use zones
- viii. Meeting with village leaders to discuss selection of Village Forest/Land Use Planning and Allocation Committee (VFLC)
- ix. VFLC meetings to discuss and formulate forest/land use zones and regulations
- x. Finalisation of agreement through map preparation and temporary forest/land use certificates
- xi. Demarcation of boundaries of forest/land use zones with signs
- xii. Village meetings to conclude forest/land use planning and allocation of activities

At Ban Makfeuung, the demonstration farm established by EcoLao has utilised a 'trial-demonstration-extension-adaptation-adoption' strategy whereby villagers have worked under the guidance of specialist and been encouraged to innovate and use the knowledge gained in their own fields. Villagers working on the farm have been paid in rice for their labour. This on-the-job training has consisted of a daily interaction with villagers and specialists residing on the farm.

This participatory model has been designed for 'Guardian Village' activities in which NPA and DAFO staff worked together with villagers to address conservation and development issues. This included establishing monitoring units and training them to patrol and encourage the use of conservation techniques. Joint patrol units were established and have been operating successfully from these villages. The results of the planning and consultation are detailed in the Pilot Field Activities Final Report (IUCN 1999).

These consultations and implementations in livelihood development and conservation for pilot schemes are continuing under the GOL and international consultants at present, centred in the villages of Ban Teung, Ban Makfeuung and Ban Navang. Considerable time and effort has been required to establish a working relationship with villagers given their suspicion of outsiders and disruption in project implementation.

3.6.2.3: Participatory Needs Assessment 2000

A Participatory Needs Assessment survey was conducted as part of the GOL review of interventions in the three pilot villages in 2000. 15% of households were sampled in order to gauge how interventions compared with the expectations of villagers. The first three priorities of the villages were the creation of new rice fields, improvement of housing and the operation of a village health facility. The focus on food security confirms the actions undertaken in the livelihood development plan while the other two needs relate to social development which also form part of the overall strategy for enhancing the lives of the villagers in the Watershed.

3.6.2.4: Consultation by DUDCP

Participation of local villagers in planning and implementation should be a key aspect of the District Upland Development and Conservation Project (DUDCP) that is supported by the WB in the form of a Learning through Innovation Loan (LIL). However, it is reported, formally and informally, that the process of developing trust and confidence with villagers has been challenging for a number of reasons.

As is probably expected with such interventions, villagers were at first suspicious of the new project and were reluctant to participate at first. The delays, staff turnover and logistic problems have not helped.

After a difficult start, co-operation between staff and the villagers seems to be improving due to benefits from project interventions becoming more apparent as the programme develops. An example is the fact that project teams are now posted in villages, a sign of mutual understanding and demonstration of support. The success of the consultation process and the project as a whole will depend to a great extent of effective and culturally sensitive communication. Training in conducting consultations and input from the ethnic minorities advisor and other specialists will be necessary. As is reported by Culas (2001), communities may be highly suspicious of outsiders and weary of interference in their lives due to a long history of disruption, war and imposition of change from outside.

The results of a recent workshop to review the DUDCP development initiatives provide some important lessons for the SEMFOP. Despite good intentions, it is clear that the level of participation of the pilot communities, particularly in regard to incorporating and building on traditional livelihood systems and local knowledge when planning development activities. Essentially, a 'transformation' approach to development was attempted and clearly shown to fail, rather than 'building on' existing systems with their inherent strengths and locally appropriate opportunities. The major lessons in regard to participation included:

- Most development activities were essentially pre-determined by the project rather than planned with villagers.
- Inadequate attention was paid to traditional NTFP use when selecting crop species for home-garden production – some duplicated existing NTFPs and others were not even eaten by villagers.
- Similarly, traditional herbal medicine use practices were virtually ignored and villagers were probably left more reliant on modern medicines with their associated availability and access problems. Indeed, it was stated that modern medicine had entirely replaced traditional remedies.
- Promises of assistance in some areas were left unfulfilled, thus reducing the villagers trust in the partnership they had with development agencies.
- The remote location of the project office in the Thakek provincial center constrained effective participation and seriously reduced the level of cooperation with district authorities.
- GoL staff-rotation caused discontinuity and hindered trust and relationships with villagers. In addition a lack of cultural sensitivity and poor behaviour (drinking purchasing wildlife) further strained relationships and set a bad example.

3.6.2.5: Public Consultation by the WMPA

Public consultations were conducted by the WMPA, with the assistance of external consultants, in both NPA and PIZ villages beginning in May 2005 (See Section 2.6.6.7 for details). The objective of these was to fully inform affected villagers of the NT2 Project, explain the implications to them and obtain feedback and suggestions from them. The public consultations focused strongly on ethnic inclusion and identified a number of shortcomings in this regard in the current process and the methods used. These have been used to modify the public consultation process itself, but have also been incorporated into the EMDP (and other parts of SEMFOP), as and where appropriate. The most important lesson learned in respect to ethnic issues and changes made to the EMDP accordingly, include the following:

Issue	Explanation	Resultant change in EMDP
Additional mechanisms are needed for full ethnic inclusion.	Particularly in villages of mixed ethnic composition, some groups were either partially excluded or dominated over by others.	Recognition of the occurrence of ethnic dominance, particularly in regard to VCMUs.. The introduction of ethnically dis-aggregated discussion groups in FLUPAM, etc.
Consultations in each local dialect are required for full inclusion.	Although village facilitators were supposed to be able to explain issues in to all dialect groups,	Local language capacity to be a key in WMPA staff recruitment. Preparation of public awareness

	discussion was in a single language and thus excluded some	materials in all dialects. The use of ethnically dis-aggregated discussion groups in FLUPAM, etc.
The occurrence of a significant degree of ethnic dominance among NPA communities.	Some groups are intimidated or even afraid of other groups.	Ethnically dis-aggregated discussion groups. Improved enforcement authority of VCMUs to deal with dominant groups
Some inter-ethnic conflict in regard to forest and land use issues in the NPA.	Some villages/ethnic groups may not have equal access to land and forest resources	Inter-village conflicts dealt with as a first step in FLUPAM
Mini-watersheds are the key ecological and social unit in regard to land use conflict resolution	Different ethnic groups may locate themselves at different places or elevations in small watersheds and thus have different impacts. LUP conflicts can usually be resolved at the level of the mini-watershed	Implementation of FLUPAM in village clusters will be modified to follow mini-watershed lines. VCMU networks will be established for all mini-watersheds in the NPA.
Problems of measuring (and thus ensuring) the equitable distribution of the benefits of development activities.	Swidden groups tend not to assess performance in returns per area but in return to labour. Relative wealth assessments tend to vary from group to group.	The development and use of appropriate 'wealth indices' to be used in FLUPAM needs assessments, planning and evaluation exercises.
The need for special support mechanisms for swiddening families during the transition period in livelihood development.	Labour foregone for development of paddy, contour strips, orchards, etc. for childrens schooling, etc. threatens family subsistence and has to be buffered against.	Establish VDFs in all villages prior to FLUPAM as a subsistence buffer during LDC activities.

3.6.3: Assessment of Meaningfulness of Consultation Process

The meaningfulness is central to the success of all consultation processes and a central element in the long-term sustainability of the programme. There are several ways of assessing meaningfulness, including gauging how local knowledge is incorporated into planning, the degree of commitment of the communities involved and the extent of the roles and responsibilities they will have in the implementation and monitoring of the project. Preliminary consultations in relation to pilot village development represent important first steps in the consultation process and provide lessons for further consultations.

3.6.3.1: Incorporation of Local Knowledge in Planning

Given the rich biodiversity of the NT2 Watershed, there is much to be learned from the accumulated local knowledge of the resident communities in terms of scientific study and the practical use of natural resources. In order for this knowledge to be fully understood and developed for the purposes of biodiversity conservation and livelihood development, certain principles must be followed and steps taken to maximize the use of appropriate local knowledge into SEMFOP planning and management processes:

- Local communities must be central actors at all levels of planning, field studies and activity management, at the village level and, preferably, at the Project Management level (See Section 3.6.1). This step will require a much slower pace in initial assessments and team building, in gathering information and planning for livelihood interventions. It is essential that working relationships between the WMPA and each village is equitable, transparent and empathetic. This will require significant training for WMPA field officers as well as for village people and committees.
- The Social and Ethnic Development Advisor must be present for initial assessments of each village, must train a subordinate who will be engaged for at least 6 months of each year during the initial

phase of the SEMFOP-1, and must coordinate closely with the PICAD Advisor and other TAs responsible for biodiversity conservation and livelihood development.

- Local language and dialects must be used whenever possible, meaning WMPA field staff must speak local dialects and/or selected local people must be included as full time team members.
- Detailed surveys and studies of the biodiversity in terms of ethno-biology, that is local categories, classifications and uses for the various species (so-called folk taxonomy), must be conducted with the inclusion of 'specialists' *from* each of the ethnic groups in the Watershed.
- Chart detailed local knowledge of the area – cultural constructs (time, natural cycles, etc.) and spirit boundaries within the NT2 Watershed, with the participation and leadership of local people.
- Identification of cultural aspects that have a direct bearing on socio-economic development and conservation and integrate these aspects into the overall Plan for the benefit of the PAPs, in particular Vietic groups, the original inhabitants of the Watershed.
- Incorporate measures to protect the rights of ethnic groups in relation to potential forest products that may have a commercial value should also be considered in order to ensure that this local knowledge is used within its original context and thus remains meaningful ;
- Finally, with the eventual goal of encouraging all ethnic groups to adopt a more sedentary form of agricultural production, the SEMFOP-1 must use the skills and experience of the groups in the watershed (e.g. the Sek) who have already successfully made, or partially made, this transformation. The Sek (and other groups or individuals as appropriate) should be engaged as resource people to teach the skills necessary to adapt to paddy cultivation and other non-swidden agricultural techniques. The Sek should be given special training in order to serve as resource people for their neighbors in, and even outside, the NNT watershed. The use of local people like the Sek to serve as resource people makes good sense because their understanding of the local context and commitment to the area is unquestioned and the likelihood that they can continue to serve as resource people for years to come is high.

Preliminary studies have already been carried out by a number of scholars (*cf* Chamberlain 1997b; Culas 2001) but further work needs to be done to consolidate these studies, to cross check the lessons learned with local 'specialists' and to relate findings to implementation plans. This will be an initial priority of the Ethnic Minorities Advisor who will be engaged at the start of full implementation of the SEMFOP.

Local knowledge has already been utilised in conservation, patrolling and studies in the pilot project villages, and activities that have already been undertaken in the NT2 Watershed/NPA. This integration will continue for the duration of the project.

Local knowledge will also play a key role in activities related to NTFPs, their traditional uses and potential for domestication. It also has a significant, potential role in cultural ecotourism, which if planned and managed properly, could assist in preserving traditional practices and cultural values. It is thus important to ensure that ethnic minorities are fully involved in the planning and management of these activities to ensure that the potential that indigenous knowledge has to offer is fully utilised. It is also important that these groups receive an equitable share of the benefits from such activities through the commercial and employment opportunities that will be created.

3.6.3.2: Commitment of Communities

Project Teams from DUDCP are now posted in the pilot villages, a sign that the staff is now welcome and that there are some benefits reaching the communities (health and education as well as agricultural support). Evidence of the commitment of the communities is the fact that 52 health volunteers have been recruited and trained. After attempting to place teachers from outside the Watershed at village primary schools and facing the difficulty of recruiting and keeping these teachers, the decision was made to recruit teachers from among the villagers themselves (17). These are important first steps in community commitment that the project develop further in other areas of the Watershed.

3.6.3.3: Role in Implementation and Monitoring

Several actions have already been undertaken in the form of pilot villages and conservation patrolling that have involved local communities in the Watershed. The most important aspect has been joint patrolling with technical experts and villagers from ethnic minorities. Villagers have collected data, patrolled areas along the borders of the NPA and set up camera traps.

3.6.4: Role of Traditional Leadership

Village leadership has played a crucial role in the consultation process. Many of the steps outlined in the previous section have involved discussions with village leaders and could not have gone ahead without their consent and support. An analysis of the role of traditional leadership in the villages of the Nakai Plateau probably reflects a similar situation for many of the villages in the NT2 Watershed area in terms of decision-making processes and power relations at the local level (cf. EMDP for the Nakai Plateau 2002). As with the Nakai Plateau, consultations with village leaders should be balanced by discussions with male and female groups and interviews with selected individuals in order to obtain a clear picture of the situation on the ground.

3.6.5: Cultural Development

Cultural development is a complex term that refers to the socially transmitted patterns of behaviour that characterises a particular group. These include knowledge, beliefs, art, morals, laws, customs, techniques and any other unique capabilities and habits of a society. Cultural development, thus, refers to the process of transmission involving considerable continuity of behavioural patterns but also change, modification, adaptation and alteration, both internally and through contact with other groups. In the context of the NT2 Watershed/NPA and its resident ethnic minorities there has been considerable borrowing and sharing cultural values and technologies both among these groups and with outside populations.

These changing cultural dynamics are effecting ethnic identity. The notion of how these ethnic groups may best benefit in terms of 'cultural development' from the project and at the same time how their cultural uniqueness may be protected from adverse effects needs to be taken into account. It would be impossible to insulate these groups from the dominant lowland Lao culture and the growing influence of the nation state and market place economics by attempting to preserve cultural uniqueness. One runs the risk of isolating these groups further and delaying an eventual absorption into the mainstream culture solely on the dominant culture's terms. The groups themselves have expressed a strong desire for integration economically during consultations and yearn for progress in the form of modern technology, infrastructure and improved services.

An alternative approach to preservation is to equip local peoples with the necessary means and knowledge to participate in the national economic, social and political development. This does not necessarily mean merging with the dominant culture, but rather establishing the economic basis and conditions (education, healthcare, infrastructure and access to resources) so that these groups may compete with the dominant group on a similar level. The political reality of Lao PDR, a nation still striving to provide peripheral areas with improved infrastructure and services, and to increase the role of market forces throughout the country since liberalisation in the early 1990s, are important factors to consider. In addition, the Nam Theun 2 project is likely to increase the tempo of these two processes. Therefore, to equip these ethnic minorities with the means to retain control over their own resources and exploit them in a profitable and sustainable manner could prove to be the best means of preserving 'their dignity, traditional rights and cultural uniqueness' (WB OD 4.20, 6). This can best be achieved through continuous public participation and taking account of the aspirations of the people themselves.

The aim is to combine elements of existing cultural values within the context of an emerging modern state. The bottom line is that without interventions which ensure food security, a sustainable use of natural resources, protected rights and improved livelihood, it is unlikely that these small ethnic minorities could withstand the advance of the better educated, better organised and more advanced dominant culture and the market forces which accompany it. In order to 'preserve' cultural diversity in this region, a realistic plan is needed that ensures socio-economic development through culturally sensitive approaches and participation. Without economic development (external inputs), cultural development (the internal dynamics of social groups) is nigh impossible.

3.7: LIVELIHOOD OPTIONS AND COMMUNITY DEVELOPMENT

3.7.1: Livelihood Development Systems

The livelihood development strategy developed under SEMFOP is described in detail in Section 2.4, but it is important to emphasise here that it embodies a number of important attributes:

- Development activities are linked to conservation in a transparent manner to ensure that preferable development options also have positive outcomes for conservation.
- The planning, implementation and evaluation of development activities is participatory involving local people in all aspects of decision making.
- It emphasises enhancements and incremental improvements to existing livelihood systems rather than the introduction of entirely new systems.
- It follows a sustainable livelihood approach under which all elements of the livelihood system are considered rather than just rice production and agriculture

3.7.1.1: Strategy for Conservation and Development

The successful introduction of livelihood improvements for the rural poor is a notoriously difficult exercise, fraught with complexities and pitfalls. There are not many examples of success, as measured by the actual adoption of introduced innovations beyond the life span of a project. Thus, at the core of the livelihood proposals is a process designed to facilitate local participation in the fundamentals of the adoption of improved livelihood practices. Ultimately this process itself will be the final arbiter of which livelihood technologies are actually tried and adopted, although the technical issues cannot be treated lightly. In identifying technologies for initial trial and adaptation, an open mind is required. A great deal is already known about the kinds of technologies that typically fail with shifting cultivators and somewhat less, but still a significant amount, about those that have a good chance of succeeding. Therefore, the process involves a particular set of 'best bet' technologies for use as starting points in the adaptive research process. Intelligent modification of these technologies based on trial by the local participants will be the best evidence of a successful process.

The successful adoption of improved livelihood interventions is made more difficult when it takes place within the context of conservation, which in the case of the NPA, is for both biodiversity and catchment values. The seriousness of the threat to biodiversity is rivalled only by the severity of food insecurity and the acute need for poverty alleviation among the inhabitants of the NPA. On the one hand, there are threats to endangered wildlife and botanical resources caused by hunting and over-use of NTFPs, compounded by the progressive destruction of forest and wildlife habitat by shifting cultivation. While on the other hand, there is a general reliance on hunting and gathering for cash income to offset chronic shortfalls in food production, exacerbated in recent years by climatic anomalies and flooding. No plan can hope to be successful unless it addresses these contradictions at their roots.

It is the position of this EMDP that the challenge can be met through a strategy which focuses on the following aspects:

- - Community Driven Development and CDD-related delivery mechanisms.
- - Increased food security.
- - Diversification of livelihood options.
- - Gradual intensification of land use away from reliance on hunting, gathering and shifting cultivation toward more productive and sustainable livelihood systems.
- - Adaptive trials and extension in support of this approach on a number of livelihood alternatives.

In order for this strategy to work, however, it will require a judicious approach to implementation of the proposed livelihood improvements, one that foregoes the open-ended-growth approach that implicitly underlies most economic development efforts. The development process must be limited if the conservation objectives are not to be swept away by unchecked growth. The appropriate welfare target is a steady-state household economy based on an orientation that might be called 'subsistence plus'. Certainly if every family was able to adopt all of the livelihood improvements identified in this plan, they would exceed the 'subsistence plus' target by an unsustainable margin. That is not the intention. What is

required here is to facilitate within each of the Watershed communities limited adoption of the most appropriate alternatives from a larger selection of livelihood options.

Community-driven development (CDD) and related participatory methodologies (Section 2.1) give control of decisions and resources to community groups. It treats poor people as assets and partners in the development process, building on their institutions and resources. Support to CDD usually includes strengthening and financing inclusive community groups, facilitating community access to information, and promoting an enabling environment through policy and institutional reform.

Experience demonstrates that by directly relying on poor people to drive development activities, CDD has the potential to make poverty reduction efforts more responsive to demands, more inclusive, more sustainable, and more cost-effective than traditional centrally led programs. CDD fills a critical gap in poverty reduction efforts, achieving immediate and lasting results at the grassroots level and complementing market economy and government-run programs. With these powerful attributes, CDD can play an important role in strategies to reduce poverty. These CDD principles are embodied in the PICAD strategy to be used for the planning and delivery of livelihood development activities to ensure that they not only complement, but actively promote conservation objectives. A more detailed description of the CDD approach is provided in Section 2.1.3 of this document.

There are also limits on the future extrapolation of even the most sustainable land use system. Although it is not within the scope of the current plan to offer detailed recommendations for future developments in peripheral impact zones areas adjacent to the NPA, some provision is required for siphoning off unsustainable population growth in future generations. Paradoxically, the best way to ensure that a good percentage of the next and succeeding generation will be attracted to livelihoods outside the conservation area is to ensure that they receive education and other fruits of development now.

Another reason for setting limits on development within the NPA communities is to preserve incentives for succeeding generations to move out of the conservation area to more attractive locations outside. A less restricted application of the same livelihood options developed for the NPA, together with a higher level of services (roads, health care and education) will be help to create 'magnets' conducive to voluntary out-migration. On the other hand, care must be exercised to avoid making the peripheral impact zone settlements so attractive that they draw settlers from all over Lao PDR. Nothing could be more threatening to a protected area than to have a large and mobile population sitting just outside its boundaries. It runs counter to currents deep within the psychology of most development workers, but successful accomplishment of both conservation and development objectives requires not only compromises from the conservation side but also ceilings on welfare targets.

3.7.1.2: The Logic of Intervention

In order to stand a realistic chance of being adopted by the intended beneficiaries, the introduction of livelihood improvements must match the possibilities inherent in the group's position on the continuum from less intensive to more intensive. Different options open up from different positions on this evolutionary sequence. A review of the main sequence patterns of land use evolution in Southeast Asia will help place the above technical options in context and set the stage for a more sensitive application to the villages in the Watershed.

In rice growing areas of Southeast Asia the evolution of optimal agricultural landscapes under pressure of population growth tends to be toward a mosaic of paddy rice fields on the bottomlands and multi-storey agroforestry systems or tree gardens in the uplands. This is an ideal pattern which is best exemplified where high population densities have been reached by gradual growth with sufficient time for land use to adjust to the demand for increasingly productive and efficient use of land in support of higher population densities. The reason for this is that both components of this complex, paddies in the bottomlands and tree gardens in the uplands, tend to be the most biologically stable and sustainable land use systems representing the highest use values consistent with the cultural objectives of Asian farming populations.

The progression from long-fallow swidden to paddy fields with upland agro-forestry can be described as a 'reluctant evolution' that is typically driven by population pressure. At the beginning land is abundant, labor tends to be the main limiting factor of production, and there is a premium on systems which offer

high returns to labor; whereas, at the other end land is usually the limiting factor, labor is abundant and land use tends to be correspondingly labor-intensive. The premium is on labor-intensive systems that maximize returns to land while making full use of available labor. This, again, is an idealised picture. The situation on the ground is often complex, with different groups practising a mosaic of different technologies from different stages on the intensification sequence (Raintree and Warner 1986).

3.7.1.3: Land Distribution

An important aspect that is central to many of the interventions listed below and key for realising sustainability and development is land distribution. A sense of secure land tenure at both the community and household levels will provide a heightened sense of food security and encourage investment in ways to more efficiently manage the land for the long-term. Land distribution needs to be seen as part of the Zoning Strategy of the NPA – and more specifically as part of the FLUPAM process – forest and land use planning allocation and Management (See Section 2.2). This government program will be implemented, in modified form, in the NT2 Watershed/NPA.

3.7.1.4: Matching interventions to existing livelihood systems

Table 3.13 presents a list of some possible livelihood changes that underlie a shift from unsustainable to sustainable natural resource use practices while Table 3.14 provides an analysis of the current livelihood systems in the NT2 Watershed/NPA on which these indicative proposals are based.

Table 3.13: Summary of Livelihood Alternatives for the NT2 Watershed/NPA.

Current Practices	Alternative Practices
Upland rice production on swidden land	Rainfed or irrigated paddy cultivation on permanent terraces Improved fallows Evolution to permanent agroforests
Foraging for dietary supplements and non-timber forest products for sale	Growing of forest foods for home consumption and other NTFPs for cash in: <ul style="list-style-type: none"> - Home gardens • - Swidden fallows - Agroforests
Unrewarding and unleveraged sales of NTFPs to itinerant traders at low prices	Organized group marketing Value-added local production of handicrafts Sustainable NTFP management and harvesting systems
Hunting protected wildlife for dietary protein and cash income	Semi-intensive production of vaccinated farm animals Aquaculture systems for indigenous fish species Controlled wildlife offtake for consumption only
Extensive free-range herding of low-quality, disease prone livestock on fire-induced grassland	Cut-and-carry feeding of fewer but higher quality, more productive vaccinated livestock
Use of child labor for hunting, gathering and swidden farming.	Settled agricultural lifestyles which allow children to be educated, thus opening opportunities for off-farm employment - improved education will be required

Table 3. 14: A Diagnostic Approach to the Identification of Interventions

	Livelihood System			
	LS1: Forest/ Swidden	LS2: Swidden	LS3: Swidden/Paddy	LS4: Paddy
Approx no. families	15	135	80	25
Analysis	Sedentary but still reliant on forest gathering to a large extent	Primarily swidden cultivation with NTFPs and livestock for cash income	Combining swidden, paddy and dependency on livestock and NTFPs.	Primarily paddy with cash crops, livestock and trading
Diagnosed Problems	<ul style="list-style-type: none"> • Relatively low levels of technology; • Flooding, rodent and insect infestations of fields; • Decreasing Wildlife and NTFPs; • Dependency Problems 	<ul style="list-style-type: none"> • Flooding of swidden, rodent and insect infestations of fields; • Decreasing Wildlife and NTFPs; • Poor yields, overworked land and population pressure; • Livestock diseases; • Distance from markets; 	<ul style="list-style-type: none"> • Flooding, rodent and insect infestations of fields; • Lack of knowledge of irrigation methods and water control; • Decreasing Wildlife and NTFPs; • Poor yields, overworked land and population pressure; • Livestock diseases; • Distance from markets; 	<ul style="list-style-type: none"> • Regulation of water supplies and flood control; • Rodent and insect infestations; • Storage of grain after harvests.
Conservation Threats	<ul style="list-style-type: none"> • Overexploitation of NTFPs 	<ul style="list-style-type: none"> • Overexploitation of NTFPs • Destruction of habitat due to expansion of swidden • Destruction of Watershed function • Potential for habitat destruction if livestock numbers increase • Livestock competition with wildlife 	<ul style="list-style-type: none"> • Overexploitation of NTFPs • Destruction of wildlife habitat due to expansion of swidden 	<ul style="list-style-type: none"> • Free ranging livestock
Intervention Strategy 'Subsistence Plus'	<ul style="list-style-type: none"> • Household economy (food security + cash income) • Sustainable land use intensification • Work with what they know best (NTFPs?) • Substitute more robust crops in swiddens • Facilitate marketing of NTFPs 	<ul style="list-style-type: none"> • Household economy (food security + cash income). • Sustainable land use intensification • Help them get what they want (rice paddies?) • Improve what they have (swidden, livestock, NTFPs) • Alternative cash crops for income • Facilitate marketing of NTFPs 	<ul style="list-style-type: none"> • Household economy (food security + cash income). • Sustainable land use intensification • Facilitate marketing of NTFPs 	<ul style="list-style-type: none"> • Household economy (food security + cash income). • Sustainable land use intensification • Facilitate marketing of cash crops, rice.

	LS1	LS2	LS3	LS4
<p>Livelihood Options (In approximate order of priority for demonstration and trial)</p>	<p>Domestication of subsistence foods (wild tubers, roots and sago palm) and other NTFPs in home gardens, swidden fallows and agroforests for home consumption and sale</p> <p>Transition from swidden to permanent multispecies agroforests (NTFPs, fruit trees etc.)</p> <p>Paddy development where appropriate:</p> <ul style="list-style-type: none"> • Expansion of paddy land with irrigation and water control • Employment in conservation work 	<p>Paddy development</p> <ul style="list-style-type: none"> • Expansion of paddy land; • Improved irrigation and water control • <p>Domestication of NTFPs in home-gardens, swidden fallows and agroforests</p> <p>Accelerated swidden fallows for more rapid and complete recovery after cropping</p> <p>Transition from swidden to permanent multispecies agroforests</p> <p>Livestock improvements</p> <ul style="list-style-type: none"> • Vaccination; • Pen feeding; • Cur & carry fodder banks; • Living fences; • Enrichment of fallows with fodder species; • Undersown fodder in plantations • <p>Intensive home garden development for increased food security and cash income (fruits, vegetables, domesticated NTFPs, etc. – less important than for groups with less swidden</p>	<p>Paddy development</p> <ul style="list-style-type: none"> • Expansion of paddy land; • Improved irrigation and water control • Green manure crops • <p>Domestication of NTFPs in home-gardens, swidden fallows and agroforests</p> <p>Intensive home garden development for increased food security and cash income (fruits, vegetables, domesticated NTFPs)</p> <p>Accelerated swidden fallows for more rapid and complete recovery after cropping</p> <p>Transition from swidden to permanent multispecies agroforests</p> <p>Livestock improvements</p> <ul style="list-style-type: none"> • Vaccination; • Pen feeding; • Cur & carry fodder banks; • Living fences; • Enrichment of fallows with fodder species; • Undersown fodder in tree plantations • Composting • <p>Permanents fields with contour bunds, terracing, green manure and composting to maintain fertility</p> <p>Improved rice storage facilities</p>	<p>Paddy development and intensification through:</p> <ul style="list-style-type: none"> • Better water control; • Green manure crops • Crop rotations and multiple cropping • <p>Improved rice storage facilities</p> <p>Intensive home garden development for increased food security and cash income (fruits, vegetables, domesticated NTFPs)</p> <p>Permanents fields with contour bunds, terracing, green manure and composting to maintain fertility</p> <p>Livestock improvements</p> <ul style="list-style-type: none"> • Vaccination; • Pen feeding; • Cut & carry fodder banks; • Living fences; • Composting;

3.7.1.5: Improved Livelihood Options

This section contains a more detailed discussion of the proposed livelihood interventions and the variables that influence their appropriateness for particular communities. In order to distinguish between initiatives that will and those which will not have significant impact on biodiversity, each livelihood option below is assessed in terms of potential impact on globally significant biodiversity values of the NPA. Furthermore, each livelihood intervention is evaluated based on an assessment of impact on socio-cultural values as well. During the term of the SEMFOP each livelihood intervention should be evaluated on a regular basis to determine the impact on biodiversity conservation.

Expansion and intensification of paddy

Development of rice paddies wherever possible is a high priority intervention. Not only is it one of the most biologically sustainable of tropical land uses, it also enjoys nearly universal popularity among the inhabitants of the NT2 Watershed. Even those with little or no experience with intensive agriculture seem to perceive it as a desirable development target.

Irrigated paddy cultivation should be considered as the 'default option' in all bottomlands in the vicinity of settlements. The only exception to this intervention might be in cases where the household economy is advanced enough to give precedence to cash crops in the form of high-value domesticated NTFPs normally found in a riverine environment (e.g. certain highly sought species of bamboo shoot). However, given the importance of rice to food security in the NT2 Watershed this option should not generally be promoted over paddy. Rainfed paddy is another good option for many areas, but would have to be compared to alternative forms of permanent field farming as well as to the more remunerative agroforestry options.

Food security within the NT2 Watershed as a whole does not necessarily require that every household be self-sufficient in paddy rice, there is unlikely to be sufficient potential paddy land in current locations. For households that are able to develop a successful cash cropping strategy, not producing their own rice should not be a major concern as long as enough of the people who do have paddy are able to generate sufficient surplus to sell to their fellow residents.

In situations where paddy yields are low or declining due to decreasing soil fertility, green manure may be indicated to raise and maintain fertility. In this connection the Rice-Sesbania rostrata green manure system developed by Chiang Mai University's Multiple Cropping Centre is very interesting. Since the seeds of Sesbania rostrata do not germinate immediately it may be broadcast into the rice paddy while the rice is still in the field. Then after the rice is harvested the sesbania grows up and takes over the field. A growth period of 50 days is sufficient to restore fertility for another cropping cycle. The sesbania is easily cut and then puddled into the wet paddy soil and allowed to decompose for a week before preparing the land for transplanting rice. If the sesbania is allowed to go to seed before being cut, the seeds will remain in the soil and germinate over a long period of time. Thus, once the system is established it can continue indefinitely without replanting. This is a very low-labour, low-input system that may appeal to experienced paddy cultivators in the Watershed who have a need to raise soil fertility.

Rice-soybean and other leguminous crop rotations are another fertility maintenance system. The soybean is simply sown into the rice paddy as a dry season crop. It would probably be inadvisable to encourage farmers in the Watershed to grow soybean as a cash crop, however. This internationally traded commodity has notorious price volatility and, in any case, the remoteness of NT2 Watershed communities would put the local farmers at a competitive disadvantage. This is a cash crop that is better left to the lowlanders.

The research at the Multiple Cropping Centre has shown that these two innovations can be combined, with Sesbania rostrata fallow for 50 days, followed by rice, followed by soybeans in the dry season.

Domestication of NTFPs

Domestication of NTFPs is proposed as a key intervention, to relieve pressure from the over-use of natural resources and to attract shifting cultivators to more sedentary livelihoods (ca. 50% of income is from NTFPs). Candidate NTFPs will be selected for cultivation, along with other crops, in home gardens,

swidden fallows and agroforests. A number of potential products which have already been identified are presented in Table 3.15. Further work will also be needed to safeguard the knowledge concerning NTFPs in the NT2 Watershed/NPA.

Table 3. 15: Preliminary list of candidate species for domestication in the NT2 Watershed/NPA

Livelihood Group	Domestication for cash income		Domesticate for food security
	Forests/Swidden, Swidden, Swidden/Paddy, Paddy		Forests/Swidden
Yams, tubers			<ul style="list-style-type: none"> • Dioscorea hispida • Dioscorea esculenta • Ipomena sp.
Rattans & bamboo	<ul style="list-style-type: none"> • Calamus spp. • Various bamboos, e.g. for wall-mats 	<ul style="list-style-type: none"> • Calamus spp. for furniture • Various bamboos, e.g. for wall-mats 	<ul style="list-style-type: none"> • Calamus sp. • Bambusa tulda • Oxytenanthera parvifolia • Dendrocalamus • Schizotachys zollingeri
Palm hearts			<ul style="list-style-type: none"> • Caryota sp.
Spice	<ul style="list-style-type: none"> • Zanthoxylum rhetsa 		
Medicinal plants	<ul style="list-style-type: none"> • Amomum (cardamom) • Coscinium usitatatum (“kheua hem”/berberine) 		
Cottage industry raw materials	<ul style="list-style-type: none"> • Notaphoebe umbelliflora (“bong” bark) • Broussonetia papyrifera (paper mulberry) 	<ul style="list-style-type: none"> • Notaphoebe umbelliflora (“bong” bark) • Broussonetia papyrifera (paper mulberry) 	

(Source: Foppes et al. 1997)

Intensification of Home Gardens

Intensification of home gardens is one of the most ubiquitous and successful features of intensive land use systems in Southeast Asia and should be a priority focus, on a par with paddy expansion. This recommendation is based on the traditional role of multistrata home gardens as the mainstay of household subsistence wherever the practice is highly developed.

The home gardens seen in the conservation area at this point in time can be described as, at best, ‘incipient’. This is not surprising for an area in which swidden is the dominant land use, since most of the products that could be grown in home gardens can be found in the forest or in swidden fallows. As long as the natural forest is providing for household needs within reasonable distance from the residential area, home gardens may not become well developed. Although this might be the situation in the NT2 Watershed/NPA at the present moment, depletion of undomesticated NTFP resources is rapidly creating a condition very favourable to the emergence of fully functional home gardens.

Extension and adaptive research activities should focus on women, because the home garden falls predominantly in their domain. Any effort to assist women to develop diverse and productive home gardens will automatically benefit the household food security, small livestock production, child rearing and other areas of the domestic economy. The LWU will be involved in the participatory analysis and planning of home garden development activities under PICAD. In summary, the effort will address:

- The key lessons learned from DUDCP in respect to home garden development (See Review of ICDPs in the Appendices of this Volume of SEMFOP).
- Analysing the current situation and needs and thereby determining what villagers want to have in their home gardens.

- Women's roles in home garden development (in cooperation with the LWU).
- Participatory research and extension on propagation techniques (preceded by an concerted effort to access what is already known internationally)
- Provision of sufficient suitable planting material - initially from external nurseries, but later through village or household nurseries, if local adoption warrants this.
- If demand warrants, nurseries could be developed as a micro-enterprise through training assistance to appropriate villagers.

In the case of some perennial crops (e.g. aged fruit or resin producing trees), plantations may have to be replaced; in which case, a brief period of swidden annual cropping may occur, while the new plantation is planted. Here the occupation time and the relative economic importance of the crop and 'fallow' phases of the swidden cycle are reversed from what is normal.

Agroforestry development

An agroforest can be defined as 'mature trees with shade tolerant understory plants' (ICRAF). As long as annual crops do not have to be grown on the plot, a far more attractive alternative for slopes over 25% is to use the existing swidden system to establish perennial crop plantations which provide continuous soil cover and high economic yields of cash crops in orchards, timber stands, fodder banks, or complex multistoried, multispecies agroforests. While the trees and other perennials are growing the farmer simply continues to practice swidden on another plot. Eventually, when the perennial crops mature and begin to provide a steady income stream, they may be deemed more attractive than swidden as long as the crops can be marketed. Permanent perennial crops have long been effective in the promoting sedentary agriculture amongst swiddeners in other countries.

Management systems for naturally occurring NTFPs

Apart from the entry point through swidden fallows, another livelihood option is simply to intensify the management of NTFPs in existing forests. This is appropriate if community forest areas are identified and the villagers provided with tenure. Peters (1994) identifies two approaches to this kind of management, as summarised in Table 3.16.

Table 3. 16: Silvicultural Management of NTFPs in Agroforests

Passive Management	Active Silvicultural Management
<p><i>Sustainable management through selective harvest based on:</i></p> <ul style="list-style-type: none"> • Selection of appropriate species • forest inventory • yield studies • regeneration surveys • harvest assessments • harvest adjustments 	<p>Active management of Silvicultural conditions through:</p> <p><i>1). Selective cleaning of understory</i></p> <ul style="list-style-type: none"> • to reduce undesirable species • to increase the survival and growth of young plants of desirable species • to stimulate the productivity of adult trees <p><i>2). Selective thinning of canopy (e.g. vines)</i></p> <ul style="list-style-type: none"> • to open up the canopy and allow more sunlight into the understory • to assist establishment of understory plants by management of light <p><i>3). Enrichment planting</i></p> <ul style="list-style-type: none"> • to increase the abundance of economically important species • to improve genetic quality through better quality material

(Source: Peters 1994)

A recent review by Foppes (2001) suggests the following steps for sustainable management of NTFPs:

- Field teams should build NTFP user groups who meet at least once a month and go through a documented process of participatory diagnosis and planning
- Field teams should map local knowledge as a basis for land-use planning. Village Development Facilitators know how to do this, they need to be encouraged to carry out these this task.

- The Project should explore the possibilities of co-operating with botanists from the Dong Dok National University's forestry faculty to record local ethno-botanical knowledge.
- Project should test existing NTFP market analysis and development approaches
- Project must improve access, e.g. by implementing footpath/ferry as designed by IUCN
- Field teams should spend more time to assist the District to develop NTFP/wildlife trade control systems, based on agreed rules and locally managed checking mechanisms
- Project must address NTFP quota systems and other policies through stakeholder workshops
- To strengthen District capacity adequately, the Project needs to establish at least three technical support units at District/Province level: a) a professional training unit, b) an action research unit and c) a marketing support unit.
- The Project should adopt a District-based focus for administration and cooperate with the relevant district offices on technical matters and implementation. It should also address the management issues identified by the mission to create a better climate for learning.

Accelerated fallows for short-rotation swiddens

For upland annual crop fields (swiddens) whose distance from penned livestock and compost bins is too far for transport of compost to be an attractive way to maintain soil fertility, farmers may continue to practice their traditional fallow-based fertility maintenance strategies. Where fallows have shortened to less than 10 years, trials of accelerated fallow systems can be introduced which are effective in fertility maintenance and weed control. Promising short-rotation fallow systems (2-4 years) based on fast-growing, weed suppressing species such as *Chromolaena odorata* and *Eupatorium inulifolium* (for highland conditions) are under investigation by ICRAF researchers in the Alternatives to Slash-and-Burn programme in Indonesia. Another attractive alternative is to enrich the natural fallow by sowing fodder crops (leguminous trees or shrubs and grasses) near the end of the cropping cycle in order to create a fodder bank for livestock. In whichever system is trialed, it will almost always be a good idea to incorporate large numbers of nitrogen-fixing leguminous trees into fallows to accelerate fallow regrowth and quicker restoration of soil conditions for crop growth.

Contour hedgerows

Labour-intensive erosion control methods like alley cropping have sometimes performed well on research stations but have, with a few exceptions, had a dismal adoption record in the real world. Most farmers would rather grow crops directly; whereas, classical alley cropping is basically about growing an input to grow a crop. This adds to both the labour requirement and the management complexity. Hedgerows of fodder trees on contours between crops are often much more attractive to farmers. Complex diversified contour hedgerow systems like SALT (Sloping Agricultural Land Technology) can be very attractive, but these system should be introduced initially on a limited trial basis and only in communities long accustomed to labour-intensive permanent field farming. The only reason for attempting such systems would be to create a stable space for annual cropping between hedgerows on slopes over 25%, for which terracing would be an intolerably labour-intensive and costly alternative.

Formerly the temperate climate low-input agricultural wisdom was that one should never attempt permanent field farming without animals to help maintain a healthy condition of the soil. Fertilisers and green manures have partially replaced this strategy under some conditions but it continues to be a mainstay of low-input organic farming in the Temperate Zone. The proposals under the current heading derive from this tradition.

In the upland areas near settlements on slope of 0-25% it is recommended to develop terraced fields (contour bunds & self-building terraces) for permanent rain-fed upland cropping systems with fertility maintenance by application of compost from nearby livestock pens. Cut-and-carry fodder (grasses, legumes) for cattle can be produced on contour bunds in the upland fields).

Composting with manure from cut-and-carry livestock will probably be perceived by the participating farmers as a better option than in-situ green manure hedgerows for the simple reason that most farmers would generally prefer to grow a crop (fodder) than an input (green manure) to grow a crop. In many cases it could be the same species; the relevant point is that farmers would rather use the stuff to feed their animals than their soils.

Labour requirements of composting will be a barrier to adoption in many cases, so care has to be given to reducing unnecessary labour as much as possible. Having the compost bins next to the pens, and the pens inside or near the fields will be a distinct advantage. This will probably limit the adaptability of this approach to areas near the homes. Hence, the characterisation of this approach is as a classic 'near-field' technology.

Livestock husbandry

Livestock (principally cattle and buffalo) are kept extensively by villagers on the plateau and by some villages in the NPA. They are used as a food source but more generally as an accumulation of wealth, for cash income and as insurance for crop failures and hard times. In many instances the livestock are allowed to roam through forest areas, and fires are used to promote pasture improvement. Unrestricted expansion in livestock numbers poses a problem for intensified land use near villages and to forest management or conservation.

Intensification of livestock management can be approached through:

- vaccination and improved veterinary care
- pen feeding of small stock
- cut-and-carry fodder banks
- use of living fences to protect fields
- enrichment of fallows with fodder species
- under-sowing of fodder crops in tree plantations
- use of manure for composting

River fisheries and aquaculture

The fishery situation in the upland streams appears to be worsening due mainly to overuse of gill nets (ESMP 1998: 7.6.3). This is part of a general decline in fish stocks all over Lao PDR that is due to:

- overuse of gillnets
- blast fishing
- use of poisons
- pumping out of wetlands
- inappropriate use of fence traps

Among the reasons responsible for the use of unsustainable methods are:

- lack of knowledge of viable alternative methods
- lack of affordable alternatives
- economic pressures such as the failure of rice crops, leading to the need for a commodity to exchange for rice
- desire to gain maximum advantage from newly opened markets

Although little is known about traditional management of fisheries in Lao PDR, some traditional practices seem to be intact and provide a basis for an effort to encourage improved community management of local fisheries based on:

- Permanent or seasonal closure of certain areas to certain fishing practices
- Prohibitions or limitations on specific harvest techniques
- Protection of particular fish species or groups

Aquaculture is also a potential avenue to increase fish protein, and should be taken up by the village PRA process. However, care would be taken against the introduction of detrimental alien invasive species. Apart from the implementation of community fisheries management, the development of small-pond private aquaculture would be a natural component of a sedentary livelihood and would complement the

development of the full lowland wet rice complex. In this, fishponds are an integral part of the lowland home garden, providing not only fish for household consumption, but also water and fertility for the home garden crops. Other interesting variations on this theme include the Mulberry-fish-pond-dike complex found in southern China, and many other pond culture systems and species used in the region.

Apiculture

Apiculture is another option that should have good potential in the NPA where bee forage is abundant. Domestic bee keeping can be approached at different levels of management complexity, but it certainly could be an attractive low-labour small enterprise option that would require technical advice and marketing support. The first activity would be to gather information on current apicultural knowledge and expertise in Lao PDR, to include an assessment of the risks associated with normal bee keeping practices (e.g. introduction of exotic bee species).

Community forest management

'Community forestry refers to the management of forests under some form of common property management regime irrespective of legal tenure' (Blockhus et al. 1997). Community forests (ESMP 1998: 10.2.3) differ more in tenure than in technology from the other types of agroforest already discussed in this SAP. The differences in technology that do arise from community management can probably be characterized as a preference for a more extensive approach to management with lower labour but management-intensive practices. This would certainly include the 'passive' management practices of selective harvesting cited in Table 3.17 in Section 3.7.1.5, which could be effected by the institution of community managed controls (ESMP 1998: 9.6.4). It could also include more 'active' management approaches such as selective management of canopies and understories as well as a certain amount of enrichment planting.

The aim of management could be to improve a valuable community resource on which villagers could rely as a food security reserve against seasons of agricultural adversity, along with opportunities to generate income for community development (school buildings, public irrigation works, etc.). Investment in such development will automatically generate greater interest in protecting the enhanced community resource from illegal exploitation by itinerant foragers and other outsiders. Given the nature of these incursions, particularly along the international border, enforcement of village management plans (ESMP 1998: 10.2.3.2) may require assistance from government agencies, particularly along the international border where foraging parties for high value NTFPs may be heavily armed.

Community forests may be the most promising location for using subsidised inputs such as food for work to develop land use systems that address conservation issues that might be hard to motivate on the basis of private initiative alone. As such it could be a major focus for raising awareness of conservation concerns through participatory planning activities. In any case, the development of management systems for community forests will be an important long-term activity, requiring patient and sensitive facilitation. It carries with it the potential for strengthening village institutions and local governance.

Employment in biodiversity conservation work

The SEMFOP specifically plans to fully involve villagers in the participatory monitoring, management and protection of the NPA. While initially it was planned to actually employ them as 'village auxiliaries' or the like, current experience suggests it is more appropriate that they be paid on a pro rata – dsa – basis for time spent in the forces and on patrol. Village monitoring teams will be formed, to include village militia, and they will receive training and equipment and be responsible for natural resource monitoring and patrolling in the village area, and jointly responsible –with other villages and the army/police, for monitoring and patrolling in both CUZ and TPZ areas.

Good advantage can be made of this opportunity by hiring individuals from some of the more vulnerable ethnic minorities such as the Vietic groups, whose traditional reliance on the forest for their livelihood has undoubtedly conferred special ethno-scientific knowledge and skills of great value to the conservation work. In the context of the socio-economic changes being visited upon these people by the larger world, this is perhaps the one area of employment in the modern sector for which they might actually enjoy a comparative advantage. This assumption would have to be validated on a case-by-case basis, of course, but it could be recommended that these groups be given priority for these jobs and for the required

training, if necessary. This could be a realistic, proactive and positive step toward preservation of valuable ethno-scientific knowledge.

Ad-hoc employment as research assistants, guides and, ethno-scientific experts will arise as organizations or individuals gain permissions to conduct research in the NPA, and the Village Natural Resource monitoring teams will be an invaluable asset for these activities. However, this may only be an option at a later stage in the SEMFOP (Phases 2 or 3) since considerable time and training will be required for such positions.

Employment in ecotourism

Plans for a community-based ecotourism program in the NPA, described in more detail in Section 5.4.8.1, will offer a number of employment opportunities for NPA villagers. These include work as guides, cooks and cleaners for the tourists. In addition the presence of tourists will provide market opportunities for handicrafts, food, fruit and other locally produced goods.

3.7.1.6: Review of Livelihood Interventions

Since the strategy for interventions was outlined in the Social Action Plan over 5 years ago (IUCN 1998), a number of interventions have been carried out in relation to pilot project development (IUCN 1997-2000 and later under the LIL project). The results of these interventions have been analysed by IUCN (1999) and by an independent consultant, Laurant Chauzée (GOL 2000). Below is a summary of these assessments in light of issues relevant to ethnic minorities and utilisation of natural resources.

In 1998, a livelihood pilot scheme was initiated by IUCN/EcoLao in the village of Ban Makfeuung using PRA, agricultural trial and demonstration farm, wet rice cultivation interest group, agricultural focal families, irrigation assessment, village health volunteer training and village primary schooling among other things. The establishment of a trial-demonstration plot of 9,530m² in Ban Makfeuung allowed for the demonstration of wet rice, intensified upland cropping and improved gardens as well as a rice-for-work scheme to address rice shortages. 40% of the village (23 households) then started to cultivate ca. 7 ha of paddy. In the neighbouring village of Ban Pung, 1.7 ha was started with assistance from Ban Makfeuung and technical assistance.

The interventions at Ban Makfeuung addressed the central issue of food security (IUCN 1999: Part 3). Initial findings indicated that rotational swidden provides food security without the use of imported inputs such as fertilisers, pumped irrigation, etc. This is not rice self-sufficiency (probably not attainable) but rice and cassava, maize, yams and other crops. Rice acts to enhance the sense of food security since it can be more easily stored, transported and even traded. Irrigated rice is limited so upland production will remain crucial to food production. High-productive pumped irrigation is not feasible. Extension in upland production, therefore, should be the continued focus of trials.

It was concluded from this trial that the livelihood concept for expansion in the NPA should consist of the following elements:

- Rainfed wet rice cultivation
- Intensified upland cropping systems
- Improved gardens
- Improved husbandry of pigs and chickens
- Investigations into possibilities for cash or barter, including domestication of NTFPs, pen-fed cattle and sustainable harvesting of high value timber
- Other income generation initiatives as appropriate.

The emphasis should be on increased food production and agricultural surpluses to offset reliance on hunting and diminishing natural resources due to population increase. The main strategy will be repeated use of plots and reduced rotation with manure, mulching crops, supplemental gardens, NTFP orchards and perhaps limited use of chemical fertilisers.

After a gap in funding and discontinued field activities, DUDCP started pilot projects at three sites: Ban Makfeuung (different to the above mentioned IUCN initiatives), Ban Navang and Ban Teung. The

DUDCP has concentrated efforts on overall project planning and strategy, organisational and institutional development and awareness programmes. Some activities relating to livelihood development have been carried out, including:

- Equitable rice field re-distribution and irrigation potential surveys (land distribution agreed-to by community beforehand)
- Provisions for new rice varieties and wild sunflower plants (for green manure)
- Supply of vegetable seeds to interested families
- Training of village extension workers in grafting techniques and other skills
- Distribution of fruit tree seedlings
- Initial efforts at fencing off of village boundaries and building buffalo shelters
- Initial efforts to establish Buffalo Banks
- Continued cultivation of cardamom at Ban Makfeuung (after IUCN's project)

3.7.1.7: Linking Community Development to Conservation Benchmarks

The indicative community development activities described in the 3.7.1.5 and elsewhere, that will be identified as the project progresses must, of course, be complementary to the conservation objectives of the SEMFOP and NT2 Watershed/NPA management. In the context of Southeast Asia, and in the Lao PDR in particular, conservation as a singular objective is neither politically palatable nor realistic at the community level. Too many factors, perhaps none more tempting than the lure of easy money for forest products, tempt officials and village people to sell off (or others to take) their resources at an unsustainable rate without sufficient management inputs. Even within the context of a larger project, with a regulatory framework and restrictions on access and use, careful monitoring and enforcement is necessary to ensure compliance.

As an additional incentive for conservation, the SEMFOP-1 will ensure that local people secure necessary resource use and management rights, and will link specific community development activities to the maintenance and enhancement of conservation values. The details of the incentive mechanisms will be described and operationalized during the first set of PICAD activities of the SEMFOP-1 (See Section 2.1 for additional details).

3.7.2: Planned Infrastructure Investments

3.7.2.1: Review of Infrastructure Investments to date

Few significant infrastructure investments have been made in the Watershed to date, except for:

- Roads (two tracks 3 meters wide) along sections of the Nam Theun near Ban Makfeuung and sections of the Nam Noy south of Ban Teung;
- Radio system now in three NPA villages – zone office;
- Upgrading of schools at pilot villages; and
- Upgrading of health facilities at pilot villages

3.7.2.2: Access Improvement with Feeder Roads and River Transport

Access into and within, the Watershed is difficult. Access in the Watershed is limited to footpaths (although two 3 m tracks have recently been constructed) river transport which varies seasonally and is subject to rapids and gorges in certain places.

Access into the Watershed is limited to a seasonal 4 wheel drive road to Ban Navang on the Nam Mon river, river transport up Nam Xot and Nam Theun, which is difficult in terms of rapids and gorges in certain places, and floods, and various walking tracks. Basically, the transport of tradable items in the Watershed is very difficult, and thus many small goods come from Vietnam, while the large scale export of products also faces considerable physical and logistic difficulties. The only positive aspect is that this also

deters large scale immigration and large scale export of forest products, thus providing a measure of protection for the NPA and Watershed

The approach to transportation improvements will be to emphasize river transportation to Nakai Town and improved foot-paths throughout the NPA rather than roads since access to the NPA should be limited for conservation reasons. As there are major problems associated with road development in remote, natural resource rich locations, improved access to the NPA is perhaps the greatest threat to the management and protection of the NT2 Watershed. However, the people consider roads as an important aspect of development, representing market access. It will be important to balance the economic needs of the villagers (access to markets) with conservation needs (threat of exploitation of resources by outsiders). It is envisaged that in the future the proposed NT2 reservoir will make river transportation more feasible and be the desired modality to develop. It will also orient NPA communities towards the district town of Nakai, rather than to Lak Xao in the neighbouring province of Bolikhamxay, or to trans-border traders (See Section 2.1.6 for details of the SEMFOP Access Strategy).

3.7.2.3: Public Transportation Infrastructure

The WMPA will build and manage a public transportation system to facilitate the public transport, and passage of cargo, from the inner Watershed areas to the Nakai, or southern reservoir shore. This will include the commissioning of boats of appropriate type to travel across the reservoir and up the Nam Theun and Nam Sot rivers. Infrastructure to support this water based public transport system will be also developed, and may include piers, jetties and ramps, as appropriate, and warehouses at appropriate locations. The existing transportation network and proposed improvements are detailed later in this report in Section 7.10.4.

3.7.2.4: Irrigation Systems, Micro-hydropower and Water Supply

Where appropriate and wherever requested by villagers, irrigation systems, mainly to service rice paddy fields, village water supply and micro-hydropower (off-grid) sites will be investigated, designed and constructed. All phases of this process will, to the extent possible, involve those local villagers who will use the systems.

There are examples of irrigation systems (Sek villages along the Nam Noy and Nam Phao) and micro-hydropower (Ban Teung) in the Watershed. These examples should be examined and can function as models for further development in terms of organising villages and establishing long-term institutions to manage these interventions.

Village water supply systems are found throughout the region and involve mostly piping water from streams and springs to locations close to the village using bamboo or plastic pipes. Identification of new sources and installation of systems should be done with the full co-operation of villagers.

3.7.2.5: Buildings

A number of improved service initiatives are planned that involve the upgrading or construction of buildings such as dispensaries or clinics and schools. In addition, village meeting halls are an essential structure for communal meetings, workshops and discussions as well as having the possibility of functioning as locations for training and adult literacy classes.

Provisions included in the Operational Plan are: (i) a review of the current status of community buildings, (ii) an assessment of the needs in terms of community use and demands (school attendance, healthcare, staffing, planned programmes, etc.), and (iii) a participatory construction plan for buildings

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3.7.3: Planned Service Improvements

Experience elsewhere has shown that it is extremely difficult to place and keep staff in remote areas, such as the NT2 Watershed. Wherever possible, SEMFOP will focus on developing capacity within the local communities to fill teaching, health-care, etc. positions, thereby increasing the likelihood of retaining qualified people, sensitive to local conditions and culture. This will necessarily be a longer term measure

and will require careful selection, sensitive placement for training and adequate support. In the short term, salary supplements and additional benefits will be offered to attract high quality and committed GoL staff.

3.7.3.1: Health Interventions

As has been mentioned in Chapter 4, health and education facilities are fundamentally lacking in the NT2 Watershed. Based partly on the assumption that a healthy population is far more responsive to change and the introduction of new ideas than an unhealthy population. The following activities will be included in the health program aimed to improving the lifestyle of the villagers living in the NPA communities:

- Impregnated mosquito nets to combat malaria
- Improving maternal and child health care
- Information on improved nutrition and hygiene
- Immunization against polio and other childhood diseases
- Training of village paramedics to keep records and distribute simple medicines
- Regular visits by a medical team, including a doctor, based in Nakai town and/or Lak Xao
- Medicine chest – revolving fund

Another aspect related to healthcare is tackling the problem of population increase that threatens the conservation area. Promoting family planning, however, would only make sense if it were introduced together with improved childcare and possibly alternative livelihood systems that are not as labour intensive. Many women, however, have indicated a desire to have smaller families and would probably be receptive to family planning services. Methods and consultations should be done over a period of time to avoid any misunderstandings and complications. There is the belief among some ethnic groups in Lao PDR that limiting reproductive ability influences the strength of a person in a negative manner. A strategy for demographic management within the NPA is described in more detail in Section 2.1.7.

The LWU will take the lead in regard to healthcare since this issue directly affects the lives of women, who are responsible for the children, nutrition and taking care of the sick at home (See Section 3.5.4.5). Information concerning any improvement in diet and hygiene should be directed towards women. This information could be combined with improvements in household vegetable gardens and small livestock.

As a result of the participatory approach, health and education needs are currently being addressed by way of training of village health volunteers, the establishment of a village medicine supply to be administered by the villagers themselves. 52 health volunteers have been recruited as part of the DUDCP and monitoring is ongoing through the existing medical teams based in the District at Nakai.

3.7.3.2: Education Interventions

With regard to education, a major problem in addition to the absence of schools appears to be keeping teachers in villages where there are schools. Qualified teachers receive little pay and are not interested in being based in remote areas. Many villages have school buildings but no teachers. The medium of teaching will be Lao, which is the language of the national curriculum. Locally recruited villagers who are literate and trained by an NGO or government organisation could be trained to teach non-formal classes in literacy and numeracy. The following recommendations cover the issues relating to education:

- - Restore and improve existing school buildings
- - Supplement existing regular teachers' salaries
- - Train teachers to conduct non-formal literacy classes for adults
- - Supply of teaching equipment
- - Supply of school books and materials for the children
- - School lunch program with WFP (to be explored)

3.7.4: Interventions in Surrounding Areas

3.7.4.1: Impact of the Construction of the Nam Theun 2 Dam Project

The planned construction of the Nam Theun 2 Dam is likely to have significant social implications for the NPA and peripheral areas. There will be a large influx of labourers stationed at the dam site at Keng Naun, approximately 4 kilometres downstream from the present site of Ban SopHia. Several villages are near the proposed construction site: SopHia, PakKatan Mai and Nam Nian as well as several Hmong villages on Route 8. There are already clear indications that these villages aim to benefit from the construction by working as labourers¹⁶. The influx of workers from outside also provides a potential market for food such as vegetables grown by villagers and wildlife. The experience of the recently constructed Theun-Hinboun Dam reveals that along with workers there are usually large numbers of camp followers and this has a considerable impact on the surrounding environment.

Although managing and running the camp and planning for camp followers will be the responsibility of the developers, NTEC, the initiation of a Joint Implementation Task Force, consisting of NTEC, GOL and the NT2 WMPA would be beneficial in co-ordinating these efforts (ESMP 12.2.2). Locating the camp outside the NPA or proposed extension boundary and transporting the labourers to work by bus will alleviate the problem and is recommended. However, irrespective of the location of the camp, there will be market and settlement issues to be addressed. Some common issues may be:

- Patrolling the NPA boundaries and imposing fees and punishments for illegal activities
- Education and awareness programs for the workers and camp followers
- Monitoring the movement of people in and out of the NPA/ Nam Theun Corridor extension
- Monitoring the sale and trade in wildlife and forest products
- A signed agreement, incorporated into the contracts of the workers, that will necessitate their removal from their positions should they be found to indulge in activities contradictory to the conservation and protection objectives of the NPA.

3.7.4.2: Peripheral Impact Zone Management

Peripheral impact zone management and development will be specifically considered as part of the WMPA's Operational Area. These villages, type 2, 3 and 4 villages (villages outside the NPA but using or extracting its resources), are equally relevant to Protected Area management in the Lao PDR as are type 1, NPA villages. A definition of eligible PIZ villages is presented in Section 1.4.2. All PIZ villages will receive compensation in the form of livelihood development under SEMFOP-1 according to the schedule presented in Table 2.3, Section 2.2.7. Development activities will be implemented through a partnership between the WMPA and local authorities, according to priorities based on the level of reliance of each village on NPA resources (See Section 3.1.4).

Recently established Hmong villages along Route 8, bordering the Nakai Nam Theun and the Nan Chat Nam Phan NPAs pose a specific management problem, in contrast, for instance to the more established Hmong population of Ban Thong Pe, who have adapted to wet rice cultivation. The Hmong have traditionally practised a type of pioneering swidden agriculture on mountaintops and slopes, planting, in addition to upland rice, corn, cassava and some poppy. Their population rate of increase per annum is the highest recorded in the PIZ villages, ranging from 4.69% to 6.1% (Chamberlain 1997a). Their efficient capture and extensive use of natural resources (swidden fields, wildlife and NTFPs) potentially threatens the conservation area and brings them into conflict with neighbouring communities. Their conspicuous presence in the Nam Theun Corridor was noted and commented on by the International Panel of Experts in January 1998 (POE 1998). The Hmong in the periphery have strong kinship ties with Hmong groups in Vietnam and there has been significant in-migration over the last years. These new arrivals tend to practice swidden in the areas near the established villages.

An accelerated PIZ programme will target the Hmong communities close to Route 8b and the Nam Theun Corridor. It is proposed that this sub-programme be undertaken by an NGO experienced in Hmong community development issues. A ToR for this work will be developed as an early priority under SEMFOP, based on the results of the PIZ village survey and on additional information from follow-up surveys under SEMFOP.

Management within peripheral impact zone will be through a cost-sharing partnership approach with the WMPA and local authorities according to the following sequence:

- Survey of PIZ villages, definition of village type (type 2,3 or 4) and initial prioritisation according to level of reliance on NPA resources.
- The development of a close linkage between the NT2 WMPA and provincial and district authorities.
- Initiate FLUPAM/PICAD in priority PIZ villages under a partnership with local authorities.
- The participatory identification and implementation of appropriate development activities to compensate for access restrictions.
- Expand the FLUPAM/PICAD process across all PIZ villages under SEMFOP-1 according to the schedule in Table 2.3, Section 2.2.7.

3.8: INSTITUTIONAL CAPACITY

3.8.1: Assessment of Capacity

Given the fact that the scale and complexity of the Nam Theun 2 Hydropower Project and the ambitious goals of conservation and livelihood development in the Watershed are new phenomena in the Lao PDR, it is not surprising that there is a need for extensive capacity building and institutional strengthening. The successful establishment of institutions and regulations as well as training and enforcement will determine the success of the intervention measures in general.

Since there is a need to create new responsibilities and roles, new institutions have been created, including the Executive Secretariat of the WMPA that will manage the NT2 Watershed/NPA. Local, district and national level government staff have been deployed in the field for some time, conducting a variety studies and evaluations. Initially most of the work was led by international consultants or at least supervised by them. However, as pilot projects have progressed, GOL and local consultants are playing an increasingly important role in their management and implementation.

In the future, due to the size and scale of the interventions and the demands that other components of the NT2 Project (especially the RAP/RMU) will have on GOL staff at the provincial and district levels, there will undoubtedly be a need to increase capacity. Already activities undertaken at a pilot level have highlighted the lack of capacity to fill positions and to carry out tasks. The weaknesses and problems so far encountered in implementing the DUDCP (2nd Annual Activity Report, November 2001) include a lack of capacity and management skills. Steps are being taken to try to address these shortcomings and problems in the 3rd Annual Plan, although success continues to be minimal, due mainly to the fact that:

- i. most of the project administration is in Thakhek, and not in the District and therefore District staff project implementation capacity is not being strengthened; and
- ii. district field staff are not assigned permanently to the project, meaning that the field work is led by the longer term local consultants, not by Government staff (who are often changing)
- iii. inadequate local participation and thus poor recognition of villagers' real needs and aspirations.

A number of institutions with varying mandates and skill levels will be involved in implementing the SEMFOP in the NPA and the PIZ. These are listed, along with initial assessments of their technical capacity, participatory skills and cultural sensitivity in Table 3.17.

Table 3. 17: Involved institutions and initial assessment of capacity.

Involved institution	Technical capacity	Participatory skills	Cultural sensitivity skills
Village institutions	Low, but with some development from DUDCP	Good	Indigenous
The WMPA Executive Secretariat	Generally high	Some skills in key staff	Very limited
Local authorities (provincial and district offices)	Generally adequate in field of responsibility	Generally poor	Generally poor but good in staff from an ethnic minority
Military and police (provincial and district based)	Poor in development and conservations	Generally poor	Generally poor
NGOs	Good in field of expertise	Generally high	High in some specialist NGOs
National institutes	High in field of expertise	Generally fair	Generally poor
International organisations	Very high in field of expertise	Generally good	Generally fair

3.8.2: Availability of Funds

The NT2 Power Company Limited has agreed to fund activities of the Operation Plan as outlined in this SEMFOP, and as committed in the Concession Agreement (Section 5), where it is stated that a sum of one million USD will be provided for the period PCD until CPCD, and then 5.5 million USD during the construction phase (the period covered by the SEMFOP-1) After commencement of operation, one million USD will be transferred each year to the WMPA (for the duration of the concession) to cover institutional development, technical assistance and training as well as village level interventions. The funding allocated for various activities under the SEMFOP-1 is discussed in Section 7.7.

3.8.3: Assessment of Professional Staff

Parts 6 and 7 of the SEMFOP provide details on the type of professional staff that will be engaged by the WMPA and the tasks they will be required to undertake. A review of capacity the professional staffing to date is presented in the following sections.

As part of the Pilot Field activities carried out by IUCN from 1998-2000, staff were recruited from GOL organisations for the NPA project. This included staff from the Provincial Forestry Section of both Bolikhamxai and Khammouane Provinces and staff from the Nakai District Forestry Section and one LWU-Nakai District representative. Staff numbers were subsequently reduced in 1999. A major constraint in regard to staff continuity and capacity development was the short time-frame of the IUCN project and the uncertainty regarding continuation and funding for the future phases.

Staff received training in participatory assessment and planning and support in terms of facilities and equipment. Although initial assessments of project results and staff capacity were in general satisfactory, the final evaluation revealed a number of serious shortcomings in regard to capacity, particularly in regard to local participation and cultural sensitivity (See DUDCP review in Appendix 3).

The problems in regard to the capacity of DUDCP staff were due in part to the large turnover of staff and thus difficulties with sustained capacity development. A training needs assessment, carried out between October and December 2000, determined that capacity was indeed lacking and considerable training was required to improve this capacity. Unfortunately, emphasis was on technical capacity with insufficient attention paid to participatory methods/skills and cultural sensitivity. Considering these lessons, the diversity of tasks to be undertaken and the recognised lack of capacity in GOL staff, the SEMFOP-1 must:

- i. Hire (national) professional staff with appropriate experience and capacity to form the nucleus of the Executive Secretariat at remuneration levels commensurate with the high quality required.
- ii. Ensure that national and international TA have adequate skills and experience in participatory methods.
- iii. Wherever possible hire local people and/or staff from the ethnic groups represented in the NPA.
- iv. Following training needs assessments, accordingly organize a wide range of training activities for both the Secretariat's professional staff, implementing partners, (mainly staff of government line agencies at the District and provincial levels) and village leaders as appropriate.
- v. Ensure that technical skills development is balanced with sufficient participatory skills and methods training.
- vi. Provide cultural sensitivity training to all WMPA and partner institution staff, organised and designed by the community development advisors.

Capacity development will be a continual process supported by hands-on training during field work, in which the Technical Assistance Team will play a key role.

3.8.4: Ethnic Minorities and Local Organisations

Because local leaders are selected from communities, and not from outside the area, local administrative authorities already include ethnic minorities. Thus village-level representation such as the members of the LWU (*sabaphan maeying*), the Development Front (*niaw bom*), the militia (*kon bong*) and the Youth Organisation (*sao num*) as well as village headmen (*nai ban or phau ban*), assistants (*bong nai ban and kamakan*) and leaders of village sections (*hua na nuay and bong nuay*). Local taxation, maintaining law and order and

resolving local disputes are the responsibilities of village leadership. In all villages in the NT2 Watershed, ethnic groups are represented in local leadership. Formal village structures often overlap with traditional and ritual positions, such as those of the thau khun or council of elders and founding families and clans tend to play important roles in local politics and maintaining contact with the outside world.

The participatory methods have involved the local population and leadership in conservation, and development activities were rated as one of the most successful aspects of the pilot village programme by IUCN (1999: 73). Villagers showed enthusiasm at the idea of participating in programmes and encouraged interaction with NPA and DAFO staff. The affect of motivation and morale on GOL staff was also noteworthy.

3.8.4.1: Village Conservation Monitoring Units

An example of how the skills of the local ethnic populations can play an important role in the fulfilling aspects of the Plan is the Village Conservation Monitoring Units (VCMUs) which were established in six pilot villages under DUDCP. Prior to their formation, villagers were consulted on the roles and responsibilities of these units and on appropriate compensation packages for them: rice stipends, a proportion of the fees collected or salaries.

The units consist of 4-6 volunteers, primarily from the Village Militia and Village Security, who are appropriately trained, and equipped with basic knowledge, skills and equipment. The purpose of these units is to monitor the condition of natural resources, and to enforce the national laws, local, and protected area rules and regulations. Their specific duties are to:

- ii. gather information and monitor the presence of wildlife and the occurrence of impacts;
- iii. patrol against poachers, traders illegally dealing in wildlife and other forest products, and to implement law enforcement activities;
- iv. disseminate conservation awareness to fellow residents, residents of neighboring villages, and other stakeholders (e.g., army and police).

Logbooks are kept and discussions are held with NPA staff on a regular basis.

3.8.4.2: Involvement in Development Initiatives

Livelihood development and improvement of services have been conducted with community co-operation in three pilot villages by DUDCP. District personnel have been working with local leaders to address a range of development concerns. The planning of food security initiatives and rice production have been co-ordinated by DAFO and PAFO and carried out by District extension workers in co-operation with villagers. Village leadership has provided the overall organisational mechanism for organising villagers' inputs and labour, selecting volunteers and sites and assigning roles and responsibilities.

In regard to health training, volunteers were selected by villagers and then trained by District Health staff with regular follow-up visits. The health-needs of villagers were assessed through interaction between the volunteer and health support staff. Issues such as transportation for health centres and medical supplies were addressed and acceptable solutions worked out.

Regarding improvements in schooling, the villagers at Ban Makfeuung organised themselves and constructed a building for teachers and agreed to provide a moderate rice stipend fund for children attending classes. It appears that the participation of community members in organising and implementing these development programmes was high and is another example of how local organisational capacity can be strengthened through participatory implementation of project activities.

3.8.5: Mobilization and Field Presence

3.8.5.1: Mobilization and Field Presence in Pilot Programs to Date

There has been a significant mobilization of staff drawn from a number of government agencies to assist with the co-ordination, planning and supervision of the NTSEP programmes, including DUDCP and the WMPA's sub-committee undertaking conservation activities. The involved agencies are:

- i. The NT2 WMPA
- ii. The Ministry of Agriculture and Forestry, Department of Forestry
- iii. GOL Nam Theun 2 Office, Prime Minister's Office
- iv. Division of Forest Resources Conservation (DFRC) Department of Forestry
- v. Provincial Agriculture and Forestry Offices in Bolikhamxai and Khammouane Provinces

At the field level the following organisations and agencies have been implementing and monitoring programmes in the villages of the Watershed:

- i. NPA Management Unit
- ii. District Extension workers from District Agriculture and Forestry Office
- iii. District forest/Land-Use Planning and Allocation Committee
- iv. Local Leaders in villages
- v. LWU at the District and local levels

3.8.5.2: *Planned Mobilisation and Field Presence*

The planned mobilization of staff and their field presence is presented in detail in Part 6: Institutional and Management Framework; and Part 7: Operational Plan and Budget, of this SEMFOP-1 report.

3.9: MONITORING AND EVALUATION

Monitoring and evaluation will consist of internal and external monitoring systems.

3.9.1: Internal Monitoring System

Internal monitoring and evaluation will be undertaken by the Executive Secretariat of the NT2 WMPA by the inclusion of a 'lessons learned' and a 'good points and bad points' sections of its monthly and annual reports to the BoD and the IMA.

Village monitoring and evaluation procedures will be established to monitor and evaluate the implementation of village activities relating to conservation and development, including joint patrolling and extension to farmers. Since a participatory approach has been and will be used for planning, a feedback loop has been established not only for ensuring participation by local people in all aspects of implementation, but also to identify new areas of intervention and foresee problems before they become difficult to solve. Formal grievance mechanisms and conflict resolution procedures have been established that will deal with problems in a fair, transparent and culturally sensitive manner, and these are described in Section 6.5.3. In addition, the guiding principles to be used for all decisions under SEMFOP include a number of clauses to ensure that the traditional and customary rights of ethnic minorities are not infringed (Section 6.5.3).

3.9.2: External Monitoring System

The main objective of this EMDP is to enhance existing livelihood systems in the NT2 Watershed Area in a way that directly maintains and even enhances biodiversity conservation and sustainable management of natural resources. Achievement of this objective may be difficult to judge by those implementing the EMDP, particularly in the early years before monitoring data is sufficient for the purpose. To overcome this, monitoring and evaluation by an independent organisation, termed the Independent Monitoring Agency, will be regularly (annually) undertaken. This IMA will have 2 international and two Lao team members, and one international and one Lao member will be selected specifically for their extensive experience in social and ethnic development issues and programmes and familiar with the local language and socio-economic conditions.

To ensure that the best candidates are selected, the recruitment of external monitors will follow a competitive bidding process. A request for proposal will be advertised and sent to potential candidates, including NGOs and social science institutions. Based on a review of their work plan and qualifications, the most suitable organisation will be selected to carry out the external monitoring and evaluation work. Selection will take place upon NT2 WMPA Executive Secretariat approval.

3.9.3: Monitoring and Evaluation for the EMDP

3.9.3.1: Social and Cultural Benchmarks

Base line benchmarks are being developed as a prerequisite to evaluating progress towards SEMFOP's stated objectives. Indicative baseline benchmarks are presented in Table 6.7 and Section 6.5.5.1, along with data sources and further monitoring needs. They include the following indicators that will be important for monitoring the progress of the EMDP:

Villager quality of life:

- Health status of villagers
- Education levels among villagers
- Access to markets
- Access to government services
- Population trends
- Up-take levels of external employment

Socio-cultural cohesion

- Retention of traditional culture/customs

- Ethnic population numbers
- Inter-village cooperation levels
- Retention of customary rights

Livelihood systems

- Farming system types & productivity
- Forest resource dependency - types/levels
- Alternative livelihood systems

Land use

- Village land use patterns
- Village agriculture land areas
- Inter-village boundary agreements
- Village land use agreements

Forest resource use

- Access to forest resources
- Sustainable use of NTFPs
- Community fisheries conservation
- Sustainable hunting regimes

Very little socio-cultural data that can be used for baseline purposes currently exists, and thus monitoring systems will have to 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 process will be initiated as a priority under SEMFOP and will involve (i) finalisation of the log-frame, (ii) identification of appropriate indicators, (iii) collecting baseline data, and (iv) operationalising monitoring systems. The community development 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 the EMDP towards its stated objectives.

3.9.3.2: Risk Management in the EMDP

The approach to risk management under the SEMFOP will be to identify those proposed plans or activities with a significant level of risk, identify the sources of potential risk and lay out options for dealing with or mitigating the risk. The ultimate aim of such a risk management strategy is to be able to not only identify potential risks and their source, but also quantify these and assess the extent to which available options will provide mitigation.

Section 6.5..2.1 describes SEMFOP's Risk Management Strategy. As with the M&E system, a number of potential risks have been identified, directly relevant to the EMDP, which may jeopardise it successfully meeting its objectives. As far as possible, these risks have been considered during the design of SEMFOP and measures have been taken to mitigate against them. This strategy in regard to the risks most relevant to the EMDP is summarized in Table 3.18.

Table 3. 18: Source of risks to the EMDP and mitigation measures adopted by SEMFOP

Source	Risk or threat	Mitigation measures
Institutional	EMDP objectives conflict with those of local authorities	Local authorities are engaged as full partners to instill EMDP ownership in them.
	Capacity of GOL partner agencies is inadequate for the tasks required under the EMDP	WMPA staff and TA will conduct both formal and 'hands-on' capacity development programs for EMDP partner organization staff.
	WMPA's conservation objectives conflict with EMDP's livelihood objectives	Continuous dialogue with PPAM Division and a partnership approach under the FLUPAM.
Management	WMPA has insufficient management	A partnership, cost-sharing approach with local

Source	Risk or threat	Mitigation measures
	authority over PIZ communities	authorities will be adopted to develop co-ownership.
	Lack of cooperation from local authorities for EMDP in the PIZ	Cost-sharing and capacity development incentives will be used to ensure full cooperation.
Political	Legal recognition of NPA village rights of abode and livelihoods is withdrawn by GOL	Recognition of customary rights in VFLMAs and appropriate conflict resolution procedures in place.
	WMPA's autonomy is eroded by central government interference	Assistance will be sought from provincial governors, NTPC and WB to put pressure on GOL.
	Support for the EMDP ceases to be a government policy priority	SEMFOP's financial and decision-making autonomy
Technical	WMPA unable to fill LDC Division staff positions with adequately qualified people	ExSec staff salary structure, incentives system and capacity development programs developed.
	Alternative livelihood systems fail to promote change	Livelihood development build on existing systems using an incremental rather than a transformational approach.
Economic	Extreme energy/power price fluctuations affect NTPC's ability to fund the EMDP	Guarded against in Concession Agreement and later trust fund development will mitigate against instability in funding.
	Value of wildlife/forest resources become greater than returns from livelihood activities	Improved enforcement and alternative livelihood activities such as ecotourism will mitigate against this.
Social	EMDP livelihood development activities attract in-migration of people into the NPA	In-migration strategy already developed under the SEMFOP to be implemented with district authorities.
	Dam construction crews cause problems in local communities	Constructio-risks task force proposed to enhance cooperation among WMPA, local authorities, NTPC and major contractors.
Natural	Extreme climatic conditions cause NPA village livelihood systems to fail	Climatic instability is considered in livelihood development planning and robustness of current systems will be enhanced.

3.10: IMPLEMENTATION SCHEDULE AND FINANCING PLAN

Parts 6 and 7 of the SEMFOP present a detailed management framework, operational plan, schedule and budget for all activities that are planned for the NT2 Watershed Area. Here, it is necessary to highlight aspects that are important from an ethnic minority perspective and indicate which aspects have been incorporated into the overall approach to livelihood, service and infrastructure improvement.

3.10.1: Social and Ethnic Minority Issues in relation to Implementation Schedule

A number of specific aspects relating to scheduling and implementation have been incorporated into the OP that prioritise social and ethnic minority concerns which have arisen during the consultations and data collection that have already been carried out in the NT2 Watershed Area. These can be highlighted as follows:

- The general approach to planning has been one of establishing an effective, long-term relationship of trust and co-operation between government agencies and the WMPA on the one hand and communities and local organisations on the other;

- Institutional strengthening and training for both villagers (pilot projects) and for government agencies (NPA, DAFO, PAFO and other staff at the district, provincial and national levels) have been central elements from the start of project planning and pilot field activities and should continue throughout the implementation period;

- NPA and PIZ Villagers are part in an ongoing consultation process wherein their concerns and viewpoints are elicited along with feedback on the various aspects of livelihood interventions;

Villagers will continue to be directly involved with – as leaders and participants – (not only consulted with) on the various planned interventions, including the use of FLUPAM participatory methods in identifying suitable interventions and confidence-building, trial adoption and adaptation of techniques and encouraging local developments and initiatives;

Enhancement of land and resource use tenure security, acknowledging the customary rights of the ethnic groups in the FLUPAM process;

Health and education interventions will focus on improved infrastructure, training and supplying needed materials and equipment – emphasis will be on provided sustainable and improved services to each village or groups of villages and measures have been put in place to address particular issues pertaining to ethnic minorities;

Special measures are being planned to address the Vietic groups which are most at risk;

Information and awareness raising concerning the rights of the ethnic groups will be strengthened through the use of Global Village's NGO extension materials for villagers on rights and responsibilities in regard to forest resource and land use rights;

The development of ethnic and cultural development plans (See Section 2.5.1);

Training and support for Village Development Committees to facilitate the village development planning and implementation process;

Participatory approach to improving infrastructure, including buildings, paths, storage, transportation facilities, etc. (shared responsibilities and local inputs to foster a sense of ownership);

Establishment of village rice banks, savings groups and establishment of necessary institutions to support the development process in the long-term;

Input from national and international community development advisors should ensure that the concerns of all ethnic minorities, especially those designated as 'vulnerable', are addressed and 'culturally-sensitive' approaches are used that take into account the different needs, understandings, experiences and worldviews of the different groups;

Measures to ensure that Indigenous Knowledge is fully recorded and studied in terms of general conservation, and for possible benefits for local stakeholders in terms of development;

Social and livelihood interventions in the peripheral impact zone;

Monitoring by the affected communities in the NT2 Watershed should involve members of the communities themselves and the committees that have been mobilised to carry out interventions in addition to elected leaders and members of government organisations – continuation of the feedback loop

Proposed cultural sensitivity training for all WMPA staff by the community development advisors;

Provision for a long term international community development advisor supported by a national community development advisor in the SEMFOP technical assistance team plan;

Local and ethnic peoples recruitment emphasised as part of the WMPA staffing policy.

In order to ensure that social and ethnic minority concerns are addressed, constant interaction between villagers and the NT2 WMPA staff and other government agencies as will be necessary. Only this can ensure a 'ethnic-sensitive' approach by allowing concerns to be voiced openly and as they arise. There is every reason to believe that this will be the case in the NT2 Watershed Area since the ongoing consultation and participatory livelihood development activities have taken ethnic concerns largely into consideration when appropriate. The Pilot Field Activities have provided important insights and lessons for the actual implementation of the programmes in the whole NT2 Watershed Area.

3.10.2: Social and Ethnic Minority Issues in relation to Budget

In regard to budget, it important to note that all participating communities in the NPA and the PIZ are ethnic minorities and as such the entire budget concerns ethnic minorities one way or the other. A number of key features of the budget of the Operational Plan specifically address the concerns and considerations of social conditions and ethnic minorities in the NPA and PIZ. Such key items include:

- The development of ethnic and cultural development plans
- Establishment of land and resource use tenure security (through the VFMA process and additional village based instruments)

- Capacity building and strengthening of local institutions
- Special measures for the Vietic groups
- Establishment of necessary support infrastructure and facilities for long-term programmes;
- Community field stations, restoration of school buildings and health facilities;
- Improved access by land and water;
- Small-scale irrigation systems, micro-hydropower systems and village nurseries;
- Community based eco-tourism as an alternative source of income;
- Supply of various equipment, including health equipment, solar power units, water pumps, tools, field equipment, teaching equipment and transport.

Technical Assistance has been designed to strengthen WMPA capacity in regard to ethnic issues/concerns and in relation to local participation in social development. Provision under SEMFOP for 42 person months of an international Community Development Advisor and 14 months for a local advisor/trainer, the details of which are presented in Sections 6.3.2 and 6.3.3. The primary role of these advisors is to sensitise and upgrade the capacity of the WMPA directors and staff of their respective divisions. This will emphasise skill development and technical competency, particularly in relation to ethnic issues and concerns. The Community development Advisors will work with all the Deputy Directors with the objective of mainstreaming ethnic issues into all three technical programs. They will work in close collaboration with the 3 WMPA Technical Divisions to ensure that ethnic issues and concerns are fully incorporated into the activities of each.

In addition, many villagers will be trained by a variety of local and national experts in the fields of health, sanitation, education, community development, marketing and livelihood development. Support for social development, provision of services, infrastructure and livelihood development emphasizes consultative and participatory approaches to ensure that ethnic issues and concerns are fully incorporated into the plans (see Section 2.1 for details).

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 4

**BIODIVERSITY MANAGEMENT
AND
CONSERVATION FRAMEWORK**

(DRAFT OF OCTOBER 2004)

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4.1: INTRODUCTION

4.1.1: Background

The Lao delegation at the 1965 Conference for the Conservation of Nature in Bangkok reported 10 forest reserves in Lao PDR totalling 151,500 ha with plans to upgrade to national park status.¹ Studies of these areas had begun, but the political uncertainty and war during the late 1960's and 1970's curtailed these efforts. In 1975, the newly formed Lao PDR repealed the prior Constitution, all legislation and the established forest reserves. Not until the end of the Cold War in 1989 did an emphasis on conservation and protected areas formally re-emerge in Lao PDR.

4.1.2: Conservation and Protected Areas in Lao PDR

4.1.2.1: Development of National Protected Areas

The first biodiversity management study undertaken in the Lao PDR was in 1986, followed by the first attempt to develop a biodiversity management systems at a national level², instituted by the Forest Resources Conservation Project (1988-91), part of the Lao-Swedish Forestry Cooperation program. This project focused on developing and establishing a Protected Areas System, i.e., areas set aside specifically for the management and protection of biodiversity, based on two foundations:

1. Policy arising from GoL's commitment to forest conservation, especially as expressed in the Tropical Forestry Action Plan of 1990. GoL's goal was to achieve 25,000 km² of forest under conservation protection (10.5% of country).
2. Design philosophy and criteria for site selection were based on the biogeographic analyses of MacKinnon and MacKinnon (1986).

The principles that guided the assessment of suitable sites (Salter and Phanthavong 1989) were:

- "Protection needs to be provided to the full range of ecosystems and species communities occurring within the country,"
- "The total area under protective management needs to be adequate to prevent or minimize species extinctions"
- "Effective protection for 5-20% of the original area of each habitat type within each biogeographic subunit" needs to be provided in the Lao PDR.
- The approach assumed that protection of adequate, representative areas of habitat would also protect the majority of plant and animal species, therefore individual species requirements were not considered.

The search for appropriate protected areas started by assessing 68 sites that had been proposed (by various sources) for protection. Analyses of the sites, individually and as a system, were based on:

- extent of remaining natural vegetation: 50,000 ha. was the minimum for selection;
- completeness of original cover: priority given to more intact areas;
- extent of representation in biogeographic subunit, based on contributions of altitude classes and habitat types;
- regional priority: according to MacKinnon and MacKinnon (1996) by biogeographic subunit, size, regional importance of habitat, and so forth;
- degree of threat: priority given to high threat areas identified by MAF.

¹ UN List of National Parks and Equivalent Reserves, 2nd edition, 1971. Prepared by IUCN pursuant to UN Economic Social Council Resolution 810: Brussels.

² Biodiversity management by villagers has probably taken place for many years, although it was generally overshadowed by non-management type extraction, due to the perceived abundance of biodiversity in relation to the small population of Laos in the recent past.

The process identified 29 of the 68 sites as potentially suitable for protected areas (and rejected the others). Ground assessments of most of the 29 were completed by 1991, and 17 suitable sites identified. The process culminated in 1993 by PM's Decree 164 establishing the 17 recommended protected areas, plus Phou Phanang near Vientiane, which was added for its historical value. Two more areas were added by Ministerial Decrees in 1995 and 1996, making a system of 20 protected areas, or NPAs (see Map 3). Some additional NPAs have been proposed but not legally gazetted. A brief history of the NPA's establishment and activities in the following decade is presented in Table 4.1 below.

Table 4.1: A brief history of the development of the NPA system in the Lao PDR

Year	Event
1986	Some priority sites for protection in Laos are suggested by MacKinnon and MacKinnon 4th Party Congress reports that regulations are necessary for the protection of forest resources and conservation of the environment and its natural beauty;
1988-1991	DoF, LSFP and IUCN conducted reconnaissance surveys of potential protected areas; by 1991 eight suitable areas are identified and recommended for management planning; additional areas are identified as priorities for assessment.
1989	1st National Forestry Conference, chaired by the PM, affirms need for biodiversity conservation The report, "Needs and Priorities for a Protected Area System in Lao PDR", is issued by LSFP/ IUCN.
1990	Tropical Forestry Action Plan prepared; it reiterates emphasis on forest conservation.
1992	Assessment and identification of suitable sites for PAs continues; LSFP/DoF & Cambridge student expedition begin wildlife and habitat surveys in proposed PAs.
1993	Adoption of Constitution of Lao PDR, including Article 17 stating "all organizations and citizens shall protect the environment and natural resources . . . forests, fauna, water" Prime Minister's Decree 164 establishes the first 18 NPAs; LSFP begins management planning in four NPAs.
1994	Wildlife Conservation Society begins to assist DoF in wildlife and habitat surveys in each NPA (these will continue through 1999), staff training management assistance in Nam Ha NPA.
1995	Xe Sap NPA added to the system.
1996	Dong Phou Vieng NPA added to the system (for a total of 20 NPAs); Forestry Law passed by National Assembly; IUCN Biodiversity Conservation Project (BCP) begins management assistance to two southern NPAs later to be joined by GAA and PDI). GEF/World Bank FOMACOP project begins fieldwork in 4 NPAs through 2000
1996-1998	Forestry Law enacted defining and establishing categories for protection and conservation forest; 7th Party Congress emphasizes need for increased forest conservation; WWF organizes transboundary conservation meetings between Lao PDR and Vietnam; joint Lao-Vietnam survey of Hin Nam No NPA in 1998
1999	Major, donor-supported phases of LSFP, FOMACOP, IUCN, and WCS projects in 11 NPAs come to an end. Some funds and adviser assistance extended for some areas. WWF begins assistance to Hin Nam No NPA. IUCN/DANIDA begin assistance to Nam Et/Phou Loei NPAs. Large extensions approved to Nam Ha NPA, now contiguous with a reserve in Yunnan, China. World Commission on Protected Areas 2nd Southeast Asia Regional Forum, in Lao PDR (Pakse).
2000	Four-day NPA management workshop convened in Vientiane; attended by representatives of every NPA and chaired by the Director General of DoF; Manager's Guide to Protected Area Management completed; The first fully approved NPA ecotourism venture begins (in Nam Ha NPA).
2001	MAF issues Regulation 524 on establishment and management of NPA system and wildlife and aquatic species (to be amended in 2003)

Currently, there are four tiers of conservation and protection forest in Lao PDR:

- i. Pursuant to PM Decree 164 and MAF Regulation 524, the central government (Prime Minister's Office) has established NPAs;

- ii. Provincial and District Governors and local authorities have established 276 conservation and protection forest reserves (mostly for watersheds and future utilization) within their own jurisdiction, but these have no national legal recognition or management guidelines;
- iii. Village conservation and protection zones within village boundaries established under a village forest management agreement with DAFO through the land use planning and allocation program (MAF Instruction 822).

The number and total area of each type are presented in Table 4.2.

Table 4.2: Levels of Protected Areas in Lao PDR.

Level	Legislation	Number	Total ha
National (GOL; MAF)	PM 164 (1993)	20 NPAs	3.3 million ha
	MAF Reg 524 (2001)	2 corridor zones	77,170 ha
Provincial Government	None specific	57 conservation areas	931,969 ha
	Land Law, Art. 12	23 protection forests	461,410 ha
District Government	None specific	144 conservation areas	503,733 ha
	Land Law, Art. 12	52 protection forests	55,713 ha
Village Authorities	MAF Instr. 822 (1996) MAF Reg 535, Art. 8 (2001)	Villages where LUPLA has occurred	Conservation / protection forest zones under VFMA

4.1.2.2: Protected Area Staff, Infrastructure and Resources

Biodiversity protection throughout the Lao PDR is constrained by a general lack of infrastructure and equipment, inadequate-funding, under-staffing, and low capacity levels in protected area management staff. Annual budgets for NPAs, even at best with some external funding, typically only amount to a few thousand dollars. The majority of NPAs have no 4-wheel drive vehicle, insufficient motorcycles and very little basic equipment. Most have in the region of 5 or 6 staff assigned to them and some of these may be seconded to other duties. NPA staff normally come from diverse and often irrelevant backgrounds, they are poorly trained and motivated and tend to be rotated to other un-related positions on a regular basis. One study (Craig, 1998) revealed that the average length of service of staff members in in Phu Xang He NPA was less than 2 years. This makes capacity development very difficult, even in cases where resources are available for training and skills development. Due to lack of capacity very few NPAs have any long-term management plan, and even those that do, normally lack the budget to effectively implement it.

4.1.2.3: Lao Environment and Conservation Fund

A Lao Environment and Conservation Fund (LECF) is to be established as a source of funding for priority projects and activities in the fields of research, preservation, mitigation and restoration of the environment, including the protection and conservation of natural resources and biodiversity, and the mitigation of adverse social and environmental impacts associated with development projects. It is intended that LECF resources will be used to support only those priority projects and activities that complement and do not replace activities, functions or tasks that are carried out under the responsibility of the GOL.

A draft Prime Ministerial Decree to establish the LECF has been finalised and will shortly go to a national and international disclosure phase prior to being signed by the end of 2004. The fund is to be capitalised initially through a US \$5 million loan from the Asian Development Bank. Under the Fund, specialised financing windows may be established under the framework of the LECF to administer, manage and account for moneys that may be deposited for specific environmental protection purposes.

It is intended to establish one such financing window as the Central Lao Conservation Fund (CLCF) to provide financial support for the central Lao protected areas surrounding NNT including Phou Hin Poun, Hin Nam Nor as well as the NCNP. Consideration will be given to establishing a similar financing window for the Nakai Nam Theun NPA, under which any funds not used during the NT2 concession period can be invested of future use to ensure the long term sustainability of WMPA funding.

4.1.3: Nakai Nam Theun NPA

4.1.3.1: Development of Nakai Nam Theun NPA Management

The Nakai-Nam Theun NPA is not only the largest of Lao PDR's twenty national protected areas³, it is without doubt the most important for biodiversity conservation. It is one of the most important protected areas in Asia.

Initial attempts to develop a management plan for biodiversity conservation in the NT2 Watershed/NPA were undertaken in the mid 1990's by a cooperative program of WCS and DoF's CPAWM. A team from WCS along with some CPAWM staff undertook site visits, interviews with villagers, discussions with decision makers and reviewed all the information on biological surveys and other data collected to date. This led to the development of a "Preliminary Management Plan for the Nakai-Nam Theun NPA" in June 1995. A further study was undertaken, resulting in a report by Finlay in 1996 "Preliminary Analysis for Zonation Decision-Making in Nakai-Nam Theun National Protected Area".

At the same time, CPAWM conducted somewhat more intensive village level investigations of villager use of biodiversity resources and a mapping of village agricultural and forest areas. While the data from these investigations has been lost, a new GIS map has been generated (Annex Map 10). Assuming this map represents some type of reality, the village usage areas could form the basis for zonation of the NPA and thus for biodiversity management.

The first attempt to actually implement NPA and biodiversity management was initiated by a PHRD Grant under the World Bank's Nam Theun Social and Environmental project (NTSEP). IUCN implemented this project in two phases, the first being the 'Pilot Field Activities in Community Development and Biodiversity Conservation', conducted from May 1998 to July 1999, followed a year later by the 2nd Phase called 'Year 2000 Activities'. However, the impact of this project on the management of the NNT NPA was constrained by limited budget and the lack of continuity in project implementation.

Following that, a District Upland Development and Conservation Project was implemented, originally planned from 1/4/99 to 30/9/02, but later extended to 30/9/03. DUDCP, a Learning and Innovation Loan, was secured by GoL to improve the livelihoods of local communities, while simultaneously conserving the biodiversity of the Nakai - Nam Theun NPA. Although, this project is not specifically aimed at developing NPA management capacity per se, it nevertheless develops the capacity of selected NPA staff in participatory field management, and in data collection, analysis and interpretation. DUDCP focuses on conservation in three sub-watershed zones (Navang, Thapaiban and Teung) through:

- i. the establishment of six village-based conservation and monitoring units,
- ii. incorporating conservation values into the project's development activities, and
- iii. conducting conservation awareness activities in three focal villages.

Thereby contributing to the overall development of a biodiversity management framework.

Nam Chat-Nam Pan Provincial Protected Area

The Nam Chat-Nam Pan Provincial Protected Area (NCNP) was established by a notice issued by the office of the Bolikhamxay provincial governor in December 2000. It comprises roughly 650 km² of Wet Evergreen Forest in the Annamite Chain of eastern Bolikhamxay Province, north of National Route 8, roughly between the Nam Chat river and the Vietnam border. The inclusion/exclusion of the NCNP as part of the NT2 Watershed/NPA has been a contentious issue over the course of the development of the NT2 Project. The area had previously been proposed as a 'Northern Extension' to the Nakai-Nam Theun NPA, but this has now been dropped due to the area's designation as a provincial protected area.

³ The area of the NT2 Watershed/NPA, prior to reservoir impoundment is 4,240 km², fractionally larger than the current area of the Nam Et Phou Loei NPA which is 4,230 km², and likely more if boundary revisions are approved.

The key issue in respect to the NCNP has been the relatively limited extent of Wet Evergreen Forest in NNT and the apparent importance of this habitat to the rare Saola (*Pseudoryx nghetinhensis*). Based on available evidence, the NCNP with its predominant wet evergreen forest, is thought to be a major stronghold of the Saola. It is the only site in Lao PDR (and only the second in the world) where a wild Saola has been photographed.

There has been concern, that without the funding support that would be available if it were considered part of the NT2 NPA Watershed, effective management of the NCNP would not be possible. However, experience to date and prospects for future funding, as described in the following two paragraphs, tends to indicate that these worries are largely unfounded.

In December 2001 Bolikhamxay Province completed preparation of a five-year management plan for the protected area. The plan is brief, but impressive. It addresses the key issues, but avoids overambition. It includes provision for a modest field headquarters and staff, and plans for patrols (quite detailed), rural conservation education, zone delineation and participatory planning of local resource use and development. The core management staff of five have been appointed in name, but are apparently not yet based in the area. The five-year plan requires a budget of US \$108,000, which is currently being sought (Robichaud, 2003).

The Central Lao Conservation Fund, to be established under the umbrella of the Lao Environment and Conservation Fund, intends to provide financial support for the central Lao protected areas surrounding NNT including Phou Hin Poun, Hin Nam Nor as well as the NCNP. A draft version of these arrangements has now been finalised and is expected to be completed at the end of 2004, following national and international disclosure (See Section 4.1.2.3).

4.1.3.2: NNT Faunal Diversity Survey, Research and Management

Apart from the fisheries work of Dr. Maurice Kottelat in 1989, the first biodiversity field survey in the NNT NPA was conducted in 1994 under the cooperative program of the Department of Forestry's Center for Protected Areas and Watershed Management and the Wildlife Conservation Society, culminating in the report: "A Wildlife and Habitat Survey of Nakai-Nam Theun National Biodiversity Conservation Area" by Timmins, R. J., and T. D. Evans (1996). Additional field studies were carried out by WCS, and included areas such as the previously proposed northern extension and the corridor to Phou Hin Poun NPA, and a study on the Saola and reptiles, as reported in Summary of Saola, herpetological and wildlife trade studies in NNT NPA and proposed NT Extension, by Robichaud and Stuart (1999). Also published in 1999, the Saola Conservation Action Plan for Lao PDR proposed a specific action plan to conserve the rare Saola.

The NTSEP/IUCN project, carried out in two phases, also supported wildlife surveys as part of field training to the NPA monitoring and patrolling staff, police, military and village volunteers. Similarly, Boonratana's work (Boonratana, 2001; 2002a; 2003) with the DUDCP ensured that the NPA monitoring and patrolling staff and the Village Conservation and Monitoring Units also continuously recorded all observations of wildlife, therefore further adding to, or confirming the faunal database. They also provided data sets for monitoring trends in abundance of selected species, hunting pressure and habitat disturbance.

Intensive work on the Asian elephants on the Nakai Plateau was undertaken by Dr. Ramesh Boonratana in 2000 for NTSEP/IUCN Year 2000 Activities, and by an M.Sc. student, Mr. Khamkhoun Khounbolin in 2001, supervised Dr. Arlyne J Johnson (WCS) and Dr. Ramesh Boonratana (IUCN consultant)

4.1.3.3: NNT Floral Diversity, Research, and Management

Very little work has been undertaken on the floral diversity of the NNT NPA, or on its management. Apparently, the early work of Vidal did not include any studies or field trips to the Nakai Plateau or any of the areas within the NT2 Watershed/NPA.

In 1995 WCS engaged Mr. Phengsintham (NUOL) to study the vegetation in the Ban Navang area of the NNT NPA. In 1997, as part of the NTSEP funded project to develop the ESMP for the NNT NPA, James K Jarvie conducted a brief overview of flora and habitats. He described habitats but decided not to

survey the occurrence of, or name any tree species, as he considered much more work (in terms of time and detail) was required to be sure that identification was correct, especially as there was likely to be many species new to science in the area.

Possibly the most detailed study of the flora has come from various studies of plants or plant parts used by villagers, termed NTFPs. Information on the use of NTFPs in the area can be found in reports of six missions, as follows:

- i. Foppes et al, 1997, undertook a short mission for NTEC from 26/2 to 30/3 1997 (reported in *The use of Non-Timber Forest Products on the Nakai plateau*, Foppes et al, 1997) in which they conducted a rapid survey in five villages on the Nakai Plateau, which has easier access to markets and are more exposed to logging activities than villages in the NPA villages. They found that villagers could identify 306 species of NTFPs: 223 food products and 67 non-food products, with damar resin “khisi”, fish/frogs, edible rattan shoots (“san”, “boun”), cardamom, and wildlife considered the most important forest products. In addition, village groups estimated income derived from NTFPs at 76% of an average family compared to livestock sales of 16%. While income from NTFPs was higher among the wealthy families than among the poor families, NTFPs were the only source of income for the poor families, therefore essential for them.
- ii. The Environmental and Social Management Plan for the Nakai-Nam Theun Catchment and Corridor Areas (IUCN, 1998) noted the earlier CARE study as suggesting that villages outside the NPA (lower Nam Theun area) have a much higher cash income than the villages inside the NPA (upper Nam Theun area), however gathering of NTFPs is relatively much more important for the people inside the NPA.
- iii. In 1998 Ingles et al, conducted NTFP investigations in four villages, three type-1 (Ban Makfeuang, Ban Nameo, Ban Vangkhouay) and one type-3 village (Pak Katan) (reported in *Rapid survey of the use and Government regulations of non-timber forest products from the Nakai-Nam Theun NPA*). Village communities could enumerate 303 types of NTFPs: 279 food products (plant foods 131, animals 148) and 24 non-food products, and on average, local people estimated 54% of family income to be derived from NTFPs, compared to 42% from livestock, 4% from crops. Local people also relied heavily on NTFPs for subsistence needs. They also need a continued trade surplus from selling NTFPs to obtain rice, other external goods and services.
- iv. The “Final report, Nam Theun Social Environmental Project, Year 2000 Activities” by IUCN reported that NTFPs in 6 Brou villages provided 53% of the average family cash income of 403,776 kip per family in 2000, against livestock 32% and labor 15%.
- v. A diagnostic survey on farming systems, agroforestry and NTFPs by the DUDCP found that villagers could identify 450-470 NTFPs, and suggested that current gathering/hunting systems may provide more economic returns than the swidden and settled farming. The project was of the opinion that depletion is unlikely to occur for some NTFPs, but is a serious threat for some commercial products that include wildlife, rattans and agarwood.
- vi. In 2001 the DUDCP engaged Joost Foppes to carry out a brief but detailed review of NTFPs in three NPA villages, who could enumerate up to 510 NTFPs. Results of the review showed that NTFP contributed to only 24 % of the income, and larger percentage of the NTFPs were consumed or used.

4.1.3.4: Biodiversity Protection (DUDCP Supported)

The first phase of the NTSEP project (1998/9) encouraged a participatory approach to biodiversity protection by establishing three Village Conservation Monitoring Units (Ban Thamuang, Ban Makfeuang and Ban Maka), with occasional participation from the District and Provincial Police, the NPA staff, and the DAFO staff from Bolikhamsay Province (Boonratana, 1998). However, these units lasted only for the project’s duration. Besides establishing the monitoring units, the project attempted the enforcement of rules and regulations regarding wildlife use and trade, and proactively maintained dialogues with enforcement agencies such as the police and army.

During the Year 2000 Activities of the NTSEP project, the project indirectly provided biodiversity protection in the Nam Theun Corridor through a six-month study on movements and seasonal migration,

which involved the long-term participation of the NPA staff, the District Police and the District Army (Boonratana, 2000). In the process, several hundred snares and traps (for both large and small animals) were destroyed or confiscated, and several poaching, fish bombing, and wildlife trading incidences were reported to the District governor's Office. This resulted in a temporary reduction in the poaching of fauna and flora until not too long after the project ceased its activities.

Again from end of 2000 until early 2001, four Village Conservation Monitoring Units (Ban Thamuang, Ban Navang, Ban Makfeuung and Ban Teung) from three zones in the Nakai-Nam Theun NPA were again re-established by the DUDCP with each unit comprising six villagers, mostly militiamen and village heads or their deputies (Boonratana, 2001). The units are backstopped by an NPA staff assigned to each zone, and by a VCMU facilitator covering all three zones. This was later extended to include two additional villages (Ban Xonglek and Ban Nameuy) in 2002 (Boonratana, 2002a). The units and their members were given basic field equipment (tents, sleeping bags, compasses, binoculars, jackets, shoes, etc.) and per diems for their effort. Since their establishment the units have successfully curbed illegal activities such as wildlife poaching and trading, fish harvest using explosives and poisons, and agar wood poaching and trading, and have led to the arrest of several offenders.

In addition providing biodiversity protection, the units collect monthly monitoring data for the presence of wildlife, and impacts on wildlife and habitats. Hence, establishing the first set of monitoring data for the NPA, and possibly the first set of monitoring data in the region to be gathered by villagers with little or no formal education. An analysis of the two years monitoring data gathered by the VCMUs have shown that there is a relative increase in species abundance, a relative decrease in hunting pressure, but a relative increase in disturbance on the habitats (Boonratana, 2003). However, VCMU activities are expected to end when the project field activities end in June 2003.

Besides establishing the units, the project through the VCMUs developed simple local rules and regulations with respect to harvesting of certain biodiversity resources, which has led to an increase in fish supply to some villages. The project further incorporated conservation criteria into village agreements for livelihood improvement assistance, and made all project personnel (short and long term) sign an agreement that they would not partake in any activity that is contradictory to conservation practice.

In 2001/2002 the NPA with some seed funding from NTEC established and trained another unit in Ban Maka along the same lines as the DUDCP's VCMUs, but this unit was active only for a short period due to limited funding.

4.1.3.5: WMPA Sub-Committee Implementing Conservation Activities

Following the passing of Decree 25 establishing the WMPA, the WMPA's 1st BoD meeting established two sub-committees, one being "The sub-committee implementing conservation activities in the NT2 Watershed"⁴ which, with funds provided by NTEC, has and continues to undertake the following activities;

Public Outreach and Awareness Raising

The organization of public meetings for over 70 villages around the NT2 Watershed/NPA (15 meetings in Khamkerd District for 38 villages, and 22 meetings in Nakai, Gnommalath and Boulapha Districts for 39 villages) in order to inform villages of:

- The background and progress of the NT2 project;
- Passing of Decree 193 (establishing the two corridors as part of the NPA and the resettlement area as forest only for resettlers);
- Declaration 03/BKX regarding the establishment of Nam Chat Nam Phan PPA;
- Forestry Law of 1996; and PM's Order 15, especially on the section dealing with the prohibition of logging in the NT2 Project Area.
- The preparation and broadcasting over local TV and radio stations of messages similar to those given in the public meetings (above);

⁴ A second sub-committee was also formed, the 'sub-committee to establish the organization and staffing for the WMPA's Executive Secretariat'. The SEMFOP-1 document is the result of this sub-committee's work.

- The participatory placement of signboards around the NPA and its corridors, to ensure people have a ground level reference with respect to the areas defined by PM's Decree 193 (and the earlier PM Decree 164), as summarized in table 4.3 below.

Table 4.3: Summary of NPA signboards erected between November 2001 to January 2002.

District	Medium size signboard: 60x120 cm		Small: 20x80cm
	Hardwood	Aluminium	Hardwood
Khamkerd	4	1	10
Nakai	5	1	10
Gnommalath	3		7
Boualapha	2		3
Total	14	2	30

Patrolling and Enforcement

The sub-committee is providing support to 6 patrolling and enforcement units as follows:

1. Nam Kata (Khamkerd) - 15 soldiers, 10 days patrolling per month;
2. Ban Maka - 3 Police and 3 Army (at Ban Seuk);
3. Houaphu - Forestry Staff;
4. Ban Thalang - 6 Police/Army staff;
5. Ban Nam Nian - 6 Police/Army staff; and
6. NPA Centers (LiL) - support for extra 5 days per month patrolling.

These units undertake forest patrols - about 10 days per month or as information is obtained relating to possible illegal activities. These units not only patrol but also conduct enforcement such as apprehension of persons trapping or illegally trading in wildlife or NTFPs. They also seize goods and weapons or tools and, if the wildlife seized is still alive, release them back to the forest.

4.2: BASELINE DATA

4.2.1: Introduction

This section aims to summarize the state of knowledge of the bio-resources of the Nakai-Nam Theun National Protected Area (the NT2 Watershed/NPA), specifically:

- the area's natural flora;
- the area's natural fauna; and
- human use of these flora and fauna resources

It is intended to cover all taxa for which there is existing information, although fishes are not treated in depth because they are the subject of a separate report.

The first biodiversity field survey of NNT NPA was conducted in 1994 under the cooperative program of the Department of Forestry's Center for Protected Areas and Watershed Management and the Wildlife Conservation Society (Timmins and Evans, 1996). Several major surveys followed over the next few years, led by DoF and STEA, and financed by the NT2 Electricity Consortium and the World Bank

4.2.2: National and Global Significance of NT2 NPA Biodiversity

Following are some of the independent assessments that have been made of the importance of NNT:

- An analysis of existing and proposed national protected areas in Laos according to three aspects of their forest cover: extent, quality, and the significance of its representation in its bio-geographic sub-unit, showed NNT to have the country's most important forest cover. (Berkmüller et al., 1995)
- A review of Indo-Malayan protected areas rated NNT as "globally significant" (MacKinnon, 1997).
- Ling (1999) ranked existing and proposed Lao protected areas using a complementarity algorithm based on vertebrate diversity. Complementarity is a step-wise analysis that picks the most diverse site first, and then selects subsequent sites, one at a time, that add the most new diversity to the set of sites picked before it. Ling analyzed sites based on three criteria: i) all bird species, ii) threatened birds, and iii) threatened mammals. NNT ranked first or second for all criteria, and highest overall of all sites analyzed, leading this researcher to comment that the "NNT clearly emerges as the lynch-pin of the Lao protected areas network..."
- A recent participatory review of the Lao national protected areas system included a prioritization of the importance of the NPAs (Robichaud et al., 2001). NPAs were assigned to ranked categories of value according to their importance for biodiversity, watershed protection and ecotourism potential. NNT was the only protected area that ranked in the highest category in all criteria.
- WWF-US compiled a global priority list of the 200 ecoregions of highest significance in the world for biodiversity conservation, "The Global 200" (Olson and Dinerstein, 1998). Nakai-Nam Theun is both the core and the largest protected block, in their "Annamite Range⁵ Moist Forests" ecoregion.
- WWF-Indochina recently coordinated a comprehensive analysis of conservation priorities in a complex of ecoregions covering parts of Laos, Vietnam and all of Cambodia, termed the "Forests of the Lower Mekong Ecoregion Complex" (Baltzer et al., 2001). One of the priority landscapes identified in this complex is the "Northern Annamites". Its conservation importance is rated "Critical" (the highest category). NNT is more than twice the size of any other gazetted or decreed protected area in this complex.

In a separate analysis, Conservation International listed the Indo-Burma hotspot, where NNT is geographically located, as one of the world's 25 threatened ecoregions (Mittermeier et al., n.d.). The hotspot concept use plants as the baseline criterion, followed by respectively, and finally, the degree of

5 Known as the Sai Khao Phou Leung mountain range in the LaoPDR.

threat. The Indo-Burma hotspot is both one of the richest and most heavily impacted of all the hotspots. According to the best available information, the Indo-plant and vertebrate endemism and diversity, Burma hotspot is home to over 300 mammal species, over 1000 bird species, over 400 reptilians, and over 200 amphibians. It boasts the highest freshwater turtle diversity in the world, and an amazing array of mammals that include the recently discovered Saola and large-antlered muntjac, both of which occur in the NNT. Within the Indo-Burma hotspot, the NNT and adjoining protected areas on both sides of the international border form a large forest complex, which is the focal point of biodiversity for this hotspot (Boonratana, 2002).

4.2.2.1 Diversity of habitats

NNT is dominated by extensive dense semi-evergreen, evergreen broadleaf, and mixed deciduous forest and significant areas high-quality pine forest on the Plateau. As noted above, the broadleaf forest of NNT has the highest quality and highest conservation importance of all forests in existing or proposed NPAs in Laos. In fact, the NNT NPA may harbor the highest quality semi-evergreen/evergreen forest block in Laos, Vietnam, Yunnan (China) or Thailand. Although there is little detailed knowledge of plant species composition, the NNT forest is known to be extraordinarily rich. In just one village (Ban Navang), the inhabitants can name 466 local non-timber plant products that they use for food, construction material, medicine, trade and other purposes. This is more than twice the amount named by any other village elsewhere in Laos. A study of rattans found 14 species, including *Calamus kingianus* which is known only from riverine habitats on the Nakai Plateau and from a handful of sites in northeastern India.

4.2.3: Flora and Forests

4.2.3.1: General Status of the Baseline Data

The gap between (i) 'the significance of any NNT biological resource', and (ii) 'the information known about that resource' is greatest for flora or vegetation. The well-known work of the French botanist Vidal apparently did not include sampling from the NNT, and since 1995 there have been only six short-term studies that focussed on the flora, of which four focussed on locally-used non-timber forest products. The studies to date are:

- i. A short study on natural forest tree species around Ban Navang (western sub-watershed area) in 1995 by P. Phengsintham of the Dong Dok University (supported by WCS).
- ii. A description of habitat types and general aspects of forest ecology by Jame Jarvie in 1997, which did not include any plant collections or species identifications (for IUCN's ESMP of the NTSEP).
- iii. A study of the use of NTFPs by five villages on the Nakai Plateau in 1997 by Foppes and three Lao colleagues (for NTEC).
- iv. A study of NTFPs in the NPAs in 1998 by Ingles and three Lao colleagues (for IUCN/NTSEP).
- v. A brief mission to collect rattan specimens from a small area of the NPA in 1999 undertaken by Tom Evans of the Oxford Forestry Institute.
- vi. A relatively short but detailed study of the use of NTFPs in three villages in the NPA (Ban Makfeuang, Ban Navang and Ban Teung) undertaken by Foppes in 2001 (for DUDCP).

It should be noted that the reports of Phengsintham and then Foppes gave extensive species lists of plant names using the local Lao language, with many matched to scientific names, although often only to the genus level. However, at least in the case of the NTFP studies, the scientific names were assigned not by examination of the specimens, but by translation (carried out in Vientiane) from the local Lao names. This is an unreliable method, especially for an area that is apparently distinctive, but little known as NNT NPA.

Surveys for commercial timber trees, and possibly rattans, were carried out by the Bolisat Phatthana Khet Phoudoi (BPKP) and/or by the Provincial Forestry Offices, but this information could not be accessed.

In summary, most of the studies to date did not involve the systematic collection and identification of specimens. Thus, in spite of the likelihood that the NNT may contain a number of new species and even genera, there has been little systematic study of the vegetation of NNT. Consequently, with the exception of the rattan study, it is not possible to draw a reliable list of known plants from the studies to date, since the accuracy of the identifications is subject to doubt.

The proposed training and capacity development work to be by Edinburgh Botanic Gardens, be funded under the Darwin Initiative, is expected to lay sound foundations for the future work needed to ameliorate the current situation of poor botanical information. This grant has the objective of providing practical and theoretical training in tropical plant taxonomy to major institutions associated with biodiversity documentation, protection and utilisation in Lao PDR.

This project will focus on the NNT NPA for field work and will train up to 30 Lao counterparts over 3 years in tropical plant taxonomy, data management and field techniques. It is expected that this initiative will lay the foundation for a National Plant Species Database and the establishment of a Threatened Plant list. It will also produce an up-to-date multilingual botanical dictionary and thus allow previously inaccessible botanical texts to be used throughout the Lao PDR.

4.2.3.2: Scientifically-Designated Forest and Habitat Types

To date there are three scientifically based classifications of the forest and habitat types of NNT. These are briefly summarized below:

Classification by The Forest Inventory and Planning Centre

The Forest Inventory and Planning Centre (MAF), with support from the Lao Swedish Forestry Program prepared forest cover maps for the whole country (the first maps produced in 1992), including the NNT NPA and its adjoining areas. The categories the FIPC used include:

dry evergreen	coniferous forest	unstocked forest
mixed deciduous	mixed broadleaf/coniferous	savannah
dry dipterocarp	forest plantation	grassland
Gallery forest	bamboo	scrub and other (non-forest) categories

In general, these forest categories have various shortcomings, especially when applied to the forest of the NNT NPA (see analysis by Jarvie, 1997). In addition, the FIPC developed these forest cover maps from satellite photo interpretation with limited ground-truthing and with no reference to aerial photos. These two factors together render this forest type categorization for NNT neither realistic nor practical.

Classification by WCS Lao PDR

In 1995 and 1996, scientists supported by WCS differentiated habitats of NNT while carrying out biological surveys. Their classification was based on the structural and wildlife community distinctiveness, rather than botanical associations. The major habitat types they used include: where:

Upper montane forest	Plateau pine/semi-evergreen forest mosaic
Cypress forest	Evergreen/semi-evergreen
Upper dry evergreen	Wet evergreen
Lower dry evergreen	Cultivation, scrub and other degraded habitat

The researchers themselves recognized the limitations of these categories, and that in reality there is a continuum between the different habitat types. Both WCS researchers and FIPC used elevations to assist in their classifications, which apparently is not a good indicator of habitat type. As Jarvie (1997) noted, it was possible to possess a species-rich Dipterocarp forest at one location, whereas another location at the same altitude may be dominant with Fagaceous species.

Classification by James Jarvie

As mentioned above (Section 4.2.3.2.), until the flora of the area is much better understood, it is impossible to make an accurate ecological map of the area. Nonetheless, Jarvie (1997), supported by IUCN Lao PDR, probably presented the best organization of habitats and their probable occurrence based on the following hierarchy:

- Major habitat (or forest types)
- Sub-habitat (or forest type)
- Dominant vegetation forms or genus/species
- Occurrence
- Current known distribution

- Description

A tabular analysis of habitat based on this hierarchy is presented as Table 4.8.

Table 4.8: Forest habitats of NNT (Jarvie, 1997).

Major habitat	Sub-habitat	Vegetative form	Occurrence	Known distribution	Description
Lowland semi-evergreen	Mixed species		Very common	Dominates the core NPA.	Many areas are species rich, with a canopy dominated by a variety of species, often Dipterocarpus: and Shorea of the Dipterocarpaceae, various members of the Fabaceae, and the species Pinus merkusii and Keteleeria evelyniana of the Pinaceae.
	Dominant	Lagerstroemia	Common	Riverbanks of the Nam Xot, around villages of PhonKeo & Ban Nameo.	Lagerstroemia: Lythraceae dominates the canopy.
	Dominant	Bamboo	Common	Mainly in disturbed forest around current villages, and old village sites.	Bamboo dominating either the sub-canopy. It results from past disturbance
	Dominant	Palm	Common (?)	Based on helicopter observation, common in southern parts NPA.	Palms dominate either the canopy or sub-canopy.
Lower montane	Fagaceous		Common	Dominates higher elevations	The family Fagaceae (oaks) dominate. The habitat is montane. In terms of tree species, it is less rich than lowland evergreen forest, yet nonetheless shows a high degree of diversity.
	Fagaceous - Cypress	Fokienia	Rare	Occurs in the Upper Nam Xot (and Nam Phan Nam Chat PPA)	Fokienia hodginsii (Cupressaceae) is the sole species of its genus, and known only from Lao PDR, Vietnam and China. It occurs in montane forest on, and marginally below, ridge tops at 1000m ASL and above. There are possibly other important species of cypress present such as Calocedrus macrolepi,
Upper montane	Cloud		Rare	Seen on Phou Laoko, a mountain > 2000 m that harbored the largest endemic vertebrate fauna for a cloud forest in the NPA as a whole.	Cloud forest is a wet habitat found principally on high ridges and mountaintops. The family Ericaceae generally dominates trees species. They are relatively short, often appear stunted, and are generally covered in moss. Ferns and lichens are common.

Major habitat	Sub-habitat	Vegetative form	Occurrence	Known distribution	Description
Pine	Pine dominant		Locally common	In the plateau area.	<i>Pinus merkusii</i> is the dominant species where it appears to represent the pinnacle of a fire climax succession, in which large evergreen species are few, and usually absent.
	Dominant, with dry dipterocarp		Rare	In the plateau area.	Characterized by a mixture of pine and dry Dipterocarp forest, dominated b the pine.
	Dominant with evergreen		Locally common	In the plateau area.	Characterized by a mixture of pine and mixed evergreen forest, dominated by the pine.
Riverine			Frequent	By the slower watercourses in all parts of the NPA.	Riverine habitat occurs by permanent streams. Trees are normally relatively small, and herbs are common. Banks may be seasonally flooded.
Deciduous	Dry Dipterocarp		Rare	Only in the plateau area	A lowland deciduous habitat, generally on shallow soils and often scrubby in aspect. Dipterocarpus is the dominant tree genus.
Scrub	Low scrub		Occasional	Near all villages that have had continual agriculture.	Highly disturbed habitat covered by small woody and weedy species. Not a regenerating forest.
	Bamboo		Occasional	Near all villages that have had continual agriculture.	Highly disturbed habitat covered in bamboo and with attempts to define the area few, if any trees.
	grass	Imperata	Rare	Hmong encroached area of Phou Pang	Highly disturbed habitat dominated by the grass, <i>Imperata cylindricans</i> : Poaceae. Fires common.
Secondary	Early regenerating		Common	Near all villages that have had continual agriculture.	A regenerating area with trees providing good ground cover, about 5-20 years old.
	Late regenerating		Common	Near all villages that have had continual agriculture.	A regenerating area with trees providing good ground cover, > 20 years old.

4.2.3.3: General Forest Types – Amalgamated Classification

Thus based on a combination of WCS and Jarvie's classifications and descriptions, the following general forest types could be described.

i) Pine Forest and Pine/Semi-Evergreen Mosaic Forest

Common on the Plateau at 490-623 m elevation, where pine may be the pinnacle of a fire climax succession. It occurs in a range of stands with *Pinus merkusii* (Pinaceae) clearly dominant, to areas of mixed pine and semi-evergreen forest. In unlogged areas dominated by *P. merkusii*, the species comprises 27.5% of all stems and more than 50% of tree basal area, with *Schima* (Theaceae) comprising about 15% of stems and 12% of basal area. Characteristic of the unlogged pine forests of the Plateau is low tree density, but large tree size. In one study, the average diameter of all trees larger than 10 cm dbh was 57 cm.

ii) Semi-Evergreen Forest

This is the dominant forest type of the NPA, and common from 500 m to higher than 1000 m. It represents a continuum of forest types, in some areas grading into more strictly evergreen forest, and in others to mixed deciduous forest. Many areas are species rich, with a canopy formed by a variety of species including *Dipterocarpus* and *Shorea* of the Dipterocarpaceae and various species of Fabaceae, and sometimes the genus *Keteleeria*. In other more deciduous areas, *Lagerstroemia* (Lythraceae) dominates, such as along the banks of the Nam Xot river and some areas of the Nam Pheo watershed. In the southern portions of the NPA, large palms dominate.

iii) Wet Evergreen Forest

Occurs at mid-elevation (roughly 500 - 900 m) near the Vietnam border, and has evolved due to winter monsoon rains from Vietnam that penetrate the border in areas of moderate elevation, rather than falling on the Vietnamese side of the Annamite ridge. Although most of the NPA receives only occasional rain in January-March, the wet forests sit under extended periods of dense, low cloud and frequent, light rain. Annual precipitation can exceed 2,500 mm, with only 1-3 months of dry season, and the air temperature is markedly lower than elsewhere in the protected area. This may be the preferred habitat of rare species such as the *Saola*. Plant endemism is expected to be high, and wet evergreen forest is one of the most globally significant habitats in the NPA.

iv) Cypress Forest

The cypress *Fokienia hodginsii* (Cupressaceae) occurs uncommonly, on dry ridges above 1000 m. Trees can grow very large, probably to 40 m tall and 2 m diameter. The species has been assessed as Near Threatened by IUCN. Where the tree occurs it usually makes up 5-30% of the canopy cover, and may occur in mixed associations with oaks (Fagaceae). Found in, at least, the upper Nam Xot and Nam Theun watersheds.

v) Fagaceous Forest

Oaks dominate in high, dry areas, probably above 800 m. The NNT Fagaceous forest has high tree diversity, but not as rich as semi-evergreen forest.

vi) Ericaceous Cloud Forest

Rare in NNT, at high elevation. Cloud forest, a wet habitat, is often dominated by shrubs and small trees, such as rhododendron. Ferns, mosses and lichens are common. Found on a few high summits that are kept wet with frequent mists and fogs (such as the summit of Phou Vang in the south)

vii) Dry Dipterocarp Forest:

Rare, found only on parts of the Plateau.

viii) Secondary Forest:

Regenerating forest is a dense formation common near most villages with continual agriculture. It is characterized by trees providing good ground cover, about 5-20+ years old. Just when a forest ceases to be 'secondary' and becomes one of the other forest types has no easy answer. In any case, some areas that are now 'good' forest in NNT may have previously been cleared for cultivation.

4.2.3.4: Natural Habitats Accounting

A Natural Habitats Accounting conducted in 2003 by Malaysian Environmental Consultants (MEC, 2003) estimated that approximately 12,500 ha⁶ or 3.55% of the original NNT NPA had been lost due to the boundary changes created by PM Decree 193. Of this, the combined total of lower value habitats (permanent agriculture, unstocked forest and swidden) account for over one third of all the land lost. The mixed broadleaf/coniferous habitat suffers the largest total loss, but on a percentage basis this only accounts for a little over 10% that habitat type. The other higher value habitats (evergreen and mixed deciduous) together account for only about 5% of the area lost.

4.2.3.5 Indigenous Habitats and Forest Types

The forest and habitat types described in 4.2.3.2 are those developed by science based researchers, usually with little reference to local understanding or villager concepts of forest type. This, with the exception of the NOFIP/FIPC categories, some of which (in their Lao language version) are similar to commonly used village expressions of the forest type. However, no detailed study has been undertaken to identify the categorization of these various forest types identified by villagers, if indeed there are any. It may be that indigenous villagers categorize their forests more by their location ('along a stream', 'on a hill' or 'ridge'), or with regard to the main species they extract, or an event that occurred therein, rather than any system of forest typology.

Spirit forest

Nonetheless, some studies have noted that a significant portion of the forest of NNT NPA is divided into spiritual territories by the residents (Chamberlain, 1997; Culas, 2001). These territories and the spirits residing in them play a fundamental role in people's day-to-day lives, determining where, when and how they can travel through the area, where new fields should be cleared, which animals can/cannot be hunted, and so forth. The extent to which the location and disposition of these spirit forests are dependent on the morphology and quality of the forests, however, is poorly known.

4.2.3.6: Tree and Plant Species

The only list of tree and plant species comes from a short survey in forests around the Ban Navang area, conducted by Phengsintham (1996). The list of 141 species found (Table 4.9) is compiled from eight transects and general observations, and the researcher was confident enough to give names at the genus or species level to 129 species. These included 5 species, which he gave scientific names but for which no local name could be associated.

4.2.3.7: Rattans

Table 4.10 lists the 14 rattan species scientifically identified to date in NNT and on the Nakai Plateau by the one study of T.D. Evans and Lao colleagues in 1997. A species of special concern is *Calamus kingianus* which is known only from the banks of rivers on the Nakai Plateau, and a handful of northeastern Indian sites. The relationship of the two populations is in question, and the Plateau specimens may prove to be an endemic species. While they may be heavily impacted by the NT2 project, there are likely to be undiscovered populations both upstream from the inundation area and at other sites across northern Indochina.

Table 4.10: Rattans recorded from the Nakai-Nam Theun NPA and the Nakai Plateau.

1. <i>Calamus viminalis</i>	6. <i>Calamus kingianus</i>	11. <i>Calamus wailong</i>
2. <i>Calamus poilanei</i>	7. <i>Calamus bimaniferus</i>	12. <i>Daemonorops jenkinsiana</i>
3. <i>Calamus gracilis</i>	8. <i>Calamus rhabdocladus</i>	13. <i>Korthalsia</i> sp.
4. <i>Calamus henryanus</i>	9. <i>Calamus nambariensis</i>	14. <i>Plectocomia pierreana</i>
5. <i>Calamus solitarius</i>	10. <i>Calamus platyacanthoides</i>	

Source: Evans, T.D., K. Sengdala, O.V. Viengkham and B. Thammavong. 2001. A Field Guide to the Rattans of Lao PDR. Royal Botanic Gardens, Kew, U.K.

4.2.3.8: NTFP Species

⁶ This does not include habitat conversion or degradation in the corridor zones caused by road and dam construction.

Local communities of the NPA know and use an unusually high amount of NTFPs. Local people can enumerate more than 500 different products collected from the forest, almost three times more than in other parts of Lao PDR. However, many of these species have not yet been scientifically identified, as there is a gap between local ethno-botanical knowledge and botanical records kept by the GOL.

Nonetheless, some understanding of the occurrence and diversity of plant species can be gleaned from those NTFPs collected and used by villages in the NPA. A list of those species enumerated as used by three NPA villages in 2001 is given later in Table 4.11. While this list requires scientific verification, it does provide some indication of the diversity of the NTFPs in the surrounding areas.

4.2.4: Use of Flora

4.2.4.1: *Timber*

Commercial logging

Commercial logging has previously occurred in three areas of NT2 Watershed/NPA:

- i. Logging of indeterminate legal status in the upper watershed in the early and mid-1990's, targeting mainly *Fokienia* spp⁷. Helicopter removal of logs required clearing an area about 30 metres in diameter around each felled tree, which when combined with tree felling resulted in significant habitat damage. In addition, the loggers reportedly hunted extensively. At the same time, construction began on a road through the core of the protected area to reach the timber, but its construction was eventually halted, again following a WB mission
- ii. Transborder timber poaching along the international border in which high value trees, including *Fokienia* spp are cut and removed overland with teams of men or water buffaloes.
- iii. Sanctioned logging of the NT2 inundation zone on the Nakai Plateau and some encroachment logging in areas outside the inundation zone. Encroachment logging has included some areas north of the edge of the proposed reservoir, which was halted following the GOL/WB logging mission in the year 2000. The main species taken on or around the plateau were pine and *Dalbergia*.

A history of logging has been ongoing on the plateau for the past 20 years. This has been primarily under a concession by GoL to the state enterprise BPKP. From the early 1980's, BPKP has developed and expanded its timber operations. Intensive and systematic logging was conducted to the north and east of the plateau throughout the 1980's, and then later on the plateau itself. In 1984 Decree 188 gave BPKP the mandate to develop Lak Sao from a small community to a significant township using locally felled timber.

After the start of the NT2 Project, BPKP was directed to focus its logging operations on the reservoir inundation zone. The volume of timber extracted from this area rose from earlier levels of 20,000-40,000 m³ per year to nearly 300,000 m³ per year in 1977 (Prosser, 1997). The rate of extraction fell between 1997 to 1999 and no recorded logging has occurred since 2000. It is estimated that a total of 1,556,000 m³ of unfelled timber still remain in the inundation zone as of the end of 1999.

Customary logging and wood use

Villagers fell and saw wood for two main purposes, to build houses and to build boats. House construction requires different types of timber for different purposes, ranging from support beams, walls, roof beams and even roof tiles. The ability to make such houses depends on money or assets. A family must have money or barter goods to hire people to saw logs, make planks and transport the wood. A poor family only has enough spare time to make a rough pole and bamboo house as compared to a square support pole and sawn plank house of a better off family. A village with timber constructed house is therefore considered wealthy.

Data on the number of houses constructed from timber in the NT2 Watershed/NPA is unavailable. Similarly, there is no data on the number of boats, but this is expected to be small. As a rule, such customary use of timber is not seen as a problem or threat in NPA villages. Firewood is another category of wood use, although some may regard it as a non-timber forest product.

⁷ *Fokienia* is the most valuable timber tree species in Laos, with logs valued at around a US\$1000 per m³. Its distribution in NNT is patchy and restricted to areas near the Vietnam border. The species is considered globally Near Threatened by IUCN.

4.2.4.2: NTFPs Non-timber(and non-wildlife) Forest Products

There are four distinguishable classes of human use of NTFPs in the NT2 Watershed/NPA:

- i. subsistence use (local consumption) by residents;
- ii. subsistence use (local consumption) by non-residents (villagers from outside NNT NPA);
- iii. commercial harvest by residents; and
- iv. commercial harvest by non-residents.

However, it is only practically possible to obtain relatively clear data on NTFPs from residents of NPA villagers (class i and iii) as all their harvests would definitely be from the NPA. Various studies have confirmed the local understanding of plant NTFPs by NT2 Watershed/NPA residents is extraordinarily rich. These studies include:

- A study of four villages in which 303 NTFPs were enumerated, of which 279 are food products (131 plants and 148 animals), and 24 are non-food products (Ingles et al., 1998).
- A 1997 study of three villages on or near the plateau enumerated 306 species, of which 223 are food products (including 59 wildlife species) and 67 are non-food products (Foppes et al., 1997).
- A 2000 study in the three main villages of the DUDCP which identified between 450-470 NTFPs.
- A 2001 study in which three villages enumerated about 510 plant products used. Of these, 297 are used for food and 169 for construction materials, medicine, and for other uses, as summarized in Table 4.11 (Foppes/DUDCP, 2001).

Of the total number NTFPs or plants enumerated in these three villages, a NUOL botanist was confident enough to put a scientific name to 353 species (Table 4.12), although this identification was not verified by reference to the actual plants, or plant parts.

These combined lists of NTFPs, identified by the villagers, are far more than those listed by villagers in any other area yet studied in Lao PDR. This could be attributed to some combination of:

- the exceptional richness of the forests in NT2 watershed/NPA;
- the high reliance of the local population on forest products; and
- the very intimate knowledge of local people on the biodiversity and ecology of the forest.

Abundance

NT2 Watershed/NPA villagers report that plant NTFPs used for subsistence purposes are still abundant. This is unusual in the Lao PDR, therefore indicating high forest quality. Those harvested for commercial sale, however, have declined, as shown in a comparative analysis (Table 4.13).

Table 4.11: Classes of NTFPs listed by 3 communities, upper Nam Theun, May 2001.

Use category	Ban Teung	MakFeuang	Navang	5 villages lower Nam Theun-'97	28 other village in Lao – '97
Food Products	120	96	297	124	237
Fruits	40	19	63	51	87
Seeds	7	4	38	-	-
Flowers	4	6	45	-	4
Leaves	28	26	54	40	86
Stems/shoots	20	19	35	17	22
Roots/tubers	11	9	31	7	22
Mushrooms	10	13	31	9	16
Non-food products	120	79	169	70	204
Fiber products	66	35	116	24	48
Medicines	25	27	36	43	52
Exudates	15	4	6	3	10
Ornamentals	14	13	11	-	92

Table 4.13: current abundance and availability of selected important NTFPs.

Typical products	Past Situation	Present Situation	Trend	Typical causes of change	Solutions
Almost depleted					
1 Agarwood “Po heuang”	could cut 30-500 trees 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’ 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 4:1 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.

Typical products	Past Situation	Present Situation	Trend	Typical causes of change	Solutions
'Toey' pandan leaves	> Find within 10 min. village(BT) > 1 bag in 6 hours (MF)	need to walk 1 hour to find (BT) 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 area fill up with sand) 2: outsider buy, fish 3: used explosives, 4: population increase	> 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	hunting by villagers	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 importance

Table 4.11 lists in order the most important plant NTFPs ranked by men and women combined in three villages in as studied in 2001 (Foppes et al.) and their status, as assessed by the respondents. Again, the trend in the NT2 Watershed/NPA villages - where non-food NTFPs, and mainly housing and handicrafts NTFPs are ranked high - is dissimilar to most other Lao villages where food NTFPs are seen as the most important. Table 4.14 also confirms anecdotal evidence that most subsistence products are still widely available, but some of the products sold for cash are becoming rare. There is no other area in Lao PDR where NTFPs are still considered to be so abundant as in the upper Nam Theun area.

Table 4.14: Rank order of important plant NTFPs in 3 villages in NPAs (after Foppes 2001).

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

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

Relative income from commercial NTFPs

Estimating income from NTFPs is difficult, and information presented must be used with caution as sale/income often 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,
- iii. an assessment by villagers of the value of effort expended compared to potential income.

A summary of income estimated from NTFP studies in the NPA and on the plateau is given in Table 4.15.

Table 4.15: 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 et al.,	1997	Lower NT	Ranking	-	76%	14%	10%
Foppes et al.,	1997	Lower NT	Interviews	204,038	41%	32%	27%
IUCN	1998	Lower NT	interviews	514,307	64%	?	36%
IUCN	1998	Upper NT	interviews	174,307	65%	?	35%
Ingles et al.,	1998	Upper NT	ranking	-	54%	42%	4%
IUCN	2000	Upper NT	interviews	403,776	53%	32%	15%
Uncited	2001	Upper NT	ranking	-	24%	26%	50%
Average		Plateau			60%	15%	25%
Average		Upper NT			49%	25%	26%

In comparing NTFP income with income from other activities, the most recent study of 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: 4.16).

Table 4.16: Villager's ranking of cash income sources, 3 villages, upper Nam Theun, May 2001

No	Income source	Ban Navang		B. Mak Feuang		Ban Teung		Average		
		W	M	W	M	W	M	W	M	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 no Scores	51	50	30	30		30			

W: Women; M: Men

If fish, wildlife and handicrafts are also considered as NTFPs, then NTFPs are the most important source of income (34%). Men and women 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 uncertain, 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 received up to 90%. One would expect a similar high percentage for the upper Nam Theun area, where villagers know and use such unusually high numbers of NTFPs. It may well be that the reasons that villagers in the upper Nam Theun derive comparatively lower income from NTFPs is due to: (I) the high level of available NTFPs for subsistence consumption reduces the need to buy food, and thus the need to commercialize NTFPs; and (II) the difficult access to markets reduces their ability to sell NTFP products.

Aquilaria (Thymelaeaceae):

The fragrant wood of this evergreen tree is the most valuable forest product by weight in the Lao PDR. It has been virtually eliminated from the NNT NPA, as in most other areas of the Country. This probably

explains why NT2 Watershed/NPA villagers didn't rate it as important during recent assessments of their most important NTFPs. The following account of the trade in *Aquilaria* is taken from the Saola Conservation Action Plan for Lao PDR - Revision (Robichaud, 1999):

"In recent years two forest products have drawn an intense concentration of poachers into the Saola's mountainous habitat in eastern Laos. One is the heartwood of a broadleaf tree of the genus Aquilaria. Young Aquilaria trees are occasionally attacked by a particular fungus, or insect, and infected trees respond by producing a resinous compound into the heartwood of the growing tree. This special wood is very fragrant, and is valued as a luxury incense in Muslim countries. In Laos it is known variously as may dam ("black wood"), my ketsana, or may heuang (royal wood). The local price reported in 1999 for 1 kg. of good quality may dam was US\$2500 (the average annual per capita income of Laos is US\$350 [Lao PDR State Planning Committee 1998]), and consequently nearly every corner of the most remote Lao forest has been scoured for may dam, and almost none is left. Poachers now dig for poor quality, low-value may dam 'crumbs' in the root structures of trees destroyed previously."

Intense searches for the wood over the years have probably had knock-on effects on wildlife in the NPA, as it stimulated large groups of men (mostly from neighbouring countries) to probe the most remote areas of the NNT NPA in search of the last *Aquilaria*. While camped for weeks in the NPA, they sustained themselves by hunting and snaring, and harvested other commercial products such as turtles.

Rattans:

Table 4.17 lists the uses by humans of each rattan species identified in NNT and on the Nakai Plateau. Rattan has been so intensively harvested for trade that it is now nearly depleted. Residents of Ban Navang reportedly cut and sold 100,000 canes in 1994 alone. Much of the problem lies with large quotas issued to Lao traders or directly to foreign merchants. Khammouane Province has ceased issuing rattan quotas, but villagers in the Khammouane portion of NNT still harvest rattan to fill quotas issued by Bolikhamxai Province. Particularly hard hit has been the most commercially valuable rattan species, *Calamus poilanei*. While it may already, or soon be commercially extinct, biological extinction is a more distant threat for this and other rattans, since rattans have a long seedling stage that can buffer the population against short-term over harvesting, and most species are multi-stemmed.

Table 4.17: Rattans and rattan use in the Nakai-Nam Theun NPA and the Nakai Plateau.

Species	Current Or Potential Uses
<i>Calamus viminalis</i>	handicrafts, trade, food
<i>Calamus poilanei</i>	handicrafts, trade (most valuable in Laos), food
<i>Calamus gracilis</i>	handicrafts, trade, food
<i>Calamus henryanus</i>	handicrafts, food
<i>Calamus solitarius</i>	handicrafts, trade, food
<i>Calamus kingianus</i>	handicrafts; other uses unknown
<i>Calamus bimaniferus</i>	handicrafts; trade unknown
<i>Calamus rhabdocladus</i>	handicrafts, trade, food
[<i>Calamus nambariensis</i>]	handicrafts, trade; food unknown
<i>Calamus platyacanthoides</i>	handicrafts, trade, food
<i>Calamus wailong</i>	handicrafts, trade, food
<i>Daemonorops jenkinsiana</i>	handicrafts, trade, food
<i>Korthalsia</i> sp.	uses unknown
<i>Plectocomia pierreana</i>	handicrafts, food

Source: Evans, T.D., K. Sengdala, O.V. Viengkham and B. Thammavong. 2001. A Field Guide to the Rattans of Lao PDR. Royal Botanic Gardens, Kew. Kew, U.K.

4.2.4.3: Other Human Use of the Forest

Crop agriculture

The predominant (or at least, most obvious) human use of the forest in NT2 Watershed/NPA is swidden agriculture. The forest - either primary or regenerating - provides essential nutrients for the cultivation of rice, cassava and vegetables. It undoubtedly also plays a role in local climate moderation, and may act as a source of either crop pests (e.g., wild pigs) or crop pest controls (e.g., small carnivores that consume rodents).

Paddy cultivation is less widespread in the area (being practiced in the protected area most extensively by the Sek people), and is less directly dependent on the forest than swidden. However, it probably also benefits from the forest services of climate moderation, maintenance of stream quality (for irrigation) and pest control (alternatively, the forest may contribute pest problems, such as crop-raiding wildlife).

Grazing

The undergrowth of forest in some areas of the NPA is apparently burned by residents to promote grazing forage for large livestock. Its extent and impact are little understood, however. Buffaloes and cows are also allowed to graze in the forest and along stream edges. Again, the extent and impact of this are poorly known.

4.2.5: Rivers and Streams

4.2.5.1: General Status of the Baseline Data

Waterways and their associated flora are among the most important habitat features of the NNT NPA for humans, wildlife and aquatic biodiversity itself. The watercourses of NNT vary from wide slow-moving rivers, to steep, rushing, perennial or annual streams. Water quality is generally very high.

The significance of the Nam Theun River is well known. In addition, small streams in Indochina, particularly on the western slope of the Sai Phou Leung range, have distinctive and diverse faunal communities (including high endemism), and are therefore of high conservation priority. Given the dependence of rural Lao on fish as a source of protein, these are also of high importance to food security. One study attempted to characterize the importance of the watercourses of NT2 Watershed/NPA by taking threatened species of birds as an indicator, as presented in Table 4.18. Data on the flora and other fauna of this important habitat is lacking, or non-existent.

Table 4.18: types of stream in the NPA, and key bird species (Timmins and Evans, 1996):

Altitude	Description	Key waterbird species
< 600m	Lowland sluggish rivers and streams with still, deep pools; few rapids; high banks; still backwaters, many sand banks.	White-winged Duck Blyth's Kingfisher River Lapwing, Fish-eagles
< 600m	Faster rivers and streams with many rapids; few pools; very few backwaters; in steep terrain.	Crested Kingfisher Blyth's Kingfisher, fish-eagles
< 600m	Faster rivers and streams with long deep pools; fewer backwaters and sand banks; in hillier terrain.	White-winged Duck, Blyth's Kingfisher, Crested Kingfisher, River Lapwing, Fish-eagles
600-800m	Fast rivers and streams with many rapids; rocky beds; steeper terrain; fast tributaries.	Blyth's Kingfisher, Crested Kingfisher fish-eagles
> 800 m	Steeply descending streams; shallow with few pools	Crested Kingfisher

4.2.5.2: Human use of Riverine habitats

The most widely used habitats other than forest are rivers and streams (although this distinction is a somewhat artificial, since streams are an integral component of the forest). They 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, laundry, maintaining large cattle, and in some areas, paddy irrigation. Watercourses are also important for travel for most villagers, either by boat or by foot along their banks. Streams also figure prominently as boundaries of spiritual territories and as the home of some spirits important in local cosmologies.

4.2.6: Other Non-Agricultural Habitats

4.2.6.1: Status of the Baseline Data

Other habitats have never or rarely been studied by biologists. However, with the exception of scrub habitats, they are minor in extent.

Savanna: There are at least three areas of apparently natural savanna (thong) in the protected area. These are large (tens of hectares), nearly treeless grasslands, sharply delineated from surrounding forest. They are apparently natural formations due to very shallow soil on rock, and have not been created or maintained by tree cutting, grazing or burning.

Marsh: These are permanently wet areas covered by herbs. There are at least two areas of marsh of about 3 ha each that occur in the NPA (but there may be more), in the vicinity of Ban Nameo. The habitat is more extensive on the Plateau, and these areas may include permanent small pools.

Scrub: Occurs occasionally near villages. Characterized by a coverage of small woody and weedy species that shows no evidence of regenerating into forest. Scrub is possibly perpetuated by livestock grazing (such as seen near villages along the banks of the Nam Pheo).

Imperata Grassland: Uncommon in the area, and confined mainly to areas of repeatedly burned and cultivated hillsides in the northern reaches of the protected area where *Imperata cylindrica* (Poaceae) has taken over. There is evidence from Thailand that *Imperata* grass areas can be regenerated to forest, but the process is slow (personal communication, G. Zwack, CARE).

4.2.6.2: Human Use of other Habitats

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. Savanna areas visited during surveys showed no evidence of grazing or other use by local people, probably due to their remoteness from any village.

4.2.7: Fauna - Invertebrates

4.2.7.1: Status of the Baseline Data

Given the diversity of terrestrial and aquatic habitats in NNT, high diversity can be expected of invertebrates (insects, crustaceans, spiders and other arthropods; worms, and). However, this taxonomic group in the NT2 Watershed/NPA is virtually unknown to science.

The only published survey of any invertebrate group is a one-week study of aquatic snails in the general area of the NT2 project site, with a focus on their potential for disease transmission (Lohachit, 1997). Although this report has imprecise collection-site information, and it is not possible to verify if specimens were collected inside the boundaries of the NPA, the list does include a "Nam Nian" collecting station, which might be just inside the boundary of the NPA. Table 4.19 gives a list of the snails collected during the survey in the Nakai Plateau.

Table 4.19: Snails recorded from the Nakai Plateau.

Clea helena	Melanoides tuberculata
Pila pesmei	Helicorbis umbilicalis
Sinotaia mandahlbarthi	Corbicula spp.
Idiopoma umbilicata	Pseudodon mouhoti

Source: Lohachit, C. 1997. Freshwater Snails in the Nam Theun 2 Project Area of Khammoune and Bolikhamxai Provinces, Lao PDR. TEAM Consulting Engineers Co., Ltd., Bangkok.

4.2.7.2: Human Use of 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 may be an important supplementary protein source, no invertebrates or their products (such as honey) were listed by either men or women among the 20 most important NTFPs in three villages surveyed. Nor were any named amongst the most important NTFPs in villages on the Nakai Plateau.

Nonetheless, 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 this extraction has probably reached the NT2 Watershed/NPA.

4.2.8: Fauna – Fish

4.2.8.1: Status of the Baseline Data

A general fish survey of Nam Theun (NT) and Xe Bang Fai (XBF) drainages was conducted in 1996 (Kottelat, 1996, 1998). In 1997, several surveys were conducted in other drainages to clarify the endemic or non-endemic status of the fish species inhabiting NT and XBF drainages (Kottelat, 1997). In 1997 and 1999 additional surveys were conducted in other drainages (unrelated to the NT2 project but with support from World Bank; Kottelat, 2000a-b, 2001). In 2002 and 2003, surveys were conducted in the Nam Gnouang (NG), NT and XBF, targeting distribution and ecological data of two species believed to occur only in the area impacted by NT2 project (Kottelat, 2002, 2004a).

The creation of an adequate fisheries baseline will be necessary for monitoring and evaluation purposes (See Table 6.7 in Section 6.5.1) and will be an urgent priority under SEMFOP (Section 6.5.1.1) because the aquatic fauna will be severely impacted immediately with the beginning of the construction phase.

4.2.8.2: Occurrence

There is a great diversity of freshwater habitats in Lao PDR and much of the Indochina fish diversity is concentrated in the country. Fish diversity is known to be much higher in the streams and basins on the west (or Lao) side of the Annamite drainage than on the east (Vietnam) side (Kottelat, 1989). Furthermore, fish distribution in Laos is patchy and localized, with high endemism (sometimes to a single stream).

69 species are known from the NT drainage; on the basis of available data, 11 are endemic to the NT+NG drainage. Out of the endemic species, 3 are known only from the NT. All the endemics have been found outside the area which will be impacted by the project (that is, above the reservoir level or in the Nam Gnouang), but the habitat of one of them (*Scaphognathops theunensis*) is almost totally within the area impacted by NT2 and Theun-Hinboun.

The 2002 and 2003 surveys yielded 6 species not previously recorded from the NT+NG drainages and 8 new records for the NT. This indicates that the fish fauna of the drainage is not yet fully known. 165 species are known from the XBF drainage, 4 of them presently known only from that drainage; all the endemic species have been recorded in the upstream areas which will not be impacted by NT2 project. An estimated 50 additional species should be expected to await discovery in the XBF drainage.

Several species undertake small distance migrations along the NT. These migrations have not yet been studied, but at least for the endemic species, it seems that habitat suitable for all stages of the life cycle is present in the non-impacted areas. The impact on the migratory species in the XBF will be significant due to the number of species migrating between the Mekong mainriver and the XBF.

4.2.8.3: Human Use of Fish

Human use of fish in the NNT is high. Villagers in Ban Navang listed 35 varieties of fish they consume (it should be noted that this might include a few species labelled 'fish' in local taxonomies but not in western scientific ones, such as softshell turtles). Men 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). In addition to being consumed locally, some fish is sold to outsiders, but the extent of this is unstudied. Fish are also extracted in bulk by outsiders, including trans-boundary traders crossing into the upper watersheds of the NT2 Watershed/NPA. Explosives are often used, although again, the relative severity of this is unstudied and its extent unknown.

In three villages in the NNT, 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. Foppes (2001) attributes the decline to:

- changes in stream morphology (cause unspecified);
- fishing and purchase of fish by outsiders; and
- former use of explosives by villagers.

The likely impact of the NT2 dam on fish of the Nam Theun tributaries in the NT2 Watershed/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. There is also a potential threat to natural fish resources in the NPA by the development of aquaculture systems and the introduction of species which are not native to the area. For this reason, the WMPA will not support any aquaculture development activities which use non-native fish species. It is considered that existing native species still provide adequate potential for aquaculture.

4.2.9: Fauna - Amphibians and Reptiles

4.2.9.1: *Status of the Baseline Data*

Amphibians and reptiles have been moderately covered by surveys. There have been focused surveys in selected areas in some seasons, but there is undoubtedly much that remains to be discovered. Only very limited work has been done on the Nakai Plateau. The herpetofauna in NNT is roughly as well-known as in other NPA's surveyed in Lao PDR, but much less than some other protected areas in Southeast Asia.

4.2.9.2: *Occurrence*

Table 4.20 lists the 25 species of amphibians and Table 4.21 the 29 reptiles identified in the NNT NPA and the Nakai Plateau to-date. Six reptiles are Globally Threatened or Near Threatened and a further six are of national conservation concern. No amphibian species are known to be of conservation concern.

Table 4.20: Frogs recorded in the NNT National Protected Area and on the Nakai Plateau.

Family	Species	Family	Species
ICHTHYOPHIIDAE (caecilians)	Ichthyophis sp.	BUFONIDAE (true toads)	Bufo galeatus
MEGOPHRYIDAE	Leptolalax pelodytoides	RANIDAE	Amolops cremnobatus
(Asian horned frogs)	Leptobranchium pullum	(typical frogs)	Huia nasica
	Megaphrys lateralis		Limnonectes kuhlii
	Ophryophryne poilani		Rana microlineata
RHACOPHORIDAE	Polypedates feae		Rana andersonii
Tree frogs:	Polypedates leucomystax		Rana archotaphus
	Rhacophorus bisacculus		Rana johnsi
	Rhacophorus calcaneus		Rana limnocharis
MICROHYLIDAE	Kalophrynus pleurostigma		Rana livida

Narrow-mouthed frog	<i>Microhyla annamensis</i>		<i>Rana maosonensis</i>
	<i>Microhyla berdmorei</i>		<i>Rana nigrovittata</i>
			<i>Rana taipehensis</i>

Table 4.21: Turtles and reptiles recorded in the NNT NPA and on the Nakai Plateau.

Family (and common names)	Species	Global/national status
PLATYSTERNIDAE		
Asian leaf turtle	<i>Cyclemys dentata</i>	
Big-headed Turtle	<i>Platysternon megacephalum</i>	EN
EMYDIDAE		
Indochinese Box Turtle	<i>Cuora galbinifrons</i>	CR
Chinese Three-striped Box Turtle	<i>Cuora trifasciata</i>	CR
Keeled box turtle	<i>Pyxidea mouhotii</i>	
Four-eyed Turtle	<i>Sacalia quadriocellata</i>	EN
TESTUDINIDAE		
Elongated Tortoise	<i>Indotestudo elongata</i>	VU
Impressed Tortoise	<i>Manouria impressa</i>	VU
TRIONYCHIDAE		
Asiatic Softshell Turtle	<i>Amyda cartilaginea</i>	VU
GEKKONIDAE (geckos)		
	<i>Cyrtodactylus interdigitalis</i>	
AGAMIDAE		
	<i>Acanotosaura lepidogaster</i>	
	<i>Calotes emma</i>	
	<i>Calotes versicolor</i>	
Water Dragon	<i>Physignathus cocincinus</i>	PARL
ANGUIDAE (legless lizards)		
	<i>Ophisaurus sp.</i>	
VARANIDAE		
Bengal Monitor	<i>Varanus bengalensis</i>	PARL
Water Monitor	<i>Varanus salvator</i>	PARL
SCINCIDAE (skinks)		
	<i>Lipinia sp.</i>	
	<i>Mabuya multifasciata</i>	
	<i>Scincella reevesi</i>	
BOIDAE		
Reticulated Python	<i>Python reticulatus</i>	PARL
COLUBRIDAE		
Wall's Bronzeback	<i>Dendrelaphis cyanochloris</i>	
Hampton's Slug Snake	<i>Pareas hamptoni</i>	
Chinese Mountain Keelback	<i>Pseudoxenodon bambusicola</i>	
Indochinese Ratsnake	<i>Ptyas korros</i>	PARL
Common ratsnake	<i>Pytas mucosus</i>	PARL
Red-necked Keelback	<i>Rhabdophis subminiatus</i>	
Mountain Keelback	<i>Sinonatrix aequifasciata</i>	
Checkered Keelback	<i>Xenochrophis piscator</i>	
Oriental whip snake	<i>Ahaetulla prasina</i>	
Green cat snake	<i>Boiga cyanea</i>	
ELAPIDAE		
King Cobra	<i>Ophiophagus hannah</i>	PARL
VIPERIDAE		
White-lipped Pit Viper	<i>Trimeresurus albolabris</i>	

Family (and common names)	Species	Global/national status
Checker-backed Pit Viper	<i>Trimeresurus mucrosquamatus</i>	
Pope's Pit Viper	<i>Trimeresurus popeiorum</i>	

CR = Critically Endangered; EN = Endangered; VU = Vulnerable; PARL = Potentially at Risk in Lao PDR

4.2.9.3: Human use of 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. The principal threat to the herpetofauna of the NPA is the collection of reptiles for the international trade, and this threat is severe. 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 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 - Revision (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 Lao PDR (usually with the aid of trained dogs) go to neighbouring countries. 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. Like Aquilaria, "golden turtles" were once fairly common in the Sai Phou Leung mountain range 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 5 years ago, two villages in the area found between them about 300 'golden turtles' annually, but now [in 1998] they have 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 Mak Feuang 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, trans-boundary traders and Lao middlemen began buying them, and in response, villagers started to actively search for them with dogs. Trans-boundary traders also search for turtles directly, probably with at least the same intensity as local residents.

4.2.10: Fauna – Birds

4.2.10.1: Status of the Baseline Data

Birds are the best surveyed and best known bio-resource of NNT. There are few resident species in the NPA or on the plateau that have not been recorded (although precise identification of some difficult to identify species still awaits), the only biological group for which this can be said.

4.2.10.2: Occurrence

The 403 species of birds that have been recorded in recent times in NNT and on the plateau are listed in Table 4.22. NNT has the highest bird diversity of any protected area in the Lao PDR and, with the plateau, is probably surpassed by few if any protected areas in Southeast Asia. Fifteen of the species are Globally Threatened or Near Threatened according to IUCN Red List of Threatened Animals, and an additional 22 species are of national conservation concern (as listed in the Wildlife of Lao PDR). Clearly, NNT is highly significant for bird conservation.

4.2.10.3: Human Use of 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 or netted as they gather at fruiting trees and mineral licks, 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, are likely to be important components of their diet. 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 is the live snaring of the globally threatened Crested Argus. This large, rare pheasant is snared on its habitual courtship display grounds (usually a small opening in the undergrowth of a forested ridgetop). The main market seems to be to in neighbouring countries (probably sold to amateur aviculturists). Trans-boundary poachers snare argues themselves, or resident villagers sometimes catch and sell the birds to them for US\$20 - \$100 each (1997 prices).

4.2.11: Fauna – Mammals

4.2.11.1: Status of the Baseline Data

The larger mammal fauna has been reasonably well surveyed, although there are probably some species whose presence remains to be confirmed. There has been some focused survey work on bats. One of the largest gaps in the knowledge base is murid rodents and insectivores.

4.2.11.2: Occurrence

The 92 species of mammals known from NNT are listed in Table 4. 24. Of these, 33-35 are of global conservation concern according to IUCN guidelines, and an additional 24-25 are of national conservation concern. In short, nearly two-thirds of the mammals known from the NNT area merit conservation attention. Among these is a suite of species endemic or near-endemic to central Indochina (and several only to the Sai Phou Leung mountain range and its foothills). Examples are Douc Langur, White-cheeked and Yellow-cheeked Crested Gibbons, Back-striped Weasel, Spotted Linsang, Heude's Pig, Large-antlered Muntjac, Annamite Muntjac, Saola and Annamite Striped Rabbit. For many of these, NNT is the largest and most pristine protected area in which they occur.

NNT's diversity of mammals, and the abundance of near-endemics and threatened species, is a major reason that the area is of the high national and global importance for mammal conservation.

4.2.11.3: Significance of Wild Mammals to the NNT residents

Mammals play a significant role in the spiritual lives of NNT residents, varying with the residents' ethnicity. One component of this spiritual relationship is the taboo 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. Their spiritual beliefs bar 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 in populations of animals with which villagers have a spiritual relationship might have on villagers' psychological well-being.

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 NT2 Watershed/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.

The trade value of mammals in general is much higher than for birds. Pangolins, primates, bears, otters, civets, tigers and other large cats, elephants, pigs, sambar deer, muntjacs, flying squirrels, 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, and medicinal species to neighbouring countries. The animals are killed or caught by villagers and sold to Lao middlemen or to trans-boundary traders, or they are harvested directly by transborder poachers, the local military, the border police 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 home-made or unauthorized 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. Indeed, it is unlikely the species can long survive the pressure it is under throughout 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 NNT in Khammouane Province. The animals were being transported by one group of traders in five boats in the direction of the eastern international border.

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

4.2.11.4: Comparative use of fauna

In surveys undertaken in villages, villager participants often refer to all of the animal and plant products they collect and utilize, and a generalized comparison of fauna and flora use is thus possible – with the exception of those wildlife products that villagers use, consume or sell but will not inform about, as they are illegal.

The ESMP (1998) noted that villages outside the NPA (lower Nam Theun area) have a much higher cash income than the villages inside the NPA (upper Nam Theun area) (see Table 4.24). On the other hand, gathering of NTFPs is relatively much more important for the people inside the NPA.

Table 4.24: 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	Unit	Agriculture	Gathering	Hunting	Fishing	Total
upper NT	Brou	Kip	3,383	2,310	3,012	2,675	11,380
upper NT	Tai Kadai	Kip	114,292	95,470	3,977	-	213,739
lower NT	Tai Kadai	Kip	183,333	166,848	32,914	131,212	514,307
lower NT	Hmong	kip	1,320,096	65,092	53,185	28,251	1,466,624
upper NT	Brou	%	25%	70%	3%	2%	100%
upper NT	Tai Kadai	%	53%	45%	2%	0%	100%
lower NT	Tai Kadai	%	36%	32%	6%	26%	100%
lower NT	Hmong	%	90%	4%	4%	2%	100%

In the 1997 study of 5 plateau villages (Foppes et al.) 31 mammals, 24 birds, 13 reptiles and amphibians, 31 fishes and 3 molluscs were noted as foods, and in terms of relative importance, the villages ranked fish as number one and wildlife as number five in importance. In terms of income however, fish were said to be 2nd and livestock 1st, with wildlife, ranked 4th (although all plant NTFPs together received 60.5 % of the counts, and thus together most important).

Chazee found that villagers reported that only a few of the forest products were commercialized such as cardamom, damar resin, rattan, markkaen, dry meat of deer, antlers of deer, muntjac and wild boar. He proposed 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, by-products of cats, gaur, goral, banteng.

The findings of the 2001 study of 3 NPA villages (Foppes et al.) is presented in Table 4.25.

Table 4.25: Numbers of wildlife used by 3 NPA villages (Foppes et al. 2001)

	Ban Teung	Makfeuung	Navang	Total 3 villages	5 villages on plateau (1997)	28 other villages in Lao PDR -97
Animal food products	145	150	288		99	215
Mammals	32	32	45		31	54
Fish	30	33	35		28	50
Other water animals	30	27	21		16	7
Reptiles	na	na	32			38
Amphibians	na	na	20			8
Birds	41	33	73		24	63
Insects	12	25	62		-	-

4.3: MAJOR THREATS AND INTENDED MANAGEMENT RESPONSES

The strategies for biodiversity management and conservation that address the major threats to be adopted by the WMPA can be described in two ways;

- i. Strategies which deal with biodiversity management and conservation as part of the overall and general management of the NT2 Watershed/NPA.
- ii. Strategies that attempt to address issues related to specific taxonomic groups.

The general biodiversity management and conservation strategies (Section 4.3.1) which will form the basis of the NT2 Watershed/NPA management plans are considerably more important for the conservation of NNT's biodiversity than the specific priorities listed for each taxon (Section 4.3.2). If they are undertaken effectively, they will address most issues raised in taxon-focused strategies. Nonetheless, taxon-focused strategies enable managers to more clearly identify those issues and responses required to deal with priority issues for threatened taxa. In addition, taxon-focused strategies frequently create public awareness and additional funding. Furthermore, taxon-focused strategies for wide-ranging umbrella species (e.g., tiger and elephant) indirectly provide protection to both habitats and their associated fauna.

The management strategies presented in Sections 4.3.1 and 4.3.2 below are critical for conservation of NT2 Watershed/NPA. While some implementation details are suggested below, and the Operational Plans presented in Part 7 provide activity plans, the appropriate form of the strategy and its implementation will be further developed by consultation between the WMPA and the NPA residents.

4.3.1: Biodiversity Conservation Threats and Management Strategies

4.3.1.1: Threats from Ineffective Protected Area Management Capacity

As is the case in all protected areas across the country (See Section 4.1.2.2), implementation of biodiversity protection in the NT2 Watershed/NPA to date is ineffective due to under-funding, lack of resources and an insufficient complement of capable staff. It is also hampered by insufficient institutional capacity and ability at both the district and provincial level, resulting in low motivation, poor facilities and communication, and unclear lines of authority between the district and province. Ineffective management is one of the major current threats to biodiversity conservation in the NNT Protected Area and the cause of much of the degradation that has already occurred is also largely due to poor management.

Under the NT2 Concession Agreement, the NTPC will provide \$US 1 million per year for the entire project operating period of 25 years to fund this current and later SEMFOP phases. These funds will be administered by the Watershed Management and Protection Authority to finance all its operations. The sums involved are considered entirely adequate to develop an effective and well-resourced management plan implemented by well trained and competent staff. The WMPA will be supported in this respect by a technical assistance team comprising long and short term specialists of both national and international extraction, who will assist in developing and implementing the management plans.

Effective and meaningful local participation is considered central to the success of biodiversity management and steps have been taken to mainstream participation under SEMFOP. A Participatory Protected Area Management (PPAM) approach has been adopted for biodiversity management under SEMFOP, and will play a key role in developing and promoting the following important SEMFOP initiatives:

- As an entry point for initiating community rapport and developing participatory processes with villagers.
- Conducting participatory needs assessment and planning of resource use, conservation and livelihood development activities and other interventions to be implemented by the WMPA.
- Fostering community organization and cooperation for community conservation initiatives and the formation of locally-based patrolling and biodiversity conservation teams.
- Defining forest zones, based on traditional uses, which can later be integrated into a more macro NPA zonation system.
- As a first step in developing community networks for stronger and more effective NPA protection

and conservation, particularly from trans-boundary and other external threats.

Effective protected area management requires a well designed and workable system of zonation. The NPA zonation process will use FLUPAM to define village boundaries and customary land use zones in a participatory manner. During FLUPAM, these village customary use areas will be overlaid with priority conservation zones or 'hot spots', such as salt-licks, and agreements will be sought to protect these areas. Initially all village customary use areas will be designated as CUZ. This will produce fairly extensive CUZ areas which DUDCP lessons have shown are beneficial for instilling custodianship and improved protection with villagers (See review of ICDPs in the Appendices of this Volume). CUZ and TPZ boundaries will not be finalized until FLUPAM has been completed and tested in all 31 villages and adequate conservation monitoring information is available from the PPAM program. This will ensure that the final zonation system integrates both traditional land use patterns and needs, and biodiversity conservation priorities.

Effective control of poaching and illegal resource extraction from the NPA will require a strong enforcement and patrolling capacity. Current patrolling efforts are not adequate to address problems over the whole area. Patrols by village militia are limited because they are usually not paid and have other responsibilities; they are also reluctant to patrol far from the village as they are often outnumbered by poachers. The current DUDCP 'Village Conservation Monitoring Units' are highly commendable, but their effectiveness is limited by insufficient manpower – six villagers per village from six villages. SEMFOP strategies to improve patrolling and enforcement will include:

- The establishment of a permanent army and police unit to work with the WMPA, recruited from provincial and district soldiers and district police. These units would be free of any other responsibilities beyond the security of the NPA, and their main responsibility would be to reinforce the village militias, village conservation monitoring units, and the border police, and with them patrol against poaching.
- The adoption of non-confrontational approaches. Professionals are needed to provide support and confidence to the village militias, and to ensure that those patrolling would be free of any compromising relationship with poachers in the area. Activities will initially focus on the problem of crossborder snaring and hunting, and only after confidence and trust has been developed will attention turn to the infractions of local people. Local people's cooperation, rather than fear and resentment, will be critical to success in this regard.
- SEMFOP plans to link and coordinate villages along mini-watershed lines into Watershed Conservation and Development Networks for both conservation and development purposes. A key objective of these WCDNs is to give villages a greater combined strength in patrolling and enforcement which, individually, they currently lack. The areas of responsibility of existing VCMUs, will be expanded to cover the entire sub-watershed, and the patrol and enforcement units will also be re-organised along these same watershed lines and linked more closely with the VCMUs through the network.
- At the start of SEMFOP a short-term consultant will be contracted to train rangers following 'Wildaid' principles. The intention is to provide the WMPA with the capacity to field a substantial and effective ground presence in the form of trained rangers knowledgeable about the NPA and its wildlife, the rules and regulations related to it, the means and purpose of patrolling, proper reporting protocols, and a willingness to use the authority vested in them to enforce laws and regulations, especially relating to the hunting of and trade in wildlife. The training will cover skills such as organizing field patrolling, law enforcement, first aid, field data gathering and reporting, map reading and GPS skills, basic wildlife recognition skills and the national legal framework. Standard training curriculum and materials will be developed and translated into Lao. The aim is to establish 2-3 ranger patrol teams using training of trainer (TOT) techniques. These teams would then be responsible for training other rangers and all VCMUs in the skills and techniques learned. Other tasks of the training consultancy would include:
 - conceptualize a rational system of patrolling for the NNT NPA including patrol routes, communications systems, reporting
 - lead and provide oversight of TOT patrol teams during the initial period of 3 months

- conceptualize a system of local information gathering on wildlife trade and to design interdiction strategies
- initiate collaboration between the WMPA, local police and military officials on control of wildlife trade
- help conceptualize and design a system of community wildlife monitoring and enforcement teams
- initiate a program of public education and outreach on wildlife trade issues and
- contribute to the development of an appropriate management information system to integrate ranger patrol data with other forms of relevant NPA management information.

4.3.1.2: Threats from NPA Communities.

All NPA communities practice some swidden agriculture, which if allowed to become unsustainable, will lead to the general degradation of natural habitats in the NPA. The current livelihood systems of these communities are also highly reliant on forest resource extraction as sources of protein, vegetables and herbs and as a means of offsetting the chronic annual rice shortages faced by most households. The high rates of population increase occurring in all communities are further exacerbating local livelihood problems and placing ever increasing pressure on the natural resource base.

Local practices are not necessarily detrimental to biodiversity; in many cases are sustainable and in some instances can positively contribute to maintaining biodiversity. It is only when practices become unsustainable (or when they are likely to become so in the near future) that they lead to environmental degradation and change is required.

Under SEMFOP, a Participatory Integrated Conservation and Development (PICAD) approach is proposed, under which livelihood development activities will be designed to promote biodiversity conservation by increasing food production, diversifying livelihood options and developing sustainable land use systems, thereby reducing reliance on hunting, resource extraction and uncontrolled swiddening. Participatory methods and tools will be used to ensure positive outcomes for both conservation and livelihood development.

As part of the land use planning process 'Village Forest and Land-use Management Agreements' (VFLMAs) will be drawn up with villagers. These will be based on existing land use and customary rules and tenure systems which, through discussion with villagers, are modified, strengthened and improved upon. Emphasis here focuses on drafting agreements that are practical and workable, even if initially they are not entirely optimal from a conservation standpoint. These draft agreements undergo a period of trial, testing and modification before they are finally ratified by the WMPA and district authorities. The VFLMA is an exchange of commitments. Villagers receive formal recognition of their tenure rights and continued legal access to specified areas and resources. Likewise, they make commitments to respect the rules that they helped to create. These rules are recognized to be in villagers' own long-term interests, even though they may limit use of resources in the short-term. In recompense for the restrictions imposed by these regulations, the WMPA will undertake to provide livelihood development activities and support. Through this two-way exchange of commitments embodied in the VFLMA, the protected area management team acquires a dependable partner. The FLUPAM process is described in detail in Section 2.2 and a description of and draft template for VFLMAs is presented in Section 5.4.4.

4.3.1.3: Threats from Peripheral Impact Zone Communities.

The NT2 Watershed/NPA has a moderately small NPA population, yet it is surrounded by a large and expanding population undergoing rapid, and in places unsustainable, development. Villagers from areas immediately outside the watershed are having significant impacts on it, and may have an increasingly large influence on the sustainability of the NPA if not managed effectively. Furthermore, as increasing population in this Peripheral Impact Zone (PIZ) places further pressure on existing land resources, some in-migration into the NPA might be expected. Livelihood development support for NPA villagers may well act as a further stimulus in this respect. Thus the area surrounding the NT2 Watershed/NPA will be included as an integral part of the Operational Plan of the SEMFOP.

The WMPA will undertake education, awareness and appropriate livelihood development activities in the PIZ to ensure that development is compatible with and conducive to management of the NT2 Watershed/NPA. These activities will be targeted according to the level of threat posed by PIZ communities, and where appropriate, NGO's or other donors will be invited to work in these communities so that WMPA resources can be targeted within the NPA itself.

To combat the threat of in-migration into the NPA by the PIZ population, safeguard have been put in place under SEMFOP. Any in-migration is likely to be for two reasons: (i) due to marriage, family re-organization of existing inhabitants, or other compassionate reasons. This type of in-migration will normally be into existing villages and, under the law requires prior approval from the Village Chief and then ratification by the district authorities, and (ii) due to land pressure or perceived benefits accruing to NPA villagers through the WMPA's livelihood development program. This type of in-migration could be into existing villages, but may also involve the establishment of new villages which requires approval from the district authorities. An in-migration control strategy has been developed under SEMFOP which deals with the first type in a fair and sensitive manner, while at the same time imposes adequate checks and controls on the second type.

4.3.1.4: Threats from Transboundary Incursions.

Although some depletion of wildlife and NTFPs is due to over-extraction by its residents, of much greater concern, is the intensive and extensive depletion of biodiversity is by transboundary traders and poachers. Several reports strongly suggest that intense transboundary poaching and trading in forest products is the principal threat to the ecological integrity of the NT2 Watershed-NPA.

There is no single, simple and quick solution to these cross-border threats. Rather, a longer term strategy is required, involving a package of measures which together will lead to improvements. The strategy developed under SEMFOP includes: international, national and inter-provincial dialogue, re-orienting access and trade via Nakai, re-organized patrolling, stronger enforcement, better border-post management, community involvement and strengthening, and possible international development assistance in local communities on the Vietnamese side of the border.

The fact that the GOL has now signed CITES (membership will become effective on May 31, 2004) will provide Lao PDR with a powerful alliance of of global allies in its growing determination (evidenced by recent wildlife trade crackdowns in Vientiane) to stop international trade in wildlife. The draft decree establishing the Lao Environment and Conservation Trust Fund (See Section 4.1.2.3) will pave the way for establishing Central Lao Conservation Fund to provide support to the interconnected group of NPAs surrounding NNT.

A proactive dialogue has been established and will be maintained with Government and related agencies and authorities in Vietnam in order to share information and experience and develop appropriate control measures. This will be carried out through several complementary means, such as province-to-province dialogue, and by GOL in collaboration with international agencies working on transboundary issues. A number of cross visits between GoL/WMPA and Vietnamese officials have already taken place. These have resulted in regular and frank exchanges of ideas with officials from relevant Vietnamese officials at both the national and provincial levels. Most recently, Vietnamese officials visited NNT NPA in June 2004 and met with senior Provincial, District and WMPA officials. WMPA and GoL staff will visit Vietnam in November 2004 and it is expected that an MoU and Action Plan, currently being drafted, will be signed by all parties at this time. A paper describing the joint action plan will be presented at the forthcoming IUCN World Conservation Congress. This initiative will be maintained and intensified under the SEMFOP.

The NPA access strategy aims to re-orient trade through Nakai town rather than across the extremely porous border as exists currently. Under the proposals, the current border crossing in the NPA may be closed and used for patrol and enforcement instead. The plan is to route all access via a well controlled and policed ferry system to Nakai (See Section 4.3.1.5).

The strategy to re-orient trade through Nakai may be further strengthened by supporting womens groups or appropriate individuals in the establishment of small village stores, where essential household items

would be sold at Nakai market prices. The required subsidy from the WMPA would be in the form of transport support or costs rather than in cash. This would enable the required subsidy to be slowly reduced as access and transportation systems within the NPA are developed and improved. The transport of the goods could be linked to VCMUs by establishing and supplying collection points for pick up by VCMUs during their patrols.

Watershed Conservation and Development Networks (WCDN,) will be established to link villages in each of the Nam Theun sub-watersheds for both conservation and development purposes (Table 4.26). By this means, villages will be given a combined strength in enforcement which individually they currently lack. By re-organizing patrol and enforcement units along the same mini-watershed lines and linking them more closely with the network's VCMUs, it is hoped to strengthen control over cross-border poaching. Under this proposal, clearly bounded and common monitoring and patrolling/enforcement sectors with improved links and communications with the police/military will be established covering the entire NPA. Another option might be the closure of the present border crossing in the NPA to all travellers. Obviously staff would be maintained but would provide patrolling and enforcement functions rather than issuing border passes. This option will only be considered after due consideration and consultation, and only after essential household supplies for villagers can be guaranteed via the Nakai market.

Table 4.26: Watershed Conservation and Development Networks and VCMU monitoring sectors

Mini-watershed Conservation and Development Network	Existing VCMU Incorporated into the network
Nam Nian	New - Phupiang and Namnian VCMU
Nam Xot	Navang VCMU
Nam Mon	Navang VCMU
Nam Theun	Taphaiban VCMU
Nam Noy	Teung VCMU
Nam Pheo	Teung VCMU
Nam Yang	New peripheral impact zone VCMU

Another facet of the to the SEMFOP transboundary strategy is more effective patrolling systems and patrol teams supported by rangers with relevant and adequate skill levels. This will be achieved through the ranger TOT training described in Section 4.3.1.1. This training will provide the VCMUs and WMPA patrol teams with a knowledge of and the means to use the authority vested in them to enforce laws and regulations, especially in relation to hunting and the trade in wildlife.

4.3.1.5: Threats from Uncontrolled Access.

Experience throughout the world has shown that improved access to protected areas can result in more poaching, increased extraction of natural resources, in-migration of shifting cultivators with inherent problems for PA management and biodiversity conservation. At the same time, improved access is required in the NNT NPA to:

- provide access to markets for household supplies from Nakai District as an alternative to the current trans-boundary supply route because the current transboundary traders also hunt wildlife and/or exchange goods for wildlife (in this respect, the plan does not support border markets as proposed in the 1998 ESMP);
- facilitate the transport (export) of produce to the Nakai plateau and beyond in support of livelihood development initiatives;
- facilitate easy and relatively quick travel by NPA villagers to the District centre of Nakai;
- facilitate the provision of rice and government services from Nakai;
- improve access for development, management and patrolling personnel and goods.

In order to address this dilemma of conflicting needs and threats to biodiversity conservation related to the issue of access, an access strategy has been developed as the basis for detailed planning and design of communications infra-structure development under the SEMFOP. This strategy (described in detail in Section 2.1.6) aims to reduce the porous nature of the NPA boundary by re-orienting the access for both

people and commodities through Nakai. The strategy focuses on establishing a single, dominant entry and exit point linked to a well-controlled water borne transport system on the reservoir. By providing a cheap and efficient service, coupled with stringent control and regulation over passengers, their personal possessions and cargo, it is anticipated that current problems of poaching, illegal resource extraction and transborder trade (with the inherent problems associated with it) will be reduced, and at the same time market access, public service availability and the general quality of life of NPA communities will be improved.

The planned, reservoir-based transportation system offers a number of opportunities for improved control and regulation, including:

- A single access point (boat dock) into and out of the NT2 Watershed/NPA which is easy to monitor and regulate.
- Through close cooperation with the reservoir management authorities from the outset, the WMPA will be able to ensure that the system is designed and implemented in line with SEMFOP's primary goal of biodiversity conservation.
- The highly visible nature of water-transport on the reservoir facilitates the identification and detection of illegal activities.
- The public nature of the transport system makes illegal activities more difficult to conceal.
- Trained boat operators and personnel will be able to assist in control and enforcement.

Under the strategy, it will be possible to improve ground-based access routes within the NPA to the benefit of both NPA communities and NPA management, without the concomitant increase in risks from external threats that this normally creates. Improved communications within the NPA, all linking with a single access point via the boat transport system will provide a number of benefits to NPA management and biodiversity conservation:

- Reduced reliance on the currently dominant transborder supply route for household supplies with its inherent opportunities for the extraction of NPA resources by the cross border traders.
- Improved access for rangers and enforcement teams for the rapid response to reported impacts, poaching, wildlife trade and other incidents.
- The potential to move larger items of conservation and protection equipment (for fire-fighting, survey, research, development, etc.) within the NPA.
- Easier access for the VCMUs and better cooperation and coordination within the Watershed Conservation and Development Networks due to improved inter-village communications.
- Improved market access to Nakai for NPA communities, thus providing alternative economic opportunities in place of their current reliance on forest resources.
- Enhanced access for ecotourism, thereby providing alternative sustainable livelihoods for NPA communities (guide-work, sale of handicrafts, cultural-tourism, etc.).

Improvements to internal NPA tracks will all channel movement towards and link with the reservoir transport system and prior participatory planning will be undertaken with villagers to identify:

- their specific, unmet livelihood needs with respect to access
- which unmet needs could be provided by existing routes
- which, if any, can be provided only by a new track
- the anticipated social, economic and environmental costs that track construction would incur, to be weighed against the potential benefits.

4.3.1.6: Threats from Unsustainable Extraction of Wildlife and NTFPs.

By their own assessments, residents of the protected area have overharvested and drastically reduced populations of several quarry species, such as muntjacs and gibbons, and several NTFPs. Part of it is a 'commons' problem whereby villagers do not have control over or exclusive access to local forest resources, but instead must compete with outsiders. Consequently, they have little incentive to harvest them sustainably. Another problem is the insatiable outside 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 effectively no upper limit on the number they can sell, other than their labor to cut them.

In order to develop successful sustainable management, agreements will be developed in a participatory manner between villagers and the WMPA. These agreements will address: sustainable harvest limits, harvest seasons, protected species, protected zones and enforcement. Village gun collections, and the establishment and enforcement of rules on the types of snaring allowed, will be an integral part of participatory resource management. For example, it may be appropriate to allow villagers to snare small mammals (crop pests) around agricultural fields, but not elsewhere. Continual and intensive patrolling to destroy snare lines, apprehend poachers and apprehend their equipment and vehicles will also be a focus.

4.3.1.7: Threats from the Uncontrolled Increase of the NPA Population.

The populations of NPA villages are increasing at high rates - 17 % from 1996 until 2002. Such a growth rate threatens to exacerbate the current unsustainable and declining livelihoods of most of the NPA and some of the surrounding communities. Sustainable agriculture, and sustainable harvests of wildlife, fish and NTFPs are impossible under unchecked population growth. Without family planning initiatives, improvements in agricultural efficiency and conservation will be compromised by larger populations, instead of relieving pressure on the forest. It has been estimated that tropical forests can sustain hunting and gathering humans at a density of about 1 person/km². NNT's density is already in excess of that, with much added pressure on its resources from non-residents.

To safeguard against the threats posed by uncontrolled population increases, a strategy for population management in NPA communities has been developed under SEMFOP. This is described in detail in Section 2.1.7, and embodies 3 components:

1. Safeguards to ensure adequate agricultural land for current and future population in NPA villages.

FLUPAM provides for the development of land use agreements with communities that mitigate against future encroachment into undisturbed forest areas, while at the same time, taking account of current and future populations by defining village agriculture and reserve agricultural land areas. FLUPAM proceeds simultaneously with clusters of neighboring villages and thus allows for the possible rationalization of agricultural (and reserve agricultural) land areas between villages according to the population needs of each.

2. Awareness raising and capacity development to enable communities to better make their own decisions on family size, and to provide the capability to be able to act on these decisions.

The assessment of population trends conducted during FLUPAM will be undertaken in a participatory manner with villagers in order to increase community awareness of population issues and to table the problems (and the potential benefits of family planning to them) for consideration when designing livelihood development activities. Wherever appropriate, assistance with family planning will be provided as a key livelihood development activity under the SEMFOP. Other initiatives in the SEMFOP in regard to helping communities generally, and women in particular, make their own decisions in regard to the sustainable management of population include: improved maternal and child health care; capacity development and empowerment programs for women in conjunction with the LWU; and support for female economic activities.

3. Improved education and vocational training opportunities to facilitate the out-migration of capable youth and adults to take up new occupations outside the NPA.

Support activities here will include: the promotion of literacy and numeracy through non-formal education; education of youth, especially girls through improved formal education opportunities; support for vocational development; and professional training to enhance career opportunities and allow NPA villagers to find employment outside the NPA.

Thus, one objective of social development will be to reduce the rate of population increase, a suite of specific and culturally sensitive activities will be adopted, including:

- developing the policy of tightly controlled in-migration into the NPA;
- improve maternal and child health care;

- promote family planning services;
- educate youth especially girls through non-formal education;
- promote literacy and numeracy through non-formal education; and
- support female economic activities.

4.3.1.9: Threats from the Lack of a Zonation System with Clear Rules and Regulations

The lack of commonly understood zones, with rules and regulations pertaining to each, means that PIZ and NPA villagers have no clear understanding of what and where they are allowed to follow their various customary livelihood practices. This has created essentially a situation of uncontrolled common property resource extraction, where each individual will extract the maximum possible from the most easily accessible areas, regardless of their conservation value and status.

Zonation should build on a combination of scientifically-derived biodiversity values and traditional zonation systems already in use by resident villagers. Existing scientific reports and results from the biodiversity monitoring to be conducted under SEMFOP will be used to identify key or critical habitats,⁸ and agreements with villagers will be sought for improved control of these areas, possibly even their excision as “Totally Protected Zones” (TPZ) if they are unused or rarely used by the local communities. All other land in the village customary use areas would be proposed as “Controlled Use Zones”.

This initial process of zoning will be carried out simultaneously with a comprehensive participatory assessment with each village of their forest use during FLUPAM. However, TPZ zonation will only be finalized, following a period of trial and testing of the CUZs and their associated village rules and regulations, after FLUPAM has been completed in all NPA villages.

This zonation strategy will result in 3 major zones, each with unique requirements in regard to both conservation and development, to be used under the SEMFOP.

Totally Protected Zones: critical habitats within the NPA, with strictly limited access, where only conservation activities will be permitted.

Controlled Use Zones: areas within the NPA, still of critical conservation importance, where appropriate villager activities will be allowed, but controlled according to the participatory agreements established through FLUPAM.

Peripheral Impact Zones: areas outside the NPA boundary, but which impact on biodiversity values within it, and thus require varying degrees of support for both conservation and development activities aimed at reducing their level of impact on natural resources in the NPA.

4.3.1.10: Threats Posed During NT2 Project Construction

It is planned that construction of the NT2 project will begin in late 2003 or early 2004, and it will employ on-site 2,000 - 3,000 wage-earning laborers and engineers, with maybe four times as many followers (family, traders, restaurateurs, bar-owners, shop keepers, etc.). This will likely put tremendous pressure on the NT2 Watershed-NPA to supply wildlife and plant-based NTFPs to this new cash income community. Anticipated threats are diverse and from a number of different sources, including:

- Hunting, accidental and deliberate fire-setting, timber extraction for shanties, trade in wildlife, encroachment for vegetable gardens, etc. by the construction workers and camp followers.
- Encroachment into the NPA for roads, power-lines, borrow-sites, land-fill sites, quarrying, etc. by the construction companies and sub-contractors.
- Encroachment and degradation along the NPA southern border by salvage logging and vegetation clearance operations.

⁸ These include important watershed areas, important water sources for wildlife, mineral licks, unique habitats, and areas with high diversity and density of fauna and/or flora.

- Additional illegal practices detrimental to the NPA by other outsiders, particularly criminal elements, attracted by the high profile nature of the project and the large number of camp workers and followers.

The WMPA will be established and functioning, and NPA management will be well advanced by the time dam construction begins. Although it is anticipated that regular NPA protection measures already instigated such as demarcation, patrolling, border posts and gates, VCMUs, etc. will go some way to providing protection during the construction period, other special measures will have to be put in force.

It is intended to establish a construction-risks working group or task force under the WMPA for the entire period of dam and associated construction. This working group, comprising WMPA staff from all relevant divisions and district authority partner organisations, will be charged with a variety of actions to ensure that potential threats are minimised. These actions will include:

- Liaison with provincial and district authorities responsible for managing the incoming workforce such as police, interior, health, departments, etc.
- Liaison with other NT2 project agencies such as NTPC, RMU, RMA, EMO, etc. in regard to construction impacts.
- Liaison with NTPC to develop contract-penalty-causes for main and sub-contractors in respect to: (i) construction impacts, and (ii) their employees infringing NPA regulations.
- Liaison with the main contractors and sub-contractors regarding impacts in respect to the NPA.
- Drawing up rules and regulations for NPA protection to be communicated to and signed by all construction employees.
- Establishing complaint procedures for NPA and PIZ villages, along with conflict resolution mechanisms.
- Agreeing on penalties, job-dismissal clauses, actions to be taken by the contractor, etc. for any infringements.

4.3.2: Scientific Research Strategy

4.3.2.1: Research Strategy

The research needs of Nakai Nam Theun NPA are both immense and extremely diverse. Although some survey and research priorities are put forward in the next Section (4.3.3), it would be impossible to develop a detailed research plan at this stage. Indeed, in the early years of SEMFOP-1 the major priority is management and protection, and this is reflected in the allocation of funding during this period. This is not to say that research is not important, and it is recognised that a major national or international research presence adds status and recognition, and thus also helps with protection. However, time resources and funding will be extremely limited for this purpose in the early years and will have to rely on outside sources for research during this period. The WMPA intends to be proactive in attempting to attract interested research organisations, individuals and funding, particularly once biodiversity monitoring begins to identify clearer needs and priorities.

4.3.2.2: Research Advisory Group

In order to help in identifying research needs and priorities, and assist in attracting donor interest and funding, the WMPA intends to establish a 'Nakai Nam Theun Research Advisory Group'. The role of this group will include the following:

- Providing the WMPA with advice on all aspects of scientific biodiversity research management, implementation and use of research findings.
- Assisting in identifying research needs, setting priorities and identifying the appropriate expertise (both in-country and internationally) to conduct the research.
- Helping to establish recognition for scientific research in the NPA and assisting in attracting support and funding from interested research organisations and individuals.

The research advisory group will be chaired by the Director of WMPA's Executive Secretariat and will include members from government agencies such as STEA, NGOs involved in conservation, academic institutes, both national and international, (including social institutes and NGOs involved with ethnic minorities to ensure adequate coverage of human/wildlife interactions) and others as appropriate. The group will meet twice yearly, but may set up working groups to address specific research topics as they are identified. The Research Advisory Group will not be paid, but will have their expenses covered and will be purely an advisory body. Final decisions on research in the NPA will rest with the WMPA.

4.3.3: Taxon Focussed Management Strategies

One of the first tasks of the Biodiversity Conservation Division, with assistance from the TA advisor will be to prioritize the need for surveys and management strategies according to immediate, medium term and longer needs. This will include an assessment of the potential for attracting additional donors and/or specialist expertise for certain surveys or management plans.

As implementation of the SEMFOP proceeds and additional information is gained, priorities will undoubtedly change and new needs will be identified. As a consequence, it would be unwise to set firm priorities at this stage. However, a number of clear needs for survey and management are already apparent and include the following which are outlined in bullet format in the remainder of this section.

4.3.3.1: Flora Management Strategies

Survey and research priorities

- A general botanical survey of NNT to be undertaken, by a cooperative program between the WMPA, Lao Institutions such as the NUOL, regional institutions in Thailand and Vietnam and international institutions such as the Royal Botanic Gardens in Kew. The international institutions should be able to fund themselves, with counterpart training and participation of the Lao botanists. Focus would initially be on participatory surveys and identification of significant NTFPs.
- Establishment of permanent botanical plots (in triplicate) for all or the main forest types in NNT, with the purpose of systematically studying species abundance, density, composition, structure, and monitoring growth rate and phenology. The establishment and collection of the initial data of these plots would be the task of the WMPA's botanist. Monthly monitoring of phenology would be the tasks of the relevant WMPA division. These plots could be used by interested parties to conduct studies on invertebrate or small vertebrate communities, etc.
- A long-term study of the effects of fragmentation on the Nakai Plateau, i.e., quantitatively study biodiversity and the variety of processes before and after inundation. This will provide data for:
 - (a) the design and management recommendations for protected areas in Lao PDR and elsewhere in the region;
 - (b) testing the island biogeographic theory (MacArthur and Wilson, 1967);
 - (c) providing information on community ecology, as to whether there are critical species-specific interactions, and on the degree of structure of species composition in natural communities.
- A survey to determine all cypress species, and their distribution and (approximate) density.
- A comprehensive rattan survey, with a priority for reconnaissance surveys of the main catchments, combining interviews with specimen collection. The objective of the interviews is to develop an understanding of species distributions, abundance, trends and socio-economic issues.

Protection/Conservation priorities

- A total ban on the possession of chainsaws by NNT residents, to be instituted as the presence and use of chainsaws in the NPA will most likely result in a sharp increase in the rate of forest loss.
- A detailed study of the current agricultural systems among the various ethnic groups, and the impact these systems have on forest cover. The urgency of reducing swidden in NNT is poorly known. There have been many suggested solutions to the 'swidden problem' in NNT, but little attempt to

understand its nature and impact. A better understanding of swidden agricultural systems in NNT is needed before attempting to alter or dismantle them. This needs to include improved understanding not only of the relationship of swidden to biodiversity, but to the cultures and livelihoods of swidden farmers (See also Sections 3.5.3 and specifically 3.5.3.3 and 3.5.3.6).

- A forest cover monitoring system to be instituted via effective interpretation of satellite data.
- The introduction and institution of improved livestock management, to mitigate or reduce the impacts of livestock on the forest and wildlife.
- A management plan for rattan. It should be noted, however, that potential is poor for sustainable and economically profitable management of rattan. Growth rates are not high, and populations are spread out and therefore hard to manage and police. Cultivation may be difficult as well, but should be investigated. Work will be undertaken with residents – both basic and action research - to improve management of existing wild stocks of NTFPs to ensure that reliance on wild NTFPs maintains villagers' interest and stake in conserving the forest. A major focus of this will be to:
 - i. determine the best or optimal harvesting systems;
 - ii. determine sustainable off take quantities; and
 - iii. determine if zonation is required.
- NTFP domestication to be encouraged when appropriate.
- A monitoring/patrolling program and checkpoint operation, which includes inspection for flora. This will require training for staff and implementing partners and adequate dissemination of rules and regulations relating to use of flora.

4.3.3.2: Invertebrate Management Strategies

- A strategy to gain, via participatory and scientific studies, a better understanding of:
 - i. the status and trend of species important to local livelihoods, either as food, agricultural pests or vectors of disease transmission (e.g., mosquitoes); and
 - ii. an investigation of the intensity of transborder beetle collection along the Vietnam border.

4.3.3.3: Management Priorities and Strategies for Fish

Survey priorities

- A baseline fish survey of the Nam Theun tributaries within the NPA needs to be carried out as a high priority. This, along with the design of a fisheries monitoring system, will be needed for SEMFOP M&E purposes. The baseline survey and species identification will be conducted jointly by an international expert, LARREC and the Fisheries Department. It will include participatory mapping of areas important to local fishes, and the identification of species that are important for local subsistence, so that mitigation measures can be undertaken in the event that populations decline after inundation of the NT2 Reservoir.

Aquatic Life Protection/Conservation strategies

- A program to establish sustainable management of stream fisheries in conjunction with villagers. Villagers in NT2 Watershed/NPA repeatedly report declining stocks, due either to over-harvest and unsustainable harvesting methods by themselves, and/or by outsiders. The methodology to promote community-managed fisheries has been practiced for years in southern Lao PDR, and could be replicated in the NT2 Watershed/NPA. Similarly, simple local rules and regulations, with regard to fishing techniques (do's and don'ts and season), developed by the Navang VCMU and the DUDCP biologist, with the participation of local communities, have shown significant increases in fish harvested (Boonratana, 2000). Such a program has a number of attractions for SEMFOP:
 - It will benefit biodiversity conservation in general, as increased fish stocks benefit other key species such as otters, kingfishers, etc.
 - It will reduce villagers reliance on other protein sources including key wildlife species
 - It is a good example of a 'win-win' situation which benefits both conservation and local livelihoods through clear and positive linkages.

- The potentially very rapid recovery rates of aquatic ecosystems make them excellent examples for villagers of what can be achieved with good conservation practices. This might lead to a greater likelihood of them being applied to terrestrial habitats which generally take longer to recover.
- It would provide a good example of an integrated conservation and development activity for the Watershed Conservation and Development Networks to demonstrate the need for inter-community cooperation along the entire mini-watershed for them to succeed.
- It will be cheap and fairly straightforward to implement and would not be a great burden on limited SEMFOP resources.

4.3.3.4: Management Priorities and Strategies for Amphibians and Reptiles

Survey priorities

- Surveys during warm months of the year (when animals are more active), and at higher elevations, including detailed surveys of the species known to be of conservation concern, especially turtles.
- Studies of the status of frogs collected by villagers.

Amphibian and Reptile Protection/Conservation strategies

- A Turtle Conservation Plan to address the intense exploitation for trade suffered by turtles, and the global rarity of some species. Harvest management systems and commercial captive breeding will be investigated, and if feasible will be developed and instituted. .
- A Reptile Management and Protection Plan covering heavily-traded reptiles, such as monitor lizards and some snakes. If the local harvest of frogs is found to be unsustainable, the participatory establishment of a frog conservation and management program will be undertaken. This will likely include the establishment of local frog conservation zones, possibly modelled on the successful frog conservation project implemented in Xe Bang Nouan National Protected Area.

4.3.3.5: Management Strategies and Priorities for Birds

Survey priorities

- A re-assessment of the current abundance of key species relative to their abundance observed on earlier surveys from the period 1994 – 1997. This will give an indication of the intensity of human impact on the various key species.
- A survey to identify areas important to Crested Argus, especially the breeding display grounds. Areas identified will be high priorities for core protected zones.

Specific bird conservation priorities

White Winged Duck

It has been estimated that there are only about 5 to 10 breeding pairs of white-winged ducks remaining in the Nakai Nam Theun NPA. Their preferred locale of plateau riverine habitat below 600 metres amsl will be reduced by about two thirds by reservoir inundation. However, given the low numbers remaining, habitat availability may not be the most important constraint to their continued viability. In terms of resource needs, the reduced area may be sufficient to support the current population.

A survey to identify potential habitats and locations of unknown populations of WWD will be conducted between the Nakai plateau and the Cambodian border to establish threats and potential release and captive breeding sites. During construction and the first 5 years of the NT2 operating phase a management program for the WWD will be developed and implemented under the EAMP. The management plan will include:

- A study of the genetic character, behaviour and outbreeding potential to other populations.
- Capture of remaining birds or the collection and incubation of eggs.
- Testing the ability of nest boxes as a means of accelerating egg collections.

- Consideration of transferring the population to other suitable breeding grounds.
- Anti-poaching patrols of Crested Argus habitat with emphasis on the mating period, when they are most vulnerable to snaring on their display grounds.
- The feasibility of protecting fig trees from hunting (when in fruit, they are favored sites for hunters because they attract hornbills, green pigeons and other frugivores).
- Village gun collection, registration and regulations on use.

4.3.3.6: Strategic Management Priorities for Mammals

Survey and research priorities

Prioritization here will depend on what is already known, and what is not known, about a particular taxon and its perceived conservation value, either economically, culturally or biologically. Hypothetically, a high priority taxon would be one that meets some of the following criteria:

- it is globally threatened
- little is known about the animal's status in Lao PDR and in NNT
- it has a significant positive or negative role in local and national economies
- it has significance in Lao or human culture (e.g., elephants)
- it is known or suspected to be biologically highly distinctive
- it is known to be a 'keystone species', with an influential impact on its ecosystem

Following these criteria, the following are anticipated to be of high priority for mammal surveys.

- Surveys of abundance of key mammals of conservation concern, to compare their abundance to those observed on earlier surveys in the period 1994 - 1998. This will give an indication of the intensity of human use of the resource.
- Pangolin surveys. Pangolins are probably the most heavily exploited animals in the wildlife trade and the animal is a significant (if irregular) source of income for local people. However, little is known about its ecology, status and management requirements for its protection and conservation. The WMPA is in the process of developing an MoU with WCS for a cooperative, cost-sharing program for biodiversity management, monitoring and staff capacity development in the NPA (See Section 4.3.4). It is intended that the pangolin conservation management plan will be developed with WCS assistance under this MoU.
- The Asian Elephant has been identified as a key species due to: (i) significant reduction of their natural habitat by reservoir inundation, (ii) loss of mineral licks, and (iii) disruption of movement patterns. There is also a high potential for increased human/elephant conflict after the plateau habitat is reduced by the NT2 reservoir. Initial studies will be aimed towards drawing up mitigation measures (for reduced habitats, access to mineral sources and human/elephant conflict), and long-term studies will include a study on their ecology and behavior, and on monitoring patterns of movement and distribution pre- and post-inundation.
- A survey to determine the status (distribution, group and population size, threats, and conservation requirements) of the globally threatened Douc langur. Following this, graduate students (national and/or international) would be encouraged to conduct Ph.D and M.Sc thesis research.
- Gibbons require more long term survey and research, as identification of the resident species is not clear. They would also serve as a good indicator species for long-term monitoring due to (i) their conspicuous territorial calling, and (ii) their susceptibility to hunting.
- Identification of the loris species present in the NT2 Watershed/NPA.
- Small carnivores (e.g., otters, badgers, civets) are little known, while they are perhaps important to rodent pest control and forest ecology (through seed dispersal).
- Flying squirrels are highly sought in the wildlife trade, but are poorly known in terms of taxonomy, status and distribution.

- Muntjac distribution, status and habitat use of the various species, including little-known new ones, requires survey and research, especially as they are an important food item for both humans and carnivores.
- A survey on wild pig, including distribution and status of the various forms that occur (likely to include the rare and virtually unknown Heude's Pig).
- A survey on bear distribution, identification and status of the forms that occur.
- Rhinoceros are still occasionally reported from the NPA; and if they occur, they would be the most globally threatened animal in the NPA.

Saola Conservation Action Plan:

The main components of the Saola Conservation Action Plan will be implemented, including Saola ecology, population and seasonal movements, and their status in the central and northern parts of the NT2 Watershed/NPA.

The NT2 Watershed/NPA is the only protected area in Lao PDR that harbors this rare animal, and researchers in Vietnam have recently suggested that the Saola's IUCN status should be changed from 'Endangered' to 'Critically Endangered'. If so, it would be the only Critically Endangered mammal known to occur in NNT. A Saola monitoring and conservation project that benefited both Saola conservation and village economies was successfully piloted in the then Northern Extension in 1998 and 1999, and this will be introduced and continued in the NT2 Watershed/NPA.

Elephant conservation and management plan

An elephant conservation and management plan will be prepared and implemented. This plan will initially rely on the work and recommendations of Boonratana, Khounboline and WCS. It will be initiated along with the elephant conservation and management plan for the Nakai plateau as financed under the EAMP. During the NT2 construction phase the EMO will be responsible for conducting a survey to determine the population of elephants on the plateau and their seasonal movements, using a mark-recapture type program. The information obtained will be used to develop and implement (prior to reservoir inundation) an elephant management program with a special focus on restricting interactions with the resettled human population.

Human-elephant conflict already occurs on the Nakai Plateau, and recently led to the death of a villager. When the NT2 reservoir fills and squeezes the human and elephant residents of the Nakai Plateau into a much smaller area, the incidence and severity of these conflicts will probably rise. It could be a major threat to the welfare of both elephants and resettled villagers. This will probably be the most obvious wildlife mitigation problem from inundation, and the problems will start as elephants react to disturbances from construction of the dam. Elephants will not benignly use the corridor toward Phou Hin Poun NPA. Problems and conflicts should be anticipated, and contingency plans prepared and rehearsed as part of mitigation for the dam. This plan will include the measures taken to ensure that trans-border poaching in the upper watershed is halted. Villagers report that it has driven elephants down toward the Plateau, and with inundation, the elephants will find themselves squeezed between the reservoir and the poaching pressure inside the NPA.

Pangolin conservation and management plan.

A conservation management plan specific to pangolin is required.

Mineral lick management

Mineral licks in the NPA will be mapped and their usage by both wildlife and humans assessed, and then a conservation plan for critical mineral licks, in participation with villagers, will be developed and implemented, and where appropriate, included in the village level forest use management plans.

4.3.4: Biodiversity Baseline Survey

In order to establish a foundation for future monitoring of conservation outcomes for the NT2 Watershed/NPA, it will be important to initiate a program of biodiversity baseline analysis through ground-based biological survey and inventory. This will form a basis for identifying and planning management zones within the NPA, and will provide a project baseline for monitoring land and wildlife

use changes in the protected area. This work will begin at the start of SEMFOP, and be conducted under the leadership of an appropriately qualified specialist consultant or Conservation NGO and involve relevant staff from WMPA's PPAM Division. The WMPA staff will receive hands-on, on-the-job training from the consultant during the survey work and, by this means, their capacity for further work of this kind will be upgraded. It is expected that the consultant will provide inputs over 2 years, with intensive inputs early and regular follow-up visits over the entire period.

The survey work will concentrate on 'major' wildlife species, understood as those listed as "key species" for the Nakai Nam Theun NPA and the Nakai Plateau (See Sections 4.2.7 to 4.2.11 and Appendix 4 of this Volume of the SEMFOP). The major threat to these species is from extraction for internal trade, unregulated export and domestic consumption. If management of the NPA is effective, one would expect to see a constant or increasing trend in the abundance and distribution of major wildlife species in the NPA. The following methods will be employed to estimate presence, abundance and distribution of major wildlife species and threats to these species.

Camera trapping

The initial groundwork would involve the establishment of a network of wildlife camera traps throughout the NPA. Camera-trapping methods have proven to be a reliable means of estimating the presence, relative abundance and distribution of rare or cryptic species that are difficult to detect through direct observation (large and small carnivores, ungulates, ground-frequenting primates, porcupines, and other carnivore prey species). Two field teams will be used to place paired camera traps in sampling blocks spaced at regular intervals from east to west across the NPA over a period of 18 months, with each camera trap set left out for 1 month. This method is being employed by WCS now in the Nam Et-Phou Loey NPAs in northern Lao PDR to gather baseline data on presence, abundance, and distribution of carnivore and prey communities and used at other WCS sites in the region to successfully estimate densities of selected large carnivores (tigers and leopards; individuals per km²) and relative abundance (camera trap hours/photo) of other terrestrial mammals and birds.

Systematic ground transects

Combined with the network of camera traps, ground surveys will be initiated for key wildlife species as well as threat indicators (snares, gunshots, camps, etc). This would involve basic wildlife and threat data gathering and reporting protocols for park rangers and other NPA staff involved in wildlife management.

Several kilometers of permanent transects will be established across the NPA, with two teams surveying separate lines once every 4-6 weeks over period of 18 months to estimate densities of key species (pheasants, hornbills, pigeons, herons, and primates) as well threats including snares, hunting camps, and forest cutting. Direct sightings and calls will be recorded onto standardized datasheets including species name, number of individuals, and type of threat, bearing distance along line, time, and weather details.

Track and sign of key wildlife and threats (snares, gunshots, hunting camps, forest cutting, etc) will also be recorded along recce transects in several sampling locations across the NPA to estimate encounter rates (observations for kilometers walked) as an index of relative abundance.

Systematic diurnal and nocturnal ground transects will also be established to estimate the presence, abundance and distribution of key reptiles in the NPA.

Semi-structured interviews

Data from ground transects and camera trapping would be combined with systematic semi-structured interviews with key informants in villages in and around the NPA to evaluate trends in abundance of major wildlife species and as well as wildlife use. The interview format would include questions related to hunting, trade and use of wildlife by the household and the village in general, with additional questions asked in reference to a limited set of key wildlife species (including mammals, reptiles, and birds). Data from interviews will be recorded on standardized data forms with results used interpret seasonal hunting effort per species, hunting methods, frequency of hunting, frequency of species used for subsistence and trade, location of hunting areas, hunting by and trade with outsiders, and perceptions of wildlife abundance and trends.

The outputs of the biodiversity monitoring will include:

- An inception report provided for Bank review and comment by December, 2004 showing how the work will be carried out.
- Quarterly cumulative reports on quantitative and qualitative observations, including maps of sightings of main species.
- A summary report at the end of year 1 and again at the end of the program.
- A final report providing to WMPA recommendations and guidance on the continuation of the work to be conducted by the trained staff, including important lessons-learned for any necessary modifications to the program.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 5:

**RESOURCE ACCESS RESTRICTION
FRAMEWORK**

(DRAFT OF OCTOBER 2004)

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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 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 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.

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 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/arbitrator
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:

- finalisation of the log-frame,
- identification of appropriate indicators,
- collecting baseline data,
- 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:

- Persons living in the villages in the NT2 Watershed/NPA – the NPA villages;
- Persons living in villages located around the NT Watershed/NPA – peripheral impact zone villages;
- Foreign persons residing in another country who enter the NPA to trade or to extract natural resources from the NPA²;
- Persons living somewhat distant from the NPA but involved in the marketing on forest products from the NPA;
- Private or other companies who may wish to extract resources from the NPA; and
- 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 village's or a villager's 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 may be eligible to receive benefits of mitigating measures 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 PIZ villages
Boualahpa	n.a	0	3	0	8	all 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.

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 group 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, 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.

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.

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 hundreds are gathered for home consumption, use as a medicine, construction and handicrafts, relatively few are gathered for commercial sale to outside markets. As a general rule, there is no management of most NTFPs 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.
"bong" bark	No management – open use
Mark Khene	No management – open use
Orchids	If trees in former swidden fields, field owner has rights, other open use
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 villagers, 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 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;

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

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 a 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.

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.

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 studied to date. 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 at 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 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.

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	Tai Kadai	kip/yr	183,333	166,848	2,914	131,212	514,307
PIZ	Hmong	kip/yr	1,320,096	65,092	53,185	28,251	1,466,624
NPA	Brou	%	25%	70%	3%	2%	100%
NPA	Tai Kadai	%	53%	45%	2%	0%	100%
Plateau	Tai Kadai	%	36%	32%	6%	26%	100%
PIZ	Hmong	%	90%	4%	4%	2%	100%

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.

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 4:1 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, laughing thrushes, 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
Palm leaves "Kho"	32%	40%	72%	Roofing, walls	MD
Small rattans "Vai"	26%	25%	51%	Handicraft, food	-
Pandan leaves "Toey"	38%	11%	49%	Handicraft	MD
Rattan shoots "Boun, San"	8%	36%	45%	Handicraft, Food	Boun/MD; San: NC - I
Cardamom "Mak neng"	18%	26%	44%	Sale	I
Bamboo-shoots "Nor mai"	25%	16%	41%	Food	MD – I
Bamboo canes "Mai pong"	1%	36%	37%	Handcraft, food, housing	-
<i>Parasborea</i> resin "Khi si"	7%	24%	31%	Sale	NC
Big rattans "Thoun"	4%	14%	18%	Sale	SD
Agarwood "Po heuang"	4%	11%	15%	Sale	SD
Forest vegetables "Phak"	7%	3%	10%	Food	NC
Medicinal herb "Wanchod"	5%	0%	5%	Medicine	NC
Wild galangal "Houa kha"	0%	3%	3%	Condiment	-
Palm shoots "Keuang"	3%	0%	3%	Food	-
Edible tubers "Man"	3%	0%	3%	Food	-
Fruits "makfai, mak ngen"	1%	0%	1%	Food	-
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 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 FLUMAP 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 FLUMAP 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 zone derived and agreed upon during the participatory FLUMAP 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 Community Development / 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.

An indicative template for the VFLMAs to be used under SEMFOP has been drafted and will form the basis for further development by the FLUPAM, PPAM and LDC Divisions, in conjunction with the Community Development / EM advisors, prior to initiating land use planning in the field. The template is presented below.

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 and 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 Following the Government's establishment of the National Conservation Forest, 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:

Village housing, amenity and community services and function area.

Village agricultural land use area including all permanent agricultural areas, swidden fields and fallows, grazing land and areas used for other agricultural production.

1. Village reserve agricultural land not currently farmed to be put aside for future population needs of the village.
2. 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.
3. Village ancestral or 'spirit' forest as defined by traditional custom of the village.
4. Village protection forest, enshrining customary uses, defined by community needs for local watershed protection, and as agreed to by common village consent.
5. Village conservation forest as defined by customary use and as agreed to by common village consent.
6. 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:
- Village agricultural land:
- 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 the totally protected zone within the NPA (*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:

2. Village housing land:
-
-
- Village agricultural land:
-
-
- 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: Offences in the TPZ (as defined in Article 2.4 above).

- First offence
- Second offence
- Persistent offenders

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 activities and support to the village and individual families, developed with the informed participation of all

villagers, in recompense for the restrictions imposed on the community by this VFLMA.

- Development activity 1.
-
-
- Development activity 2.
-
-
- Etc.
-
-

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

- Public service 1.
-
-
- Public service 2.
-
-
- Etc.
-
-

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 impacts of introducing 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.

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 overharvested and drastically reduced populations of several wildlife species, such as muntjacs and gibbons, and several NTFPs. 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

5.4.4.1: 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

5.4.5.2: *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 – are 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 in the NPA 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 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.

5.4.5.3: 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. Thus, besides human population control, there is a strong need to develop management strategies for the continued, but 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 the LUP/LA. Currently, NPA wildlife protein is consumed not only by NPA villagers but also by transborder poachers and persons from peripheral impact zone villagers. These stakeholders may buy the meats from NPA villagers, or they may hunt themselves. In both these cases, the export of wild meats from the NPA will be ceased.

Once this export of wild meats is ceased, 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..

5.4.5.4: NTFP Management

It is not envisaged that any restriction will be placed on those plant NTFPs used by NPA villagers for customary consumption, handicrafts, construction and the like. Nonetheless, opportunities will be sought to encourage the development of local management systems for these, while only medicinal NTFPs will be able to be gathered in TPZs. Some commercial NTFPs, on the other hand, will be regulated, including agar wood, rattan, and cardamom. Thus, a study will be conducted into the sustainable off-take of, and the feasibility of domesticating appropriate candidate NTFPs.

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 discussed in more detail elsewhere. These type of activities will be agreed to with villagers, partly to mitigate and compensate for any restrictions that may be imposed under the SEMFOP and partly to meet the general objective of improving the quality of life of the villagers. These are in addition to the more direct compensatory measures for improved livelihoods contemplated under the FLUPAM process.

5.4.5.1: 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 and improve their lives in more general terms. These skills will be useful not only in developing and then participating in the improved natural resource management systems, but also in an incremental increase in their understanding of alternative agriculture and livelihood systems.

5.4.5.2: Health

Similarly, improved health facilities and services will be 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.

5.4.6: 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 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.

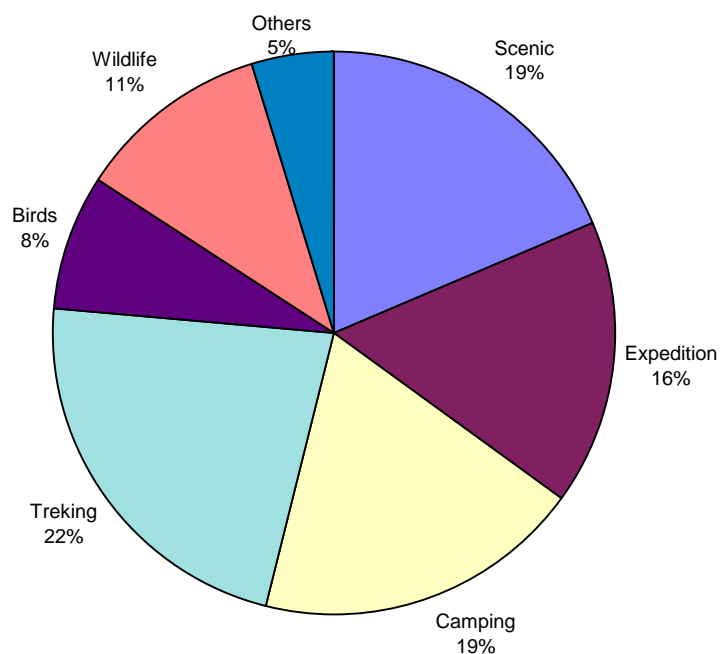
- It provides villagers with additional income and other forms of employment as alternatives to forest extraction.

- 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 and 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.

5.4.9.2: 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.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 6

**INSTITUTIONAL AND
MANAGEMENT FRAMEWORK**

(Draft of October 2004)

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6.1: WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

In order to;

- i) ensure that the monies to be contributed by the NTPC to the management of the NT2 Watershed-NPA are use effectively and efficiently; and
- ii) in order to involve all relevant stakeholders in this internationally important project, and in the effective management of the NNT NPA,

the GoL has established a specific entity, the Watershed Management and Protection Authority (WMPA), to be responsible for coordinating and implementing the management and development of the NT2 Watershed/NPA (PM Decree 25, General Annex 4.ix). The authority will be a perpetual Government organization, established within the Government framework, but its Executive Secretariat will have financial and staffing independence.

6.1.1: WMPAs Objectives and Functions

The Objectives of the Authority (Decree 25, article 4) are:

- i. Protection and rehabilitation of forest cover in the NT2 Watershed/NPA to assure adequate water flows with low sedimentation to the Nam Theun 2 Reservoir.
- ii. Conservation, maintenance and promotion of biological diversity coupled with the development of national park appropriate for tourism and scientific research.
- iii. Building and strengthening capacity of the Authority and those Stakeholders contributing to management and implementation of the Authority's activities.
- iv. Facilitation of improved livelihoods for inhabitants of the NT2 Watershed/NPA by focussing on poverty reduction through environmentally sustainable development.
- v. Prudent management and effective use of funds for the purpose of furthering the above objectives.

While the functions of the Authority (*Decree 25, article 5*) are specified to include:

1. Coordination and management of all activities designed to further the Objectives in the NT2 Watershed-NPA;
2. Consultation and planning with Stakeholders to prepare Management Plans and Operational Plans;
3. Preparation of detailed annual budgets based on the Management Plans and Operational Plans;
4. To coordinate, facilitate, and, as necessary, fund implementation of the Management and Operational Plans by Implementing Agencies;
5. To receive, disburse and account for moneys paid to the Authority by NTPC and other donors;
6. To manage and control activities that may impact upon the objectives by:
 - i) developing rules and regulations, systems of permits and licences applicable in NT2 Watershed/NPA;
 - ii) monitoring and enforcement of such rules and regulations, systems of permits and licences
 - iii) monitoring implementation of Management Plans and Operational Plans;
7. To promote and support scientific surveys, technical research and data collection;
8. To facilitate improved livelihoods by focussing on poverty reduction through environmentally sustainable development; and
9. To perform other activities consistent with objectives and as approved by the Board of Directors.

A practical implication of Article 5, clause 1 will be the WMPA's coordination and management of any remaining activities of the LiL funded DUDCP project. In addition, the Japan Social Development Fund grant, currently managed by the DUDCP project will be transferred to the WMPA administration and implementation, via an amendment to the JSDF Grant agreement. JSDF funds are already factored into the SEMFOP-1 budgets for health, education and intra-NPA access development and maintenance. Funding from the JSDF also illustrates the scenario envisaged by Article 5 clause 5, whereby funds from other donors (other than the NTEC) can be received and managed by WMPA.

6.1.2: The WMPA - General Structure

The WMPA will have two main components, the Board of Directors and the Executive Secretariat (see Figure 6.4). While Decree 25 states quite specifically, and in detail the structure of the BoD it gives little guidance as to the Executive Secretariat. As there is no precedence for such an authority in the Lao PDR, the WMPA's relation to other Government institutions will require time to evolve and develop, such evolution being influenced by the following conditions:

- i) most of the NT2 Watershed/NPA is in Nakai District, and conversely most of Naka District is in the NT2 Watershed-NPA;
- ii) the mandate of the WMPA covers many of the functions of the range of Government agencies active at the local level, i.e., there is much functional overlap with District agencies;
- iii) the WMPA and RMU together will provide most, if not all, funds for development and basic support activities in 92 % of Nakai Districts villages, and these funds will be far more than the District has ever dealt with before;
- iv) the current capacity of Nakai District and its agencies is weak, and it will no doubt seek to strengthen its staff capacity. However, the large staffing requirements of the NT2 Project construction and the Resettlement program will, in the early years at least, see Nakai District overburdened with responsibilities and tasks. As such, it will not have the ability to take the leading role in implementation of the SEMFOP for the NT2 Watershed/NPA.

Thus, while the general organizational structure of the WMPA will undoubtedly evolve over time, an organizational structure for at least the first six years – this SEMFOP-1 – has been reviewed and planned (Figure 6.1), and is composed of:

A: Board of Directors

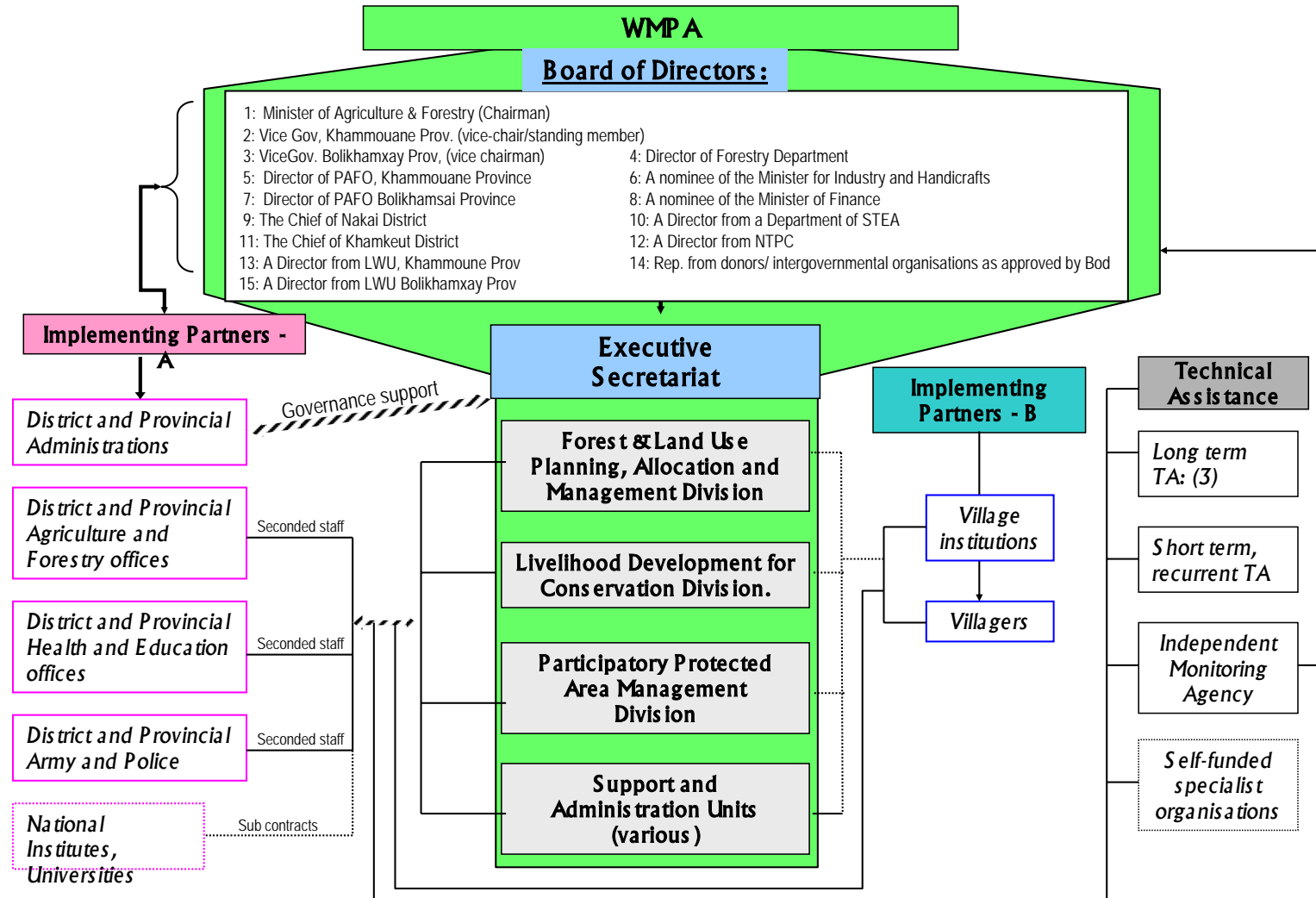
B: Executive Secretariat, the operational branch of the WMPA, with a relatively large number of staff in the following units: i) a Directors Cabinet; ii) Operational Divisions; iii) Support Units and Offices; and iv) Joint Offices.

6.1.3: The Board of Directors

The responsibilities of the Board of Directors (BoD) are partly defined by its membership, its relationship to the operational planning and reporting of the Executive Secretariat, and to financial planning, disbursements and accounting tasks. A range of Government agencies are represented on the Board of Directors of the WMPA (article 8 of decree 25 – Box 6.1), and in this respect the BoD is a perpetual form of the 'steering committee'. It should be able to provide co-ordination amongst a range of Government agencies and institutions. This BoD, however, does not include a representative from the Ministries of Interior or Defence, two agencies which currently and will continue to play a major role in the activities of the WMPA, as these agencies are considered represented by the District and Provincial Governors.

<u>Box6.1: WMPA Board of Directors membership</u>
1. Minister of Agriculture & Forestry (Chairman)
2. Vice Governor of Khammouane Province, (vice-chairman and standing member)
3. Vice Governor of Bolikhamxay Province, (vice chairman)
4. Director, Department of Forestry
5. Director of PAFO, Khammouane Province
6. Director of PAFO Bolikhamxai Province
7. A nominee of the Minister of Industry & Handicrafts
8. A nominee of the Minister of Finance
9. A Director from a Department of STEA
10. The District Governor of Nakai District
11. The District Governor of Khamkeut District
12. A Director from LWU, Khammoune Province
13. A Director from LWU Bolikhamxay Province
14. An NTPC Division Director
15. Representatives from donors or inter-governmental organisations as may be approved by the Board of Directors .

Figure 6.1: Organization of the WMPA and implementing partners.



6.1.4: Role of the Board of Directors

The BoD will act as a steering and oversight committee for the implementation of SEMFOP, and provide direction and guidance to the WMPA's ExSec who will make all day-to-day executive decisions. The BoD will meet annually to approve annual workplans and budgets. Between annual meetings, the BoD Standing Member is empowered to make decisions on behalf of the Board in regard to issues of an extraordinary nature.

The role of the BoD can be deduced from its duty statement, article 23 of Decree 25, including;

- 1: to promote the goal and objectives of the Authority;
- 2: to formulate policy and management guidelines for the Executive Director and Staff to effect the policy and perform the functions of the Authority;
- 3: to monitor the activities of the Executive Secretariat, as required;
- 4: to approve management plans, operational plans and budgets prepared by the Executive Secretariat on an annual basis;
- 5: to approve the rules and regulations, systems of permits and licences, as formulated by the Executive Secretariat in relation to activities which may impact on the Objectives;
- 6: to appoint a duly qualified professional investment agency to manage the Fund and invest surplus funds;
- 7: to determine investment policies and management guidelines for the professional investment manager;
- 8: to appoint an independent monitoring agency and an independent auditor to facilitate transparency and accountability of management and activities undertaken under supervision of the Authority;
- 9: to appoint the Director of the Executive Secretariat of the Authority;
- 10: to fix appropriate remuneration for the Director and staff of the Executive Secretariat, as well as advisors and consultants to the Authority;
- 11: to report on the progress of the Authority to the Government on a regular basis; and
- 12: to perform such other activities consistent with the Objectives as are resolved by the Board of Directors.

6.2: THE EXECUTIVE SECRETARIAT

6.2.1: Role of the Executive Secretariat

The focus and burden of the operational role of the WMPA will lie with its Executive Secretariat, whose role could be deduced from the rights and duties statement given in article 24 in Decree 25, as follows;

- 1: to coordinate and carry out the day-to-day activities of the Authority in accordance with the general policies and specific directions of the BoDs;
- 2: to consult and plan with Stakeholders to prepare Management Plans and Operational Plans for approval by the BoDs;
- 3: to prepare detailed annual budgets based on the Management Plans and Operational Plans for approval by the BoDs;
- 4: to coordinate, engage, facilitate and supervise implementation of the Management Plans and Operational Plans by Implementing Agencies;
- 5: to enter into contracts under the authority of the Board of Directors;
- 6: to ensure that all money received is deposited as soon as possible in the Authority's bank account;
- 7: to disburse funds in accordance with the annual budgets approved by the Board of Directors;
- 8: to manage and control activities that may impact upon the Objectives by:

- (a) developing the rules and regulations, systems of permits and licences applicable in the NT2 Watershed/NPA for activities which may impact on the Objectives, following consultation with Stakeholders, for approval by the Board of Directors; and
 - (b) enforcing and monitoring enforcement of such rules and regulations, systems of permits and licences applicable in the NT2 Watershed-NPA;
 - (c) monitoring implementation of Management Plans and Operational Plans;
- 9: to promote and support scientific surveys, technical research and data collection;
- 10: to facilitate the development of environmentally sustainable forms of livelihood for local communities.; and
- 11: to keep proper accounts and records of financial transactions and affairs of the Authority and arrange for accounts to be audited at the end of each financial year;
- 12: to prepare quarterly progress reports of the Authority for distribution to the BoD, to include:
- (a) the proceedings and activities of the Authority for that quarter;
 - (b) a summary of the financial transactions of the Authority for that quarter;
 - (c) the extent to which the WMPA objectives, and plans have been achieved in that quarter;
 - (d) the plans of the Authority for future quarters;
- 13: to perform such other activities consistent with the Objectives as are authorised by the Board of Directors and under the guidance and direction of the Board of Directors.

6.2.2: Organization and Structure

Thus, the organisational structure of the Executive Secretariat is a logical extension of:

- a) The functions and mandated tasks of the WMPA; and
- b) The need to effectively administer and support a relatively complex and operational agency.

As summarized in Figure 6.2 and illustrated in detail in Figure 6.3, the Executive Secretariat will include the following components:

- i) Directors cabinet.
- ii) Technical Divisions (operational managers, professional staff and technical staff)
- iii) Support units and administration offices.

Figure 6.2: Simplified layout of the organisation of the NT2 WMPA’s Executive Secretariat

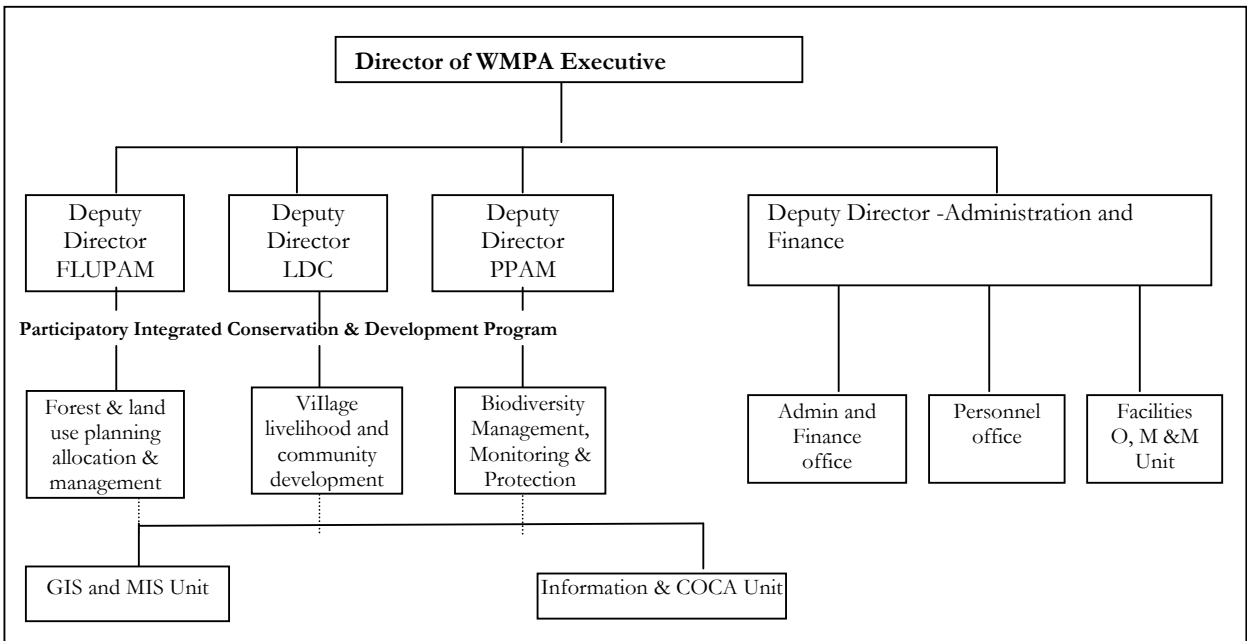
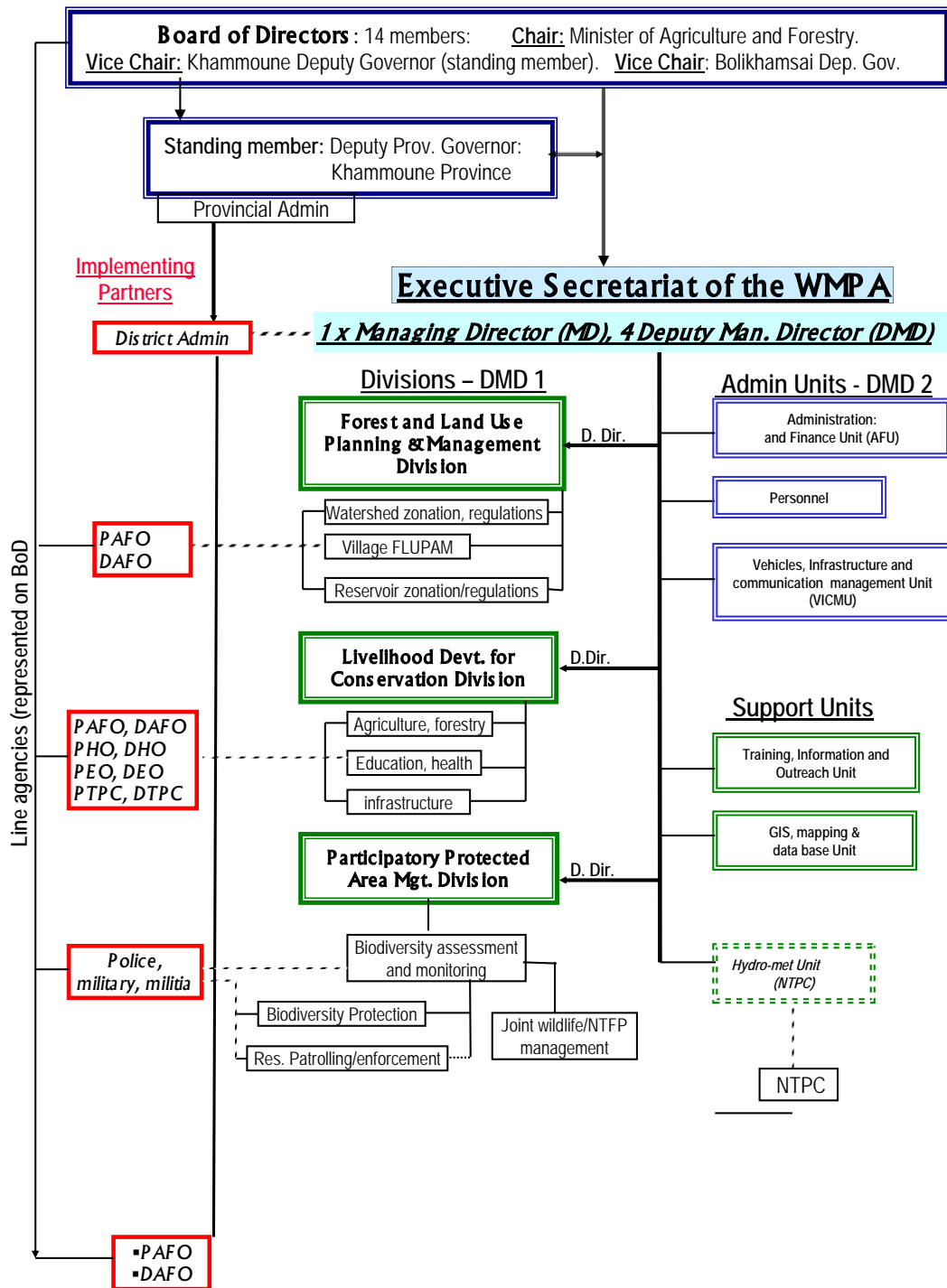


Figure 6.3: General organisation of the WMPA, Executive Secretariat and partner agencies.



6.2.3: Location of the Executive Secretariat

The Executive Secretariat will establish its main office, or headquarters in Nakai District. A sub-office will be established in Luk Xao town of Khamkeut District.

Headquarters

The WMPAs Executive Secretariat main office in Nakai District town will take 2 years or more to design and construct. During this initial period (the first 2 years) it will renovate either/or both the current NPA office, a current District office or other buildings available, to be used as temporary headquarters. During the first year, some use may also be made of the DUDCP office in Thakek town, mainly for faxing and emailing (if the systems do not work adequately in Nakai) and for Provincial level coordination.

The main office or headquarters will be located in Nakai District centre, either;

- a) near the District administration and DAFO office; or
- b) on the shores of the new reservoir.

This office will house all the operational Divisions, the administration and support Units, the library, and the vehicle and boat repair facility. Some accommodation facilities will be built next to the office, and some will be in the old (and renovated) NPA office.

Khamkerd Branch Office

An office will be built in Luk Xao town of Khamkerd District, to be the Khamkerd base for coordinating all of the WMPA's operational activities in Khamkerd District in relation to sections of the NT2 Watershed and the peripheral impact zone villages in this District.

Office Accommodation

In Nakai town, some staff accommodation facilities will be built next to the main office, and some will be available in the old (and renovated) NPA office. If all staff and TA cannot be accommodated in these buildings, then they may (or may choose to) seek private accommodation in the town of Nakai. In Khamkerd District, accommodation will be the responsibility of the staff.

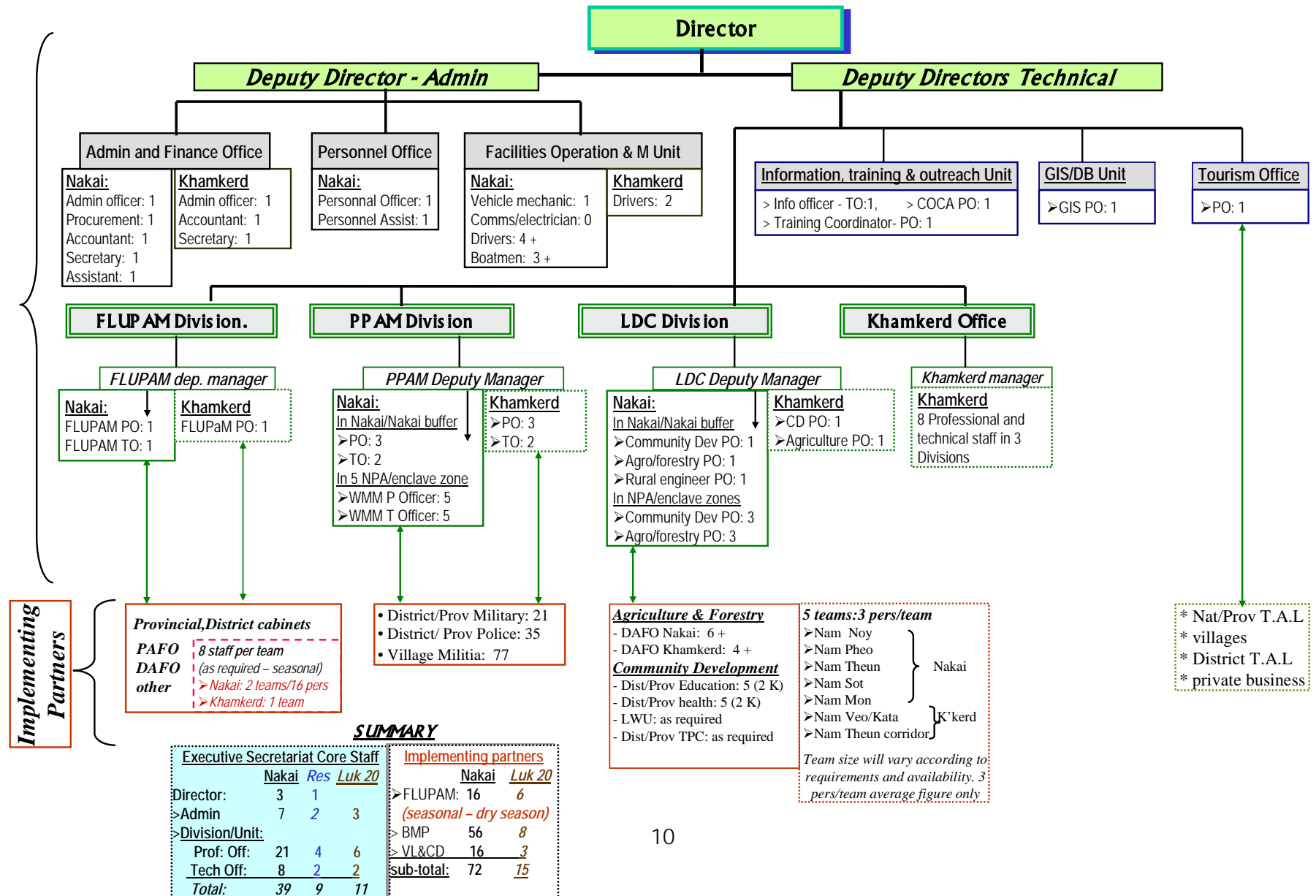
6.2.4: Director and Deputy Directors

It is planned to engage one Director and four Deputy Directors of the Executive Secretariat. These Directors, who will be seconded from the Government, should have considerable experience in either NPA management, land use planning and livelihood development. This will ensure that the smooth, effective and timely development of the Secretariat on the early years. It is anticipated that the contractual term of these Directors, over the six year period of SEMFOP-1 would be two 3-year terms, to ensure they have enough time to develop the understanding and skills required by the positions.

While the Director will have overall responsibility and accountability for all of the WMPA's activities, Deputy Directors will be specifically responsible for management and operation of each of the Technical Divisions. The BoD may decide that the Deputy Directors are always sourced from DoF's Divisions of Forest Resource Conservation, Land Use Planning or Extension, on a rotational basis. The fourth Deputy Director will be responsible for Administration and Finance.

Terms of References for the Director and Deputy Director positions are presented in General Annex 1. The role and main functions of each Division, Unit and Office is summarised in Figure 6.4 (and detailed in Part 7).

Figure 6.4: Summary of Staffing of the WMPA and Executive Secretariat.



6.2.5: Admin and Support Units

The Exec Sec will have an Administration and Finance Office (AFO) who will be responsible for finance and accounting matters, including banking, procurement, disbursements, salary and dsa payments etc., plus the full range of office management and administrative matters.

The AFO will include a Personnel Unit with responsibility for organizing the selection and engagement of staff, for coordinating the finalization of the ToR and contracts, and advertising staff positions, in Lao and English language newspapers. They will also coordinate the interviews for prospective candidates. Following selection, the Personnel Office will finalize the contracts with the administration unit, and maintain all relevant files on Executive Secretariat staff, technical Assistance and Implementing partners.

The Vehicle, Communications and Infrastructure Management Unit (VCIMU) will be established under the mandate of the Deputy Director - Administration. This Unit it will be responsible for the operation and maintenance of the vehicle fleet (both 4 and 2 wheeled vehicles, and the public bus), the boat fleet and the radio communications systems. It will also be responsible for ensuring the maintenance of the various project buildings, other project infrastructure (not at village or forest level) and the projects equipment.

The Information, Training and Outreach Unit will assist the Deputy Directors with the storage, compilation, presentation and dissemination of information about the WMPA and the NT2 Watershed-NPA. It will maintain a library and publications office, and be closely linked to the GIS and database Unit. It is envisaged that various rules and regulations will be developed, over time, to define, licence and control activities in and around the NT2 Watershed/NPA, including local or village level rules and regulations regarding forest and land resource use and management. Many legal documents will be collated and organised by the unit, which will be responsible producing user friendly versions of these and making them available to all stakeholders including villagers, Division staff and implementing partners.

This Unit will also be responsible for coordinating, facilitating and organizing training courses for WMPA staff and implementing partners in the full range of disciplines. It will not be specifically responsible for villager training, but should assist other staff in this task, especially as part of the community outreach and conservation extension activities that this unit will also be responsible for.

The GIS, Mapping and Database Unit will be responsible for the compilation, storage and analysis of all biological, physical and socio-economic data sets, which will be integrated into a GIS system. The Unit will also keep and publish all topographic maps, aerial photos and satellite data for all users, and produce GIS and other maps as and when required. This Unit will closely support the FLUPAM Division in particular.

The LDC Division will be responsible for all tourism related activities and will liaise with the Provincial Tourism Office in this regard. Both the NT2 Watershed/NPA and the Reservoir have considerable potential for a wide range of tourism activities such as nature and eco-tourism, cultural tourism, recreational boating and fishing, and the development of other recreational facilities. Two main issues arise, relating to:

- a) management of such activities to ensure minimal environmental or cultural impact; and
- b) management of such activities to ensure optimisation of revenues from licensing or fees
- c) placing management roles with villagers themselves to ensure that they derive maximum benefit from the activities.

A joint agency comprising the WMPA (and its ResMO), District administration and the Tourism Authority of Lao will have to be developed to oversee this sector.

6.2.6: Operational Divisions

6.2.6.1: Forest and Land Use Planning Allocation and Management Division

The FLUPAM Division will be headed by a Deputy Director plus 2 permanent professional and technical officers, one in Nakai and Khamkerd District. The Division will be responsible for coordinating FLUPAM

activities (see Part 7) at both the village and the NT2 Watershed/NPA level, and for both in-holder villagers (type 1) and those in the peripheral impact zone (types 2, 3 and 4).

Most of its field activities – participatory forest and land use survey and planning in villages and in the forest in general - will be undertaken in the dry season, and will include staff from other Divisions and staff from appropriate implementing partners. In the wet season it will mainly concentrate on data collation and analysis, agreement and mapping compilation for the village management planning, reviewing remote sensed imagery, field reports and information of village level planning. This will lead to the development of macro and micro level zonations within the NT2 Watershed/NPA and villages, as a key component of management plans for NT2 Watershed-NPA and stakeholder villages.

6.2.6.2: Participatory Protected Area Management Division

This PPAM Division will be responsible for a wide range of activities related to the monitoring and protection of the natural resources of the NT2 Watershed/NPA, both in the totally protected zones, in which implementing partners will include the military, police and villagers, and in controlled use zones which will include mainly the relevant villagers as implementing partners. It will also be responsible for facilitating the work of biodiversity research teams. Some of its implementing partners – those manning posts and gates - will be engaged full-time (probably on rotational basis) while those participating in forest surveys and patrolling will be undertaken on an as-needs or as-planned basis (Part 7).

The PPAM Division will also work closely with the FLUPAM Division – it may even take the lead - in developing management strategies and plans for the management of biodiversity by stakeholders, particularly at the village level and as relates to sustainable offtake and consumption levels.

6.2.6.3: Livelihood Development for Conservation Division

The LDC Division's role is to foster and facilitate the development of appropriate livelihood improvements, income generating activities and culturally sensitive community development initiatives. As such, the 12 professional and technical officers in this Division will cooperate closely with full time teams of implementing partners drawn mainly from representative government line agencies. These staff will also participate in land and forest use planning programs, and maintain close relations with the PPAM Division staff.

6.2.7: Core Staffing (Executive Secretariat)

Article 26 of PMs Decree 25 states that "The Executive Director may, from time to time: employ and dismiss managerial, technical and administrative staff as required; engage consultants and advisers; and may, with the consent of a State organization and on such terms as may be mutually arranged, make use of the services of any of the officers or employees of that State organisation".

Due to;

- i) the crucial importance of the Secretariat in the management and development of the NT2 Watershed/NPA;
- ii) the scale and difficulties of the tasks of the Executive Secretariat;
- iii) the difficulties that will be faced by Nakai District and Khammoune province (in terms of human capacity) to deal with the many and varied issues and responsibilities presented by the NT2 project and the Resettlement activities; and
- iv) the experiences and lessons learned of the LIL funded DUDCP projects,

the institutional framework proposed in this SEMFOP-1 specifies a significant number of core managerial and technical staff be retained by the Executive Secretariat, as illustrated in Figure 6.5 and detailed in Tables 6.1 and 6.2.

Figure 6.5: NT2 WMPA Executive Secretariat Staffing and Implementing Partner Teams.

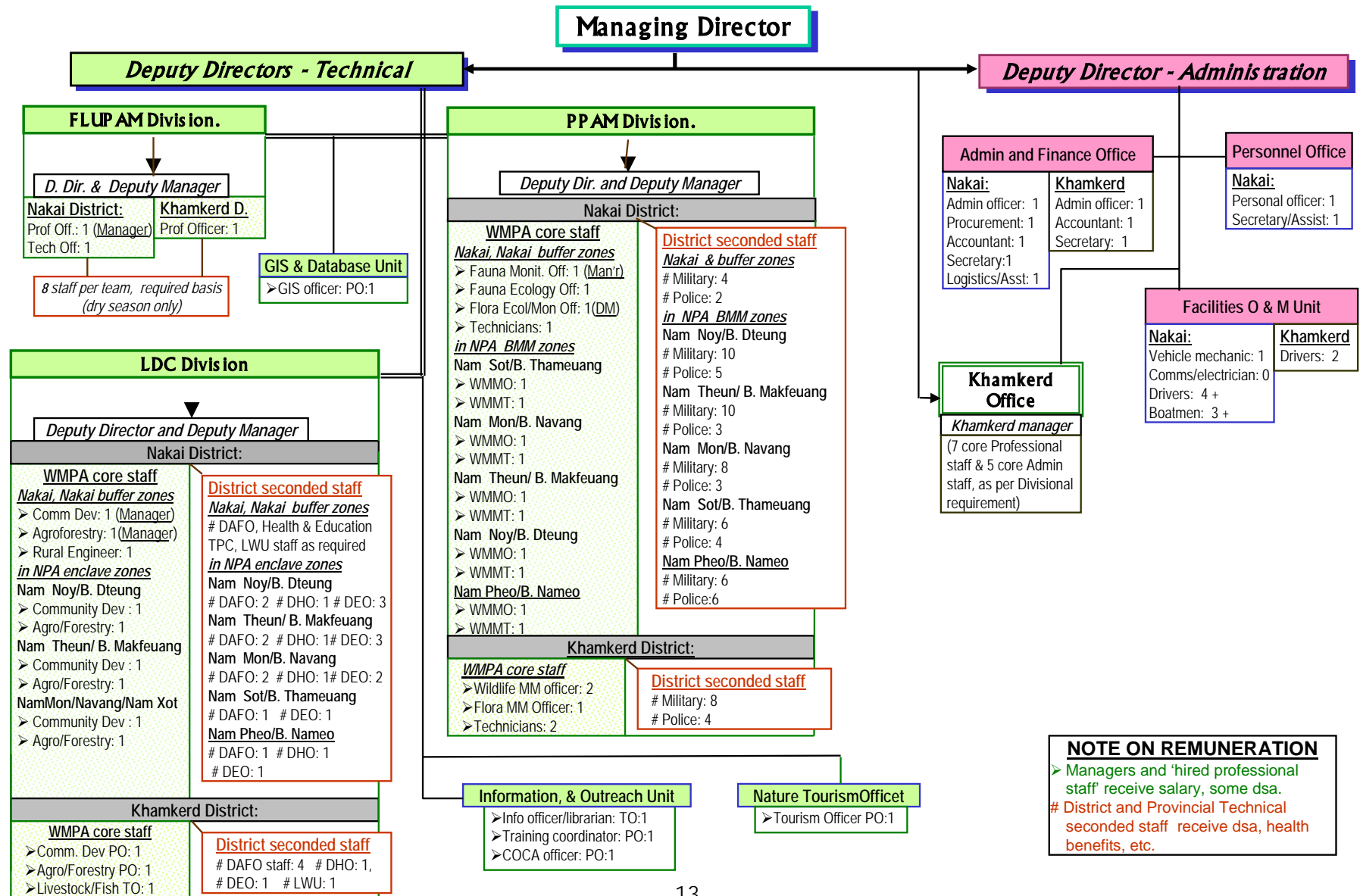


Table 6.1: Proposed (indicative) type and number Executive Secretariat technical staff

Staff Positions	Total		Nakai	Khamkerd
	prof- essional	tech- nical		
<u>Directors Cabinet</u>				
i) Managing Director	1		1	
ii) Deputy Directors, Technical and Administration	3+1		4	
iii) Khamkerd Manager	1			1
<u>FLUPAM Division</u>				
i) Professional Officer	4		3	1
ii) Technical Officer		4	3	1
<u>PPAM Division</u>				
i) Wildlife – Professional Officers	4		3	1
ii) Wildlife – Rangers		15	10	5
iii) Wildlife Ecology – Professional Officer				
iv) Flora Ecology/Management Officer				
<u>LDC Division</u>				
i) Community Development Professional	4		3	1
ii) CD - Technical		4	3	1
iii) Ethnic and cultural development Professional	1		1	
iv) Gender Specialist Professional	1		1	
v) Rural Infrastructure Officer	1		1	
vi) Tourism Officer (from year 4 only)	1		1	
<u>GIS/Database Unit</u>				
i) GIS Officer	1		1	
<u>Information, Outreach and Training Unit</u>				
i) Information Officer: Technical	1		1	
Sub-total	24	23	36	11

Table 6.2: Proposed type and number of administrative staff.

Administration/Personnel Staff	Total	N	K	Support Staff	Total	N	K
1. Accountant	2	1	1	2. Vehicle mechanic/driver	1	1	
2. Procurement and logistics	1	1		3. Drivers	5	4	1
3. Secretary/computer operator	3	2	1	4. Boatmen	3	3	
Sub-total	9	6	3	Sub-total	9	8	1

6.2.7.1 Staff Recruitment

While the Director and Deputy Directors will be directly seconded from Government agencies, Professional and technical staff will be recruited on the open market, via an advertisement, interview and selection process. They may come from Government sector, in which case they will be temporarily seconded from the Government - if agreed to by their supervisor - or they may be sourced direct from the private sector. Staff who previously or are currently working on projects or Government programs related to the NT2 Watershed-NPA will of course be given priority, on the condition that their past or current work has been good quality and they have basic skills for future development.

Wherever possible, support staff such as rangers, drivers, boatmen, cleaners, etc. will be recruited from NPA communities to give these communities a stake in the WMPA and the opportunity for capacity development and career advancement.

6.2.7.2: Salaries

The Executive Secretariat will have its own salary scale as detailed in Section 7.2.1. The salary scale is intended to give qualified, experienced and diligent staff an opportunity to work on a national and regional priority, and gain appropriate recognition and ‘compensation’ for their efforts. These salary levels are significantly higher than other Government agencies, but the Executive Secretariat staff will be expected to

work to rigorous standards, with more responsibilities, and for longer hours. Providing adequate salaries to Executive Secretariat staff is fundamentally important for at least 3 reasons;

- i) Many, if not most donor projects in the Lao PDR employ international and considerable numbers of national advisors and short term consultants to assist the Government staff allocated to the projects. This is because Government staff salaries are so low that they (Government staff) must spend considerable time and mental energy in non-official activities in order to feed, cloth and shelter their families. Successful rural development and conservation projects usually requires more mental application and (over)time allocation than most government staff can afford to give. Without hired national staff, these projects usually either fail or significantly under achieve.
- ii) The Nakai Plateau and especially the NT2 Watershed/NPA is remote and somewhat risky in terms of disease and travel. In this difficult environment, full application to the tasks at hand requires incentives payments and adequate compensation.
- iii) Apart from the Directors, all other staff will be sought from the open market. That is, the positions will be advertised, and either present government staff or private individuals may apply and be considered for one or two year contracts. Applicants will expect to receive at least the current market rate for remuneration.

The salary scale will be reviewed by the BoD at appropriate intervals to make any necessary adjustments.

Critical for the development of the capacity of the Executive Secretariat is a stable and encouraging institutional environment. Thus, a human resources management policy is required that will encourage the engagement of high quality staff and ensure their continuity of service - and thus maximise the return on this investment in human capacity. Such a policy will ensure that;

- a) the staff selection criteria and process is professional and independent, based on merit and ability to do the work;
- b) salaries are paid on time and in full;
- c) health and medical insurance is available to all staff and families of staff; and
- d) other family benefits such as housing and schooling support are included.

6.2.7.3: Tenure

This first SEMFOP is expected to cover approximately six years. The tenure, or contract period of the Director and the Deputy Directors other professional staff, technical officers, and administration and support staff is proposed to run for 4 years. A 4 year, rather than a 2 year, contract period is required to ensure the directors have enough time to develop the knowledge and skills required by their positions. The WMPA will retain the right to terminate the contracts of any staff whose performance or behavior is deemed to be detrimental to the objectives of the WMPA.

6.2.7.4: Staff Performance Evaluation

The effectiveness of each staff position – including Directors, managers, professional officers, technicians and administration staff – will be evaluated towards the end of each two (and three) year contract. This will ensure that staff application to work, and the effectiveness and technical quality of the work is up to the standard required by the WMPA and its stakeholders. Most likely, three levels of evaluation would be applicable, as follows:

- Case 1: work satisfactory or better, and continued engagement recommended;
- Case 2: work not satisfactory, but could be improved by remedial measures; and
- Case 3: work not satisfactory, not likely redeemable and thus termination recommended.

The evaluation of the five Directors (one chief and four deputies) will be conducted by the Independent Monitoring Agency (Section 6.5.4). The decision of this evaluation panel (as to whether to the Director meets the required standards, and as to whether the incumbent will be continued, or if alternative replacements should be found) will be passed to the BoD for adjudication.

The evaluation of staff will be conducted by the Secretariat Directors, assisted by the CTA. The evaluation will be passed to the BoD for adjudication as to whether the incumbent is up to the required standard, and as to whether they will be continued, or if alternative replacement should be found.

Besides these regular, biennial evaluations, ad-hoc evaluations may be undertaken, as required, at the discretion of the Managing Director. Ad-hoc evaluations of the Managing Director or Deputies themselves will be undertaken if required by more than 50% of the Directors cabinet.

Wherever appropriate, staff performance evaluations will adopt the 360 degree approach where appraisals are conducted with supervisors, horizontally with colleagues, and with subordinates.

6.3: TECHNICAL ASSISTANCE

6.3.1: Role and Scope of Technical Assistance

The SEMFOP-1 is designed to ensure that the Technical Assistance will assist the WMPA's Executive Secretariat, rather than direct it or run in parallel to it. This will be achieved through the engagement of 3 long term TA, as counterparts to the Deputy Directors of each of the WMPA Technical Divisions as follows:

- A Biodiversity Conservation advisor will act as counterpart to the Deputy Director responsible for the Participatory Protected Area, Management Division.
- A PICAD and Land Use Planning advisor, will act as counterpart to the Deputy Director responsible for the FLUPAM.
- A Community Development advisor will act as a counterpart to the Deputy Director for the Livelihood Development Division, and will work with all division staff with the objective of mainstreaming ethnic issues into all three technical programs.

Depending on qualifications and experience, one of the long-term TA members will be selected as CTA and thus also act as a counterpart to the WMPA Director. Ideally this would be the Biodiversity Conservation advisor. The primary, and probably the most important role of the long-term Technical Assistance, will be to provide on-the-job training to the directors and staff of their respective division. This will emphasise team-building and competency, with the objective of developing staff capacity throughout the WMPA to the point that the TA will be able to withdraw at the end of their respective terms, leaving competent and self-reliant management and staff in place.

The international and national, short-term, Community Development Advisors, will work together in close collaboration with the 3 WMPA Technical Divisions to ensure that ethnic issues and concerns are fully incorporated into the activities of each. Similarly, the GIS/database advisor will assist each of these Divisions in the development of appropriate Management Information Systems. Other short term but recurrent TA will assist each of the WMPA Divisions on specific tasks as required. The type, number and persons months of technical assistance to be engaged by the Executive Secretariat over the six year period is detailed in Table 6.3 below.

The process and procedures by which Technical Assistance will be sought, selected, hired, coordinated and technically monitored needs to be approached carefully. ToRs for the TA will need to be reviewed and finalized, based on those presented in General Annex 2. International positions will be advertised widely – nationally, regionally and internationally. Interview procedures and selection criteria will be clearly defined, based on the ToRs, and rigorously applied.

The selection and interview panel for the long term positions should include the Executive Secretariat Directors, and selected BoD members. Short term consultants will be reviewed by the Executive Secretariat Directors, and their recommendations passed to the BoD for approval.

Table 6.3: Technical assistance required to support the Executive Secretariat

POSITION	SOURCE	INPUT (OVER 72 MONTHS)	
<u>LONG TERM ADVISORS</u>		Pers mths	
1: Biodiversity Conservation Advisor	Int'l	44 pm	

2: PICAD Advisor	Int'l	42 pm	
3: Ethnic and Development Advisor.	Int'l	42 pm	
SHORT TERM ADVISORS			
1: Ethnic Development advisor/trainer	Nat'l	14 pm	
2: Financial/Institutions management advisor.	Int'l/Nat	5 pm	
3: Conservation ecologist – plants.	Int'l	6 pm	additional inputs from other donors welcomed
4: Botany and ecological survey team	Nat'l	9.5 pm	
5: Rural Engineer	Int'l/Nat	6 pm	
6: GIS, remote sensing, database advisor	Int'l	5.5 pm	
7: Biodiversity monitoring specialist	Int'l	9 pm	
8: Ranger enforcement training specialist	Int'l	3 pm	
MONITORS			
1: Independent Monitoring Agency	Int'l/Nat'l	1 month/yr	2 int'l, 2 national
2: Auditors	Nat/Int'l	Annually	

(Note: source: Int'l = international, Nat'l = national)

The effectiveness of TA input will be regularly evaluated, at the end of each input for short term advisors and every year for the full time advisors. This evaluation will be conducted by Executive Secretariat Directors cabinet, and their findings passed to the BoD for adjudication as to whether an Advisor is of the required standard, and as to whether the incumbents tenure will be continued, or if alternative replacements should be found.

6.3.2: Long Term TA

The long-term Technical Assistance team - will be sought, selected and engaged early in the 1st year of the Executive Secretariat's operation. The positions will not be full time for the entire duration of the SEMFOP-1. Due both to (i) budget constraints, and (ii) the need to test and understand the capacity and capability of the Executive Secretariat without intensive assistance, the TA will essentially 'hand-over' responsibilities WMPA after about 3.5 years, but will provide follow-up support through short term inputs over the remaining period of the SEMFOP-1 (Figure 6.6).

Figure 6.6: Phasing of long term TA inputs.

Long term TA	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
PPAM biodiversity advisor	█	█	█	█	1 pm	1 pm	1 pm
PICAD/LUP advisor	█	█	█	█	1 pm	1 pm	1 pm
Community Devt. advisor	█	█	█	█	1 pm	1 pm	1 pm

On contracts of 2 years duration, the PPAM, PICAD and CD advisors will work daily and closely with their respective Directors, be based at the Nakai headquarters but travel frequently to the field, villages and forest. All will be multi-skilled, technically and administratively, with excellent personnel management skills and a good grounding in participatory to their specific area of responsibility. Lao language skills are essential, although these could be developed thru early language training, if language learning capacity can be demonstrated by applicants.

6.3.2.1: Biodiversity Conservation Advisor

The PPAM Advisor will work closely with the Deputy Director responsible for the PPAM Division. He/she will, be based at the Nakai headquarters but travel frequently to the field, villages and forest of the Operational Area. The advisor will be from a wildlife management background and be multi-skilled in all aspects of biodiversity management and protection, with good personnel management skills. Lao language skills are essential, although they could be developed through on-the-job language training.

6.3.2.2: PICAD Advisor

The PICAD advisor will have responsibility for overall management and coordination of the PICAD approach with specific responsibilities for the FLUPAM program. He/she will counterpart directly with the Deputy Directors responsible for the Land Use Planning and Livelihood Development Divisions.

6.3.2.3: Community Development Advisor

The CD advisor will work closely with all three of the SEMFOP Technical Divisions and assist them with ethnic issues. In particular, he/she will counterpart with the Deputy Director responsible for the LDC division and assist with all aspects of the program. The advisor will have extensive experience in ethnic issues, indigenous land and resource use systems, livelihood development and participatory methods and will help to ensure that these are mainstreamed within the SEMFOP, along with ethnic sensitivity. He/she will be supported by a national counterpart advisor, and have responsibility for capacity and skills development in this person. The community development advisor will be responsible for recommendations concerning social and ethnic aspects that would facilitate project objectives in a culturally sensitive manner. In collaboration with national community development advisor, he/she will work closely with the FLUPAM, LDC and PPAM Programs to ensure that ethnic minority issues are mainstreamed across all SEMFOP programs, following a PICAD approach. The advisor will also be responsible for overseeing the development of village specific “cultural and ethnic development plans”.

6.3.3: Short-Term, Recurrent Advisors and Consultants

Social and Ethnic Development Advisor (National).

The national advisor will be responsible for designing and implementing ethnic minority development training and sensitization programs for relevant (all field implementation staff) WMPA staff across all programs. He/she will work with the International CD Advisor to ensure that social and ethnic development issues are addressed in an effective and practical manner within the framework of project activities and are mainstreamed across all programs. Through a series of short term inputs, the advisor will work as a professional partner of the International CD advisor to learn new skills and techniques in the first 3 years to develop adequate capacity to take over most CD responsibilities from year 4, supported by short term inputs from the international advisor.

Financial/Institutions Management Advisor.

The F/IMA would provide technical and advisory support to the Managing Directors, with a focus on the administration and finance procedures. The advisor would provide about 2 months input in both the first and second years operation, and then again in the fourth and sixth years.

Plant Ecologist

Parallel to the biodiversity monitoring and protection, a better understanding of flora ecology is required in order to (i) describe and understand more fully the status of plant diversity in the NT2 Watershed/NPA, and(ii) to develop a more realistic basis on which to develop protection, management and utilisation strategies. The plant ecologist would work via short term inputs at periods appropriate that their particular discipline, for up to 3 months per year. International advisors would be accompanied by national consultants in the same field, and in the case of flora it will be a team from the NUOL.

Rural Engineer

Infrastructure requiring specialist review of design and construction includes irrigation systems, the internal NT2 Watershed/NPA track network, and the river/reservoir transportation network. International and experienced advisory is essential for the planning and design of such infrastructure in order to ensure the facilities are technically sound and durable and that their construction is correct.

GIS, Mapping, Remote Sensing, Database Advisor

Mapping is essential for many Protected Area management tasks such as forestry and biodiversity monitoring, forest and land use planning and land allocation. Maps are also be the best way to represent information, data and management plans. Thus, a GIS mapping and database Unit will be established with one full time staff. The establishment of GIS process and database, and the training of the full time staff member requires input from an experienced GIS and database expert.

6.3.2.5: TA Selection and Management

The strategy for, and procedures by which the Technical Assistance will be sought, selected, hired, coordinated and technically monitored needs to be approached carefully. Detailed ToRs will need to be finalised (based on those detailed in General Annex 2), advertised widely and the selection criteria clearly defined and rigorously applied. The selection and interview panel for the three long term positions should include the Executive Secretariat Directors, and selected BoD members. Short term consultants could be reviewed and proposed by the Executive Secretariat Directors and the CTA, and their recommendations passed to the BoD for approval. If none of the candidates for a particular short term position are considered appropriately experienced and skilled, then engagement of a person for that particular TA position will be postponed – until an appropriate candidate can be found. That is, a TA position will not be fielded just for the sake of filling a TA position.

6.3.2.6: TA Quality Control

The effectiveness of TA input will be regularly evaluated, at the end of each input for short term advisors and at the end of every year for the two full time advisors.

The evaluation of all consultants will be conducted by Executive Secretariat Directors cabinet. The decision of this evaluation panel - as to whether to the advisor is up to the required standard, and as to whether the incumbent will be continued, or if alternative replacements should be found - will be passed to the BoD for adjudication

6.4: IMPLEMENTING PARTNERS

The role of Executive Secretariat managerial and professional staff in relation to;

- a) the administrative agencies of District and Provincial Governments; and
- b) the technical staff of Government sectoral agencies such as agriculture, forestry, health and education, etc,

may initially be problematic. This is because (after the establishment of the Executive Secretariat and the RMU) Nakai District will be composed (almost totally) of three main zones;

- i) the area under the mandate of the WMPA, the NNT NPA and its corridors;
- ii) the resettlement area on the southern and western shore of the reservoir, assisted by the RMU and RMO; and
- iii) the reservoir,

Thus, while the District may still nominally be responsible for community administration and protection functions, most of its other functions will be ‘funded’ by either the RMU (responsible for 12 resettlement villages) or the WMPA's Executive Secretariat (responsible for 31 villages). Nakai District administration would have sole, full responsibility for only about 20 villages, all on the border of the Phou HinPoun NPA, which is also a peripheral impact zone of relevance to the WMPA.

SEMFOP-1 envisages that administration and support activities will be undertaken exclusively by Executive Secretariat staff, with limited interaction with or inclusion of ‘implementing partners’. On the other hand, the field and activity based functions of the Executive Secretariat’s Operational Divisions will be managed and monitored by Executive Secretariat professional officers but be implemented together with the teams of ‘implementing partners’. These implementing partners would be involved in planning of all activities, both on an annual and monthly basis, and then arrangements made to contract the partners on either annually or on a project basis. It is proposed that some staff from the full range of District (and some Provincial) agencies be seconded for one (or two) years to specific Divisions and tasks of the Executive Secretariat. It is envisaged that at least 16 technical staff and up to 60 military and police staff will be required to be seconded to work with the WMPA.

Note: Staff of implementing agencies will, every two years or so, be able to apply to become core staff of the Executive Secretariat, selection being based on past record and merit.

6.4.1: District - Provincial Agencies

The Executive Secretariat will work closely with District and Provincial governance, administration and technical offices through a cost-sharing, partnership approach, with the possible secondment of some staff. Partnership relations and ‘ownership’ for SEMFOP will be promoted by full consultation with district authorities prior to the implementation of activities. Wherever, possible district agencies will be given leadership for activities within their remit, with technical support and capacity-building for their staff provided by the WMPA. Working relationships will also be developed, wherever possible, by relevant divisions of the ExSec sharing accommodation with district offices, with expansion and renovation of these where necessary supported by the WMPA.

- **District Governors Office:** In general, or in similar situations to this NPA program, staff from the Governors office are not actually seconded to the NPA Management Unit or project. The Governor’s or their staff are sought for advice, and requested to chair meetings to discuss and resolve the full range of issues concerning governance or other aspects relevant to the NPA. However, as the NT2 Watershed/NPA covers so much of Nakai District, and 50 % of its villages, the Nakai Governors office may elect to actually second staff to sit in the Executive Secretariat to ensure full coordination between the WMPA and the local authorities.

- **District Agriculture & Forestry Office (DAFO):** Significant numbers of staff from this office will work virtually full-time with the WMPA, as detailed in the box at right. They will effectively be counterparts to Executive Secretariat core staff, and receive regular dsa payments for their work.

Location	DAF
1: Navang	2
2: Makfeuung	2
3: Dteung	2
4: Nam Pheo,	2
5: Nam Xot	1

- **District/Provincial Health Office (DHO):** Will provide four nurses, preferably from NPA villages, to be stationed in four zones of the NT2 Watershed/NPA, as indicated in Table 6.4 below. These nurse’s must be educated to at least an ‘11+ 2’ years standard. They will receive a monthly stipend of about \$100 per month. (They will be assisted by 2 health workers, villagers, who have received some training in the district or province, and will receive dsa for days worked at the health centre or in the villages.

Table 6.4: Health staff working with the WMPA, and village health worker assistants

Location	District	Village Health
Navang zone	1	2
Makfeuung zone	1	2
Dteung zone	1	2
Ban. Nameo	1	2

In addition, Nakai based health staff will liaise closely with the WMPA, helping plan and implement public health facilities and services. They will also, at times, be required to make trips to NPA and peripheral impact zone villages under the auspices of, and supported by, the Executive Secretariat.

- **District/Provincial Education Office (DEO).** While Nakai-based district education officers will liaise closely with the WMPA, helping plan and implement education development, they will also be required to make trips to NPA villages and, at times peripheral impact zone villages under the auspices of, and supported by the WMPA. Teachers will be essential to ensure education facilities are put to use and that the younger generation have the opportunity for skills and mental development, and will be permanently placed in NPA villages, as proposed in Table 6.5 below.

Table 6.5: District teachers required to be permanently placed in NPA villages

Location	Teacher	Assistant	Location	Teacher	Assistant
<u>Navang zone</u>			<u>Dteung zone</u>		
B. Fangdaeng	1	2	B. Dteung	1	3
B. Navang	1	2	B. Thong	1	1

B. Thameuang	1	1
<u>Makfeuang zone</u>		
B. Makfeuang	1	3
B. Peung	1	3
B. Soklek	1	3
B. Vangchang		3
B. Nava		3

B. Tong	1	1
B. Makka		1
<u>Nam Noy valley</u>		
B. HuaySarn	1	1
B. NaMeo/NaMeuy	1	2
B. Kunaie		1

Teachers must be educated to at least an ‘11+1’ years standard. They will receive a monthly stipend of about \$100 per month. (They will be assisted by villager assistants who have received basic training in the district or province, and who will receive dsa for days worked at the school).

- District/Provincial Transport and Communication Office: Access into the NPA– both by track and by water - and tracks within the NPA will be developed and maintained, while the Executive Secretariat will support a public transport system into and from the NPA. The District TPC office will be required to plan and manage these developments, assisted by the Executive Secretariat staff and engineer.

6.4.1.1: Tenure and Remuneration of District – Provincial Staff

Those staff from these local agencies to be seconded to work (regularly, on a daily basis) with the WMPA on annual contracts will continue to receive normal government salaries and benefits, but will be eligible to receive dsa, field equipment and will be covered for health service costs at a level necessary to attract and keep good partner staff¹.

Local authority staff who are not seconded specifically to the WMPA, but join in its work on an ad-hoc and as-needed basis, will also be eligible for per diems at the same rate, and coverage for health problems incurred during the period working with the WMPA.

Additional incentives for district authority cooperation will include training and staff development programs, based on the needs of SEMFOP. In order to reduce staff turnover after training and skills development, agreements will be sought with the corresponding provincial authorities to restrict this in return for the above incentives, so as to provide staff continuity under SEMFOP. It is recognised that some staff turnover will necessarily occur, and repeat and refresher training will be scheduled at appropriate intervals.

6.4.2: District - Provincial Military and Police Agencies

The Governments military and police units are mandated (generally) to maintain security, monitor unlawful activities and make arrests as appropriate. The police have an extra duty of manning border posts, and thus checking and keeping records of both persons and goods entering and exiting from the NT2 Watershed/NPA across international borders.

The police are the only agency who can officially make arrests, or apprehend perpetrators of illegal activities, although the military can also do this if no police staff are present. The police have a village police representative in each village, while the village protection militia, who will play the most crucial role in biodiversity protection, are officially under the mandate of the military. There is a specific cross-border agreement that military staff are not to work within 30 kms of the Lao – Vietnamese border. Thus, for patrolling or posting near the border, the police and village militia must work without the military.

These agencies already, or potentially, play a key role in the monitoring and protection of biodiversity, especially wildlife, and as biodiversity monitoring and protection is an explicit objective of the NT2

¹ Due to the many other activities and programs in Nakai District (resettlement and dam construction, both of which will have a large demand for human resources and present economic opportunities outside the WMPAs program etc.) it is very likely that the capacity of Nakai District agencies will be totally stretched. Local authorities have emphasised this potential problem, although it is possible that they do not realise that ‘District’ and ‘WMPA’ activities are one and the same.

WMPA, a way must be found to integrate these agencies, or at least staff from these agencies into the WMPA's activities. Thus, it is planned that police and military staff be seconded to work with the Biodiversity Monitoring, Management and Protection Division. A few will assist in managerial roles, and be based in Nakai, while the bulk, about 23 police and 40 military staff will participate in biodiversity monitoring and protection activities in specified zones throughout the NT2 Watershed/NPA (See Section 7.8.5).

6.4.3: Village Institutions

It is intended that village institutions will play a key role in the planning implementation and evaluation of all SEMFOP activities at the grass roots level. The main village institutions concerned, in some way, with natural resources management and livelihood development, and their anticipated functions (shown in italics) at the village level are:

- i) The village chief, who is basically responsible for all activities in the village, including natural resource management. The village chief is elected every 2 years. As a rule, the persons elected are those with better education, writing and communication skills, and respect of the community.
The village chief will be helpful in organizing and mobilizing the community for SEMFOP initiatives. They will also be responsible for liaising with WMPA and district authorities, particularly in respect to infringement of rules and regulations and problems in regard to livelihood development activities.
- ii) The deputy village chiefs. Also elected, one is generally responsible for economic development and taxation.
Deputy chiefs will assist the chief in all matters, but will be directly concerned with livelihood development activities. They will also be responsible for managing any locally levied income coming from forest products and incomes coming from fines and penalties for infringements to the conservation agreements;
- iii) The village head of Party, who is responsible for ensuring that (a) party policies related to sustainable development, biodiversity conservation and village development are implemented in a balanced and appropriate manner.
The head of party will be valuable in providing two-way feedback to the district party on all aspects of SEMFOP and thus of critical importance in gaining party commitment to and ownership of it.
- iv) The village elders, are respected, usually older, village members who have the respect of the entire community.
Village elders have the institutional memory of prior natural resource management and wildlife conditions and will thus be valuable in providing time series data on this. They will also play a key role in the selection and management of LDC activities. In addition, they have influence over the younger generations and are thus expected to be helpful with conflict resolution, public consultations and awareness raising activities.
- v) Village women's union, are usually one or two of the more educated and active women in the village, who liaise with the District LWU or participate in appropriate village activities. However, LWU village representatives are not always present or active in all villages, and additional capacity development may well be required in many situations.
LWU will play a critical role in ensuring the active participation of women in all aspects of decision making regarding SEMFOP. They will also play a key role in livelihood activities in relation to NTFPs and will be critical in the demographic management activities under FLUPAM.
- vi) The village militia who are officially responsible for defense of the village territory, and thus the nation as a whole.
There have been relatively few national security issues in NNT in recent times, and the militia often use their spare time (and issue of automatic guns) to hunt wildlife. As such, they should be among the most eligible candidates for the village conservation monitoring units, so as to employ their spare time in conservation rather than in hunting.
- vii) The village police, usually a single person, who is the contact point for District police.
The village police will play a role in the apprehension and management of offenders to laws and conservation agreements by both local people and particularly outsiders. They will also be prime candidates for VCMUs as they will lend them some authority and also assist in communicating information to the district police authorities.
- viii) Village conservation monitoring units (VCMUs).

These have already been established in some NPA villages, initially with the support of the NTSEP/IUCN pilot project and by the WB funded DUDCP project. These units are primarily responsible for patrolling and gathering monitoring data on wildlife and habitats;

- ix) According to the land and forest directive, a Village Forest and Land [Use Planning and Allocation] Committee (VFLC) is also to be formed for land and forest allocation.

During LUP and thereafter they are responsible for land and forest management. Theoretically this would be the group most concerned with biodiversity resource management and will thus have to be closely linked (and membership overlapped) with the VCMU. This group would have responsibility for monitoring the adherence to village conservation agreements. The status of this group is, however, unclear, and it often reverts to village chief and his deputies to take charge of this activity. This situation will be improved under SEMFOP.

- x) Some villages support the establishment and/or election of a Village Development Committee (VDC). Sometimes membership of this committee reverts to the mainstream village leadership

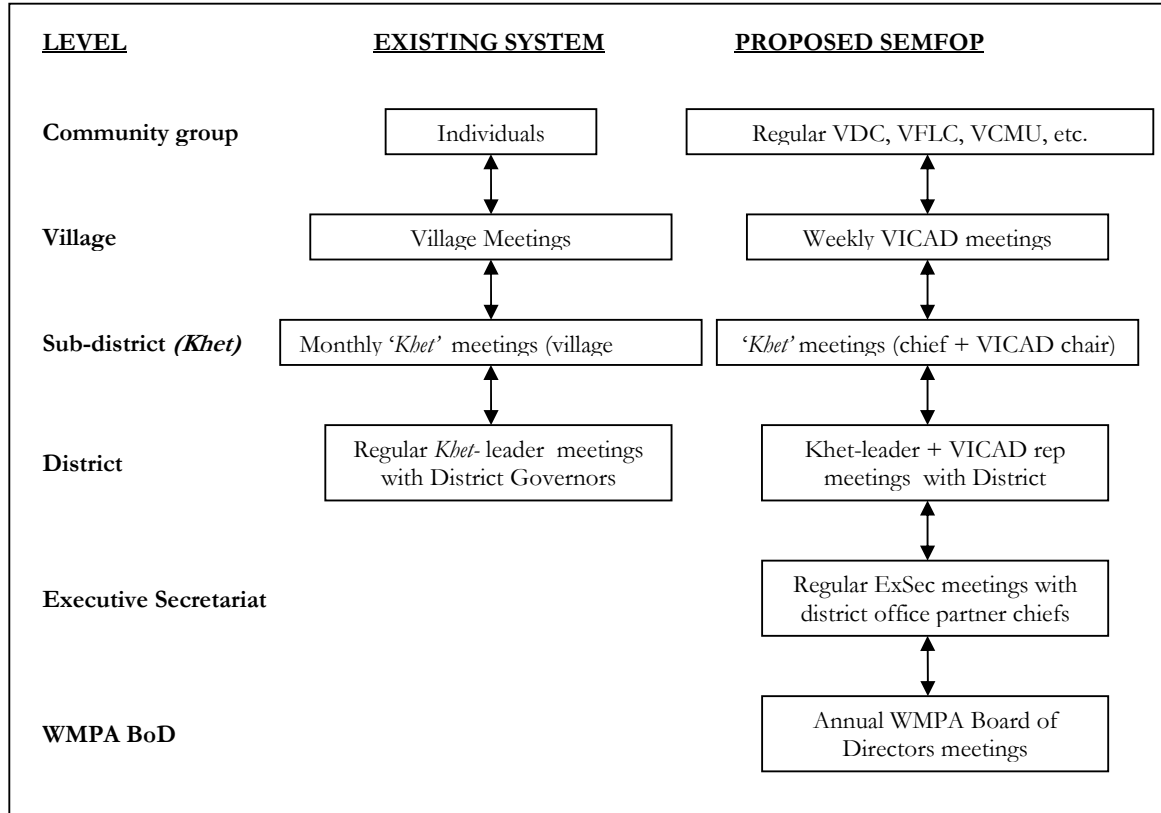
This group would certainly be concerned with natural resource management, at least in context of PICAD agreements etc., and, with the VFLC, would be responsible for evaluating the impacts of development on conservation.

It is essential that all villagers and community level institutions are linked with and fully represented in higher level SEMFOP decision-making processes up to the level of the WMPA Board of Directors in a 'fully inclusive' manner. Rather than attempting to create a new bureaucratic hierarchy to achieve this, it is proposed to use existing administrative communication and representation systems and to strengthen these and align them more closely with SEMFOP's conservation and livelihood development objectives.

To achieve this, it is proposed to establish Village Integrated Conservation and Development (VICAD) committees representing the interests of all community groups (ethnic minorities, women, youth, the elderly, disabled, female headed households, etc). Through PICAD support, these will be encouraged to be active, but as informal as possible. They will be led by a village elder or other broadly respected community member and comprise representatives from all village institutions concerned with both conservation and livelihood development, including the VCMU, VFLC, VDC, LWU, etc. At the same time, VICADs will be strongly encouraged and supported to be more fully inclusive in regard to ethnicity, gender, the poor, etc. than the current formal village groups and committees usually are.

As shown in Figure 6.7, the chairpersons will represent their respective VICADs at all sub-district (*Kbet*) meetings. With the assistance and support of the WMPA, sub-districts will also elect an appropriate sub-district conservation and development representative, who will represent his/her entire constituent's (all villages in the sub-district) interests at the district level through the regular monthly meeting system already in place. With the more regular discussions on conservation and development issues in the monthly district meetings that the proposed system will promote, District Governors will be better prepared and briefed to fully represent his constituent interests at all WMPA Board meetings.

Figure 6.7: Proposed communication, coordination and representation system for village institutions



6.4.4: National Institutes

Implementing partners will include national levels agencies and organizations which have specialists or specific skills required by the Executive Secretariat. They will be sub-contracted for specific tasks, and they may include, for example;

- *Division of Forest Resources Conservation in the Department of Forestry*, who may assist in wildlife issues, development and implementation of regulations, and help organise cross border dialogue and arrangements.
- *National University of Lao PDR*, whose Forestry Faculty and Botany Department, in cooperation with relevant TA, will spend considerable time in the field in conducting studies and surveys of the areas of floral biodiversity and ecology. They may include undergraduate or post graduate students in their team, thus contributing to the national human resource and knowledge base.
- *Forest Inventory and Planning Centre*; may assist in the better definition of the areas forest cover, forest type and land use mapping.
- *Science, Technology and Environment Authority*, may assist in any areas where they have the required competencies. These might include reservoir monitoring and survey, watershed studies, etc.
- *Living Aquatic Resources Research Institute*; will assist in better definition of the areas aquatic fauna and ecology, and on completion of the reservoir will be closely working at monitoring biological status and dynamics of this aquatic environment.
- *Institute of Cultural Research*, may assist in improving the knowledge of the cultural diversity of the ethnic groups in the NPA and PIZ, including their indigenous knowledge of plants and medicines, their relationship to the forest and cultural traditions.
- *Institute for Linguistic Research*, who may assist in improving the knowledge of the languages of the various ethnic groups, and who may assist in developing special education programs for the ethnic groups.

6.4.5: International Organizations

Regional and international organizations (and individuals) with specific expertise of relevance to the WMPA and with the funds to co-support such research or advisory work will be invited to establish cooperative programs with the WMPA, if these are seen to contribute to WMPA objectives. For example, organizations with faunal biodiversity expertise could assist in two major areas:

- a) research into distribution, abundance and ecology of endangered species;
- b) research into the dynamics and resolution of wildlife-human contact and conflict, and management strategies for the same; and
- c) research into those species commonly consumed by villagers, and their impact on predator species, and the possible development of sustainable off take levels and other management parameters.

Most of this work would be conducted with the already established monitoring and patrolling units, and WMPA staff.

Organizations or individuals with expertise in floral biodiversity (botany and ecology) could assist in various ways, such as;

- a) research and survey to catalogue all the plant species occurring in the NPA;
- b) research into the ecology of key species, and to identify if any species are endangered; and
- c) research to fully catalogue and describe the use of flora by villagers, and to contribute to the development of sustainable off take levels and other management parameters; and
- d) research to identify any species whose genetic properties have commercial value, and thus should be copyrighted for commercial gain.
- e) establishment of permanent botanical plots to study species diversity, density, structure, growth rates, and phenology.

Organizations with expertise in community development could assist in various ways, including:

- a) organizing and strengthening Village Development Committees;
- b) training and supporting district and WMPA officials;
- c) providing additional funding and technical assistance in a variety of areas, including health care, agriculture, livelihood enhancement, etc.

Organizations with expertise in ethnic and cultural development, indigenous land tenure systems and community development:

- a) enhancing the villages' land and resource use tenure security and management systems;
- b) developing culturally appropriate community development for the various ethnic groups.

6.5: MONITORING, EVALUATION AND AUDITING

Internal monitoring and evaluation will be a specific function of the reporting schedules of the Executive Secretariat. The monthly reporting format will include a section requiring an analysis of good and weak aspects and of lessons learned. These reports will be submitted to all BoD members. In addition, the BoD will make 2 trips to the NT2 Watershed/NPA, as part of their annual meetings to be held in Nakai, and this will represent a form of internal monitoring by the BoD itself.

Similarly, such an internal evaluation will be included as a specific section of the Annual Report, as presented to the IMA and then the BoD's annual meeting. The inclusion of such M & E reporting requirements will require that Executive Secretariat Directors maintain a constant analytical framework in the way they plan, conduct and then report on the work, and as such can be an effective method for internal monitoring and evaluation.

An in-depth, independent SEMFOP project evaluation of all work to date will be conducted in year 4-5 to evaluate progress towards objectives and provide recommendations on required changes that should be made under SEMFOP-2.

6.5.1: Monitoring and Evaluation Framework

Internal M&E systems will be outcome focused (impact monitoring) where the outcomes of conservation activities will be measured against baseline indicators. M&E systems will be developed for each of the major SEMFOP components. The M&E framework will emphasize participatory evaluation procedures, particularly for evaluating the outcomes of village level activities and for WMPA staff appraisals and performance evaluations. Staff performance evaluations will adopt the 360 degree approach where appraisals are conducted with (i) superiors or supervisors, (ii) horizontally with colleagues, and (iii) with subordinates.

Effective M&E capable of assessing the extent to which conservation objectives are reached under SEMFOP will require a system capable of measuring the following in a quantifiable manner:

Monitoring information required	Examples of types of indicator
1. The extent that activities are being implemented according to the Workplan	Number of village forest & land use agreements drafted Number of checkpoints established Number of VCMUs formed and trained
2. The extent the activities are reducing the major threats to biodiversity conservation	Number of cases of land use infringements Number of poachers arrested Number of incidents reported
3. The effect that reduction or removal of the threat is having on biodiversity values	Rate and extent of deforestation Wildlife population numbers and distribution Range end extent of wildlife populations
4. The extent that activities are improving the quality of life and livelihoods of participating NPA and PIZ villagers	Income levels in NPA and PIZ villages Education levels and health status of villagers Food security levels in NPA and PIZ villages

Such a system will necessarily cut across all technical divisions and require monitoring data from each on a timely basis and in a standardized format compatible with the overall evaluation framework.

The SEMFOP M&E framework will be based on a logical framework approach, an early indicative, but incomplete, draft of which is presented in Table 6.6. Detailed objectives, expected outputs, objectively verifiable indicators, means of verification and potential risks will be developed as part of this log-frame process following the ZOPP (objective oriented planning) approach.

Table 6.6: Monitoring and evaluation framework for the SEMFOP.

<i>Narrative Summary</i>	<i>Key Performance Indicators</i>	<i>Monitoring and Evaluation</i>	<i>Risks</i>
1. Strategy-related Goal	1A	1B	1C (From Goal to Mission)
Protection of the NNT NPA and of the livelihoods of people who depend on its resources.			
2. Project Development Objective	2A Outcome/Impact Indicators	2B Project reports/Process involved	2C (From Objective to Goal)
Effective participatory management of the NT2 watershed/NNT NPA.	No new clearance of primary forest after signing of (conservation) village agreements until the end of the SEMFOP-1. Upward trend in population abundance in key wildlife species (elephant, tiger, hornbill, gaur,) starting 2008. Effective resolution of 90% of complaints within 3 months.	<ul style="list-style-type: none"> • WMPA Progress reports • Ranger reports • Baseline inventories and monitoring • GIS maps • Field visits 	Insufficient support from stakeholders. Logistical constraints.
3. Expected Outputs	3A Output indicators	3B Various project reports, supervision missions and evaluation reports	3C (From Outputs to Objective)
A 'model' watershed management protection authority.	Average annual disbursement of 75% of the work plan. Trained staffing according to SEMFOP plan. Turn-over of staff less than ...%. Unqualified audit reports for the last 3 years.	<ul style="list-style-type: none"> • WMPA Progress reports • Ranger reports • IMA reports • Audit reports 	Sufficient capable staff available. Recruitment of staff can be implemented smoothly (WB/GoL procedures). Slow NTPC procurement and funding replenishment. Erosion of decision making authority. Poor technical assistance. Change in institutional support (and/or memory).
Increased awareness of and involvement in conservation of the natural resources by the local stakeholders.	Conservation agreements for 31 NPA villages.	<ul style="list-style-type: none"> • Conservation agreements • WMPA progress reports. 	All 31 villages are willing to cooperate.
Improved patrolling program.	Increase in patrolled area and frequency of coverage. VCMUs operational in all NPA villages and in a minimum of 8 PIZ villages. Constructed facilities for rangers (3 field stations, 7 gates and 15 patrolling posts).	<ul style="list-style-type: none"> • WMPA Progress report • Field inspections 	Intense patrolling leads to increased enforcement
Empowered and healthy communities.	Increased wealth indices for all ethnic groups. Established functioning village development funds. Increased school attendance Increased number of schools, clinics, teachers. Decline in morbidity rate.	<ul style="list-style-type: none"> • Interviews with village representatives • Village statistics • VDF Disbursement 	Illegal in-migration Time constraints Aggravated social-economic inequality Increased pressure on natural resources.
4. Project Components/ Activities	4A Inputs (budget for each component)	4B	4C (From Components to Outputs)

<i>Narrative Summary</i>	<i>Key Performance Indicators</i>	<i>Monitoring and Evaluation</i>	<i>Risks</i>
Project Management		IMA reports <i>Audit reports</i>	
Land-use planning (FLUPAM)			
Protection (PPAM)			
Sustainable Development (LDC)			
Capacity Building of WMPA staff and Partners			

6.5.1.1: Baseline Data and Benchmarks for M&E

Base line benchmarks will need to be established as a prerequisite to evaluating progress towards SEMFOP’s stated objectives. Although a significant amount of quite recent data that could be used for baseline purposes already exists, these need to be clearly identified and organized as a baseline benchmark for SEMFOP. In addition, relevant indicators need to be identified, monitoring systems designed, and mechanisms established to ensure that relevant data are available on a timely basis for comparisons with the baseline benchmarks as part of the M & E process. These tasks will all be performed as an initial priority under SEMFOP following the development of the log-frame. Indicative guidelines on how this will be achieved have been developed and are presented in a summary format in Table 6.7.

Table 6.7: Guidelines on baseline benchmarks and future monitoring needs for key monitoring and evaluation indicators.

Impact area	Indicators	Baseline data sources/needs	Future monitoring requirements
Biodiversity values	Floral species occurrence, abundance & distribution Habitat types, extent & quality Faunal species occurrence, abundance, distribution	Floral/botanical surveys NTFP surveys/villager-use records FIPC forest inventories Aerial-photos, satellite-imagery Wildlife surveys/patrol records VCMU patrol records Villager hunting records	Botanical survey system established LUP village data collection system reviewed/ modified Forest inventories planned & conducted GIS established and operated by WMPA Patrol sectors organized/data recording systems set VCMU training in data collection LUP village data collection system reviewed/ modified
Watershed values	Stream/river flow, sediment load, water quality, Fish stocks and species distribution Riparian vegetation Land use in critical watershed areas	NTEC hydrological studies Fisheries surveys Villager fish records Aerial photos/satellite-imagery Aerial photos/satellite-imagery	Stream-flow monitoring stations established in NPA Fish resources baseline needs to be completed Fisheries monitoring systems established LUP village data collection system reviewed/ modified GIS established and operated by WMPA
Villager quality of life	Health status of villagers Education levels among villagers Access to markets Access to government services Population trends Up-take levels of external employment	National census data Village problem census data Socio-economic studies/surveys Local authority records National census data	Health monitoring systems established LUP problem census methods reviewed/modified Socio-economic monitoring systems established WMPA database unit established and operating LUP village data collection system reviewed/ modified
Socio-cultural cohesion	Retention of traditional culture/customs Ethnic population numbers Inter-village cooperation levels	Anthropological studies/surveys National census data LUP population trend records LUP village problem census records	LUP problem census methods reviewed/modified LUP village data collection system reviewed/ modified WCDNs established and functioning
Livelihood systems	Farming system types & productivity Forest resource dependency - types/levels Alternative livelihood systems	Agricultural studies/surveys NTFP surveys LUP village problem census records Socio-economic surveys	LDC databases designed/monitoring systems set NTFP use database designed and operating LUP village data collection system reviewed/ modified LDC databases designed/monitoring systems set
Land use	Village land use patterns Village agriculture land areas Inter-village boundary agreements Village land use agreements	Aerial photos/satellite-imagery Village LUP records Village LUP agreements District LUP records	GIS established and operated by WMPA LUP database established with GIS capability FLUPAM agreements archive designed/established Land use agreement monitoring systems established
Forest resource use	Access to forest resources Sustainable use of NTFPs Community fisheries conservation Sustainable hunting regimes	Village LUP records NTFP surveys Fishery surveys Village LUP records	Land use agreement monitoring systems established NTFP use database designed and operating Fisheries monitoring systems established Conservation agreement monitoring systems set

6.5.1.2: Certification Standards for Forest Management

The certification standards for forest management required under the World Bank’s Forests Policy will be applied to NPA management under SEMFOP. These will be developed during the design of the log-frame and later used as an M&E tool to monitor a set of standard of forest management indicators. These will be consistent with the following:

- (i) compliance with relevant laws;
- (ii) recognition of and respect for any legally documented or customary land tenure and use rights as well as rights of indigenous people and workers;
- (iii) measures to maintain or enhance sound and effective community relations;
- (iv) conservation of biological diversity and ecological functions;
- (v) measures to maintain/enhance environmentally sound multiple benefits accruing from forest;
- (vi) prevention or minimization of the adverse environmental impacts from forest use;
- (vii) effective forest management planning;
- (viii) active monitoring and assessment of relevant forest management areas; and,
- (ix) maintenance of critical forest areas and other critical habitats affected by the operation.

Once these management standards have been verifiably achieved, the WMPA intends to apply for and obtain independent certification.

6.5.2: Risk Management Strategy

The approach to risk management under this SEMFOP-1 will be to identify those proposed plans or activities with a significant level of risk, identify the sources of potential risk and lay out options for dealing with or mitigating the risk. The ultimate aim of such a risk management strategy is to be able to not only identify potential risks and their source, but also quantify these and assess the extent to which available options will provide mitigation. The process comprises 6 steps as follows:

1. Identification of likely risks and threats (narrative description and explanation of the risk)
2. Their likelihood of occurrence (percentage probability).
3. Quantitative assessment of their impact on project objectives if risk occurs (percentage).
4. Scale of impact on objective (rating and/or percentage)
5. Mitigation options available if risk occurs (narrative description).
6. An assessment of the degree of alleviation provided by each mitigation option (percentage)

As was the case for the M & E system, detailed risk identification and quantification will be conducted during and after log-frame development. However, indicative examples of the types of likely risks facing SEMFOP are presented in Table 6.8, grouped according to source.

Table 6.8: Indicative examples of risks identified during SEMFOP design

Source	Risk or threat
Institutional	WMPA objectives conflict with those of local authorities Capacity of GOL partner agencies is inadequate for their required tasks WMPA’s conservation objectives conflict with NTPC’s power generation objectives Objectives of SEMFOP-participating provinces are in conflict High turnover/transfer of GOL district partner staff negates WMPA’s HRD efforts
Management	WMPA lose control of decision making in regard to reservoir management and development ExSec loses day-to-day authority for executive decisions to WMPA BOD WMPA has insufficient management authority over PIZ areas Lack of management cooperation from local (district/provincial) authorities
Political	Legal recognition of NPA village rights of abode and livelihoods is withdrawn by GOL WMPA’s autonomy is eroded by central government interference

Source	Risk or threat
	International pressure to relieve cross border restrictions that may be imposed under SEMFOP Vested interests in illegal activities in the NPA cause non-cooperation from enforcement agencies Support for conservation ceases to be a government policy priority
Technical	Improved NPA access creates new NPA exploitation opportunities for outsiders WMPA unable to fill technical staff positions with adequately qualified people Livelihood and community development activities fail to improve land and resource use and improve livelihoods.
Economic	Extreme energy/power price fluctuations affect NTPC's ability to fund the WMPA Value of wildlife/forest resources become greater than returns from livelihood activities Increases in the value of timber causes illegal logging within the NPA GOL funding to district authorities is reduced as a result of SEMFOP
Social	WMPA livelihood development activities attract in-migration of people into the NPA Project activities result in social stress for NPA and PIZ communities. Socio-political or economic change in neighboring countries causes increased trans border poaching Dam construction crews engage in forest extraction activities
Natural	Extreme climatic conditions cause NPA village livelihood systems to fail Domestic livestock spread disease to wildlife populations Uncontrollable forest fires within the NPA

6.5.2.1: Risk Mitigation

As far as possible, the risks described in Table 6.8 (above) have been considered during the design of SEMFOP and measures have been taken to mitigate against them. These risk mitigation measures are described as follows:

Source of risk	Mitigation strategy
<u>Institutional risks</u>	
WMPA objectives conflict with those of local authorities	- Local authorities are to be cultivated as full partners to instill ownership of the SEMFOP with them.
Capacity of GOL partner agencies is inadequate for their required tasks	- WMPA staff and TA will conduct both formal and 'hands-on' capacity development programs for partner organization staff.
WMPA's conservation objectives conflict with NTPC's power generation objectives	- Develop continuous dialogue with NTPC towards common objective of maintaining watershed values.
Objectives of SEMFOP-participating provinces are in conflict	- Provincial authorities are to be cultivated as full partners to instill ownership of the SEMFOP with them.
High turnover/transfer of GOL district partner staff negates WMPA's HRD efforts	- Agreements for staff retention to be negotiated with provincial authorities at the start of implementation.
<u>Management risks</u>	
WMPA lose control of decision making in regard to reservoir management and development	- Strategy for full inclusion of all stakeholders in the Reservoir Management Authority has been developed.
ExSec loses day-to-day authority for executive decisions to WMPA BOD	- This risk is already apparent and pressure from the WB has been helpful. Improved reporting and regular feedback from ExSec will be used to keep BOD informed of actions taken by ExSec.
WMPA has insufficient management authority over PIZ areas	- A partnership, cost-sharing approach with local authorities will be adopted to develop co-ownership.
Lack of management cooperation from local (district/provincial) authorities	- Cost-sharing and capacity development incentives will be used to ensure full cooperation.
<u>Political risks</u>	
Legal recognition of NPA village rights of abode and	- Partnership approach to conservation with villagers will show

Source of risk	Mitigation strategy
livelihoods is withdrawn by GOL	that NPA villager rights are in GoL's best interests.
WMPA's autonomy is eroded by central government interference	- Assistance will be sought from provincial governors, NTPC and WB to put pressure on GOL.
International pressure to relieve cross border restrictions that may be imposed under SEMFOP	- Improved transborder dialogue, at national and particularly provincial levels.
Vested interests in illegal activities in the NPA cause non-cooperation from enforcement agencies	- Incentive based approach with enforcement agencies to develop partnership and co-ownership under SEMFOP.
Support for conservation ceases to be a government policy priority	- Development of NNT NPA into an international conservation 'showcase'
<u>Technical risks</u>	
Improved NPA access creates new NPA exploitation opportunities for outsiders	- The access strategy developed has fully considered this and will be implemented with extreme caution with this threat in mind.
WMPA unable to fill technical staff positions with adequately qualified people	- ExSec staff salary structure, incentives system and capacity development programs developed.
Alternative livelihood systems fail to promote change	- Livelihood development will build on existing systems using an incremental rather than a transformational approach.
<u>Economic risks</u>	
Extreme energy/power price fluctuations affect NTPC's ability to fund the WMPA	- Guarded against in Concession Agreement and later trust fund development will mitigate against instability in WMPA funding.
Value of wildlife/forest resources become greater than returns from livelihood activities	- Improved enforcement and alternative livelihood activities such as ecotourism will mitigate against this.
Increases in the value of timber causes illegal logging within the NPA	- Partnership approach with NPA and PIZ villagers, district, province and enforcement agencies will mitigate against this
GOL funding to district authorities is reduced as a result of SEMFOP	- WMPA cost sharing and proactive approach to attract additional donors.
<u>Social risks</u>	
WMPA livelihood development activities attract in-migration of people into the NPA	- In-migration strategy already developed under the SEMFOP to be implemented with district authorities.
Socio-political or economic change in neighboring countries causes increased trans border poaching	- Improved transborder dialogue, at national and provincial levels.
Project activities result in social stress for NPA and PIZ communities.	- Participatory nature of FLUPAM, community development advisors hired, ethnic and cultural sensitivity training for WMPA staff, and special programs for Vietic groups.
Dam construction crews engage in forest extraction activities	- Strategy for this to be developed with major contractor, to include registration agreement and penalties in worker's contract.
<u>Natural risks</u>	
Extreme climatic conditions cause NPA village livelihood systems to fail	- Climatic instability will be considered livelihood development planning and robustness of current systems will be improved.
Domestic livestock spread disease to wildlife populations	- Improved health care and less extensive grazing systems proposed will mitigate against this.
Uncontrollable forest fires within the NPA	- Improved equipment, patrolling and partnerships with VCMUs and villagers.

6.5.3: Conflict Resolution

Because of different perceptions, cultural 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. Obviously, the most important step in conflict resolution is conflict avoidance, and the consultative and participatory nature of decision making under the SEMFOP is very much aimed at reducing the occurrence of disagreements and conflicting positions. In instances where disagreements do occur, it is similarly important that they are resolved quickly and through a participatory process before positions harden and the conflict escalates.

Thus, different approaches may be required according to the level that any conflict has reached, while at the same time recognizing that the earlier a potential conflict is recognized and dealt with, the higher the

chance of a successful outcome. These phases of conflict development and appropriate interventions can be summarized as follows:

Type of Conflict	Means of Resolution
1. Conflict avoidance:	Consultation & participation in planning and decision making
2. Simple disagreements:	Informal negotiation, discussion and mediation
3. Early conflict development:	Reference to SEMFOP ‘guiding principles’ (see later)
4. Conflicting positions taken:	Reference to customary rules, NPA regulations & national laws
5. Fully developed conflict:	Refer conflict to WMPA arbitration panel
6. Intractable conflict:	Review & adjudication by district governor or district court.

In order to deal with disagreements and resolve conflicts in a fair, transparent and culturally sensitive manner, it will be helpful to have a number of ‘guiding principles’ that can be applied to all conflict situations. It is important that all stakeholders are aware of these from the outset, so that all parties involved in any conflict understand the rationale and logic employed in resolving and adjudicating in any disagreement. Thus these principles will be further developed by the WMPA and then presented and explained to all stakeholders as part of the consultative process. The principles will then be refined, modified and expanded according to feedback from stakeholders. An initial draft version of the principles for conflict resolution have been developed as follows:

1. Biodiversity conservation is the primary and overriding objective of the SEMFOP and will take precedence in guiding decision making.
2. Customary use, tenure, traditional livelihoods, and cultural values of local communities will be respected and given equal standing to biodiversity objectives in decision making.
3. All conflicts will be dealt with in an ethically fair and culturally sensitive manner.
4. The WMPA, district authorities, local communities and all ethnic groups are equal partners and have an equal say in all decisions.
5. The greater good to the entire NPA community will take precedence over the interests of individual communities or specific groups of individuals in all decision making.
6. The long-term sustainability and equitability of the outcomes of all decisions will take precedence over short term gains by one or more groups of people.
7. Laws of the Lao PDR will be abided by in all decisions which will be arrived at under the principles set out in the constitution.
8. The views of women, the poor, ethnic and other minorities and other disadvantaged groups will be given equal standing with all others in making decisions.
9. Any restrictions imposed on current livelihoods will not infringe on traditional rights and values and will be compensated for by activities/support of at least equal value to those foregone.
10. All NPA/PIZ communities and ethnic groups will be treated equally and fairly in regard to compensation, livelihood support, remuneration for assistance, etc.
11. NPA and PIZ villagers will be given equal opportunity to share in the economic benefits of biodiversity conservation from such sources as eco-tourism, research, intellectual property, media rights, etc.

All WMPA staff will be given training in conflict resolution procedures and cultural sensitivity as an early priority under SEMFOP. In addition, an NT2 Watershed/NPA arbitration and reconciliation panel will be established and will assist in impartially resolving conflicts that cannot be reconciled by other means. Membership on the panel will include:

1. WMPA representative
2. District Governors Office representative
3. NTPC representative
4. NPA village representatives
5. PIZ village representatives

6. LWU representative
7. Lao Front for National Construction representative
8. Reservoir management representative
9. Representative from civil society
10. Ethnic Minorities Advisor
11. Representative from a participating or informed NGO

Every effort will be made to resolve conflicts by mutual agreement of the parties involved. In some cases, arbitration and adjudication on disagreements by an external mediator will be required. Responsibility for 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 outlined in Table 6.9.

Table 6.9: Means of adjudication and arbitration responsibilities for conflict resolution.

Parties to the conflict	Final decision/adjudication	Key mediator/arbitrer
Within village disputes	Majority decision of village meeting	Village Chief and Village Elders 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

6.5.3.1: 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. As a general rule, such apprehension only occurs once the police have firm evidence, that the offender is in fact guilty. Evidence often comes from multiple witnesses, a common feature in a highly interactive society such as Lao PDR.

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 for different groups of offenders are summarized in Table 6.10.

Table 6.10: 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	Customary law VFLMA Forestry law	Employment contract	Forestry law	Immigration law Forestry law
Presentation of evidence	Evidence presented to village chief/elders 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 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	Pay deduction or dismissal	Fine or imprisonment	Fine or imprisonment Deportation

	Fine or imprisonment	Fine or imprisonment		
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At the start of SEMFOP steps, procedures and authority issues in regard to enforcement will be discussed with all relevant local authorities. The aim will be to ensure that everyone concerned is familiar with and correctly understands the legal framework and to reach agreement on the steps, procedures and penalties to be used in regard to infringements related to the NT2 Watershed/NPA. Agreements will also be sought in regard to the use and possible sharing of fines and the disposal of confiscated articles.

Ideally the rights and duties of villagers to patrol, monitor and enforce forestry activities within the village boundaries are governed by a Village Forest Management Agreement (VFMA), drafted for the local context, and consistent with forestry legislation. The Forestry Law, Articles 59 to 74, provide the framework for monitoring and enforcement conducted by the four forest management organizations (MAF, PAFO, DAFO and villages). Article 63 lists specific duties for village authorities which include:

- monitor forestry activities and changes in forest quality in village areas and report information to DAFO;
- monitor, inspect and prevent illegal hunting, buying and selling of wildlife; and
- assist in timely enforcement of illegal forestry activities such as illegal logging, burning forest, or harming wildlife, aquatic species and water resources.

MAF Regulation 535 on Village Forest Management (2001) states that the duties of Village Forest Units are to patrol, monitor and enforce activities in village boundaries such as illegal logging, hunting, trading and processing of forestry products and report illegal activities to DAFO and take offenders to village authorities (Article 11). PM Decree 59 and the MAF Regulation on Sustainable Management of Production Forestry (to be issued in 2003) further provide that village forest organizations and villagers shall participate in all aspects of monitoring of forestry activities, including pre-harvest, harvest and post-harvest, and collaborate with DAFO to report any findings. Generally, villagers, village militia and village forest monitoring units have the right to suspend use, temporarily detain suspect and seize evidence, warn, educate and collect small fine based on local rules, the Forestry Law, Articles 70-74, and relevant legislation, but this right needs clarification and to be better implemented on a consistent basis at the local level. Village Conservation Monitoring Units have been established and utilized in various projects and can be the basis for further implementation in accordance with the law.

6.5.3.2: Adjudication on Infringement of Regulations

The authority for adjudication depends on the severity and location of the offence. For minor offences committed by villagers the village chief has the power to imposes appropriate sanctions and penalties.

For more serious offences adjudication is the role of the district (or provincial) judge. For less serious infringements, a first offender is usually given a warning. A second offence incurs a fine, and a third a possible jail term. Village regulations refer to a (similar) fining process, but it is unclear if the village can impose the fine, or if it must be the District. If the offenders is a villager, then the village is very reluctant to impose a fine for fear of creating animosities within the village. If the offender is an outsider, the village may impose a fine, but actually receiving this from a distant villagers may not be possible without district help.

The Constitution does provide for villagers and organizations to lodge complaints, petitions or to propose ideas to relevant state organizations on issues pertaining to their rights (Article 28). However, there is no administrative procedure or forestry legislation that specifically outline how to appeal government decisions or failure to act or to resolve conflicts in the forestry sector. Individual VFMA, lease agreements and MOUs with the GOL, MAF and DAFO should include conflict resolution provisions consistent with various cultural mechanisms. PM Decree 59 and the implementing MAF Regulation to be approved in June 2003 contain articles to govern conflict resolution in established production forest areas utilized by village forestry organizations. The GOL, MOJ and MAF should collaborate to adopt administrative procedures legislation applicable for the forestry sector.

6.5.4: Independent Monitoring Agency

The IMA will undertake annual missions in August each year to:

- a) review work conducted and how budget has been spent in the current year, and
- b) review the annual workplan and budget for the following year.

They will be required to give confirmation, or otherwise, that the previous year's activities and budget and the following year's workplan and budget are consistent with the objectives of the WMPA and the SEMFOP. Their conclusions in this respect will be conveyed to the World Bank, the WMPA Board of Directors and NTPC who, under the concession agreement, may withhold budget disbursements until any outstanding issues have been rectified to the satisfaction of the IMA.

The IMA will comprise 2 international experts, with regional and Lao experience, one with PA experience and the other with institutional management experience in a development setting. It will also include 2 Lao experts with similar experience and expertise.

As a rule, the IMA will undertake one mission per year, of one months duration. The WMPA's financial year is planned to run from October 1 to September 30 so as to coincide with the Lao financial year and also to be consistent with the seasonality of protected area management and livelihood development. As a consequence, it is anticipated that the IMA would make their visit in August in order to be able to evaluate progress in the current year, but also to be able to review and have an input to the following year's Annual Work Plan and proposed budget.

External monitoring will be the primary responsibility of an Independent Monitoring Agency (IMA) who will undertake regular missions to review progress, provide future direction and ensure that the activities being implemented are consistent with SEMFOP objectives. A detailed ToR will be drawn up by the ExSec prior to each mission of the IMA, but their overall mandate will include the following:

- Review work conducted in the previous year, the budget spent and accounting of the same.
- Assess progress made towards SEMFOP's stated objectives.
- Assess progress towards certification standards for forest management and assist with obtaining such certification.
- Identify any areas of weakness and provide recommendations for improvement.
- Review of the proposed following year's annual workplan and budget.
- Confirm, or otherwise, that the previous year's report and following year's work plan and budget are consistent with the objectives of the WMPA and this SEMFOP.
- Review the efficiency and effectiveness of the WMPA in support of SEMFOP objectives and provide recommendations for any required organisational changes.
- Assess the situation of the NPA/watershed in relation to the NT2 Project as a whole and, if necessary provide recommendations for improved coordination with other project components, agencies, etc.

The IMA will be composed of 2 international experts with regional experience, one with protected area management and ICDP experience and the other social development and project management experience. It will also include two Lao experts with complementary backgrounds and experience. Although the IMA will be appointed and funded by the WMPA, their independence and impartiality will be ensured by seeking World Bank approval prior to their engagement.

The number of inputs or missions required by the IMA will depend on the due date of annual reports and annual plans. If this 'due date' falls in the dry season, then only one mission per year is necessary, as the IMA can undertake field and village visits immediately prior to writing their report. This mission will be of approximately 1 month duration. If the end and start of financial years is in the wet season (July, or

August, for example) then the IMA will have to undertake two missions. One trip will be undertaken in the dry season (say, February) to allow the IMA to access the field and focus on review of the field work, with most time spent in the forest and villages. The second trip will be in September, with the focus being on review of the annual and following annual WorkPlan and budgets.

Even though the IMA has a mandate to endorse progress and approve

6.5.5: Independent Auditor

An internationally reputable, Lao auditing firm will be engaged to undertake annual audits of WMPA's accounts, and report to the IMA and all of the BoD members, prior to the annual BoD meeting.

6.6: COORDINATION

6.6.1: Co-ordination with the Resettlement Management Unit

During and following reservoir filling, most of the flooded plateau villages (who are ethnically related to NPA villages) are intending to resettle on the southern shores of the reservoir (which is, geographically, actually part of the NT2 watershed. The Resettlement Management Unit (RMU), responsible for managing this resettlement in conjunction with the NTPC's RO, will be relying on similar or the even the same 'implementing partners' – Provincial and District agencies. The funding source of these two agencies is also similar. Thus, close co-ordination between these two agencies is imperative. One effective way to ensure co-ordination and avoid confusion and staffing problems is for the Executive Secretariat and the RMU to share offices and facilities, for those years that the RMU is operational..

Coordination with the RMU/RMO will be also be vitally important for other reasons including;

- a) sharing of training facilities developed on the plateau, by both resettlers and by NT2 Watershed/NPA in-holders;
- b) the RMU is mandated to help the resettlement of current plateau in-holders. However, there may be a problem with NT2 Watershed-NPA in-holders moving to the resettlement area – lured by the development – and the WMPA should take all efforts to avoid this, especially by trying to ensure adequate development in-situ, in the NT2 Watershed-NPA..

6.6.2: Coordination with the Reservoir Management Coordination Office

The NT2 reservoir will be of crucial interest and concern to a range of stakeholders. The reservoir may evolve into a geographically complex system of open water, waterways, seasonally flooded wetlands and forests, and large drawdown areas, all of which may be important to, a range of interested stakeholders.

The pertinent NNT-NPA boundary map used for the interpretation of PM Decree 193 effectively excises the reservoir from the protected area. As a consequence, the WMPA will no longer be directly responsible for reservoir management. Nevertheless, as the reservoir will border directly with the NT2 Watershed/NPA and because the power generation, livelihood activities of resettled villagers, and the reservoir transport system, are all likely to have significant impacts on the PA, it is essential that the WMPA are closely involved in all reservoir management decisions and work closely with the relevant authority on an ongoing basis. Responsibility for reservoir management decisions is to be vested in the RMCO (Section 1.4.3) which will allow for the interests of all stakeholders to be taken into consideration during decision-making in regard to the reservoir.

6.7: INSTITUTIONAL EVOLUTION

6.7.1: Evolution of Institutions After SEMFOP-1

The NT2 project's emphasis on developing and funding a planned and effectively implemented social and environment program to manage the NT2 Watershed-NPA is new in the Lao PDR. New institutions are being developed to assume semi-independent managerial and financial responsibility for a range of functions. In addition, they are being developed to manage a new geophysical and social environment, and this environment is likely to change over time.

Thus, the institutional planning being undertaken at present cannot hope or predict, in detail, all of the required institutional arrangements required in the medium and long terms. It is assumed the institutional arrangements will need to respond to the changing socio-economic and geophysical environment. However, it is possible to make some more general predictions as to the possible evolution of some institutions.

Possibility 1. Relationship of the WMPA to the District of Nakai:

About 90 % of Nakai District will be in either the NT2 Watershed-NPA or in the Reservoir. 5% of the Districts remaining area will be on the southern shores of the reservoir designated for resettlement, which for the first 9 years is assisted by the RMU. It is only the remaining 5 % of the Nakai District, containing about 20 villages on the southern peripheral impact zone of the NNT-PHP corridor which is not directly affected by or supported by a component of the NT2 project. About 95 % of the development and other funds to be spent in Nakai District will actually come from the RMU (and RMO) and the WMPA.

Thus, to ensure that both the WMPA and the RMU/RO have the administrative and political mandate and that Nakai District has adequate funding and implementing functions, it may transpire that the WMPA (and its RMD) and the Nakai District somehow merge. It may that Nakai District somehow ceases to exist as a normal District, but becomes the 'Nakai-Nam Theun Special Zone'. In this scenario, the NNT Special Zone Chief would be equivalent to the District Chief and would effectively replace the Director of the WMPA (Nakai section).

Possibility 2. Phase down of WMPA.

Decree 25's article 4.3 requires that the WMPA strengthen the capacity of local institutions. Thus one possible future scenario is that the WMPA would become relatively smaller, yet more efficient and effective, while the local authorities would become relatively larger, more effective and take on more operational responsibility.

Possibility 3. Changed status of WMPA

Another possibilities is that, due to the fact that the WMPA's legally mandated operational area is the NNT National Protected Area and corridors, it may be decided to change the name of the authority from the NT2 WMPA to the NT2 Protected Area Management Authority – or PAMA.

6.7.2: Evolution of Activities After SEMFOP-1

While SEMFOP-1 focuses on:

- i) establishing the WMPA and staff development;
- ii) forest and land use planning, zonation and regulations development;
- iii) villager livelihoods; and
- iv) biodiversity research, monitoring and protection. the future SEMFOP's will, in recognition of the ultimate objective of transforming the area into a national park, see an increased focus on activities such as:
 - research;
 - tourism development; and
 - rehabilitation of degraded areas;

In regard to the peripheral impact zone, the level and type of threat posed and the availability of funds will dictate the focus and activities in these areas.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

PART 7

FINANCIAL AND BUDGETARY FRAMEWORK

(Draft of October 2004)

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7.1 BUDGETARY AND FINANCIAL FRAMEWORK

This Operational Plan for the first 7 Financial Years (FY) operation of the WMPA covers the period from January 1, 2005 to September 30, 2011 (81 months, referred to as the SEMFOP-1 period). It seeks to operationalize the planning, the proposed safeguards and mitigation measures and the institutional and management framework proposed under the SEMFOP-1. The plans have been developed to ensure that the funds allocated to the management and protection of the NT2 Watershed/NPA are effectively and efficiently utilized. As such, this Part 7 of the SEMFOP-1, essentially describes the Work plan for the WMPA's Executive Secretariat (Exsec) and the activities that it is responsible for directing and managing.

Key SEMFOP-1 activities to be conducted by the WMPA include:

- Establishment and management of the Executive Secretariat, including staffing, infrastructure development, equipment purchase, finance and administrative management, engagement of TA and training to develop staff capacity.
- Operation of the various support units such as GIS/MIS and Information/COCA units.
- Development of partnerships and working agreements with local authorities
- The core field activities of Forest and Land Use Planning, Allocation and Management (FLUPAM), Participatory Protected Area Management (PPAM), and Livelihood Development for Conservation (LDC) and community development and social services.

7.1.1 Long Term Framework

The current Concession Agreement between NTEC and the GoL specifies that NTPC will provide US\$1 million per year to the WMPA, commencing COD, for the whole Operating Phase of 25 years. Prior to that, for the six years from PCD to COD, US \$6,500,000 will be provided to the WMPA in six installments. Thus, the WMPA has a long term framework of assured funding, unlike any other NPA in the Lao PDR.

This SEMFOP-1 is concerned with the funding prior to COD, phase (1) and (2) above, and two years of the normal post-COD operation Phase. The SEMFOP-1 plan is based on a 8.5 million budget scenario. Funding will be approved yearly based on the Annual Work plan for each financial year. The first Annual work plan will be prepared for the Financial year 1 and 2 (i.e. 21 months). After COD, it is expected that 5-year Plans will be developed, as SEMFOP-2 and so on.

Apart from the core funds to be provided by the NTPC, the WMPA is legally mandated to accept funding from other sources, funds directed to support specific activities in this SEMFOP, or for new or supplementary activities which would see the development of an expanded SEMFOP.

7.1.2 SEMFOP-1 Funding Installments

The WMPA Operational Plan and the budget framework and timeline of SEMFOP-1 are specifically linked to the NT2 Project planning and construction timeline. Thus, the planning timeframe started at the PCD (Schedule 4, Part 3, Section 5.1, paragraph b). The first installment will be paid upon the approval of the SEMFOP-1 document. The second and subsequent installments of funding to the WMPA during the pre-COD period (as per the concession agreement) are payable at the start at May 8 of each annual funding period (see Table 7.1). During the post-COD period, installments are due at each anniversary of the COD (i.e. each November 8). Further details are given in Section 7.6.

Table 7.1: Planned installments for the SEMFOP-1

NTPC INSTALLMENTS	PCD	SEMFOP Approval	First Inst.	FC/Inst. May'05	Inst. May'06	Inst. May'07	Inst. May'08	Inst. May'09	COD/Inst. Nov'10	Inst Nov'10
Date	12-Dec-03	16-Dec-04	15-Jan-05	8-May-05	8-May-06	8-May-07	8-May-08	8-May-09	8-Nov-09	8-Nov-10
Duration	370	30	113	365	365	366	365	184	365	365
End	15-Dec-04	14-Jan-05	7-May-05	7-May-06	7-May-07	7-May-08	7-May-09	7-Nov-09	7-Nov-10	7-Nov-11
Phase:	PCD	SEMFOP Approval	First Inst.	FC/Inst. May'05	Inst. May'06	Inst. May'07	Inst. May'08	Inst. May'09	COD/Inst. Nov'10	Inst Nov'10
Last NTPC payment	\$ -	\$ 375,000	\$ 625,000	\$ 1,500,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
Cummulative Pre COD	\$ -	\$ 375,000	\$ 1,000,000	\$ 2,500,000	\$ 3,500,000	\$ 4,500,000	\$ 5,500,000	\$ 6,500,000	\$ -	\$ -
Cummulative Post COD	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,000,000	\$ 2,000,000

7.1.3 Linking Budget Funding to Operational Planning

Although the Concession agreement mentions installments of US\$1,000,000 at pre-defined dates, recent discussions with the NTPC confirmed that the actual amount may be adjusted, depending on the proposed work-plans. This still needs further discussion.

7.1.4 Financial Procedures and Management

In order to operationalize the intentions and articles of the Decree, and to facilitate the timely and transparent operation of the WMPAs and its budget process, systems have been developed that ensure the timely and wise disbursement of funds to enable the effective operation of the Executive Secretariat and its field activities.

General procedures for its financial management procedures have been prepared and are described in the present Chapter. The financial management and administration procedures adopted by the WMPA (during SEMFOP-1) will depend on the source of its funding and in accordance with the normal financial management and administration procedures required by the World Bank. A proper accounting system has been prepared to be used starting January 1, 2005.

More detailed procedures and manuals will be developed by the WMPA and its Secretariat with the support of an financial advisor during the first Financial year, and be included in the first annual report. These documents will have to be agreed to by the BoD and be consistent with relevant sections of Decree 25 which pertain to financial management of the WMPA and its Executive Secretariat, particularly articles 24, 27 and 28, as described in the following.

- a) *Article 24: "Duties of the Executive Secretariat" include*
 - 5: *to enter into contracts under the authority of the Board of Directors;*
 - 6: *to ensure that all money received is deposited as soon as possible in the Authority's bank account;*
 - 7: *to disburse funds in accordance with the annual budgets approved by the Board of Directors;*
 - 11: *to keep proper accounts and records of financial transactions and affairs of the Authority and arrange for accounts to be audited at the end of each financial year;*
 - 12: *to prepare quarterly progress reports of the Authority for distribution to the Board of Directors, such reports to include:*
 - (a) *the proceedings and activities of the Authority for that quarter;*
 - (b) *a summary of the financial transactions of the Authority for that quarter;*
- c) *Article 27: "Establishment of Fund..."*
 - 2: *The Board of Directors shall be responsible for managing the Fund so as to provide a long-term reliable source of funding for the Authority's activities.*
 - 3: *To give effect to Article 27(2), the Board of Directors shall instruct the Executive Secretariat to open and maintain such bank accounts in the name of the Authority in Lao PDR and offshore (with approval from the Bank of Lao PDR) and in such currencies as the Board of Directors shall determine, and without being obligated to convert from any currency to another currency.*
 - 4 *The Executive Secretariat shall deposit all moneys referred to in Article 27(1) into such bank accounts and may pay from the moneys standing to the credit of those accounts at any time:*
 - (a) *disbursements in accordance with annual budgets approved by the Board of Directors;*
 - (b) *moneys to be invested in accordance with investment policies and guidelines approved by the Board of Directors; and*
 - (c) *any other payments authorised by or under this Decree, upon the signature of persons authorised by the Board of Directors and pursuant to a resolution of the Board of Directors.*
- d) *Article 28:*
 - "The Board of Directors may engage a professional investment manager to assist it in managing the Fund and investing surplus funds in accordance with the investment policies and guidelines referred to in Article 21(7). Surplus funds may be invested in Lao PDR, or, with approval from the Bank of Lao PDR, offshore".*

Funding will be approved on an annual basis, based on annual Work plans and budgets, and the BoD will request the NTPC to transfer the installment to the WMPA fund, an account in US dollars, which may or may not be managed by an investment manager. Transfer of funds from the WMPA Fund to the Executive Secretariat imprest bank account in Khammoune Province will be effected on a quarterly basis and based on quarterly Work plans and budgets presented to and approved by the BoD standing member. Within this general framework, a clear set of general financial procedures of the WMPA and the Executive Secretariat are prepared (see section 7.4). Such a financial process will require detailed attention to accounting and budget request and transfers. One accounting staff will be assigned solely to monitor and coordinate these various transfers, and to keep project accounts up to date, on a daily basis.

7.2 EXECUTIVE SECRETARIAT ESTABLISHMENT

7.2.1 Approval of Organization and Staffing

A high priority task and focus of initial work of this SEMFOP-1 is the establishment and strengthening of the institution(s) which will be responsible for the management of the NT2 Watershed/NPA. This began with the promulgation of PM Decree 25 (2001) creating the WMPA, and specifying that an Executive Secretariat will be established and have responsibility for day-to-day operations and for the furtherance of the WMPA's objectives.

The second step in institutional development was the first meeting of the WMPA's Board of Directors on the 31st of August, 2001 which appointed a subcommittee to prepare for the establishment of the Executive Secretariat of the Authority. This sub-committee's responsibilities were to;

- i. determine criteria and guidelines for the procurement of the Director and deputy Directors of the Executive Secretariat of the authority;
- ii. devise and propose a the policy and regulations concerning the implementation of the Decree;
- iii. devise and propose the salary scale and other incentives for positions in the Executive Secretariat and propose the same to the BoD; and
- iv. select the Directors and deputy Directors of the Executive Secretariat and propose to the BoD meeting for consideration and adoption.

Regarding i) above, a primary criteria for the selection of the Director and Deputies is the structure, organization and staffing of the Secretariat which the Directors will be managing. This proposed organization is discussed in detail in Section 6.2.2.

Regarding iii) above, the planned salary scales and incentives system is presented in detail Section 6.2.7.2 and currently proposed scales are presented in Table 7.2. These have now been approved by the Board of Directors and will be reviewed at appropriate intervals.

Table 7.2: Proposed (indicative) salary scale of Executive Secretariat core staff

Staff position	Salary range	Source	Contractor	Evaluator
1. Director	\$1,800 - \$2,000	Government	BoD	IMA, CTA
2. Deputy Directors	\$1,500 - \$1,800	Government	BoD	IMA, CTA
3. Division Deputy Manager	\$600 - \$800	Govt or private	ExSec Director	ExSec Dir, CTA
4: Professional Officer	\$550 - \$800	Govt or private	ExSec Director	ExSec Dir, CTA
5: Technical Officer	\$250 - \$450	Govt or private	ExSec Director	ExSec Dir, CTA
6: Admin Officer	\$400 - \$500	Govt or private	ExSec Director	ExSec Dir, CTA
7. Admin Assistant	\$250 - \$350	Govt or private	ExSec Director	ExSec Dir, CTA
8: Mechanic/Technician	\$250 - \$350	Govt or private	ExSec Director	ExSec Dir, CTA
9: Drivers/Boatmen	\$100 - \$200	Govt or private	ExSec Director	ExSec Dir, CTA

7.2.2 Managing Directors – Selection and Engagement

The following directors will be sought and engaged:

- i. A Managing Director (MD).
- ii. 3 Deputy Directors, responsible for each of the Technical Divisions.
- iii. A Deputy Director, responsible for Administration and Personnel.

The indicative Terms of References for these positions are presented as General Annex 1.

7.2.2.1 Directors Terms and Conditions:

The Managing Director and Deputy Managing Directors will be selected and seconded from Government agencies. Such secondment of Government staff will be sanctioned by the Government via BoD approval. However, their release (nominally for 4 years at a time) will still require the approval of their supervisors and Units.

- The first Directors to be seconded (in the early years of SEMFOP-1) should have considerable experience in either NPA management based on PICAD and/or the development of this SEMFOP-1 program. This will ensure the smooth, effective and timely development of the Secretariat in the early years.
- It is essential that one of the first duties of the Directors is the establishment of a system for participation. One of the Deputies, the Deputy Director for LDC, must take immediate responsibility – in collaboration with the PICAD Advisor TA – for this task and put into place a mechanism for consultation and participation, including the WMPA staff, other officials and all other project stakeholders based on the participation framework described in Section 2.6.3.
- They will be seconded for periods of 4 years at a time, after which time they can return to their prior Government position. Dependant on a performance review, contracts could be extended for a further period.
- While on secondment, they would not have any administrative or reporting responsibilities to their prior Government agencies, Department or Ministry. They will also cease, temporarily (for the period of employment by the WMPA), to receive Government salaries or any other benefits.
- They will receive a salary according to the Executive Secretariat salary scales (See Table 7.2) and other benefits such as health insurance.

7.2.2.2 *Selection of Directors*

Candidates for the Director and Deputy Director positions will be canvassed from relevant Government Ministries at the Central and Provincial levels. The interim sub-committee will collate the CVs of all potential candidates who will then be compared by reference to a selection criteria matrix (Table 7.3).

Table 7.3: General criteria for selection of Executive Secretariat Directors

Managing Director	Deputies - Technical.	Deputy – Administration
1: Relevant Degree.	1: Relevant Degree	1: Relevant Degree
2: Protected Area management experience.	2: Biodiversity monitoring, management and protection exp.	2: Administration experience and ability.
3: Rural development planning & implementation experience	3: Forest and Land Use Planning experience	3: Staff management experience and ability.
4: Understanding of Integrated Conservation & Development	4: Protected Area management experience	4: Budget planning experience and ability.
5: Financial management & Budget planning experience and ability	5: Participatory rural development planning & implementation	5: Financial management experience and ability.
6: Administration and Staff management experience and ability	6: Administration and Staff management experience and ability	6: Protected Area management experience
7: Aptitude for public relations, inter-personal skill	7: Aptitude for public relations, inter-personal skill	7: Aptitude for public relations, inter-personal skill
8: Computer use ability	8: Computer use ability	8: Computer use ability
9: English language	9: English language	9: English language

Each candidate will be scored according to this matrix. This score will, however, be supplemented by a qualitative analysis and discussion – resulting in a final recommendation for each candidate, prepared (individually and in confidence) by the selection sub-committee. This score matrix and discussion will then be presented to the BoD meeting for their final decision.

Every four years, (or earlier, if a Director retires or is dismissed) this process will be repeated, managed again by a sub-committee appointed by the BoD, which should include the CTMA.

7.2.3 Professional, Technical and Administrative Staff

7.2.3.1 *Staff Numbers*

To implement all activities for the SEMFOP-1, the maximum number of staff employed by the Executive Secretariat is estimated to reach 62 to work in the various Divisions and Units as detailed in Table 7.4 and Sections 6.2.7 and Tables 6.2 and 6.3.

Some positions will be phased out gradually, as the work program of the WMPA will change. At the end of the SEMFOP-1 phase, about 55 staff (19 Professional, 19 Technical and 17 administration/support staff) will be permanently employed by the Executive Secretariat (Table 7.5).

Table 7.4: Staffing distribution among the main Divisions

COMPONENT (Division)	LEVELS	Expense Accounts	Person months	Khamkerd	Nakai	Grand Total	
Exec.Secretariat Office	Director	WMPA Director	81		1	1	
	Division Deputy Manager	Khamkerd manager	81	1		1	
	Professional Officer	Tourism Officer	21		1	1	
	Technical Officer	Information Officer	78		1	1	
Exec.Secretariat Office Total				1	3	4	
Finance and Admin Division	Admin Assistant	Accountant 1	75		1	1	
		Accountant 2	63	1		1	
		Procurement and Logistics	81		1	1	
		Secretary/Computer Opera	75		1	1	
		Secretary/Computer Opera	75		1	1	
		Secretary/Computer Opera	75	1		1	
	Admin Officer	Admin and Office Manager	75		1	1	
		Admin and Office Manager	63	1		1	
	Deputy Directors	Deputy Director - Administ	81		1	1	
	Drivers/Boatmen	Boatmen 1	Boatmen 1	75		1	1
			Boatmen 2	75		1	1
			Boatmen 3	75		1	1
		Driver 1	Driver 1	78		1	1
			Driver 2	78		1	1
		Driver 3	Driver 3	78		1	1
			Driver 4	78		1	1
		Driver 5	Driver 5	78	1		1
			Driver 6	78	1		1
		Finance and Admin Division Total				5	13
	PPAM Division	Deputy Directors	Deputy Director - Technica	81		1	1
Wildlife - Professional Offic			81		1	1	
Professional Officer		Wildlife - Professional Offic	81		1	1	
		Wildlife - Professional Offic	81		1	1	
		Wildlife - Professional Offic	81	1		1	
		Technical Officer	Ranger 01	78		1	1
			Ranger 02	78		1	1
			Ranger 03	78		1	1
			Ranger 04	78		1	1
			Ranger 05	78		1	1
			Ranger 06	78		1	1
			Ranger 07	60		1	1
Ranger 08		60		1	1		
Ranger 09		60		1	1		
Ranger 10		60	1		1		
Ranger 12		60	1		1		
Ranger 13		78	1		1		
Ranger 14	78	1		1			
Ranger 15	60	1		1			
PPAM Division Total				6	13	19	
LDC Division	Deputy Directors	Deputy Director - Technica	81		1	1	
		Community Development F	75		1	1	
	Professional Officer	Community Development F	45		1	1	
		Community Development F	36		1	1	
		Community Development F	66	1		1	
		Ethnic Development Profes	78		1	1	
		Gender Specialist Professi	78		1	1	
		Rural Infrastructure Profess	78		1	1	
		Technical Officer	Community Development T	75		1	1
	Community Development T		45		1	1	
	Community Development T		36		1	1	
Community Development T	66		1		1		
LDC Division Total				2	10	12	
FLUPAM Division	Deputy Directors	Deputy Director - Technica	81		1	1	
		GIS Officer 1	78		1	1	
	Professional Officer	Professional Officer 1	81		1	1	
		Professional Officer 2	51		1	1	
		Professional Officer 3	51		1	1	
		Professional Officer 4	81	1		1	
	Technical Officer	Technical Officer 1	81		1	1	
		Technical Officer 2	51		1	1	
		Technical Officer 3	48		1	1	
Technical Officer 4	78	1		1			
FLUPAM Division Total				2	8	10	
Grand Total				16	47	63	

Table 7.5: Average SEMFOP-1 Staffing schedule

Staff Position	FY1	FY2	FY3	FY4	FY5	FY6	FY7
	1-Jan-05	1-Oct-05	1-Oct-06	1-Oct-07	1-Oct-08	1-Oct-09	1-Oct-10
	30-Sep-05	30-Sep-06	30-Sep-07	30-Sep-08	30-Sep-09	30-Sep-10	30-Sep-11
Director	1	1	1	1	1	1	1
Deputy Directors	4	4	4	4	4	4	4
Division Deputy Manager	1	1	1	1	1	1	1
Professional Officer	11	15	16	16	14	13	13
Technical Officer	10	16	23	23	21	19	19
Admin Officer	0	1	2	2	2	2	2
Admin Assistant	2	5	6	6	6	6	6
Mechanic/Technician	-	-	-	-	-	-	-
Drivers/Boatmen	5	9	9	9	9	9	9
	35	53	62	62	58	55	55

7.2.3.2 *Recruitment*

Candidates for the Professional and Technical Officer positions will be recruited on the open market, via the placement of advertisements in Lao and English language newspapers (and any other means of information) inviting application from both Government and private sector individuals. However, priority will be given to staff who have worked in projects or government programs in relation to the NT2 Watershed/NPA, and who have demonstrated skills and application in the conduct of these duties.

Candidates for both the admin and support positions will sought via advertisements in Lao and English language newspapers inviting application from both Government and private sector individuals. Interested applicants may also be identified by other formal or informal channels. In the case that a Government employee is chosen, he/she will be seconded from their Ministry under the same terms and conditions as the Directors (7.2.2.1 above). They will be seconded for periods of 4 years. Depending on a performance review, contracts could be extended for a further 2 years. While on secondment, they would not have any administrative or reporting responsibilities to their Ministry. They will receive a salary according to Executive Secretariat salary scales.

Some of the Professional and Technical officers will be based at the projects offices in Nakai or in Khamkerd, while others will be based permanently in the villages inside the NT2 Watershed- NPA, as indicated in Table 7.4.

The salaries of the P/TOs will range from \$US 250 to 800 per month (See Table 7.2), not including DSA or health insurance. The actual level will be based equally on a) on years of relevant and demonstrated experience (see section criteria matrix), and b) qualifications.

A comprehensive health insurance will be available. DSA will be paid for day or overnight trips to the forests or villages, and for overnight trips to other Districts, Provincial centers and Vientiane.

7.2.3.3 *Selection and Engagement*

The functional responsibility for organizing recruitment (seeking and engagement) of staff will rest with the personnel office of the Administration Division. They will coordinate the finalization of the ToR and contracts, and then advertising each staff position, in Lao and English language newspapers. They will coordinate the interviews for prospective candidates. For all professional and technical positions, the Managing Directors will comprise the interview team, assisted by the relevant TA members if appropriate. While the interview panel will make a choice, the final decision for engagement will be made by the BoD.

For the administration staff positions, the selection panel will include the administration manager, one deputy managing Director, and a representative of the assisting agency. Following selection, the Personnel Office will finalize the contracts with the administration unit. Thus, the selection and engagement process will include the following tasks;

- review and finalize the ToRs and terms and conditions for each position;
- preparation of advertisements, the placement of advertisements in newspaper;
- organization of selection committee;
- drafting of a selection criteria matrix, and preliminary review and scoring of applicants;
- calling short list applicants for interview;

- applicants interviewed by panel - composed of the Executive Secretariat Directors and, for Director Positions-relevant BoD members. The positions Terms of Reference will be the selection panels guiding document, in the form of a selection criteria matrix;
- the selection panel makes their commendations, and these are forwarded to the BoD for approval.

Although technical qualifications and experience of candidates will be a major selection criteria, communication skills, sensitivity to gender, ethnicity, etc. will also rate highly and be assessed during the interviews. Proven ability in any of the local dialects spoken by the various ethnic groups will also rate highly in the final selection of candidates. The recruitment process will also attempt to achieve an appropriate gender and ethnic balance in the eventual staff complement. In addition, preference will be given to candidates from the local area, particularly those from NPA or PIZ communities.

It may well be necessary to identify and recruit staff from outside the local area, and candidates who already have good experience in other programs or regions, or new graduates from NUOL and other educational institutions will be considered. Thus, the Executive Secretariats will maintain regular contact with the NUOL in order to identify appropriate graduates who could join the Executive Secretariat, particularly those who have conducted research or surveys in the NT2 Watershed/NPA as part their studies while at NUOL.

For the administration staff positions, the selection panel will include the administration manager, one deputy managing Director, and a representative of the assisting agency. While the interview panel will make a choice, the final decision for engagement will be made by the BoD. Following selection, the Personnel Office will finalize the contracts with the administration unit.

7.2.4 Establishment and Management of Facilities/Equipment

The establishment of sound, appropriately designed and functional infrastructure will provide a good basis on which the Executive Secretariat can function effectively and efficiently. Where appropriate, elements of the WMPA (in particular, the Technical Divisions) will be housed implementing partners in existing accommodation which will be renovated/extended as appropriate. Further details on the budget allocations are given in Section 7.6.

7.2.4.1 *Offices and Accommodation*

The Executive Secretariats offices and accommodation to be built during the first 2 years includes those facilities presented in Table 7.6.

Table 7.6: Proposed Infrastructure – offices and accommodation, to be constructed by the WMPA

Facility	Location
1: Temporary office	Old NPA HQ, or District Offices
2: Headquarters (main office):	Nakai District town
3: Sub-headquarters (branch off.)	Luk 20 town, Khamkeut District
4: Accommodation	In old NPA HQ, near new HQ, etc,
5: Visitor center	Not yet planned or budgeted
6. Technical Divisions	Existing Offices in Nakai District

However, as such infrastructure will take time to design and construct, the lack of office and accommodation space in the first few years may be a significant constraint to the early development and function of the Executive Secretariat. Thus, while the permanent headquarters are designed and built it is planned to initially renovate and improve existing buildings in Nakai town. Such temporary office accommodation could be a combination of:

1. the current NPA HQs at Nakai;
2. current district administration offices; or
3. some other building or compound.

Making use of the current NPA office would be appropriate as this office will be automatically merged with the newly established NT2 WMPA Executive Secretariat. However, it is currently too small to office all of the Executive Secretariat staff in its first two years. The Nakai District administration has started to build an extensive new office, although this building is only about 25 % complete. If the District is assisted to finalize at least part of its new office space, the Executive Secretariat may be able to occupy rooms in the Districts old (current) building. This would be the desired option, as it would be an effective means of promoting coordination and cooperation between the Executive Secretariat and District authorities.

During the first financial year, the WMPA's Executive Secretariat headquarters complex at Nakai District town will be professionally designed, while the construction will be completed in the second financial year. The design will allow for progressive additions of buildings and rooms, as funds become available and staff and offices become functional. Eventually, the HQ complex will include offices, a library and visitor information centre, a storeroom and a machinery workshop. Depending on its location, it may also include a ramp to the reservoir, a restaurant (privately run), and a small botanical garden (representing plateau species).

A sub-headquarters will be built in Khamkerd District, probably in Km 20 town, and ideally these would be located in the compound of either the DAFO or of the District administration.

Accommodation for the Executive Secretariat staff and all TA may be a problem in the early years of the SEMFOP-1. In Khamkerd, all staff and TA will be expected to find their own accommodation. As the situation in Nakai is more serious, funds have been allocated to construct accommodation. The location of this is as yet unknown.

7.2.4.2 Field Stations, Posts and Gates

A network of field stations, monitoring posts and checkpoint gates will be developed over time, the extent of the network to be developed during SEMFOP-1 (see Map 13). Field stations will be placed in focal villages in enclave zones, for both accommodation base and office's for enclave based staff. In some cases, these will be ex-DUDCP field stations, renovated and expanded. Monitoring posts may be somewhat more isolated, and will be dry and warm refuges for staff, partners and village monitoring staff to rest up during forest missions. Gates will be placed at strategic points, to intercept and check either regular or irregular transit of persons and goods. Some gates may be permanent, many will be mobile in which staff decide to set up a checkpoint at any location based on information or understanding of transit routes. In most cases, field stations and posts inside the NPA would be built from local materials, while those on or in the reservoir and in peripheral impact zones could be built from cement.

7.2.4.3 Transportation, Field and Office Equipment

A wide range of transportation, field and usual office equipment will be purchased and put to effective use. Transportation equipment will include 4-wheel drive, motorbikes and different boats (river and ferry). Office furniture will include; furniture, desk top and notebook computers, A2 and A3 printers and accessories, photocopiers, a few air conditioners, telephones, photocopiers, etc.,

Further details and budget estimates are given in Section 7.6.

7.3 CAPACITY BUILDING AND TECHNICAL ASSISTANCE

7.3.1 Staff Training

During this SEMFOP-1, and especially the first 2 years of operation of the Executive Secretariat, developing the capacity and ability of the Executive Secretariat's new complement of staff will be of critical importance. In close cooperation with the Deputy Directors, the Managing Director will review previous training needs assessments and conduct a new training needs assessment, linked to the on-going development of the organization and staffing of the WMPA and the required functions of its Executive Secretariat. This assessment will;

- i) identify the subjects for which training will be required;
- ii) identify which staff require training in those disciplines;
- iii) provide an analysis and clear presentation of the range of training courses and education opportunities available and appropriate. These training and education opportunities will include;
 - training courses organized by the Executive Secretariat, and held in Nakai HQs;
 - training organized by another agency or organization especially for the ExSec, and conducted at the WMPA headquarters or at another location in the country;
 - attendance to already organized training courses, usually in the Provincial of nationally, but possibly within the region; and
 - attendance to longer term education institutions to undertake formal education programs, such as bachelor or post-graduate courses.

Selected staff will then be supported to attend these training or education opportunities. Provision is also made to support students to conduct thesis field work in the NT2 Watershed/NPA, through the Executive Secretariat. Furthermore, a specific requirement of Technical Assistance will be to provide on-the-job or in-service training, and TAs effectiveness in this respect will be a specific component of TA evaluation.

Training of staff will also be conducted through the hiring of various NGOs and/or Consultants to carry out specific tasks within the project. These include: Project Management Support, Ranger & VCMU Training, Biodiversity Baseline Survey, and Community Participation Support.

7.3.2 Technical Assistance Requirement

The SEMFOP-1 is designed to ensure that the Technical Assistance will assist the WMPA's Executive Secretariat, rather than direct it or run in parallel to it. This will be achieved through the engagement of 3 long term TA, each to be engaged for an estimated duration of 42 months:

- The PICAD/CTA Advisor will act as counterpart to the Deputy Directors responsible for FLUPAM and will support the WMPA management in general project implementation and coordination.
- The Conservation Advisor will act as counterpart to the Deputy Director responsible for PPAM.
- The Community Development and Participation Advisor will work under the direct supervision of the LDC Deputy Director, and will work closely with the other TA team members and all other Deputy Directors with the aim of mainstreaming ethnic issues and concerns in all the SEMFOP-1 programs.

The primary, and probably the most important role of the long-term Technical Assistance, will be to provide on-the-job training to the directors and staff of their respective division. This will emphasize team-building and competency, with the objective of developing staff capacity throughout the WMPA to the point that the TA will be able to withdraw at the end of their respective terms, leaving competent and self-reliant management and staff in place.

Short term international TA (Financial Management Advisor and GIS Specialist) will be recruited for a variety of functions in support of SEMFOP objectives. Long term and short term technical assistance positions are described in detail in Section 6.3, and their TORs are presented in General Annex 2.

7.3.3 TA Selection, Management and Quality Control

The process and procedures by which Technical Assistance will be sought, selected, hired, coordinated and technically monitored needs to be approached carefully. ToRs for the TA will need to be reviewed and finalized, based on those presented in General Annex 2. Most positions should be advertised widely – nationally, regionally and internationally. Interview procedures and selection criteria should be clearly defined, based on the ToRs, and rigorously applied.

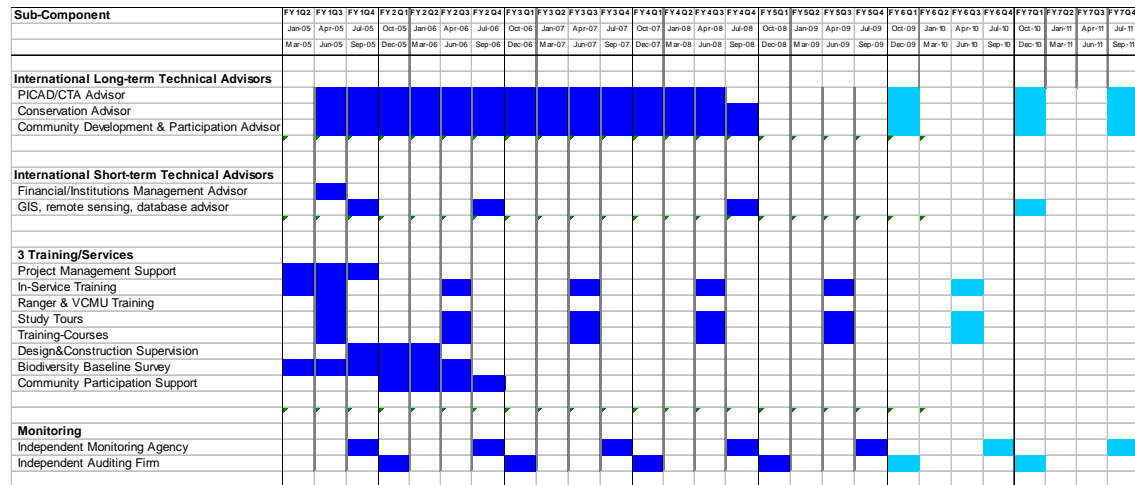
The selection and interview panel for the fulltime positions should include the Executive Secretariat Directors, and selected BoD members. Short term consultants will be reviewed by the Executive Secretariat Directors, and their recommendations passed to the BoD for approval.

The effectiveness of TA input will be regularly evaluated, at the end of each input for short term advisors and every year for the full time advisors. This evaluation will be conducted by Executive Secretariat Directors cabinet and the CTA, and the result passed to the BoD for adjudication as to whether an Advisor is of the required standard, and as to whether the incumbents tenure will be continued, or if alternative replacements should be found.

7.3.4 Long Term TA Selection and Engagement

The PICAD/Chief Technical Advisor will be sought, selected and engaged early in the 1st FY of the Executive Secretariats operation. The CTMA will not be full time for the entire duration of the SEMFOP-1. Due both to (i) budget constraints, and (ii) the need to test and understand the capacity and capability of the Executive Secretariat without the CTA's assistance, the CTA will essentially 'hand-over' all responsibilities to the Execsec after 3.5 years, but provide follow-up support through short term inputs over the remaining period of the SEMFOP-1. A similar phasing strategy for the Conservation and Community Development and Participation advisors will also be adopted as shown in Figure 7.1. On contracts of 2 years duration, the PICAD/CTA, Conservation, and CDP advisors will work daily and closely with their respective Directors, be based at the Nakai headquarters but travel frequently to the field, villages and forest.

Figure 7.1: Phasing of TA inputs.



7.4 EXECUTIVE SECRETARIAT MANAGEMENT

7.4.1 Staff Management

Administrative management of the Executive Secretariats staff (and implementing partners) will be based in the personal office of the Administration and Finance unit. Following selection and engagement of the staff (see Section 7.2) all data related to staff will be updated and filed in this office. This will include:

- CVs and work history;
- records required for health insurance coverage;
- monitoring of days worked, leave due and leave taken - attendance and leave records - (staff will have to submit monthly timesheets for payment of salary and payment of DSA).

This office will also (i) inform the finance section of monthly salaries and DSA due; and (ii) organize and facilitate the annual evaluation of all staff, the results of which will be filed accordingly.

In terms of technical management, staff will report specifically to the Deputy Director in charge of their particular Division or Unit. Besides daily management of their staff, each Division Deputy Director will have to lead an annual evaluation of staff performance, which will lead to one of three scenarios:

- 1: performance satisfactory (or better) and staff encourage to continue; or
- 2: performance not satisfactory, but redeemable – staff to undergo counseling; or
- 3: performance not satisfactory nor redeemable – staff engagement to be terminated.

7.4.2 Technical Assistance Management

As for permanent staff, the administrative management of the Executive Secretariats TA will be based in the Personal Office of the Administration and Finance Division. Following selection and engagement of the TA, all data related to them will be updated and filed in this office, including:

- CVs and work history;
- records required for health insurance coverage;
- monitoring of days worked, leave due and leave taken - attendance and leave records - (TA will have to submit monthly timesheets for payment of salary and payment of d.s.a.);
- informing the finance section of monthly salaries due and d.s.a. due; and
- organizing visas and other permits as required.

In terms of technical management, the TA will report to their respective Deputy Director. Each Division Head will have to lead an evaluation of TA performance after the end of each TA input. This will allow the Executive Secretariat to decide if the TA should be considered for further inputs as planned. One of three scenarios is likely:

- I: TA performance satisfactory (or better) and they would be encouraged to provide further inputs, as planned; or
- 2: TA performance not satisfactory, but redeemable, and they would be encouraged to provide further inputs as long as (i) they agree to their appraisal evaluation, and (ii) they guarantee their performance can improve on the next input; or
- 3: TA performance is not satisfactory nor redeemable, and the incumbent will not be considered for further inputs.

7.4.3 Infrastructure and Equipment Management and Maintenance:

7.4.3.1 *Office Management and Maintenance*

The management and maintenance of all the various buildings of the Executive Secretariat will be the responsibility the O&M Unit, under the leadership of the Deputy Director – Administration.

Management will include ensuring all offices and accommodation is occupied appropriately, and maintain an inventory. Buildings maintenance will include ensuring all electrical wiring and outlets are safe and effective etc., ensuring any damages are repaired, ensuring roading and tracks are kept in good condition, ensuring water pipes and drains are in working order, and ensuring all toilets are used and working properly, etc. It may transpire in later years that an electrician and handyman will be employed.

Experience has shown that adequate and timely supply (availability) of consumable office and field supplies is required to avoid bottlenecks in the conduct of field and office activities. Thus, the administration unit will maintain a storeroom with all the required consumable field and office supplies, to be issued to staff on an as-needs basis, upon the signature of the Deputy Director. Replenishment of this store will be the responsibility of the Administration Office, probably on a monthly basis. Field supplies will include falms, torches, batteries, shoes, socks, raincoats other field clothes, field (pocket sized) notebooks, pens etc.,

7.4.3.2 Vehicle Management and Maintenance

The fleet of vehicles will be used on difficult terrain, especially prior to and during the reservoir construction. Thus, staff allocated and responsible for all the vehicles and boats will ensure logbooks are kept up to date for all 4-wheeled vehicles and all boats. The O&M Unit will keep track of the logbooks and mileage of all vehicles, and inform responsible officers of the imminent need to service a vehicle. This Unit will operate a limited equipped workshop, which, under the supervision of a main driver/mechanic, will provide basic service the vehicles, and keep in stock basic spare parts and tires. More significant repairs and timely maintenance will be ensured through the services of a reputable 'garage' in Thakek and km20.

Good vehicle operation of the vehicles will be stressed, and Unit will also be responsible for training in good vehicle operation.

Limited personal or private use of vehicles will be allowed although the vehicle must be driven only by the staff specifically assigned as responsible for that vehicle. All private trips over 5 kms must be recorded in the logbook, and for trips over 10 kms, the driver must fully cover the cost of fuel. For trips over 20 kms, specific prior permission must be obtained from the responsible Deputy Director.

7.4.3.3 Communications Management and Maintenance

During and after installation of the external and internal communications network, a team (one person initially) will be responsible specifically for the management of the network, including;

- developing a network protocol;
- training of operators;
- regular equipment maintenance; and
- general trouble shooting.

This person will be based at the Nakai HQs 'communications centre'. Considering the wide area to be covered, the mountainous and forested terrain and the range of 'teams' who may be using the system (including the military and police partners) a short, independent consultancy may be required to adequately plan and budget such a system (or may be included in the tender for prospective contractors to sell and install the system).

7.4.4 Financial Management

Functional management of the financial aspects of the Executive Secretariat will be the responsibility of the Administration and Finance office, although approval responsibilities will apply to each specific financial plan, approval and transaction, as detailed below.

The financial year of the WMPA corresponds with the financial year of the Lao Government (i.e. Oct 1 to September 30). An overview of the annual cycle of planning and installments is show in Table 7.1.

Figure 7.1: Overview of the Financial Year main activities (SEMFOP-1)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Start of Financial year												
Replenishment of WMPA account (Pre-COD)												
Replenishment of WMPA account (post COD)												
Independent Audit												
IMA review												
ES Preparation of Annual Work Plans/budget												
ES Preparation of Annual report												
Presentation of Annual Work Plans/budget												
BOD Approval of Annual Work Plans/budget												

In general, funding will be approved on an annual basis, based on annual Work plans and budgets, but the transfer of operational funds from the WMPA Trust Fund to the Executive Secretariat imprest bank account in Khammoune Province will be effected on a quarterly basis and based on quarterly Work plans and budgets presented to and approved by the BoD standing member. Within this general framework, the Executive secretariat will follow a clear set of financial procedures as follows:

Annual Budget Approvals and Release of Funds

1. Together with its annual report, the Executive Secretariat will develop annual Work Plans and budget, and the 1st quarterly budget.
2. The IMA will review these Work Plans and budget, and certify them (or direct immediate revisions are made).
3. The Executive Secretariat will then forward annual Work Plans and budgets to the BoD at least one month before the scheduled annual meeting of the BoD.
4. The BoD will then consider these budgets prior to and then at its annual meeting, at which time any comments or recommendations on the budget will be aired. If consensus is found and the budget approved, the BoD will inform the NTPC of this approval, and request that the NTPC (or WB) to make a timely release of the funding installments for the coming budget year.
5. The NTPC or WB then (within 15 days) transfers that budget (US \$1 million, plus indexation) to the Bank account of the WMPA Fund.
6. The BoD will inform its investment manager of this request and imminent annual budget installment.

Quarterly Budget Approvals and Release of Funds

1. At least 2 weeks before the start of each new quarter, the Executive Secretariat will submit quarterly activity and budget reports, and quarterly Work Plan and budget plan to all the members of the BoD. (the 1st quarters Work Plan and budget will be submitted along with the annual plan to the BoD meetings).
2. If no objections are forthcoming, the Chairman and standing member will approve this Work Plan and budget within 2 weeks of receiving it. If contentious issues are found, the BoD will call a meeting of the BoD to discuss and resolve contentious issues or budget expenses.
3. If approved, the BoD chairman instructs the Investment manager to release the required quarter budget requirement of the Executive Secretariat.
4. [actions v) vi) and vii) will be repeated each subsequent quarter]
5. The funds released, on a quarterly basis, from the WMPA trust fund will be transferred to a US \$ Bank account in Thakek town of Khammoune Province, under the signature of the Managing Director of the Executive Secretariat.

Monthly Budget Approvals and Release of Funds

1. The Executive Secretariat admin manager drafts a monthly Work Plan and budget with input from the Managing Director and Deputy Managers, and requests that those funds to be spent in Nakai are

transferred to a Nakai Bank (or safe of the Executive Secretariat in the absence of a good), and those funds to be spent in Luk 20 to be transferred to a Luk 20 bank account. Those funds to be spent elsewhere are to be transferred to a second \$ account in Thakhek, from which daily disbursements are made as required.

2. Each month, those funds remaining in the monthly bank accounts (one in Thakek, Nakai and Luk 20) are returned to the quarterly bank account in Thakek.
3. Each quarter, any funds remaining in the Thakek quarterly account are transferred back to the WMPA fund, or more likely discounted from the approved advance for the following quarter.

Such a financial process will require detailed attention to accounting and budget request and transfers. One accounting staff will be assigned solely to monitor and coordinate these various transfers, and to keep project accounts up to date, on a daily basis.

7.4.4.1 Bank Accounts

In order to facilitate the financial procedures and management as detailed in 6.4.4.1 above, the WMPA will establish a series of bank accounts, as follows:

i) WMPA US \$ Account 1 – WMPA Fund:

A US\$ account which will receive annual installments from the NTPC, and from which the quarterly transfers of funds to the Executive Secretariats 'US \$ account 1' will be made. As some of the monies in this account will not be transferred until quarter 2, 3 and 4, the account may be subdivided into 3 medium term deposits 3, 6, and 9 months. Each quarter (maturation of the term deposit), the planned and approved funds (on average, 25% of the annual budget) would be matured and returned to the Account, for release to the Executive Secretariat Operational account 1.

This account may be managed by an Investment Manager who will be remunerated by a mutually agreed % of the interest accumulated annually. The use of the remaining interest, which would be in the order of many 1,000's of dollars, will be reviewed by the BoD, but could include (i) invest in the Trust Fund, or (ii) use for WMPA activities.

iii) Executive Secretariat US \$ Account 1:

A US\$ account, probably in Thakhek, which is replenished from the WMPA account 1, and from which the Executive Secretariat will withdraw its monthly budget requirements.

iv) Executive Secretariat US \$ Account 2:

A US \$ account Thakhek, which will be used to finance daily US \$ expenditures within any particular month in the region of Thakhek or Vientiane. This account will have a check facility.

v) Executive Secretariat Lao Kip Account 1/Nakai:

A Lao Kip account in Nakai, which will be used to finance daily expenditures within any particular month in and around Nakai District.

vi) Executive Secretariat Lao Kip Account 2/Khamkerd:

A Lao Kip account in Lak Sao town of Khamkerd District, which will be used to finance daily expenditures within any particular month in and around Khamkerd District.

7.4.4.2 Trust Fund

In addition to these regular bank accounts, a Trust fund may be established to receive any residual funds following each years disbursements. This fund will be managed to ensure fund growth, and the interest from this fund will then be used for long term Protected Area management. However, it is not expected that annual funding will be in excess of requirements during the early years of the WMPA's operation. That is, there will be few, if any residual funds to invest on this trust fund. If there are, they will be relatively small, and thus the interest accumulated relatively small. Thus, it is not likely that this trust fund will become significant in the short to medium term.

There will be 3 funding phases with different funding sources for SEMFOP:

1. Pre Financial Close (NTPC)
2. FC to Pre-COD (WB equity & NTPC)
3. Post-COD to end concession period (NTPC)

It is therefore unlikely that any remaining funds will be available to capitalize the proposed trust fund until possibly towards the end of SEMFOP-1. By that time, the LECF will have been established (Section 4.1.2.3) and it is proposed that a specialized financing window be established under the LECF framework for any monies remaining over and above WMPA spending. Investment revenue from capital accumulated over 25 years would provide a sustainable funding source for NNT NPA after the concession period.

7.4.4.3 Procurement and Disbursement Approvals

Procurement packages have been defined based on mainly sources of funding and the type of activities. The overall summary is given in Table 7.7. Procurement plans will be prepared on an annual basis and attached to the annual work plans.

Table 7.7: Procurement Packages

Package Code	Package Type	Description	Pre-COD Funding
1 Civil Works			
1.1 Office Construction/Rehabilitation	NCB/NS	National Competitive Bidding/	World Bank
1.2 Construction of Field Facilities	NS	National Shopping	World Bank
1.3 VDC Facilities	NS	National Shopping	World Bank
1.4. Other	NS	National Shopping	World Bank
2 Equipment/Goods			
2.1 WMPA Office Equipment	NS	National Shopping	World Bank
2.2 WMPA Field equipment	NS	National Shopping	World Bank
2.3 Vehicles, Boats	IS	International Shopping	World Bank
2.4 Motorcycles	NS	National Shopping	World Bank
2.5 Maps, RS, data	IS	International Shopping	World Bank
2.6 Village Development	NS	National Shopping	World Bank
2.7 Other	tbd	To Be Determined	Tbd
3 Training/Services			
3.1 Project Monitoring	CQ	Consultants Qualifications	World Bank
3.2 Project Management	IC	Individual consultants	World Bank
3.3 Training Contracts	IC	Individual consultants	World Bank
3.4 Design and Construction Supervision	IC	Individual consultants	World Bank
3.5 Various contracts	IC	Individual consultants	World Bank
3.6 Other	tbd	To Be Determined	Tbd
4 Technical Assistance			
4.1 International Technical Advisors	IC	Individual consultants	World Bank
4.2 Short-term Technical Advisors	IC	Individual consultants	World Bank
4.3 Other	tbd	To Be Determined	Tbd
5 Recurrent Operating Costs			
5.1 WPMA Staff	IC	Individual consultants	NTPC Pre-COD
5.2 WMPA Operating costs	SOE	Statement of Expenses	NTPC Pre-COD
5.3 Transportation	SOE	Statement of Expenses	NTPC Pre-COD
5.4 Field Expenses	SOE	Statement of Expenses	NTPC Pre-COD
5.5 Miscellaneous	SOE	Statement of Expenses	NTPC Pre-COD
5.6 Meetings, Workshops	SOE	Statement of Expenses	NTPC Pre-COD
5.7 Financial Auditing	CQ	Consultants Qualifications	NTPC Pre-COD
5.8 Other	tbd	To Be Determined	Tbd
6 Other			
6.1 Preparations until June 2004	SOE	Statement of Expenses	NTPC Pre-COD
6.2 Remaining Balance	SOE	Statement of Expenses	NTPC Pre-COD
6.3 Government Contribution	tbd	To Be Determined	Other
6.4 Other	tbd	To Be Determined	Tbd

Larger procurement will be undertaken by the NTPC, following standard World Bank Procurement guidelines. Smaller procurement will be undertaken by staff of the Admin and Finance Unit of the Executive Secretariat, and will follow standard procurement guidelines to be developed in association with the Institutional and Finance Management Advisor. The procedures are likely to be similar to the following:

- Approvals for operational disbursements from the petty cash register of up to US \$50 can be made on the approval of the administration officer;
- Approvals for operational disbursements from the petty cash register from US \$50 up to US \$250 can be made on the approval of the Deputy Director - Administration
- Approvals for operational disbursements from the petty cash register of over US \$250 and up to US \$1000 (the limit of the petty cash) can be made on the approval of the Administration Deputy Director, but must be countersigned by the Director or Deputy Director technical.
- Approvals for withdrawals or disbursements from the monthly bank accounts of under US \$1000 can be then made on the signature of the Deputy Director - Administration
- Approvals for withdrawals or disbursements from the monthly bank accounts of under US \$1000 to US\$4,500 can only be made on the signature of the Deputy Director - Administration Approvals but counter signed by the Director.
- Expenditures (bank withdrawals, checks, contracts or purchase orders) over US \$4,500 and up to US \$10,000 must be signed first by the Director and then sent to the BoD Deputy Chairman for their non-objection. If no reply is received within one week, then this is accepted as a non-objection, and the signature of the Managing Director and at least one Deputy Managing Director is accepted.
- Expenditures (or contracts or purchase orders) over US \$10,000 must be signed first by the MD and then sent to the BoD Deputy Chairman for their non-objection, which must be obtained before the expenditure is incurred.

These limits or ranges of approval delegation will be reviewed annually, and amended as appropriate.

The purchase of equipment, supplies or services costing over US \$4,500 will have to be procured through an open tendering process. Ad hoc bidding and inspection committees will be formed comprising senior WMPA staff, as appropriate to the nature of each purchase. These committees will be responsible for approving bid announcements and specifications, selecting the successful bid and inspecting/approving delivered items or services.

7.4.5 Coordination and Cooperation

1. External Coordination

The Manager and Deputies of the Executive Secretariat will be required to co-ordinate with many stakeholders and implementing partners at the local and provincial level, including the range of Government agencies, the NTPC and the RMU. It is proposed that regular, quarterly, co-ordination meetings are convened with the RMU, Nakai District and the NTPC to review progress, co-ordinate activities and resolve issues as they arise.

2. Internal Coordination

Regular internal meetings will be held on a monthly basis in order to co-ordinate and share information between all of the Units and Divisions, including Luk20 office, and to discuss budget planning. The location of this meeting will rotate, probably twice in Nakai and once in Km20 office, per quarter.

Other ad-hoc or as-required meetings will be convened as and when issues arise within the Executive Secretariat itself or with implementing partners. The Executive Secretariat must be proactive in convening such meetings to address issues as they arise and seek consensus on resolution of issues or modifications and improvements required in the work plan and activities.

3. Board of Directors Meetings

The Executive Secretariat Managing Directors will act as Secretary to the meetings of the WMPA Board of Directors. This BoD will meet twice per year, with one meeting per year focused on review of the annual report and review, for approval of the following years work plan and budget.

The Secretary (Managing Director of the Executive Secretariat) will be required to submit agendas two weeks in advance, organise the meetings and take minutes.

4. Trans-boundary Coordination Meetings

A large tract of the boundary of the NT2 Watershed/NPA is also the national boundary between the Lao PDR and Vietnam PDR. The spirit of co-operation between these two countries extends to watershed and conservation management issues, which are very similar in these two countries. The trans-boundary co-operation efforts undertaken to date will be continued and strengthened for the mutual benefit of both countries.

7.4.6 Planning and Reporting

7.4.6.1 Regular Reporting and Planning

A rigorous schedule of reporting and planning (Table 7.8) will be followed by the Managing Directors, each of which will have responsibility for their Division and Units, while the Managing Director will be ultimately be responsible for the compilation of these report and plans and passing them onto the BoD members.

Table 7.8: Regular Reports and Plans to be submitted by the Executive Secretariat to the BoD

Reports – activities and budget	Language	Approximate size	Due date
i) Monthly Reports	Lao	5 to 10 pages	End of month
ii) Quarterly Reports	Lao/English	10 to 15 pages	End of quarter
iii) Annual Report	Lao and English	No limit	Two weeks before BoD meeting
iv) STC reports	Lao and English	No limit	End of each consultancy
Plans –activities and budget			
i) Quarterly Work plan & Budget.	Lao & English	No limit	Two week before start of qtr
ii) Annual Work plan & Budget	Lao & English	No limit	Two weeks before BoD meeting
iii) Monthly Plans & Budgets	Lao	No limit	Every month

7.4.6.2 Programmatic Planning

Towards the end of SEMFOP-1 (starting the third quarter of Financial year 7) the plan and budget for SEMFOP-2 must be developed. This will primarily be the responsibility of the Managing Directors, the CTA, and international and national consultants employed specifically for SEMFOP-1 review and SEMFOP-2 drafting.

7.4.7 Operational Support

The three main operational support units mandated to support all of the operational divisions as and when required, are:

- GIS, mapping and database Unit
- Training, Information and Outreach Unit.
- Hydrometeorology Unit (managed by the NTPC)

7.4.7.1 GIS, Mapping and Database Management

The GIS/Mapping Unit will be based inside the FLUPAM Division, but will provide services to all programs and divisions. Mapping will be an essential part of the management of the NT2 Watershed/NPA, as maps display a wide range of information; and provide the spatial framework on which rational management decisions will be made and activities coordinated.

Maps which will to be managed, generated and supplied by the GMD Unit will include (see annex 3 for inventory of maps and aerial photos covering the NT2 Watershed/NPA).

Topographic Maps: Topographic maps of scale 1:25,000, 1:50,000 and 1:100,000 which will be purchased and stored as paper copies in the Executive Secretariat. At least the 1:50,000 series will also be procured in digital format, and filed on computer. This format is particularly useful for the printing of maps of any required area, at any time, and in unlimited quantity.

Topographic maps will be taken into the field to guide surveys, boundary delineation, village level land forest use planning and allocation, forest and wildlife monitoring and patrolling etc.,. However, while topo maps are useful for showing terrain and watercourses, the alignment of roads and location and names of villages is usually incomplete or incorrect, and these features will need correction or updating and reprinted by the GIS mapping Unit.

Aerial Photographs: There a number of aerial photographic coverage's available for the NT2 Watershed/NPA (Table 7.9). These include 1992 coverage of mainly the peripheral impact zones and corridors, flown at 1:40,000, and the JICA funded coverage at 1:50,000 flown in 1998/1999 which covers the inner Watershed/NPA. In addition, the coverage at 1:30,000 of the reservoir area also includes some of the lower Watershed/NPA..

Table 7.9: Summary of recent aerial photo coverage of the NT2 Watershed/NPA

Year	Scale	Description
1981	1:30,000	These photos were used to make the UTM/1:100,000 maps
1993	1:25,000 & 1:40,000	Includes Bolikhamsy, the NT reservoir and lower and mid-watershed:
1994	1:10,000 & 1:30,000.	Specifically the NT2 dam area.
1999	1:50,000	Does not cover the lower watershed, as it was considered that the 1993 coverage was sufficient.

For budgeting purposes, coverage of the whole Watershed/NPA area requires about 90 of the 1999 1:50,000 series photos (printed on 25 x 25 cm paper) and 50 of the 1993 1:40,000 photos (printed on 25 x 25 cm paper). Thus, 140 photos at US\$5/each would cost about US\$840. Enlargements of these photos to a more useful 1:25,000 scale (useful for survey and land and forest use planning and allocation) would require their printing on sheets of about 50 x 50 cm, which, at about \$10/sheet, would cost about US\$1,400. Due to this good (prior) coverage, and the fact that satellite data is becoming more detailed, new aerial photographic coverage is not envisaged in the current planning timeframe (and budget).

Remote Sensed Data: Up-to-date information on forest cover land use, and other issues can be gleaned from interpretation of remote sensed (satellite) data. Relevant satellite data includes:

- Landsat ETM (TM7). While each scene covers a very large area, in the case of the NT2 Watershed/NPA three overlapping scenes are required to cover all of the NPA. As each scene costs about US \$600/scene, then an investment of about US\$1,800 per year is required.
- Spot:
- IRS data is higher resolution than Landsat. 2 scenes are required to cover the Watershed/NPA and as each scene costs US \$3,500, then US \$7,000 per year is required, if purchased annually.
- If certain areas require very high resolution to gain reliable and up to date information, then digital cover from 'Ikonos' can be purchased. These images give about 2m resolution but are viewed and printed comfortably at about 1:5,000. They cost about 34 per km², with a minimum of US \$2,000 - or 60 km² per purchase.

A combination of these satellite image sources may replace the need to undertake new aerial photography, at least within the current project time frame. Given budget constraints and quality requirements, it is likely that only the Landsat TM images and data will be procured and used.

Interpretation and use of this satellite data requires a computer powerful enough to manipulate satellite data, and with appropriate GIS programs. Staff will be trained to manipulate and interpret the data and produce maps as required by the Executive Secretariat Directors and managers. For this purpose, a GIS consultant will be employed on a recurrent, short term basis.

Thematic GIS Maps: Information represented on GIS thematic maps will provide decisions makers (such as the BoD) and field staff with a useful tool. These maps often use the topographic map information, digitised into the computer, as a background or template, and other information is added as layers, which can be manipulated and combined to compare and present information as and when required. Information can be added either as point data, polygon data, or as excel tables – thus the database nature of the GIS systems.

Examples of some of the GIS Information and Thematic maps to be developed include;

- Base Map, showing NT2 watershed boundaries, Provincial and District boundaries, stakeholder village location, roads and main tracks, roads and main tracks.
- Resources Use and Management Maps, to define land use and management zones in the W/CA which are useful for implementing and monitoring land and forest management agreements reached with villagers and other stakeholders. They could include the location of TPZ and CUZ, once defined, and the location of major commercial NTFPs or other forest product sources.
- Land and Forest Allocation maps.
- Patrolling sectors and patrol routes.
- Ecology maps of forest types, important habitat features (wetlands, salt licks), etc.
- Watershed maps to delineate watersheds and sub-catchments, land and forest use and management zones within these areas, and a watershed analysis for focus areas.
- Reservoir maps showing the reservoir at different flooding and drawdown levels, the placement of facilities and roads, land use and management zonation, etc,
- 3-D models of both the watershed and the reservoir will be constructed and used as a participatory planning and implementation tool.

7.4.7.2 Information, Training and Outreach Unit

The Unit will report directly to the WMPA Director, but will provide services to all divisions across the entire program of the WMPA.

An information office – or library and documentation centre- will collect, collate and organise all information about the NT2 Watershed/NPA, and the many and various activities of the WMPA and its stakeholders. Information to be collated will include relevant decrees and laws, and those rules and regulations developed, over time, to control activities in and around the NT2 Watershed/NPA.

A Community Outreach and Conservation Awareness office will ensure information is drafted into user friendly pamphlets, posters and other information and training formats. This will include making legal documents and local level rules and regulations available to all stakeholders, in a user friendly format. They will also provide interpretative advice on the documents, especially for the Monitoring and Protection Division enforcement activities. Thus, this COCA office will be aimed at two main audiences. Firstly, the general audience of all stakeholder interested in the NT2 Watershed/NPA, including government agencies and ministries, private and business entities and any international stakeholders. The second audience is the villagers and others working on a daily basis with and in WMPA activities.

7.5 MONITORING AND EVALUATION

7.5.1 Internal M & E

Internal monitoring and evaluation will be a specific function of the reporting schedules of the Executive Secretariat. The monthly reporting format will include a section requiring an analysis of good and weak aspects and of lessons learned. These reports will be submitted to all BoD members. In addition, the BoD will make 2 trips to the NT2 Watershed/NPA, as part of their annual meetings to be held in Nakai, and this will represent a form of internal monitoring by the BoD itself.

Similarly, such an internal evaluation will be included as a specific section of the Annual Report, as presented to the IMA and then the BoD's annual meeting. The inclusion of such M & E reporting requirements will require that Executive Secretariat Directors maintain a constant analytical framework in the way they plan, conduct and then report on the work, and as such can be an effective method for internal monitoring and evaluation.

An independent SEMFOP review will be conducted in year 4-5 to evaluate progress towards objectives and provide recommendations on required changes.

7.5.1.1 Monitoring and Evaluation Framework

Internal M&E systems will be outcome focused (impact monitoring) where the outcomes of project activities will be measured against baseline indicators. M&E systems will be developed for each of the major SEMFOP components. An indicative M&E approach has been presented in Section 6.5.

The M&E framework emphasizes participatory evaluation procedures, particularly for evaluating the outcomes of village level activities and for WMPA staff appraisals and performance evaluations. Staff performance evaluations will adopt the 360 degree approach where appraisals are conducted with (i) superiors or supervisors, (ii) horizontally with colleagues, and (iii) with subordinates.

7.5.2 External M & E

7.5.2.1 Independent Monitoring Agency

As detailed in Section 6.5.4, the IMA will undertake annual missions in last Quarter of each Financial Year (August) to:

- a) review work conducted and how budget has been spent in the current year, and
- b) review the annual work plan and budget for the following year.

They will be required to give confirmation, or otherwise, that the previous year's activities and budget and the following year's work plan and budget are consistent with the objectives of the WMPA and the SEMFOP. Their conclusions in this respect will be conveyed to the World Bank, the WMPA Board of Directors and NTPC who, under the concession agreement, may withhold budget disbursements until any outstanding issues have been rectified to the satisfaction of the IMA.

The IMA will comprise 2 international experts, with regional and Lao experience, one with PA experience and the other with institutional management experience in a development setting. It will also include 2 Lao experts with similar experience and expertise. Although IMA fees and expenses will be the responsibility of the WMPA, their independence and impartiality will be ensured by seeking World Bank approval prior to their appointment.

7.5.2.2 Independent Auditor

A local auditing firm will be engaged at the end of the beginning of each financial year to check the accounts of the Executive Secretariat. They will provide their report to both the IMA and the BoD.

7.6 **BUDGET ESTIMATE**

7.6.1 **Indicative SEMFOP-1 Budget Plan**

Core funding for the implementation of the NT2 WMPA's SEMFOP is guaranteed in the Concession Agreement between the NTPC and the GoL, in which Schedule 4, Part 3, Section 5 notes that the company will fund the WMPA for 31 years, in three main phases and for the amounts as follows:

- (i) US \$1,000,000 to be provided from PCD (soon after signing of the CA and approval of the SEMFOP) up until financial closure or CPCD, expected to be about 15 months later;
- (ii) US \$5,550,000 to be provided in five installments during the construction phase, from CPCD until COD, expected to take about 5 years; and
- (iii) post-COD, that is, for the whole Operating Phase, (the NTPC will) provide US \$1,000,000 annually (indexed to inflation) for next 25 years.

The total allocated budget for the SEMFOP-1 is accordingly 8.5 million US\$, i.e. the funding prior to COD, including both (i) and (ii) above, for a period of about 6 years, and for two years after the COD.

Apart from the funds provided by the NTPC, the WMPA is legally mandated to accept funding from other sources, funds directed to support specific activities in this SEMFOP, or for new or supplementary activities which would see the development of an expanded SEMFOP.

Apart from the core funds to be provided by the NTPC, the WMPA is legally allowed to accept funding from other sources, funds directed to support specific activities in this SEMFOP, or for new or supplementary activities which would see the development of an expanded SEMFOP.

7.6.2 **Organization of the Budget**

The SEMFOP-1 budget is organized according to three main components:

Program component/Activity: in which the major budget lines or budget categories (in the case of SEMFOP-1) are:

- A. Establishment and Operation of the Executive Secretariat
- B. PICAD Implementation
- C. Capacity Building
- D. Project Monitoring and Supervision.

Disbursement category: which is similar to the system used by the Government of Lao, and in which the major budget lines or budget expenditure categories are:

- Budget Category 1: Civil Works
- Budget Category 2: Equipment/Goods
- Budget Category 3: Services and Training
- Budget Category 4: Technical Assistance
- Budget Category 5: Recurrent Operating Costs
- Budget Category 6: Other

Procurement package: which is similar to disbursement categories, although budget categories are linked to specific procurement procedures and requirements. The different packages are listed in Table 7.10, including their funding sources for the pre-COD phase of the SEMFOP-1.

Table 7.10: Procurement packages and pre-COD funding sources.

Package Code	Package Type	Description	Pre-COD Fundir	World Bank	NTPC Pre-COD	NTPC Post-COD	Total
1 Civil Works							
1.1 Office Construction/Rehabilitation	NCB/NS	National Competitive Bidding/	World Bank	\$ 355,000	\$ -	\$ -	\$ 355,000
1.2 Construction of Field Facilities	NS	National Shopping	World Bank	\$ 46,000	\$ -	\$ 2,000	\$ 48,000
1.3 VDC Facilities	NS	National Shopping	World Bank	\$ 136,000	\$ -	\$ 64,000	\$ 200,000
1.4. Other	NS	National Shopping	World Bank	\$ 60,000	\$ -	\$ 20,000	\$ 80,000
				\$ 597,000	\$ -	\$ 86,000	\$ 683,000
2 Equipment/Goods							
2.1 WMPA Office Equipment	NS	National Shopping	World Bank	\$ 70,000	\$ -	\$ -	\$ 70,000
2.2 WMPA Field equipment	NS	National Shopping	World Bank	\$ 169,000	\$ -	\$ 25,000	\$ 194,000
2.3 Vehicles, Boats	IS	International Shopping	World Bank	\$ 130,000	\$ -	\$ 80,000	\$ 210,000
2.4 Motorcycles	NS	National Shopping	World Bank	\$ 45,000	\$ -	\$ -	\$ 45,000
2.5 Maps, RS, data	IS	International Shopping	World Bank	\$ 35,000	\$ -	\$ -	\$ 35,000
2.6 Village Development	NS	National Shopping	World Bank	\$ 367,000	\$ -	\$ 169,000	\$ 536,000
2.7 Other	tbd	To Be Determined	Tbd	\$ -	\$ -	\$ 16,000	\$ 16,000
				\$ 816,000	\$ -	\$ 290,000	\$ 1,106,000
3 Training/Services							
3.1 Project Monitoring	CQ	Consultants Qualifications	World Bank	\$ 200,000	\$ -	\$ 80,000	\$ 280,000
3.2 Project Management	IC	Individual consultants	World Bank	\$ 52,500	\$ -	\$ -	\$ 52,500
3.3 Training Contracts	IC	Individual consultants	World Bank	\$ 144,000	\$ -	\$ 16,000	\$ 160,000
3.4 Design and Construction Supervision	IC	Individual consultants	World Bank	\$ 8,500	\$ -	\$ -	\$ 8,500
3.5 Various contracts	IC	Individual consultants	World Bank	\$ 230,000	\$ -	\$ -	\$ 230,000
3.6 Other	tbd	To Be Determined	Tbd	\$ -	\$ -	\$ -	\$ -
				\$ 635,000	\$ -	\$ 96,000	\$ 731,000
4 Technical Assistance							
4.1 International Technical Advisors	IC	Individual consultants	World Bank	\$ 985,680	\$ -	\$ 86,580	\$ 1,072,260
4.2 Short-term Technical Advisors	IC	Individual consultants	World Bank	\$ 66,045	\$ -	\$ 9,435	\$ 75,480
4.3 Other	tbd	To Be Determined	Tbd	\$ -	\$ -	\$ 20,000	\$ 20,000
				\$ 1,051,725	\$ -	\$ 116,015	\$ 1,167,740
5 Recurrent Operating Costs							
5.1 WPMA Staff	IC	Individual consultants	NTPC Pre-COD	\$ -	\$ 1,568,550	\$ 646,200	\$ 2,214,750
5.2 WMPA Operating costs	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ 619,750	\$ 282,000	\$ 901,750
5.3 Transportation	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ 37,000	\$ 16,000	\$ 53,000
5.4 Field Expenses	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ 621,900	\$ 316,800	\$ 938,700
5.5 Miscellaneous	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ -	\$ 80,000	\$ 80,000
5.6 Meetings, Workshops	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ 91,500	\$ 40,500	\$ 132,000
5.7 Financial Auditing	CQ	Consultants Qualifications	NTPC Pre-COD	\$ -	\$ 60,000	\$ 30,000	\$ 90,000
5.8 Other	tbd	To Be Determined	Tbd	\$ -	\$ -	\$ -	\$ -
				\$ -	\$ 2,998,700	\$ 1,411,500	\$ 4,410,200
6 Other							
6.1 Preparations until June 2004	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ 421,000	\$ -	\$ 421,000
6.2 Remaining Balance	SOE	Statement of Expenses	NTPC Pre-COD	\$ -	\$ (20,000)	\$ -	\$ (20,000)
6.3 Government Contribution	tbd	To Be Determined	Other	\$ -	\$ -	\$ -	\$ -
6.4 Other	tbd	To Be Determined	Tbd	\$ -	\$ -	\$ -	\$ -
				\$ -	\$ 401,000	\$ -	\$ 401,000
				\$ 3,099,725	\$ 3,399,700	\$ 1,999,515	\$ 8,498,940

7.6.3 Funding Installments and Budget Plan

The WMPA Operational Plan and the budget framework and timeline of SEMFOP-1 is specifically linked to the NT2 Project planning and construction timeline. The cyclical planning timeframes for the WMPA will be based on these cyclical funding installments (and thus planning and reporting report requirements). At present, the best estimate of proposed funding installments to the WMPA are the scheduled installments as shown in Table 7.1 and Table 7.11.. Assuming that this funding timeline – over a total period of 6 years and 9 months - is realized, it will be rounded to 7 planning years for the purposes of the SEMFOP-1.

Annual budgets by Financial Year for the implementation of the SEMFOP-1 is summarized for funding sources (Table 7.12), procurement packages (Table 7.13), and main activities (Table 7.14).

Table 7.11: Indicative timeline and amount of budget core funding by NTPC to the WMPA

	PCD	Preparation	FY1	FY2	FY3	FY4	FY5	FY6	FY7
Start	12-Nov-03	1-Jun-04	1-Jan-05	1-Oct-05	1-Oct-06	1-Oct-07	1-Oct-08	1-Oct-09	1-Oct-10
Duration	202	214	273	365	365	366	365	365	365
End	31-May-04	31-Dec-04	30-Sep-05	30-Sep-06	30-Sep-07	30-Sep-08	30-Sep-09	30-Sep-10	30-Sep-11
Funding	\$ -	\$ 375,000	\$ 2,125,000.00	\$ 1,000,000.00	\$ 1,000,000.00	\$ 1,000,000.00	\$ 1,000,000.00	\$ 1,000,000.00	\$ 1,000,000.00
Cummulative funding:		\$ 375,000	\$ 2,500,000	\$ 3,500,000	\$ 4,500,000	\$ 5,500,000	\$ 6,500,000	\$ 7,500,000	\$ 8,500,000

Financial Planning

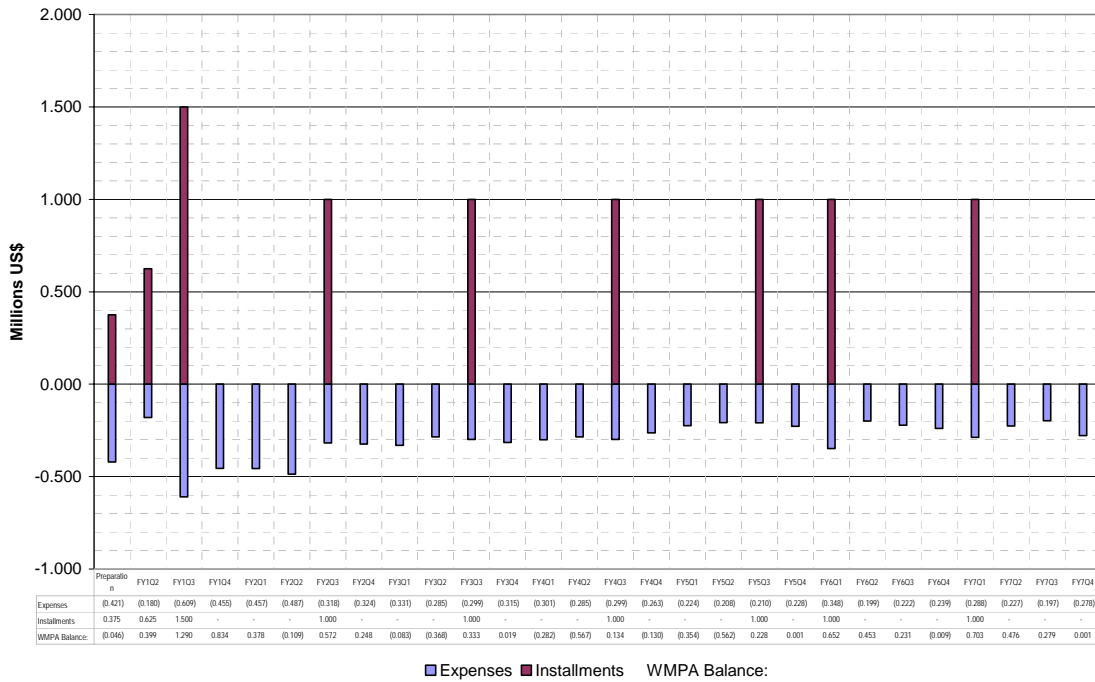


Table 7.12: Indicative timeline and amount of budget core funding by NTPC to the WMPA

	Preparation	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
	1-Jun-04 31-Dec-04	1-Jan-05 30-Sep-05	1-Oct-05 30-Sep-06	1-Oct-06 30-Sep-07	1-Oct-07 30-Sep-08	1-Oct-08 30-Sep-09	1-Oct-09 30-Sep-10	1-Oct-10 30-Sep-11	
World Bank									
1 Civil Works	\$ -	\$ 205,000	\$ 292,000	\$ 34,000	\$ 34,000	\$ 32,000			\$ 597,000
2 Equipment/Goods	\$ -	\$ 297,000	\$ 189,000	\$ 130,000	\$ 100,000	\$ 100,000			\$ 816,000
3 Training/Services	\$ -	\$ 275,000	\$ 192,000	\$ 56,000	\$ 56,000	\$ 56,000			\$ 635,000
4 Technical Assistance	\$ -	\$ 174,825	\$ 315,795	\$ 306,360	\$ 254,745	\$ -			\$ 1,051,725
5 Recurrent Operating Costs									
6 Other									
Sub-total:	\$ -	\$ 951,825	\$ 988,795	\$ 526,360	\$ 444,745	\$ 188,000	\$ -	\$ -	\$ 3,099,725
NTPC Pre-COD									
1 Civil Works									
2 Equipment/Goods									
3 Training/Services									
4 Technical Assistance									
5 Recurrent Operating Costs	\$ -	\$ 312,900	\$ 597,200	\$ 703,400	\$ 703,400	\$ 681,800			\$ 2,998,700
6 Other	\$ 421,000	\$ (20,000)	\$ -	\$ -	\$ -	\$ -			\$ 401,000
Sub-total:	\$ 421,000	\$ 292,900	\$ 597,200	\$ 703,400	\$ 703,400	\$ 681,800	\$ -	\$ -	\$ 3,399,700
NTPC Post-COD									
1 Civil Works						\$ 54,000	\$ 32,000		\$ 86,000
2 Equipment/Goods						\$ 168,000	\$ 122,000		\$ 290,000
3 Training/Services						\$ 56,000	\$ 40,000		\$ 96,000
4 Technical Assistance						\$ 25,530	\$ 90,485		\$ 116,015
5 Recurrent Operating Costs						\$ 705,600	\$ 705,900		\$ 1,411,500
6 Other						\$ -	\$ -		\$ -
Sub-total:	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,009,130	\$ 990,385	\$ 1,999,515
Total (per year):	\$ 421,000	\$ 1,244,725	\$ 1,585,995	\$ 1,229,760	\$ 1,148,145	\$ 869,800	\$ 1,009,130	\$ 990,385	\$ 8,498,940

Table 7.13: Summary of annual budgets, presented by expenditure category

CATEGORY	Preparation	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total	
		1-Jan-05 30-Sep-05	1-Oct-05 30-Sep-06	1-Oct-06 30-Sep-07	1-Oct-07 30-Sep-08	1-Oct-08 30-Sep-09	1-Oct-08 30-Sep-10	1-Oct-09 30-Sep-11		
1 Civil Works										
1.1 Office Construction/Rehabilitation	\$ -	\$ 135,000	\$ 220,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 355,000	4%
1.2 Construction of Field Facilities	\$ -	\$ 40,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ -	\$ 2,000	\$ -	\$ 48,000	1%
1.3 VDC Facilities	\$ -	\$ 10,000	\$ 30,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 200,000	2%
1.4. Other	\$ -	\$ 20,000	\$ 40,000	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$ 80,000	1%
	\$ -	\$ 205,000	\$ 292,000	\$ 34,000	\$ 34,000	\$ 32,000	\$ 54,000	\$ 32,000	\$ 683,000	8%
		16%	18%	3%	3%	4%	5%	3%		
2 Equipment/Goods										
2.1 WMPA Office Equipment	\$ -	\$ 20,000	\$ 20,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	\$ -	\$ 70,000	1%
2.2 WMPA Field equipment	\$ -	\$ 84,000	\$ 40,000	\$ 35,000	\$ 5,000	\$ 5,000	\$ 25,000	\$ -	\$ 194,000	2%
2.3 Vehicles, Boats	\$ -	\$ 80,000	\$ 50,000	\$ -	\$ -	\$ -	\$ 50,000	\$ 30,000	\$ 210,000	2%
2.4 Motorcycles	\$ -	\$ 45,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 45,000	1%
2.5 Maps, RS, data	\$ -	\$ 35,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 35,000	0%
2.6 Village Development	\$ -	\$ 33,000	\$ 79,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 85,000	\$ 84,000	\$ 536,000	6%
2.7 Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,000	\$ 8,000	\$ 16,000	0%
	\$ -	\$ 297,000	\$ 189,000	\$ 130,000	\$ 100,000	\$ 100,000	\$ 168,000	\$ 122,000	\$ 1,106,000	13%
		24%	12%	11%	9%	11%	17%	12%		
3 Training/Services										
3.1 Project Monitoring	\$ -	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 280,000	3%
3.2 Project Management	\$ -	\$ 52,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52,500	1%
3.3 Training Contracts	\$ -	\$ 75,000	\$ 21,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ -	\$ 160,000	2%
3.4 Design and Construction Supervision	\$ -	\$ 2,500	\$ 6,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,500	0%
3.5 Various contracts	\$ -	\$ 105,000	\$ 125,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 230,000	3%
3.6 Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%
	\$ -	\$ 275,000	\$ 192,000	\$ 56,000	\$ 56,000	\$ 56,000	\$ 56,000	\$ 40,000	\$ 731,000	9%
		22%	12%	5%	5%	6%	6%	4%		
4 Technical Assistance										
4.1 International Technical Advisors	\$ -	\$ 127,650	\$ 306,360	\$ 306,360	\$ 245,310	\$ -	\$ 25,530	\$ 61,050	\$ 1,072,260	13%
4.2 Short-term Technical Advisors	\$ -	\$ 47,175	\$ 9,435	\$ -	\$ 9,435	\$ -	\$ -	\$ 9,435	\$ 75,480	1%
4.3 Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000	0%
	\$ -	\$ 174,825	\$ 315,795	\$ 306,360	\$ 254,745	\$ -	\$ 25,530	\$ 90,485	\$ 1,167,740	14%
		14%	20%	25%	22%	0%	3%	9%		
5 Recurrent Operating Costs										
5.1 WPMA Staff	\$ -	\$ 188,850	\$ 321,300	\$ 360,000	\$ 360,000	\$ 338,400	\$ 322,200	\$ 324,000	\$ 2,214,750	26%
5.2 WMPA Operating costs	\$ -	\$ 68,250	\$ 128,500	\$ 141,000	\$ 141,000	\$ 141,000	\$ 141,000	\$ 141,000	\$ 901,750	11%
5.3 Transportation	\$ -	\$ 6,000	\$ 7,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 53,000	1%
5.4 Field Expenses	\$ -	\$ 42,300	\$ 104,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 938,700	11%
5.5 Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 40,000	\$ 40,000	\$ 80,000	1%
5.6 Meetings, Workshops	\$ -	\$ 7,500	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	\$ 19,500	\$ 132,000	2%
5.7 Financial Auditing	\$ -	\$ -	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 90,000	1%
5.8 Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%
	\$ -	\$ 312,900	\$ 597,200	\$ 703,400	\$ 703,400	\$ 681,800	\$ 705,600	\$ 705,900	\$ 4,410,200	52%
		25%	38%	57%	61%	78%	70%	71%		
6 Other										
6.1 Preparations until June 2004	\$ 421,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 421,000	5%
6.2 Remaining Balance	\$ -	\$ (20,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (20,000)	0%
6.3 Government Contribution	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%
6.4 Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0%
sub-total:	\$ 421,000	\$ (20,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 401,000	5%
		-2%	0%	0%	0%	0%	0%	0%		
Total (per year):	\$ 421,000	\$ 1,244,725	\$ 1,585,995	\$ 1,229,760	\$ 1,148,145	\$ 869,800	\$ 1,009,130	\$ 990,385	\$ 8,498,940	100%

Table 7.14: Details of annual budgets, presented by Activity category

	Preparation	FY1Q2	FY1Q3	FY1Q4	Preparation	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total	
	1-Jun-04	1-Jan-05	1-Apr-05	1-Jul-05		1-Jan-05	1-Oct-05	1-Oct-06	1-Oct-07	1-Oct-08	1-Oct-09	1-Oct-10		
	31-Dec-04	31-Mar-05	30-Jun-05	30-Sep-05		30-Sep-05	30-Sep-06	30-Sep-07	30-Sep-08	30-Sep-09	30-Sep-10	30-Sep-11		
A. PROJECT MANAGEMENT														
A-1 Overall Project Management	\$ -	\$ 28,050	\$ 28,050	\$ 28,050	\$ -	\$ 84,150	\$ 53,200	\$ 53,200	\$ 53,200	\$ 53,200	\$ 121,200	\$ 119,700	\$ 537,850	6.3%
A-2 General Project Operation	\$ -	\$ 26,275	\$ 23,275	\$ 27,850	\$ -	\$ 77,400	\$ 116,500	\$ 123,800	\$ 123,800	\$ 123,800	\$ 123,800	\$ 123,800	\$ 812,900	9.6%
A-3 SEMFOP-1 Preparation	\$ 367,300	\$ (20,000)	\$ -	\$ -	\$ 367,300	\$ (20,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 347,300	4.1%
A-4 WMPA Office Facilities	\$ -	\$ 20,000	\$ 10,000	\$ 127,500	\$ -	\$ 157,500	\$ 266,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 423,500	5.0%
A-5 Procurement Office Equipment	\$ -	\$ -	\$ 145,000	\$ -	\$ -	\$ 145,000	\$ 70,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 50,000	\$ 30,000	\$ 325,000	3.8%
A-6 General Project Management TA	\$ -	\$ -	\$ 28,305	\$ -	\$ -	\$ 28,305	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 28,305	0.3%
A-7 O&M of WMPA facilities/equipmer	\$ -	\$ 6,550	\$ 9,250	\$ 10,600	\$ -	\$ 26,400	\$ 79,900	\$ 92,400	\$ 92,400	\$ 92,400	\$ 92,400	\$ 92,400	\$ 568,300	6.7%
A-8 Other	\$ -	\$ 35,000	\$ -	\$ -	\$ -	\$ 35,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 35,000	0.4%
	\$ 367,300	\$ 95,875	\$ 243,880	\$ 194,000	\$ 367,300	\$ 533,755	\$ 585,600	\$ 279,400	\$ 279,400	\$ 279,400	\$ 387,400	\$ 365,900	\$ 3,078,155	36.2%
						43%	37%	23%	24%	32%	38%	37%		
B. PICAD IMPLEMENTATION														
B-1 Procurement Field Equipment	\$ -	\$ -	\$ 84,000	\$ -	\$ -	\$ 84,000	\$ 40,000	\$ 35,000	\$ 5,000	\$ 5,000	\$ 25,000	\$ -	\$ 194,000	2.3%
B-2 FLUPAM Process Implementation	\$ -	\$ 14,250	\$ 19,300	\$ 38,170	\$ -	\$ 71,720	\$ 89,885	\$ 90,200	\$ 99,635	\$ 79,400	\$ 68,600	\$ 78,035	\$ 577,475	6.8%
B-3 PPAM Process Implementation	\$ -	\$ 56,450	\$ 169,190	\$ 86,960	\$ -	\$ 312,600	\$ 345,840	\$ 295,440	\$ 279,900	\$ 200,200	\$ 209,970	\$ 215,740	\$ 1,859,690	21.9%
B-4 LDC Process Implementation	\$ -	\$ 5,250	\$ 30,440	\$ 43,610	\$ -	\$ 79,300	\$ 208,990	\$ 211,040	\$ 195,500	\$ 107,000	\$ 103,970	\$ 111,740	\$ 1,017,540	12.0%
B-5 General IOT Tasks	\$ -	\$ -	\$ 900	\$ 900	\$ -	\$ 1,800	\$ 3,600	\$ 3,600	\$ 3,600	\$ 3,600	\$ 9,000	\$ 10,800	\$ 36,000	0.4%
B-6 General GIS Tasks	\$ -	\$ -	\$ 1,800	\$ 1,800	\$ -	\$ 3,600	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 7,200	\$ 46,800	0.6%
B-7 Boundary Demarcation	\$ 53,700	\$ -	\$ -	\$ -	\$ 53,700	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 53,700	0.6%
B-8 Village Development	\$ -	\$ 3,000	\$ 20,000	\$ 20,000	\$ -	\$ 43,000	\$ 109,000	\$ 117,000	\$ 117,000	\$ 117,000	\$ 117,000	\$ 116,000	\$ 736,000	8.7%
B-9 PICAD TA	\$ -	\$ -	\$ 19,980	\$ 29,970	\$ -	\$ 49,950	\$ 119,880	\$ 119,880	\$ 89,910	\$ -	\$ 9,990	\$ 29,970	\$ 419,580	4.9%
	\$ 53,700	\$ 78,950	\$ 345,610	\$ 221,410	\$ 53,700	\$ 645,970	\$ 924,395	\$ 879,360	\$ 797,745	\$ 519,400	\$ 550,730	\$ 569,485	\$ 4,940,785	58.1%
						52%	58%	72%	69%	60%	55%	58%		
C. TRAINING														
C-1 In Service Training of WMPA staff	\$ -	\$ 5,000	\$ 5,000	\$ -	\$ -	\$ 10,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ -	\$ 15,000	0.2%
C-2 Training of Partners	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
C-3 External Training	\$ -	\$ -	\$ 15,000	\$ -	\$ -	\$ 15,000	\$ 20,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ -	\$ 95,000	1.1%
C-4 Consultation Meetings, Workshop	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
C-5 Other Training	\$ -	\$ 5,000	\$ 20,000	\$ -	\$ -	\$ 25,000	\$ 21,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ -	\$ 110,000	1.3%
						2%	1%	1%	1%	2%	2%			
D. PROJECT MONITORING														
E-1 Monitoring (Technical)	\$ -	\$ -	\$ -	\$ 40,000	\$ -	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 280,000	3.3%
E-2 Monitoring (Financial)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 90,000	1.1%
	\$ -	\$ -	\$ -	\$ 40,000	\$ -	\$ 40,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 370,000	4.4%
						3%	3%	4%	5%	6%	5%	6%		
Total (per year):	\$ 421,000	\$ 179,825	\$ 609,490	\$ 455,410	\$ 421,000	\$ 1,244,725	\$ 1,585,995	\$ 1,229,760	\$ 1,148,145	\$ 869,800	\$ 1,009,130	\$ 990,385	\$ 8,498,940	100.0%

7.6.4 Civil Works Budget

7.6.4.1 WMPA Executive Secretariat Facilities

Of the total US\$415,000 to be invested in various facilities of the WMPA's Executive Secretariat, the main expenditures include the construction of the main office complex in Nakai District center, for a total planned budget of US \$300,000 (excluding US \$8,500 allocated for the construction supervision of this main office complex). The construction for the Khamkerd office is estimated at US\$ 25,000.

In the 1st year US \$30,000 will be spent upgrading current buildings in the NPA headquarters and Nakai district offices, to be the temporary offices of the Secretariat for the 1st two years. Following construction of the main office, these buildings (at least the current NPA compound), will probably become accommodation. A further US \$60,000 will be spent to develop accommodation for non-local ExSec staff and TA in Nakai.

7.6.4.2 PPAM Biodiversity Monitoring, Management and Protection Facilities

A total of US \$48,000 has been allocated over the SEMFOP-1 period to build, repair and maintain biodiversity monitoring and protection posts (see map 12) – a total of about 13 - which will be both accommodation and offices for staff, army and police partners in this program. These will be built from local material, constructed by contracts with local villages.

No funds have been allocated to construction of radio repeater towers, as the type of radio system to be developed has not yet been decided.

7.6.4.3 LDC Village/Community Development Facilities

Community development infrastructure budget (US\$ 200,000) will be used for activities in both enclave and peripheral impact zone (PIZ) villages according to the threat posed to NPA resources and other appropriate criteria described in Section 5.5.2. It should be noted that the funding for village facilities is a rough estimate only, as a large portion for village facilities also consists of equipment and goods (see Section 7.6.5.2). The actual interventions still have to be decided.

Another significant contribution to the budget for community development infrastructure may also be available through the Japan Social Development Fund project

7.6.4.4 Tourism

Investments in nature, cultural and sports related tourism have not yet been defined, because:

- a) tourism development under the SEMFOP-1 will focus on community-based nature tourism which requires only very limited funding, which will be sourced from village livelihood development budgets.
- b) any large scale tourism development will only be initiated after the unsettled period of construction, when the reservoir is in its normal operating cycle, and once important lessons have been learned from the community-based nature tourism program.
- c) any large scale tourism development will be financed and owned by private enterprise, under carefully licensed and controlled concessions from the WMPA.

7.6.5 Equipment Budget

7.6.5.1 Office and Transportation

Of the total US \$325,000 budget allocated to the purchase of transportation and field equipment; the following is allocated to vehicles:

- US \$210,000 to two 4WD wagons (land cruiser type), five 4WD double cabs and I mini van; boats, including rubber dinghy's, long tail boats, and goods transport boats (once the reservoir is impounded, flat wetland boats will also be required).
- US \$45,000 for 22 motor bikes, (14 off road, Ag200);

Most vehicle procurement will be undertaken in year 1, and some in year 2. The administration manager, in cooperation with the Directors cabinet, will develop the required specifications, then seek quotations for these.

A total of US \$70,000 is allocated to the purchase of office equipment over the 6 year period, including;

- 16 computers (6 portable, 1 GIS capable);
- 8 printers, and 1 large format (A0) printer;
- the full range of office furniture;
- photocopy machines (2), fax and telephone, satellite TV system, and air conditioners.

7.6.5.2 *Field and Communication Equipment*

A wide range of field equipment will be purchased (Table 7.15), for which US\$180,000 is allocated. Care will be taken to procure appropriate items of durable quality and effectiveness. Some of the field equipment will be allocated to each field staff, as personal work equipment. The more expensive equipment will be retained on the inventory of each Divisional (in Nakai and in Luk 20) and issued to staff and teams on an as-needs basis.

Table 7.15: Tentative field equipment procurement plan, and allocation

Equipment on inventory	No.	Equipment allocated to staff	No. staff	No. partners
1. gps	8	1. rucksacks	14	15
2. camera	4	2. sleeping bags	14	15
3. camera traps	150	3. silva compass	14	15
4. survey level	2	4. tents (to some staff)	6	6
5. theodolite	1	5. field cooking set	6	15
6. survey staffs etc	6 sets	6. water bottles	14	15
7. sunnto compass/tandem	6	7. field boots	14	15
8. measuring tapes	10	8. field clothes – 2 sets/yr	14	15
10. tents	many	9. tarpaulins		
		10. binoculars		

The equipment allocated to individual staff and partners will be assumed to last for 3 years only. Thus, over the course of the 6 year project, they will have to be purchased at least twice for all staff and partners.

US \$14,0000 will be spent to upgrade current radio systems (if more is required, funds should be drawn from contingencies). Two general types of communications systems are required:

1: External Communication System

Telephone, fax and internet/email connections will be installed in Nakai HQs and in the Luk Xao branch office.

2: Internal Communications System

To enable all the teams and staff working to communicate in the field, and back to headquarters. Such communication is required to;

- i) facilitate co-ordination and improving efficiency of activity implementation;
- ii) facilitate the monitoring, patrolling and enforcement activities;
- iii) in case of emergencies, including medical emergencies;
- iv) for flood warnings and the hydro-meteorological information system (with NTPC)

The internal (radio) communication system will have at least three components:

- 1: A series of base and sub-base stations to connect the HQs to field stations, gates and posts (similar to the radio telephone system already operational in the three zones field stations in Ban Navang, Ban Makfeuang, and Ban Dteung).
- 2: Radio sets permanently fitted to vehicles and some boats.
- 3: Hand held sets for mobile (monitoring and patrolling) teams - land and water based.

Before procuring these items, a detailed review of the radio equipment installed and used by the WB's UDCP will be undertaken (they have purchased and use ICOM HF transceiver, IC-718). Following this, those additional components required to develop it into a fully operational internal communications system will be known, and then procured.

7.6.5.3 *GIS and Database Systems*

A total of US\$35,000 has been allocated for the purchase of GIS and mapping equipment. The database, GIS system and mapping unit will require;

- i) a GIS capable computer;
- ii) an A3 printer and a large format (A0) printer;
- iii) GIS programs;
- iv) metal map cabinets;
- v) full sets of all available aerial photos;
- vi) full sets of topographic maps in paper format (and at least the 1:50,00 in digital format);
- vi) satellite data (probably Quickbird imagery).

Some of this will have to be procured every two years. Development of the specifications for this equipment will be undertaken by the GIS officer, assisted by the GIS consultant.

7.6.5.4 *Village Field Equipment*

Durable equipment to be provided to villages includes power tillers (or the funds used instead for buffalo banks) and US \$536,000 allocated for other various agricultural equipment as required (see also Section 7.6.4.3).

7.6.6 Service and Training Budget

A full US \$731,000 is allocated over the SEMFOP-1 period to the training of Executive Secretariat staff and implementing partners staff (DAFO and PAFO, DEO/PEO and DHO/PHO, and military and police officers), and the implementation of various services (Table 7.16). While the exact training plan will be developed annually, it will include:

- training provided by engaged trainers at the ExSec headquarters in Nakai;
- attendance of rating course provincially or nationally;
- attendance of regional training course;
- the conduct of study tours; and
- attachment of university students to undertake thesis field work.

Moreover, training will be provided for village teachers, health workers facilitators and coordinators, village staff, including village monitoring and patrolling staff.

The Independent Monitoring Agency has been allocated US \$40,000 per year.

Table 7.16: Summary of Services and Training budget

3 Training/Services	Unit Cost	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
Independent Monitoring Agency	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 280,000
Project Management Support	\$ 52,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 52,500
In-Service Training	\$ 10,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ -	\$ 15,000
Ranger & VCMU Training	\$ 50,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 50,000
Study Tours	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ -	\$ 30,000
Training-Courses	\$ 10,000	\$ 15,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	\$ 65,000
Design&Construction Supervision	\$ 2,500	\$ 6,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,500
Biodiversity Baseline Survey	\$ 105,000	\$ 105,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 210,000
Community Participation Support	\$ -	\$ 20,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000
Total:		\$ 117,500	\$ 126,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ -	\$ 731,000

7.6.7 Technical Assistance

The SENFOP-1 period allocation of US \$1,167,740 for international and national level technical assistance will be disbursed over the entire 6 year period, but with more intensive TA support in the early years (Table 7.17). The main long-term, international TA include the PICAD/CTA, the Conservation advisor and the Community Development

and Participation specialist. All other advisors are short term, but preferably recurrent. Either International or national candidates will be considered for these positions.

Table 7.17: Technical Assistance

	Unit Cost	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
4.1 International Technical Advisors									
PICAD/CTA Advisor	\$ 9,990	\$ 49,950	\$ 119,880	\$ 119,880	\$ 89,910	\$ -	\$ 9,990	\$ 29,970	\$ 419,580
Conservation Advisor	\$ 7,770	\$ 38,850	\$ 93,240	\$ 93,240	\$ 77,700	\$ -	\$ 7,770	\$ 15,540	\$ 326,340
Community Development t	\$ 7,770	\$ 38,850	\$ 93,240	\$ 93,240	\$ 77,700	\$ -	\$ 7,770	\$ 15,540	\$ 326,340
sub-total:		\$ 127,650	\$ 306,360	\$ 306,360	\$ 245,310	\$ -	\$ 25,530	\$ 61,050	\$ 1,072,260
4.2 Short-term Technical Advisors									
Financial/Institutions Mana	\$ 9,435	\$ 28,305	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 28,305
GIS, remote sensing, data	\$ 9,435	\$ 18,870	\$ 9,435	\$ -	\$ 9,435	\$ -	\$ -	\$ 9,435	\$ 47,175
sub-total:		\$ 47,175	\$ 9,435	\$ -	\$ 9,435	\$ -	\$ -	\$ 9,435	\$ 75,480
4.3 Other									
Technical Assistance Unfo	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000
sub-total:		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ 20,000
Total:		\$ 174,825	\$ 315,795	\$ 306,360	\$ 254,745	\$ -	\$ 25,530	\$ 90,485	\$ 1,167,740

7.6.8 Operating Budget - Recurrent Costs

At US \$4,410,200 over the SEMFOP-1 period, the budget allocation for recurrent operating costs is the largest major budget expenditure category.

7.6.8.1 Salaries for Executive Secretariat Professional and Administrative Staff (5.1)

The number and positions of the Executive Secretariat professional, technical and administrative staff are summarized in Tables 6.1 and 6.2. The WMPA, as a financially independent authority of the Government of the Lao PDR, will pay salary direct to its Executive Secretariat staff (including those on official secondment from the Government), according to its own salary scale previously presented in Table 7.1).

On the basis of staff numbers and salary scales, the annual budget for salaries for the WMPA's staff is between US\$325,000 and US\$360,000 per year (Table 7.18). However, payroll tax of between 20% to 40% may be applicable on these salaries.

Table 7.18: WMPA Salaries and associated costs

	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
Professional	\$ 148,050	\$ 223,800	\$ 231,000	\$ 231,000	\$ 216,600	\$ 207,600	\$ 209,400	\$ 1,467,450
Technical	\$ 27,000	\$ 57,600	\$ 82,800	\$ 82,800	\$ 75,600	\$ 68,400	\$ 68,400	\$ 462,600
Administrative	\$ 7,050	\$ 23,700	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 180,750
Support staff	\$ 6,750	\$ 16,200	\$ 16,200	\$ 16,200	\$ 16,200	\$ 16,200	\$ 16,200	\$ 103,950
Total:	\$ 188,850	\$ 321,300	\$ 360,000	\$ 360,000	\$ 338,400	\$ 322,200	\$ 324,000	\$ 2,214,750

7.6.8.2 Other Staff and WMPA Operating Costs (5.2)

The total budget allocated for other WMPA operating costs is US\$. The breakdown of the costs is given in

Table 19: Other WMPA operating costs

	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
Building Maintenance	\$ 3,750	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 33,750
Communication	\$ 18,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 162,000
Local Service	\$ 15,900	\$ 21,200	\$ 21,200	\$ 21,200	\$ 21,200	\$ 21,200	\$ 21,200	\$ 143,100
O&M Motorcycles	\$ -	\$ 7,500	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 57,500
O&M Vehicles and Boats	\$ -	\$ 30,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 230,000
Other staff and Implementing costs	\$ 6,600	\$ 8,800	\$ 8,800	\$ 8,800	\$ 8,800	\$ 8,800	\$ 8,800	\$ 59,400
Stationary, emergency, etc.	\$ 24,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 216,000
Total:	\$ 68,250	\$ 128,500	\$ 141,000	\$ 141,000	\$ 141,000	\$ 141,000	\$ 141,000	\$ 901,750

The annual local service budget allocation of US\$5,300 per three months will be used to employ guards, cooks, and other services.

7.6.8.3 Transportation (5.3)

About US \$8,000 per year is allocated for vehicle insurance and other miscellaneous operating costs.

7.6.8.4 WMPA and Partner Staff Per Diems (5.4)

Per diems or daily subsistence allowance (DSA), will be paid for work done in the villages and the forest, and overnight stays in the field and villages. While per diems will be applicable to both WMPA core staff, and for staff from implementing partners, they will be slightly higher for implementing partner staff, as core WMPA staff will already be receiving a basic monthly salary.

Thus, while DSA rates for WMPA staff will be:

- for daily work in village or field, with no overnight stay: US \$2 per day
- for work and overnight stay in village, field or forest: US \$3 per day

The per diem rates for seconded implementing partner staff will be based on:

DAFO Staff: Day trip: \$2/day, overnight in field station: \$3/night, overnight in other villages \$4/night.

Police Staff: On-duty and overnight at post, \$2.5/day, and overnight forest or another village, \$4/day

Military Staff: On-duty and overnight at post, \$2.5/day, and overnight forest or another village, \$4/day

Village Staff: Village teacher assistants (22) DSA of \$3/day
 Village health assistants (8) DSA = \$3/day
 Village militia - overnight in forest = \$3/night

Based on these rates, the total budget required for DSA per diems has been calculated (Table 7.20), based on the staff and time required for the three main components:

Table 7.20: Estimated DSA requirements

	FY1	FY2	FY3	FY4	FY5	FY6	FY7	Total
A-1 Overall Project Management								
DSA WMPA Other	\$ 300	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 2,700
<i>sub-total:</i>	\$ 300	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 2,700
B-2 FLUPAM Process Implementation								
Partner DSA FLUPAM	\$ 2,500	\$ 6,250	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 58,750
WMPA DSA FLUPAM Activities	\$ 4,000	\$ 10,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 94,000
<i>sub-total:</i>	\$ 6,500	\$ 16,250	\$ 26,000	\$ 26,000	\$ 26,000	\$ 26,000	\$ 26,000	\$ 152,750
B-3 PPAM Process Implementation								
Partner DSA PPAM	\$ 15,000	\$ 47,500	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 412,500
WMPA DSA PPAM Activities	\$ 12,000	\$ 19,500	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 181,500
<i>sub-total:</i>	\$ 27,000	\$ 67,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 594,000
B-4 LDC Process Implementation								
Partner DSA LDC	\$ 4,500	\$ 10,750	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 95,250
WMPA DSA LDC Activities	\$ 4,000	\$ 10,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 16,000	\$ 94,000
<i>sub-total:</i>	\$ 8,500	\$ 20,750	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 32,000	\$ 189,250
Total:	\$ 42,300	\$ 104,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 158,400	\$ 938,700

7.6.8.5 Meetings (5.6)

A total of US \$132,000 has been allocated to cover the costs of meetings of the Board of Directors (at least once per year), transboundary liaison meetings, at least twice per year, and a range of other meetings and workshops.

7.6.8.6 Financial Auditing (5.7)

A total of US \$ 90,000 has been allocated for the hiring of an auditing firm.

7.6.9 Integrated Schedule of Implementation

The summary of the schedule of implementation is presented in Figure 7.2.

NAM THEUN 2 WATERSHED MANAGEMENT AND PROTECTION AUTHORITY

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

[1st January 2005 to 30th September 2011]

APPENDICES

(DRAFT OF OCTOBER 2004)

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- 2. INSTITUTIONAL AND LEGAL SETTING**
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APPENDIX 1: NT-2 PROJECT DESCRIPTION

A standardised project description can be found in Chapter 2 of the Advanced Draft of the Environmental Assessment and Management Plan (EAMP) for the Nam Theun 2 Hydroelectric Project.

APPENDIX 2: INSTITUTIONAL AND LEGAL SETTING

GOVERNANCE AND DEVELOPMENT INSTITUTIONS

The Government of Lao has four main levels of institutions;

- i. The Lao People's Revolutionary Party (LPRP), and its mass organizations for national unity and development (i.e. youth union, women's union);
- ii. The administrative and governance institutions, including the PM's office, cabinet at the Central level, the Provincial Governors office and cabinet then the District Governors office and cabinet and the village chiefs and administration. Aligned to these are Ministries such as Defense and Interior;
- iii. The legal institutions, including the National Assembly, Law Commission and the Courts and Prosecutor's Office under the Ministry of Justice;
- iv. The technical line agencies (Ministries), generally concerned with livelihoods, health education and the like. These agencies are represented at the Central, Provincial and District level. At the District level, they actually report to two streams, to the Governors for local administration and governance matters, and to their line Ministries for technical and line Ministry related administration matters.

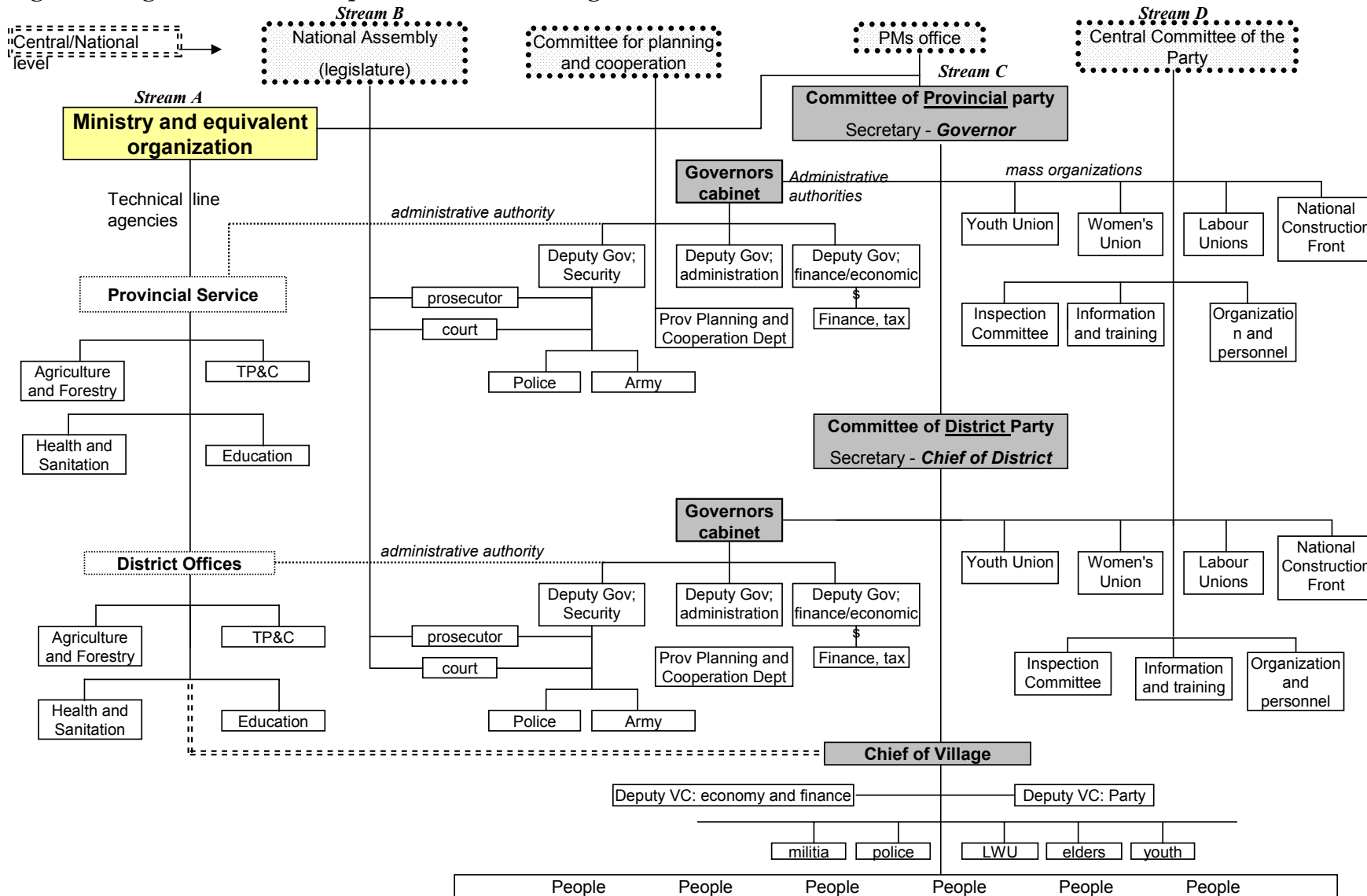
Figure 1 describes the organisation line ministries at the provincial and district levels, for example, the Ministry of Agriculture and Forestry at these levels is organised as follows:

- Central level: Ministry of Agriculture and Forestry (including the Department of Forestry and Division of Forest Resources Conservation)
- Provincial level: Provincial Agriculture and Forestry Office (including the Provincial Forestry Unit etc.)
- District level: District Agriculture and Forestry Office;

In addition to line ministries, there are a range of agencies and Institutes which may play a role in the SEMFOP, particularly in research rather than the development or protection field activities. Such agencies are based at the national level, usually belong to the Government, and will may include agencies such as STEA (a formal partner in environment matters), LARREC, NAFRI, FIPC and the like.

Besides these there are a range of agencies and institutions, which may play a role in the SEMFOP, particularly in research rather than development or protection field-activities. Such agencies are based at the national level, usually belong to the Government, and will may include agencies such as STEA (a formal partner in environment matters), LARREC, NAFRI, FIPC and the like.

Figure 1: Organization chart of provincial and district governments



Government Agencies Responsible for Biodiversity Conservation

The Forestry Law legally recognizes four levels of forest management organizations to implement GOL policy on management of forestland and aspects of the forestry sector and biodiversity conservation (FL, Articles 10 and 59):

- The Ministry of Agriculture and Forestry (MAF);
- Provincial Agriculture and Forestry Offices (PAFO);
- District Agriculture and Forestry Offices (DAFO); and
- Village Administrative Authorities.

Within MAF, DOF's Division of Forest Resources Conservation has primary responsibility at the central level for biodiversity conservation and management of the NPA system. DOF and DFRC play mainly an advisory role and may issue guidelines, but not binding legislation similar to the forest management organizations listed above. At the Provincial and District level, NPA management is the responsibility of PAFO and DAFO, particularly the forestry sections and in some cases a special NPA unit has been formed to manage biodiversity management in the NPA. The Police (Ministry of Interior) also become involved in the apprehension of persons illegally trading in protected wildlife or NTFPs, as required by Law.

The Science Technology and Environment Office, within the PMOs, is also mandated to be concerned with some aspects of biodiversity management and conservation, although more from an advisory and monitoring perspective rather than actually implementation of activities in forests and with the villages (Environmental Protection Law, Article 15)

Besides those agencies shown in the Diagram 6.3, there are other agencies and Institutes which may play a role in the SEMFOP, particularly in the research type activities. Such agencies are based mainly at the national level, and usually belong to Government, and includes such agencies as STEA (a formal partner in environment matters), LARREC, NAFRI, FIPC, FRC etc,

Legal Institutions

Over the past 25 years, the executive branch has had the largest role in development and implementation of the legal system. Even the 49 laws passed by the National Assembly, acting as the Legislative Branch, have been initially drafted and revised within the technical departments of the line ministries. The role of several other State organizations in the development and implementation of legislation should increase as the legal system and the other branches of government broaden their scope. Table 1 outlines some of the institutions with an important role in the legal framework in Lao PDR.

Table 1: Key legal institutions in the Lao PDR

STATE ORGANIZATION	ROLE IN LEGAL SYSTEM
The Ministry of Justice (MOJ)	The role of the Ministry of Justice (MOJ) was defined in PM Decree 94 on Organization and Activities of MOJ (1/12/1992), but may have been updated. MOJ authority has been expanded by PM Notifications 05 and 664, ¹ giving them authority to coordinate and review draft legislation from all ministries, including internal ministry legislation and legislation to be submitted to the PM and the National Assembly for approval. MOJ has the authority to issue draft legislation, support legal drafting, disseminate legislation and administer the judicial system, including local People's Courts, the law school, and the bar association. MOJ shall coordinate with the Supreme Court and the Public Prosecutor General, but has no authority over those institutions. Finally, MOJ serves as a depository for legislation and has established a Legal Resource Center. MAF has submitted draft legislation to MOJ during prior drafting, especially if submitted to the Prime Minister's Office. MOJ has good capacity working with legislation relevant to the forestry sector since the Minister of MOJ was previously Deputy Minister of MAF. The current MOJ representative, Ketsana Phommachane, on the Forest Strategy Working Group, and Siwath Sengdounchan, have both been trained abroad and have knowledge of forestry legislation.
The Law Commission	The Law Commission was formed within MOJ in 1992 and has been composed of six members of high-ranking officials from MOJ, Legal Commission of the National Assembly, the Supreme Court and the Deputy Public Prosecutor General. The Commission assists in the review of draft legislation before final review by the GOL, especially regarding the market economy reform. Although each member is a legal expert, they may not have expertise in the specific sectors covered by the various draft legal documents they must review.
The National Assembly and Legislative Committee of the Standing Committee	In 1975, the People's Supreme Assembly formed and was renamed the National Assembly in 1989 when the initial 79 representatives were elected for five-year terms. The NA convenes twice a year & is represented by a permanent body, the Standing Committee, which is divided into six commissions. One of the six commissions, the Legislative Drafting Committee reviews draft laws submitted by the GOL to the NA, provides legal opinions and suggests edits before sent to the general assembly of the Standing Committee of the NA (Const., Art. 36). The Standing Committee may edit a draft or request further review by MOJ prior to submission for NA vote. Individuals may request the Standing Committee to interpret legislation or GOL action that may be inconsistent with laws. The NA shall approve international agreements (GL, Art. 27) and approves public prosecutors and judges.
Prime Minister's Office, Legal Division	The PM has the duty to issue legislation to implement LPRP/GOL policy (GL, Art. 13(7)). The PM Office monitors implementation of legislation and acts as the focal point for the Executive Branch (GL, Art. 18). The PM has a major role in the forestry sector by issuing decrees to establish the National Protected Area System and National Production Forest Areas (PFAs) and annual orders ² on forest management, including quota for timber and NTFP harvest (see section 5.3). The PM Office Legal Division has the responsibility of reviewing legislation and coordinating with ministries and provincial governments. A legal division in each ministry and technical unit in some departments has been established for consistency to draft and implement legislation in the specific sectors. The DOF technical division was formed in 1998 to draft forestry legislation to submit to MAF, even initial versions of PM Orders on forest management.
The Court System	The People's Courts represent the judicial branch (Const., Ch. 8) and includes the Supreme Court and People's Courts in provinces, municipalities, districts and military. The Standing Committee of the NA appoints/removes judges, but during trials judges shall be independent (Const., 67, 68). Forestry Law violations should be heard in courts of first instance where the violation occurs. Depending on amount of damages, the case would be filed in district or provincial court. There are over 100 district courts to hear civil, criminal cases, 16 provincial courts to hear cases with larger damages, and one court in the Special Zone and Vientiane Municipality. The Supreme Court is an appellate court and first instance for constitutional claims. Procedure is governed by People's Courts Law #32 (amended 1991), and the Civil Procedures Code (1990) being redrafted.
Office of the Public Prosecutor	Pursuant to the Constitution, Articles 72-74, and the Law on the Office of Public Prosecutors, ³ this office is an independent State organization with a large mandate to enforce the criminal system in Lao PDR with very minor resources or international training or assistance. The Public Prosecutor General is appointed by the National Assembly to oversee the system and appoint the public prosecutors for both the People and Military Courts at the local level. It is necessary to improve coordination between Public Prosecutors, DAFO inspection officers and police (Min. of Interior).
Vientiane Law School	Established in 1986, the Law School offers a 3-year bachelors and 5-year masters degree and has

¹ PMO Notification 05 on Drafting and Submitting Draft Laws, Regulations, Decrees and other legislation (19/7/1996); and PMO Notification 662 on Improvement of Drafting Process of Laws, Decrees and other Legislation (26/5/1994).

² Each year, the PM issues an order regulating the management for timber and NTFP harvest. The quota is only valid for the single harvest season, but other provisions in the order shall be valid until repealed by other legislation. For example, PM Orders 10 (2000) and 15 (2001) expressly repealed Order 11 (1999).

³ The original Law No. 31 on the People's Prosecutor of Lao PDR (23 December 1989) was enacted prior to the Constitution so amendments or implementing legislation may offer more specifics.

STATE ORGANIZATION	ROLE IN LEGAL SYSTEM
	graduated thousands of students. MOJ has coordinated with donors on capacity building of teachers and students, including overseas training and monitoring in the provinces. There remains a need to increase resources for the legal education sector, especially for reading materials and qualified faculty at the Law School. Development of any legal system takes generations before the judicial or legislative branch can utilize its role and be accessible to citizens and the private sector to resolve conflicts, but formal education, training of the next generation is a good method.

In addition to the institutions listed in Table 1, the Police are responsible for investigations and the apprehension of persons conducting illegally activities, which may include breaking laws related to natural resources management and utilization, especially trading in protected wildlife or NTFPs.

Government Agencies Responsible for Biodiversity Conservation

The Forestry Law legally recognizes four levels of forest management organizations to implement GOL policy on management of forestland the forestry sector and biodiversity conservation (Articles 10 and 59):

- The Ministry of Agriculture and Forestry (MAF);
- Provincial Agriculture and Forestry Offices (PAFO);
- District Agriculture and Forestry Offices (DAFO); and
- Village Administrative Authorities.

In 1999, CPAWM became the Division of Forest Resources Conservation within the Department of Forestry. DFRC has primary responsibility at the central level for biodiversity conservation and management of the National Protected Area system. DOF and DFRC play mainly an advisory role and may issue guidelines, but not binding legislation similar to the forest management organizations listed above.. At the Provincial and District level, NPA management is the responsibility of PAFO and DAFO, particularly the forestry sections and in some cases a special NPA unit has been formed to manage biodiversity conservation in the NPA. The Police (Ministry of Interior) also become involved in the apprehension of persons illegally trading in protected wildlife or NTFPs, as required by Law.

The Science Technology and Environment Authority, within the PMO, is also mandated to be concerned with some aspects of biodiversity management and conservation, although more from an advisory and monitoring perspective rather than actually implementation of activities in forests and with the villages (Environmental Protection Law, Article 15).

LEGAL INSTRUMENTS AND POLICY

There are a range of legal instruments relevant to this WMPA SEMFOP, including the Constitution, Laws enacted by the National Assembly, Decrees and Orders issued by the Prime Minister, Implementing Regulations, Orders and Instructions issued by MAF and other Ministries and Declarations signed by Provincial Governors. The authority and scope of each legal instrument depends on the rank of the issuing body in the hierarchy of legislation ranging from the Constitution down to the Provincial Governor. Table 2.10 lists some of these instruments relevant to the WMPA SEMFOP with copies included in the Folio of Annexes.

Legal Instruments

The current legal system can be described as a hybrid of a civil code and common law driven recently to adopt a large body of legislation, above its capacity to implement, in order to stimulate economic reform since adoption of the New Economic Mechanism (1986). Despite the adoption of over 50 comprehensive laws and numerous legal documents, the legal system remains in an early stage difficult to interpret, implement or enforce, especially in the forestry sector.

From 1975 to 1989, some legal documents in the forestry sector were issued, but many have been repealed by the Forestry Law (1996) and succeeding legislation. The major legal reform in the forestry sector in Lao PDR has occurred since 1999 when PM Decree 198 formally adopted the Forestry Law and

required MAF and other ministries to issue implementing legislation. The Forestry Law legally recognizes four levels of forest management organizations to implement GOL policy on management of forestland and aspects of the forestry sector (FL, Articles 10 and 59):

- The Ministry of Agriculture and Forestry (MAF);
- Provincial Agriculture and Forestry Offices (PAFO);
- District Agriculture and Forestry Offices (DAFO); and
- Village Administrative Authorities.

The various types of legal instruments used are described in Table 2, and such articles relevant to the forestry sector are listed in Table 3.

Table 2: Legal instruments in the Lao PDR

DOCUMENT	PURPOSE
Constitution	Provides general framework for system and legal principle for State ownership of forestland and resources, unless allocated under legal mechanism.
Law	Forestry Law governs the rights, duties and management of the sector under four levels of management organizations; outlines criminal provisions; mandates MAF to issue regulations for five forest categories. Land Law covers ownership rights and land use allocation. Tax Law covers land and resource taxes.
PM Decree	Used by GOL to establish the NPA and PFA systems as a central designation of forestland. Decree used also to directly implement laws in more specific detail and to give mandate to MAF and other line ministries to issue regulations. Ex. PM Decrees 164, 59, 03, 196, 261, 150 (see tables of laws in Annex).
PM Order	Most commonly used as annual order on forest management and harvesting of timber and NTFPs. Ex. PM Orders 11, 10, 15 and 18 (see table of laws in Annex).
MAF Regulation	The highest legal document issued by the Minister primarily to implement Forestry Law and PM Decrees regarding the five categories of forest and major sub-sectors, incl. Conservation, Production, Harvesting, Plantation, Village Forests, Wood Processing. Ex. MAF Regulation 59, 524, 535, 261, and 221. (see table of laws in Annex).
MAF Instruction	Issued primarily as direct mandate to PAFO(s), DAFO(s) and local authorities to specify duties and specific methods to implement forest sector policy.
DOF Guideline	Non legally binding document issued by DOF and drafted by the Technical Division to provide guidance to PAFO and DAFO on implementation of MAF Regulations and legislation on the forestry sector.

All organizations and citizens in Lao PDR have a constitutional duty to protect the environment, natural resources and forests and fauna (Constitution Article. 17). The Forestry Law, Articles 16-18, established five forest categories, notably conservation and protection forest, and outlined management objectives for each (FL, Articles 41-42). PM Decree 164 (1993) and MAF Regulation 524 (2001)⁴ govern the establishment and management of conservation forest. No national legislation has been issued for protection forest, but provincial and district governments have taken the initiative to create local protection and conservation forest areas (Land Law, Article 12). MAF Instruction 822 and MAF Regulation 535 govern conservation and protection forest zones in village boundaries identified during LUPLA. Lao PDR is a signatory to the CBD, World Heritage Convention, Climate Change/Kyoto Protocol is pending admission to CITES.

⁴ MAF Regulation 524 is currently being amended pursuant to FMAC requirements and will be re-issued in 2003.

Table 3: Legal Instruments of relevance to the forestry sector

LEGAL DOCUMENT	DATE	ISSUING BODY
Constitution	15 August 1991	National Assembly 6 th Session
Forestry Law	11 October 1996	National Assembly
Water and Water Resources Law	2 November 1996	National Assembly
Land Law	12 April 1997	National Assembly
Environmental Protection Law	26 April 1999	National Assembly
President Decree 03 Preserve Cultural, Historical & Natural Heritage	20 June 1997	President of State
CCM Decree 74 Protection of Forests	17 January 1979	Council of Ministers REPEALED
CCM Decree 24 Protection of Forests and Forest-Related Resources	2 February 1981	Council of Ministers <i>REPEALED</i>
CCM Decree 117 Management and Use of Forests and Forest Land	5 October 1989	Council of Ministers <i>REPEALED</i>
CCM Decree 118 Management and Protection of Wildlife, Fisheries and Management of Hunting and Fishing	5 October 1989	Council of Ministers <i>REPEALED</i>
PM Decree 102 Organization and Administration of Villages	5 July 1993	Prime Minister
PM Decree 164 National Biodiversity Conservation Areas	29 October 1993	Prime Minister
PM Decree 193 Establishment of Nakai-Nam Theun NPA Corridor Areas, NT2 Project Area and Resettlement and Forest Area	29 December 2000	Prime Minister
PM Decree 25 Establishing NT2 Watershed, Reservoir and Resettlement Area and Forest	26 February 2001	Prime Minister
PM Decree 37 Allocation of Resettlement Area and Forest to People and Village Organizations Affected by NT2 for Forestry Business	12 April 2002	Prime Minister
PM Instruction 03 Land Management and Forest Land Allocation	25 June 1996	Prime Minister
MAF Regulation 822, Allocation of Land/Forest for Management and Use	2 August 1996	Minister of MAF
MAF Regulation 535 Management of Village Forests	18 June 2001	Minister of MAF
MAF Regulation 360 Management of NPAs, Wildlife and Aquatic Animals	8 December 2003	Minister of MAF
MAF Order 54 Customary Rights and Use of Forest Resources	7 March 1996	Minister of MAF
MAF Order 377 Customary Use of Forest Resources	7 April 1996	Minister of MAF

(Note: see Annex 4 in Volume 2 for the full text of all relevant laws, decrees, regulations and directives)

PM Decree 164

This Decree, promulgated in 1993, legally established the original 18 National Protected Areas, including the Nakai Nam Theun NPA, (353,200 ha). Since then, the GOL has established an additional 2 NPAs giving the current system 20 protected areas covering over 3.3. million ha. Two additional areas have been established as corridor zones and are located near Nakai Nam Theun NPA. Decree 164 contains 8 articles, covering:

- the main objectives of the protected areas;
- measures and restrictions applicable in protected areas; and
- entrusting the MAF to establish provisions, detailed rules, work with the province to development management plans and to provide budget to actually implement the plan.

PM Decree 164 established the NPA system and outlines the general objectives and restrictions, but it needs to be amended or repealed by future legislation on the protected area system issued by the PM or National Assembly since it was issued prior to the Forestry Law and does not provide sufficient guidance on several issues. For example, Article 4.3 allows mining, hydro, road construction and other infrastructure activities with prior authorization by the GOL, but does not provide any procedures or standards for such a decision. It further does not adequately cover participatory management, management plans, customary use, zoning, or tourism. MAF Regulation 524 (2001) does implement PM Decree 164 and partially cover these gaps and an amended version should be issued in 2003 as part of the FMAC process, however, it still may be necessary to secure these principles in higher legislation approved by either the PM or the NA as was the intent with the original drafts of MAF Regulation 524.

Forestry Law

Relevant sections of the Forestry Law (October 11, 1996) affirm the right of villagers residing within and near NPAs for traditional management and customary use over forest areas within village boundaries. National legislation guarantees the customary use, however, specific rules should be adopted by the village in local regulations and management plans with DAFO (Forestry Law, Article 63). It may have been assumed that local level negotiations and development of management strategies would follow their legal declaration as national conservation areas, and indeed such process's are now underway. The general thrust of current work is to develop methods and modalities to effectively consult with villagers regarding their understanding of the NPA, of its geography/boundary and the possible regulations and management modalities which they could be involved in.

The Forestry Law mandates that villagers should participate in NPA management and zonation of NPAs into (i) *Totally Protected Zones (TPZs)*, and (ii) *Controlled Use Zones (CUZs)*. The macro-level zonation of the NPA should take place concurrently with the micro-level zoning within village boundaries through the FLUPAM process.

The Forestry Law further outlines guidelines requiring village authorities to control shifting cultivation, logging and hunting of wild animals within village boundaries. Thus, while it is assumed that villages will have certain rights and management roles in the CUZs, and even maybe the TPZs, the Law implies that such rights and duties may be restricted by protected area and zoning legislation and negotiated at the local, village level.

Articles 39 and 40 of this Law relate specify to aquatic animals and wildlife, but does not give details on protected or managed species, instead stating that such categories and activities relating to them should be developed in specific regulations (MAF Regulation 524).

PM Decree 193

PM Decree 193 of 29th December 2000, defines the areas included in the NT2 project:

- the Nakai Nam Theun NPA;
- the corridor between Nakai Nam Theun NPA and Phou Hinpoun NPA;
- the corridor between the Nakai Nam Theun NPA and the Hin Nam Nor NPA;
- the reservoir area at full supply level; and
- the resettlement area and forest area for resettlers

Unfortunately, the textual description of the boundaries of these areas is inadequate and unclear. In addition, a GIS map is attached to the Decree but nowhere mentioned or referred to in the Decree, and it is not detailed enough to present an unequivocal understanding of the various areas. However, the Decree does note that reservoirs high watermark is that area which can be cleared of trees and vegetation and confirms that the NT NPA is part of the WMPA management.

PM Decree 25

Following considerable review and negotiations by a range of stakeholders and Government agencies, on February 26, 2001 PM Decree 25 established the NT2 Watershed Management and Protection Authority which provides a detailed definition of the WMPAs objectives, functions and membership of the Board of Directors in 34 articles (attached in full in Annex 4).

Regulation 360 on NPA Management

MAF Regulation 360 implements provisions of the Forestry Law and PM Decree 164 regarding the establishment, zoning, management and use within NPA (Table 4). The Regulation further governs the management of aquatic and wildlife species throughout the country and provides a list of protected and managed species. Observers have noted inaccuracies with this species list and general conflicts between the Regulation and PM Decree 164, therefore, MAF Regulation 524 is currently under amendment pursuant to FMAC requirements, and is due to be reissued by MAF in 2003. It shall remain the primary legal document for NPA and wildlife management and the SEMFOP should be consistent with the amended provisions. Being a national level regulation, the application of MAF Regulation 524 in diverse regions and NPAs throughout the country remains difficult. (see the "Nam Et Phu Loei NPA draft Management Rules and Regulation" for a different definition of protected and managed species) and considerable responsibility and flexibility should be delegated to 'rules' developed at the local level through negotiation between Government agencies and village communities as required by the Forestry Law, Article 63.

Table 4: Contents of Regulation 360 - National Protected Area and wildlife regulations

1. Purposes	16. Prohibited activities in NPAs
2. Ownership of NPAs and biodiversity	17. Classifications of wildlife
3. Obligations to conservation NPA & biodiversity	18. List of prohibited wildlife
4. Definitions	19. List of managed wildlife
5. Procedures to establish NPAs	20. Possession, use, export and transit of wildlife
6. Provisional NPA management	21. Restrictions on management of wildlife
7. Procedures re modifying NPA boundaries	22. Source of NPA funding
8. List of National Protected Areas in Lao PDR	23. Utilization of NPA funds
9. Categories of NPAs	24. Scope of rights & duties of Department of Forestry
10. Zoning of NPAs	25. Scope of rights & duties of Provincial Agr. and For.
11. Approval of NPA zoning	26. Scope of rights/duties of NPA management unit
12. Survey's before modifying NPA categories	27. Incentives for outstanding people
13. NPA Management Plans	28. Sanctions against violators
14. Approval of NPA Management Plans	29. Implementation of the regulations
15. Education/other criteria required of NPA managers	30. Date of regulation effectiveness

The fact that villagers are entitled to live in and use the resources of Protected Areas in the Lao PDR is highlighted by the designation of the Controlled Use Zone, which in article 10 is divided into at least 4 sub-zones;

- (i) settlement zone;
- (ii) forest resources use zone;
- (iii) agricultural production zone; and
- (iv) socio-economic development zones within which development type projects which benefit the country, and pass an EIA, can be implemented.

Resource management plans relevant to these zones must be developed, under the general principle of sustainable use and in consultation with villagers.

Land Law

Lao PDR is in a transition period with regard to introducing legislature on land tenure and rights to utilize resources.

In Lao PDR, the national community owns the forest resources under State management with the right to allocate through TLUCs plots of degraded forestland to individuals and households in a village for agriculture and tree planting and to lease natural forest areas within the village boundary to the village as a community under a village forest management agreement. (LL; FL; PM 3; MAF 822). TLUCs provide the right to use and inherit degraded forestland and potentially obtain full property rights and title after the initial three-year period upon a showing of good management and payment of taxes. Individuals and organizations may not own natural forest since it is State property, but the VFMA acts as a form of lease agreement between a village and the State guaranteeing exclusive customary use and protection rights to the village with no tax obligations. The law does not specify the duration or terms of this agreement. In some cases (i.e. FOMACOP, resettled villages in Nakai-Nam Theun)⁵ the GOL has or will lease forest areas as a form of concession to a village or association of villages for up to 50 years (LL, Article 64) including some commercial timber rights, upon payment of royalties and fees, in addition to customary use and management rights.

The majority of farmers, especially those in remote areas such as the NT2 Watershed-NPA do not possess property documents. Various forms of customary tenure are the norm. It has been suggested that if indigenous rights are to be maintained it would be beneficial that their rights to land be enshrined in law, that is individuals, households and communities acquire the necessary documents entitling them to use the land and to inherit property.

Documents officially recognizing the right of occupancy and use of the land for individuals and villages *may* make villagers feel secure as permanent residents within the gazetted conservation area. Given their attachment to the land and the important role the land and its resources have in relation to ethnic identity, legal recognition of the customary tenure by indigenous communities should be considered (cf. OD 4.20: 15(c)). On the other hand, the fact that the majority of the NT2 Watershed/NPA residents have no legal land documents is consistent with much of rural Lao PDR. It is also not considered by villagers to be a constraint to livelihoods. Indeed, access to land based on traditional usufruct patterns is, for some, preferable to entanglement in legal documentation.

Policies

Shifting cultivation stabilization

Initial government policy regarding the problem of shifting cultivation stabilisation was contained in the PM Decree 186 of 12/10/94 regarding the allocation of land and forest for forest plantations and forest protection, since repealed by the Forestry Law. This was followed by the PM Order 03 (25/6/96) regarding the continuation and expansion of land allocation and transfer of land and forests, further implemented by MAF Instruction 822/MAF regarding land and forest allocation for management and use. More recently, the 7th Party Congress passed a motion that shifting cultivation be eliminated in most basic areas by 2005, and totally eliminated by the year 2010.

The policy on shifting cultivation has evolved in the last several years, from one that implied the elimination of all forms of shifting cultivation by the year 2000, to a more pragmatic approach, in which more specific methods/approaches could be applied to address the three types of shifting cultivation shown in Table 5.⁶

⁵ PM Decrees authorized village associations and lease agreement for villages in NNT as mitigation for resettlement from the Dam. Under FOMACOP the lease agreements were valid, but the ability for the villages to contract timber sales was eliminated by PM Order 11, repealed by PM Order 10, 15 and PM Decree 59 reforming the methods for production forestry, log sales and village agreements.

⁶ *Notification No. 0350/AF, 2001: Definition of "Hay" and "Upland Agriculture Area"*

Table 5: Three types of shifting cultivation recognized under current policy

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 khong ti</i>)	Preferable

A major problem has been the interpretation and the definition of ‘shifting cultivation stabilisation’ and the forest types involved. The term used to describe the policy in Lao language actually translates to “cessation of forest slashing and upland rice cultivation”, not ‘shifting cultivation stabilisation’ as usually translated or used in English documentation.

The word ‘forest’ can have a broad or a limited meaning. Some Provinces or Districts consider that a ‘forest’ should have large trees or be close to a primary forest and the slashing of these areas is definitely prohibited. They may, however, consider that regenerating swidden forests or “Pah lao” are not real forests but more a type of forest fallow, and thus allowed to be slashed for rice growing. This approach allows some flexibility, especially in areas where flat land for paddy is not available.

On the other hand, some authorities consider that all land which contains trees of any type, even small regenerating trees, as a ‘forest’ and this should not be slashed again for upland rice. This approach focus’s on the second part of the policy - “cessation....upland rice” - which can be problematical for hilly areas with very little flat land. One trend now is for locals to change the name of upland rice fields to upland rice gardens, in an attempt to avoid action based on the policy. Whatever the case, this policy also responds to the worldwide issue of the control of forest burning and clearing for agriculture.

Application of the Shifting Cultivation Policy in the WM and PA Area

The overview of livelihood systems in SEMFOP-1 indicates that 50% of the population in stake-holder villages use this form of livelihood system (LS2 – Swidden) while another 35% combine swidden with paddy (LS3 – Swidden/Paddy).

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 mitigated 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.

An approach to assessing the nature of livelihood systems and how these can form the basis for long-term sustainable land and resource management can include an assessment of village land carrying capacities and land requirements for swidden systems for projected populations, assuming that the swidden system would remain the main stay of the livelihood system while new approaches to agricultural production are gradually introduced and adopted. Therefore at village level it would be essential to initially undertake “balanced zoning” to adequately support the populations, in the following order of priority:

- a) swidden or rotational upland (agricultural production)
- b) village production forest zones (economic, food, household and medicinal production)
- c) village protection forest zones (some forest production and environmental protection)

This, at least in the short term, would be preferable to placing a dependence on the gains from improved agricultural production methods of a more permanent nature.

In relation to the NBCAs the stakeholder villages described in SEMFOP-1 are of four types:

- Type 1: Villages located totally within the NBCA. (enclave villages)
- Type 2: Villages whose 'boundaries' overlap those of the NBCA.
- Type 3: Villages adjacent to the NBCA.
- Type 4: Villages distant from, but 'using' the NBCA.

As the Type 1 and Type 2 villages are likely to have the greatest impact on NBCA resources because of the location of their production land and their heavier use of forest land as livelihood "safety nets" to supplement agricultural production, the land use planning and land use zoning would necessarily have to commence in the Type 1 and Type 2 villages, as indicated in SEMFOP -1, in order to ameliorate the negative impact on the NBCA resources.

Logging

Commercial logging activities are governed by the Forestry Law, a series of PM Orders issued each year since 1999 (PM Orders 11, 10, 157 and 18), MAF Regulation 221 on Management of Timber and Forest Product Exploitation (2000) and MAF Regulation 69 on Pre-Harvest, Logging and Post-Harvest Activities (2001).

The issuance of changes in annual PM Orders aimed at enhancing policy have created an uncertainty and lack of clarity in the production forestry sector, especially regarding timber sales and village participation. To rectify the situation, PM Decree 59 on the sustainable management of production forest areas (2002) was recently issued under FMAC reforms. PM Order 18 on Logging Activities for 2003 affirms PM Decree 59 as current policy. This Decree aims to implement provisions of the forest law to ensure forestry benefits both the national economy and community livelihoods, and creates a framework for the sustainable management of production forest areas based on the participation of villagers in forest management planning, management and receipt of revenues. A MAF implementing regulation has been drafted and shall be issued in July 2003 to initially govern the establishment of national production forest areas and implementation within four pilot provinces under the new World Bank/FINNIDA/GOL forestry project. Commercial logging outside of these pilot provinces may be governed by MAF Regulation 221 and the PM Orders until the GOL establishes national production forest areas in other provinces.

Notwithstanding the above, commercial logging of any type in the NPA itself is not envisaged in this SEMFOP, while sustainable logging is envisaged in the areas adjacent to the NT2 Watershed, especially the NT2 project resettlement area. Logging for customary use by villagers will however be allowed, as per Government regulations, which allow 5 m³ per family pursuant to MAF Regulation 535 (2001) and MAF Instruction 822.

Wildlife

In addition to MAF Regulation 524 on NPA and Wildlife Management (7/6//2001), recent wildlife policy is contained in two MAF Orders. Specifically, MAF Order 76 (4/6/2002) governs the prohibition of hunting and trading of aquatic and forest animals, both in-country and out-country, for importation or for transfer to a third country. This order come just before the recent agreement of the Prime Minister's Office to join CITES (PMO 876 28/6/2002), in which it is also stated that relevant Ministries must appoint responsible agencies to ensure maximum benefit is obtained from membership of CITES and may be repealed or amended by future national legislation to implement CITES due to be issued in 2004-2005.

⁷ Prime Ministers Order No 15 (3/8/2001), in which clause 4 specifically prohibits logging of all kinds in the NNT NPA and the Corridors.

LEGAL INSTRUMENTS IN REGARD TO PROTECTED AREAS

A number of legal instruments are used in the forestry/conservation sector (Table 4.4).

Conservation forest is defined as forest reserves and forestlands zoned for the purpose of preserving species of flora and fauna, nature and things with value to history, culture, tourism, the environment, education and experimental scientific research (FL, Art. 18). PM Decree 164 established the NPA system, but should be amended or repealed by future legislation on the protected area system issued by the PM or National Assembly since it was issued prior to the Forestry Law and does not provide sufficient guidance on several issues. For example, Article 4.3 allows mining, hydro, road construction and other infrastructure activities with prior authorization by the GOL, but does not provide any procedures or standards for such a decision. It further does not adequately cover participatory management, management plans, customary use, zoning, or tourism. MAF Regulation 524 does implement PM Decree 164 and partially covers these gaps, however, it is necessary to secure these principles in higher legislation approved by either the PM or the NA as was the intent with the original drafts of MAF Regulation 524 before MAF decided to issue a Regulation rather than submit it to the GOL. MAF Regulation 524 is under review as part of the FMAC process and an amended version should be issued by end of 2003. It is the intent of MAF and the GOL in 2004 to draft a Wildlife Law since they intend to become a member of CITES and plan to separate protected area and wildlife legislation.

Guidelines should be issued to reflect lessons from initial PICAD projects⁸ and to clarify the role and benefits of villages in participatory management of the NPA system. Access to resources should be based on the proximity of the village to the NPA. Customary use is prohibited in Core Protected Zones in a NPA (PM Decree 164, Art. 4; MAF Reg 524, Articles 10, 16) and restricted in conservation and protection forest zones within a village boundary to collect limited non-protected NTFPs and wildlife as stated in the VFMA (MAF Instr. 822; MAF Reg 535).

Without donor assistance, most NPAs in the Lao PDR remain poorly managed, with insufficient staff, infrastructure, management plans and budget for either conservation or development. During the 1990s, 15 different donor projects coordinated with MAF to provide opportunities to initiate NPA management. Most of these projects have ended, but the McArthur Foundation has funded a few new projects that will attempt to apply lessons learned to improve management and conservation in select NPAs along the Central Annamite Mountain Range. Information and lessons from these projects should also be integrated into the implementation of the SEMFOP.

Table 6: Forestry Law Articles Relevant To Conservation Forest and NPA Management

Legal Article	Relevant Excerpt	Explanation
Article 10 Categorization of Forest Types	Ministry of Agriculture (shall)...collect data relative to forests...to categorize type...there must be a determination of forest types...	Different types of forest must be categorized by MAF, including conservation and protection forests.
Article 11 Administrative and Use Planning	Local authorities...shall make an administrative and a use plan for forests and forest lands in their localities...	Local authorities have a role to play in the designation and management of conservation and protection forests in their jurisdiction.
Article 12 Assignment of Rights for Administration and Use	After allocation and division of forest types... the Government shall assign rights to local authorities...the province...shall assign to the district and the district to the village to be responsible.	Management of conservation and protection forest areas shall be delegated to the local authorities and village level.

⁸ A national workshop on lessons learned from participatory integrated conservation and development projects in protected areas will be held in Lao PDR in June 2003.

Legal Article	Relevant Excerpt	Explanation
Article 16 Forest Types	Forests...are divided into the following types: 1) protection forests; 2) conservation forests; 3) production forests; 4) rehabilitation forests; 5) degraded/plantation forests	The major forest designations include: Conservation forests as classified in Article 42.
Article 18 Conservation Forests	Conservation forests are forests and forest land which are separated for the purposes of preserving flora and fauna, nature and other precious things in terms of history, culture, tourism, the environment, education and experimental scientific research.	Explanation of role that conservation forests play. Primarily related to protection of biological diversity or habitat conservation.
Article 30 Customary Use	Customary use of forests...is the use of forests...which have been undertaken for a long period of time...and recognized by society or by law...Such customary use shall not cause damage to forests...must be undertaken according to regulations	Legal recognition of customary use, such as the gathering of NTFPs, in forest categories.
Article 42 Preservation of Conservation Forests	To protect forests in order that there is an abundance of vegetation, animal species and biological diversity...for development of national parks...it is necessary to protect conservation forests and divide conservation forests into core prohibition zones, utilization zones, and corridor zones	Management objective of conservation forests and outline for division into three zones applicable to National Protected Area planning.
Article 42 Core Prohibition Zones	Core Prohibition Zones are forest areas...where animals live, forage and propagate...and where there are many dense species of flora...absolutely prohibited to undertake forestry activities...including entering the area without authorization.	Definition for Core Prohibition Zone designation whereby all forestry activities are prohibited.
Article 42 (Utilization Zones)	Utilization Zones are forest areas...adjoining or near complete prohibition areas (where) use is restricted relative to harvesting wood, forestry products and game hunting...	Defines Utilization Zones and the level of restricted use and purpose. Use zones are to be further classified into four sub-zones for management in MAF regulation 524 (2001).
Article 42 (Corridor Zones)	Corridor Zones are forest trails or forest lands which serve as animal trails connecting conservation forests or conservation forests and other types of forest for the purpose of preserving the existence and expansion of wildlife...it is prohibited to hunt animals, cut wood, carry out forestry activities or other actions that obstruct or destroy animal trails.	Defines Corridor Zones and explains management objective and prohibited activities in these areas.

Legal Article	Relevant Excerpt	Explanation
Article 56 Lease of Forest Lands	Forests and forest lands may be leased or licensed to individuals and enterprises for planting, preservation, and extraction activities, and to use by a relevant agency approving and contracting for such according to regulations.	Forest lands may be leased for conservation purposes. An example is conservation forest zone within a village boundary that remains State land, but managed by village under forest management agreement. Potentially an organization may lease areas of a protected area from the State for management.

APPENDIX 3: REVIEW OF ICDPs

ICDP and SEMFOP

SEMFOP intends to promote an Integrated Conservation and Development Project (ICDP) strategy which integrates security of land tenure and resource use rights, community development opportunities, incentives, ownership and involvement in conservation initiatives for mitigating the restrictions to natural access in the protected area. This review was conducted in order to ensure that all the lessons learned from previous ICDP experiences were available to SEMFOP during the design phase. Following the review, the SEMFOP strategy was analysed to ensure that it incorporated the lessons learned (both positive and negative) from ICDPs throughout the region and in the Lao PDR.

Integrated Conservation and Development

The ICDP approach to conservation attempts to link conservation and livelihood development in such a way that rural development activities have positive outcomes on conservation and conservation initiatives benefit and improve the quality of life in stakeholder communities in a tangible and demonstrable way.

Potential Benefits and Risks of the ICDP Approach

By linking conservation to development, ICDPs offer a number of potential benefits:

- Local stakeholders benefit from both the fruits of development and the rewards from the improved conservation of natural resources.
- Local stakeholders become active partners in the conservation process.
- Local stakeholders are compensated for foregoing those livelihood activities that are detrimental to conservation by other livelihood options with positive outcomes on conservation.

At the same time, ICDPs have a number of potential risks which could have negative impacts on conservation:

- The inefficient use of resources which are diverted from conservation to development.
- Uncontrolled development with negative impacts on conservation.
- Distracting attention away from conservation imperatives to development objectives.

National Setting for ICDPs

This review reveals a generally more positive experience with ICDPs in the Lao PDR than in other countries in the region, and suggests a healthier 'enabling environment' for such an approach here compared to elsewhere in South-East Asia. An analysis of the current social, economic and political situation pinpoints a number of enabling factors which include:

- the economic importance of forests (including watershed functions) to the Lao economy;
- the government policy of allowing villagers to remain and reside (and thus assist with conservation) in protected areas;
- GoL's commitment to providing secure and equitable land use rights to enclave communities;
- a well established system of participatory land use planning;
- locally devolved protected area management authority to provincial and district authorities, rather than being centrally-based.

A number of impediments to the successful implementation of ICDPs also exist in the Lao PDR, and these include:

- the shortage of staff and financial resources for both development and conservation initiatives;
- the lack of clear laws and regulations in regard to Protected Areas and the use of natural resources;

- poor capacity levels in the agencies and staff involved in conservation and development;
- the political imperative for development which may distract from a balanced ICDP approach.

ICDP Review

Integrated conservation and development as an approach to participatory biodiversity conservation is an appealing concept and has attracted considerable attention in recent years. ICDPs conducted throughout the world have generated a wealth of lessons (both positive and negative) which will be valuable to the SEMFOP. A review of the lessons from a number of ICDP projects both in the Lao PDR and the region (Table 1) was conducted to ensure that these lessons were incorporated in the SEMFOP design.

Table 1: ICDPs Reviewed to Identify Important Lessons for Inclusion in the SEMFOP.

Author	Publisher	Year	Title
Anon.	National Statistics Center	2001	Participatory Poverty Assessment
Berkmuller, V. <i>et al.</i>	Government of the Netherlands	1998	Results of Rules Considerations in Villages Near the Dong Hua Sao NBCA.
Berkmuller, V. <i>et al.</i>	Government of the Netherlands	2002	Coffee or Conservation. Experience from the Dong Hua Sao NBCA
Chazee L.	DUDCP	2002	Farming Systems and Agroforestry Mission Report.
Craig, I.A.	Lao Swedish Forestry Program	2000	Participatory NBCA Management in Lao PDR
Flint, C. and Chantavong, K.	CPAWM/IUCN	1998	Participatory Protected Area Management (PPAM)
Flint, C. <i>et al.</i>	IUCN	2000	Integrating Conservation and Development (ICAD)
Foppes, J. and Ketphanh, S.	IUCN	2000	Non-Timber Forest Products in Lao PDR
In prep.	DUDCP	2003	DUDCP Review Workshop, Thakek. June, 2003.
Kramer, R. <i>et al.</i>	Oxford University Press	1997	Last Stand – Protected Areas & the Defense of Tropical Biodiversity
Lao Swedish Forestry Program	DOF	2001	Review of the National Protected Area System in Lao PDR
MacKinnon, K.	Parks. Vol. 11, No. 2: 1-5	2001	Editorial on “integrated Conservation and Development”
MacKinnon, K.	Parks. Vol. 11, No. 2: 50-59	2001	ICDPs: Imperfect Solutions for Imperiled Forests in South-East Asia
Nurse, M and Soydara, V.	IUCN	2002	Conservation and Development: Finding the Linkages.
Raintree, J and Soydara, V.	Unpublished draft	2001	Human Ecology and Rural Livelihoods in Lao PDR
Raintree, J.	Lao Swedish Forestry Program	2001	Completion Report of the Long-term Research Advisor to FRC in Lao PDR
Sage, N.	ICDP Working Group, Hanoi	2001	Analysis of Constraints and Enabling Factors of ICDP in Vietnam
Wells, S. <i>et al.</i>	World Bank	1999	Investing in Biodiversity – a review of Indonesia’s ICDPs

The review identified a number of recurrent issues which were commonly cited as being key determinants to the success or failure of the project in question. Among the most frequently cited topics, were the need for ICDPs to adequately address:

- (i) poverty and food security issues of protected area stakeholder communities;
- (ii) local participation in planning, implementing and monitoring both development and conservation initiatives;
- (iii) close involvement of district authorities and proactively involve and engage all government agencies active at the local level;
- (iv) providing economic or other incentives (such as secure land use rights) to villagers for participating in conservation activities;
- (v) selecting those livelihood development activities which have direct linkages to and positive impacts on conservation;
- (vi) identify what villagers have and build on that, rather than what they lack and assuming it should be supplied;
- (vii) the benefits and/or incomes from ICDP activities should be seen as supplemental rather than replacements for traditional practices;
- (viii) the community management of NTFPs, with benefits accruing to villagers in an equitable manner. This was most commonly cited as being of particular importance in the Lao ICDP context.

Specific Case Studies

The generally positive outcome of the review is not to say that ICDPs have been without problems in the Lao PDR. A summary of two World Bank funded projects are presented here as case studies to provide further specific insights into the lessons learned from ICDPs in Lao PDR.

Forest Management and Conservation Project

The World Bank FOMACOP project has come under criticism from a number of quarters, not least from within the Bank itself. The major problems associated with FOMACOP largely reflect many of the key findings of the review described above:

1. Artificial 'project' structures within FOMACOP, meant that real authority was never adequately devolved through normal government channels to the provincial and district level.
2. Delays in releasing funds by DOF was a major constraint at the field level, and the devolution of authority in '1' above needs to include an adequate level of fiscal authority as well as management control.
3. The problem of the slow release of funds impacted heavily on the project's participatory processes. Promises and deadlines for village development activities were broken time and again, creating serious problems for field staff in building rapport and actively involving villagers in project planning.
4. Because of the poor local participation, livelihood development interventions did not reflect real villager needs and the links between development and conservation were either entirely absent or, at best, extremely weak.
5. Protected Area Management Plans for each of the FOMACOP NPAs were produced in Vientiane by a short term expatriate consultant, who had no understanding of realities at the field implementation level. The resulting top-down nature of the plans, meant that quite apart from failing to be integrated with village livelihood needs, they were actually in direct conflict in many instances.

At the implementation level, the SEMFOP has taken on board the key issues identified by these reviews. It recognizes the link between food security and forest destruction, which forms the basis for livelihood development under SEMFOP. Local participation is emphasized throughout the major programs

(FLUPAM, Livelihood Development and Biodiversity Management. Economic and other (service provision) incentives are incorporated in SEMFOP's development programs. FLUPAM aims to provide villagers and communities with secure land use rights. The proposed Conservation Impact Assessment (CIA) technique for selecting appropriate livelihood development activities helps to identify and ensure direct linkages to and positive impacts on conservation. The community management of NTFPs, is frequently cited as an indicative activity likely to be undertaken by SEMFOP.

The District Upland Development and Conservation Project

1. Summary of lessons on the conservation support and awareness component

The District Upland Development and Conservation Project (DUDCP) was a 3-year, \$2 million project in support of a Learning and Innovation Loan (LIL) and was designed to test the hypothesis that a program of (a) increased food production through intensification of existing land use, (b) diversification of income, and (c) provision of basic health and education services coupled with conservation awareness and joint management would reduce unsustainable practices of hunting/gathering and shifting cultivation.

The project covered three sub-watersheds in the upper Nam Theun region in Khammouane Province providing agriculture support and conservation efforts in three pilot villages in conjunction with provision of some social support services in these plus the remaining 26 villages in the sub-watersheds. All these villages are within the Nakai-Nam Theun National Biodiversity Conservation Area (NNT NBCA), which is considered to be the most important protected area in Lao P.D.R. for biodiversity conservation. The project closed on September 30 2003 after four years of operation (the original 3 year plus one year of extension).

This report summarizes the results of the evaluation of the conservation support and awareness component and includes a number of lessons learned.

The conservation support and awareness component comprised three sub-components: (a) land and resource use planning; (b) awareness; and (c) patrolling and monitoring. The focus of the activities was on participatory processes to develop a village land and resource use plan, increase community awareness of the constraints and opportunities of the natural resource base, and involving village participation in protection and monitoring of valuable biodiversity the respective village administrative and spiritual territories.

Project design strengths and weaknesses. It is the opinion of the reviewer that the design of the conservation support and awareness component provided a good basis for contributing to achievement of the development objective. The land and resource use planning sub-component and the patrolling and monitoring sub-component were generally well received in the pilot villages. The conservation support and awareness component did attract the interest and participation of the villagers from very early on. However, the component would probably have contributed more towards the project objectives if integration of conservation and development in the sense of more active and direct focus on sustainable use of natural resources had been *specifically* designed as part of the project and if the project duration had been longer.

Project implementation and performance. The conservation support and awareness component was largely implemented according to the plans.

Land and resource use planning sub-component. Land and resource use plans have been developed and successfully negotiated for three pilot villages. The land and resource use planning in three other villages also received support from the Project. Village and household boundaries have for parts been demarcated. Full demarcation has not been undertaken (but is considered unrealistic to achieve). This sub-component has progressed successfully but rather independent from the rest of the project. It could have been integrated better with both the agricultural component and the social component.

Awareness sub-component. The Project has conducted workshops on natural resources management and conservation in the pilot villages, in Nakai and in Thakhek. Most workshop and training activities were meant as ‘Training of Trainers’ actions for school teachers and other government staff, and selected villagers. Information on importance of wildlife conservation and the existing national laws and regulation prohibiting wildlife trade has been disseminated using materials produced by this and other projects. Relevant slide presentations and videos were shown in the pilot villages twice weekly for several months. This sub-component could have contributed more to the villagers’ conservation awareness if it had produced more printed materials to be used by teachers and non-formal teachers working within the Project’s social component.

Patrolling and monitoring sub-component. The DUDCP showed that VCMUs can take responsibility for patrolling and monitoring if provided with training, supervision and allowances. Six Village Conservation Monitoring Units were established and were functioning well; patrolling and monitoring plans were developed; wildlife recording forms and human impact forms have been developed and used; and at least 36 VCMU members have been trained in different aspects of conservation work; most of them are capable of carrying out their patrolling and monitoring tasks.

The VCMUs patrolled for more than 1,500 days during the project life and walked almost 15,000 km within the forests of NNT NBCA. NBCA staff members have joined the patrolling for a total of 84 person-days. An impressive amount of data on wildlife and human impacts was collected. This sub-component has probably contributed substantially to the recorded and widely acknowledged reduction in hunting pressure in the pilot village areas.

The overall performance of the conservation support and awareness component is rated satisfactory.

Coherence of activities. The Project would probably have been more successful in achieving its development objective if the different components and sub-components had been better integrated, e.g. by using the results of land and resource use planning as well as patrolling and monitoring within the education component. The agricultural component could also to a larger extent have reflected the result of the land and resource use planning and vice versa.

Major factors affecting implementation and outcome. Unclear government regulations on protection of NBCAs have had negative impact on resource use planning and conservation awareness raising as hunting of wildlife for villagers’ own consumption could not be discussed openly. Limited number, capacity and motivation of NBCA staff were constraints to effective project implementation; Low quality and infrequent replacement of some field equipment has threatened the motivation among NBCA staff and VCMU members; and The involvement of some field staff in environmentally destructive activities has undermined some of the project’s conservation awareness work (as well as the credibility of the project’s conservation efforts per se).

Achievements of objectives, effect and impact. The conservation support and awareness component project did have a visible and significant, positive impact on hunting of threatened wildlife and unsustainable gathering of NTFPs. These activities are by all parties reported to have decreased significantly.

Sustainability. The sustainability prospects for the Conservation Support and Awareness Component are rated as likely on account of this component being taken over by the Watershed Management Authority (WMA). The WMA will be responsible for the design, administration and monitoring of the NNT NBCA programs. Funding for the WMA will be secured for the next 30 years if the Nam Theun II hydropower project is implemented. However, the sustainability of the component in a scenario of no other external funded projects to take over is more questionable.

Replicability. The establishment of VCMUs for successful patrolling, monitoring, awareness raising and support to NBCA management is likely to be feasible elsewhere as long as there is funding available for basic equipment and allowances.

Lessons learned. *VCMUs are able to carry out NBCA patrolling and monitoring with limited supervision.* A key lesson learned from the Project's conservation support and awareness component is that villagers can do effective patrolling and monitoring of NBCAs with surprisingly little supervision. Once equipped with the necessary knowledge, skills, and tools, the VCMUs are largely able to carry out their assigned tasks.

It was easier for the villagers to accept the conservation support and awareness component than the agricultural component. It has been argued that the initial problems with gaining the trust of the villagers partly was founded in the villagers fear that the Project would lead to closure of their hunting and NTFP gathering practices. DUDCP, however, showed that initial communication and trust building with remote villages in NNT NBCA can take as its point of departure participatory land and resource use planning and joint monitoring of wildlife and human impacts on the forest habitats.

GoL's commitment to NBCA management need to be stronger communicated to government staff.

The principal challenge to improved management and protection of NNT NBCA is not training, staffing or funding but to obtain a clearer GoL commitment. It is very difficult to get government field staff involved in any work which they do not see as supporting GoL policies.

Integration of conservation and development does not happen by itself. The Project did little to integrate conservation and development and conspicuously tried to avoid dealing with the many complex issues which a conservation and development project is expected to cover. This is, however, understandable for a Project without permanent technical advisers with experience in integrating conservation and development.

Proposed follow-up. It is important to secure that monitoring reports are filed and stored safely to ensure that they still can be retrieved decades into the future. It was therefore agreed that the DUDCP VCMU-Facilitator will be sought retained under the ECRU project, and that his TOR will reflect the task of being responsible for the storage of VCMU monitoring data until this responsibility can be transferred to the WMPA.

2. Lessons learned from the agricultural development component

Project planning

Better understanding of the baseline situation. As the Project entered into a new field of co-operation agreements implementation suffered heavy delays because neither party was aware of the mutual expectations. The Bank's assessment of the situation was based on the experiences in the area documented by IUCN. The quality of their activities and reports could not be assessed by this missions but it appears that existing reports did not appropriately reflect the diverse situation in the NNT area. Appraisal missions for the DUDCP should have crosschecked the information at least through some short field visits and focus group discussions. Upon entering with a new lending instrument (LIL) into a topic which is new to the client (decentralization) in a geographical area where due to its political and environmental sensitivity activities are closely followed by an international audience (NNT NBCA) a better understanding of the institutional and socio-economic framework of the area should have been obtained. What appeared to be a thoroughly researched area proved to be socially and culturally more diverse than expected, and having a more complicated and negative project history than anticipated. Future interventions should build on a solid understanding of village-specific history and conditions.

The ECRU project extends a limited range of social support measures in health and education to all remaining villages in the area. Activities start with a proven package which benefit entire communes and which will establish trust and confidence for support interventions in other sectors. This slow and sequential approach is very likely to succeed.

Decentralized institutions. The participation of the Province and District Departments generally remained too low. This can be explained by the fact that the Departments did not feel themselves enough involved neither in the planning nor in the successful achievement of the Project's objectives. Instead of being a prime beneficiary of capacity building and training there was little commitment in particular at PAFO and DAFO. The very low capacity and ability/motivation to learn of the provincial/district staff, resulted in low achievements from capacity building efforts. Some trainees selected for the training comprised

individuals who were not from the target groups and who showed little interest in the training content but more concern for opportunities to collect allowances. The training neither benefited these individuals nor benefited from these individuals. In addition, there was a high turnover in personnel at the field level, resulting in protected areas and other activities being staffed with inexperienced and unqualified individuals.

The fact that implementation happened despite this unfavorable institutional environment must be attributed to the presence of well-paid and highly motivated VDFs in the village. In the current political and administrative framework it is not very likely that any sustainable solutions for the problem of weak and unmotivated local institutions can be found. High priority interventions like in the NNT area will require a parallel structure established and funded by respective projects. The example of DUDCP's VDFs proves that such approach is possible and can yield very good results. Future interventions should build more on the capacity and involvement of such staff from the beginning and until village institutions are established and/or strengthened to take over their tasks. It may appear an expensive approach but writing-off training and capacity building expenses which do not have any impact is not cheap either. Reforming the decentralized institutions would primarily -or at least in parallel- require high level policy decisions and a top down supportive approach.

Understanding local culture. Understanding and suitably reacting in the framework of cultural differences between foreign experts, local staff, and villagers is important. Mutual expectations need to be clarified and sensibly handled. This includes the deployment of suitable staff. Civil servants deployed in the field to work with target population are mostly young, and not well trained in working with rural villagers. Moreover, local staff are not always able to fully absorb new techniques taught by experts because instruction and topics are sometimes too sophisticated. Approaches must be adapted and planning must be flexible enough to respond appropriately and fast enough. Incentive structures need to be in place to avoid delays and setbacks especially at the very beginning of the project when building of mutual trust between all stakeholders is of paramount importance. A slow start should be the preferred approach in particular in light of the risk of failure. The selection and funding of capable individuals for training and subsequent posting in their own villages was a promising approach under DUDCP (and now ECRU). The performance of these teachers and their students should be closely monitored to find out whether this could be an approach also in other fields.

Integration with other components. The Project was very successful with its education and health component. This could have been used as a slow introductory and confidence building component. Failure of this component was very unlikely as it was based on a tested and widely accepted model. In this sense, the ECRU project should have been the initial project, followed by DUDCP after a three year learning period financed by a grant. Lot of the pitfalls could have probably been avoided.

Food security and poverty alleviation. Not every family who does not have enough rice for everyday consumption is automatically food insecure. Not every poor family is best helped by providing them with rice or with the means to produce rice. In particular in Lao's difficult and diverse socio-economic and natural environment interventions need to be based on a solid understanding of the situation on the ground. This can either be achieved by a deliberately slow pace of project activities, i.e. learning while doing, with the option to adjust planning as activities move forward, or by gaining a better understanding by commissioning respective studies beforehand. DUDCP tried a bit of both. On the one hand the LIL allowed for flexible management and implementation on the other hand the pressure for delivering results pressed for quick actions.

The lending instrument. Although the concept of the program clearly entailed 'learning and innovation' as one of its main implicit objectives, the technical areas where main changes were envisaged (agriculture, farming systems) does not render itself to quick transformation. The shift from swidden agriculture to permanent cultivation takes longer than the 3 years that were possible at the time of DUDCP appraisal. The nature of permanent hillside farming systems requires a longer term commitment as benefits from agroforestry systems and perennial (tree) crops accrue only after a number of years. On this background, even if the project had made respective trials and attempts, in a 3 year it could not have achieved very much. A timeframe of 5 to 10 years would have been more realistic.

Livelihood support

The delivery mechanism. The Household Grant scheme was well-suited to achieve quick improvements of the poverty levels in the villages. Basically it increased the asset value in each household by US\$ 700. The HHG allocations achieved a visible improvement in a short time. The downside of the approach taken was that it runs counter all efforts to initiate self-determined and self-financed development. It increases the 'begging attitude' and will make future interventions in the area more expensive. The Project should have devised some sort of repayment/household contribution element. This free social welfare approach should not be replicated in other villages. However, the pressure for replication is already there. While the HHG lifted some villagers out of poverty and created more (short-term) equality, it created jealousy between participating and non-participating villages.

The HHG created confidence and trust between the Project and villagers. This positive development in the relationship came at a high price and could not be used to initiate and test alternative agricultural and economic activities urgently required for sustainable socio-economic development in the area. The HHG lifted some villagers out of poverty and created more (short-term) equality. But only a limited number of households had the opportunity to use the HHG for gaining access to improved agriculture production (irrigation, paddy fields). Paddy rice production on irrigable flat lands in shifting cultivation areas is an alternative only for a limited number of households. As the productive resources are distributed very uneven it must be expected that inequality will now grow even faster. Overall, the HHG deviated funds from agriculture development in the villages to other activities and to consumptive purposes. About 70 percent of the support went into agricultural development and other investment, 25 percent into housing improvements and roughly 5 percent into direct social support.

Institutional considerations

Cooperation and Coordination. Working relations between DUDCP and PAFO/DAFO were weak. PAFO/DAFO expected the Project to develop new approaches/alternatives but their weakening structure down to village level prohibited any knowledge transfer through the (intensive) project TA. The TA, in turn, concentrated on paddy rice and irrigation and the Project shied away from engaging in an effort to change agricultural practices in the shifting cultivation areas. The government policy to abolish any shifting cultivation and hillside farming was not favorable either to support testing and introduction of hillside farming techniques, which would have been available. Little effort was made to test and attract farmer's interest for them. Initiating sustainable changes in farming systems, from shifting cultivation to settled agriculture would have required a more long-term commitment of all stakeholders. Any such changes take much more time than the 3 years of DUDCP life. PIU and Steering Committee provided no support for such an approach. Future intervention need to ensure the support through respective policy decisions, guidance from Department heads and technical facilitation at the implementation level. Unless all levels work in the same direction no sustainable change can be expected.

Sustainability and replicability. Continuing support for agricultural activities (research, extension services) cannot be expected in the current framework. Follow-up on agricultural activities by the newly created Watershed Development Authority (WMA) are a hope/option, however, also not very likely without external support. The expected well-funded WMA should be staffed with strong and committed experts, supported possibly by some international TA. The system of village-based VDFs should serve as model. The mandate of the WMA and its staff should include the development/testing of adapted farming *systems* for shifting cultivation areas.

Conservation capacity building

Hillside farming techniques would have been available but little effort has been made to attract farmer's interest for them. The failure to address this problem might have lead to an increase in the area under swidden agriculture. Project monitoring data suggests a stabilization of this area. However, it remains unclear whether *new* areas are cleared for cultivation or rotation takes place only within a limited area. The latter is less likely and more information is required to understand the interactions between the current farming systems and biodiversity conservation. More confirmed data and information should be collected in the field to provide arguments for a more comprehensive approach.

Monitoring & Evaluation

The insecure basis from which the Project started would have required a stronger monitoring system with better documentation not only of physical deliverables but equally important of processes. In particular with the intended strong component of institutional strengthening it is not sufficient to monitor only the number of training and trainees. Changes in service delivery approaches and performance can not be assessed by looking at numbers only. The Project collected data and information on a large number of indicators. Subsequent use of this data was and remains limited as it is difficult to put in perspective. Conclusions can be mislead because neither the context nor the data and information collection mechanisms are well documented.

A more in-depth evaluation could save a lot of this valuable information as long as it is present in the memory of those who have been involved in the Project. Future interventions would certainly benefit from a better baseline assessment and a more decision-oriented data and information collection and analysis system.

Conclusions

In conclusion, the findings of the review support the adoption of and ICDP approach in SEMFOP. At the same time, the review has helped to pinpoint key areas where SEMFOP design has been weak and amendments have been made accordingly. Overall, the findings also suggest that the political, economic, administrative and social conditions in the Lao PDR generally, and in the SEMFOP situation in particular, strongly favor the ICDP approach. At the same time, SEMFOP offers the opportunity to provide further lessons and leverage to overcome the potential drawbacks and weaknesses of the ICDP approach in the future.

APPENDIX 4: BIODIVERSITY TABLES

Table 1: Mammals recorded from the Nakai-Nam Theun NPA and the Nakai Plateau.

{ } indicates a species not been confirmed in the area, but evidence indicates that its presence is likely.

Bold text in the species column indicates a species recorded exclusively or predominantly in the Nakai Plateau

Family & common name	Species	Global/National Status
MANIDAE		
Chinese Pangolin	<i>Manis pentadactyla</i>	NT/ARL
Sunda Pangolin	<i>Manis javanica</i>	NT/ARL
TUPAIIDAE		
Northern Treeshrew	<i>Tupaia belangeri</i>	
CYNOCEPHALIDAE		
Sunda Colugo	<i>Cynocephalus variegatus</i>	LKL
PTEROPODIDAE		
Northern Tail-less Fruit Bat	<i>Megaerops niphanae</i>	
Hill Long-tongued Fruit Bat	<i>Macroglossus sobrinus</i>	
RHINOLOPHIDAE		
Large Woolly Horseshoe Bat	<i>Rhinolophus luctus</i>	PARL
Bouret's Horseshoe Bat	<i>Rhinolophus paradoxolophus</i>	VU/PARL
Big-eared Horseshoe Bat	<i>Rhinolophus macrotis</i>	PARL
Pearson's Horseshoe Bat	<i>Rhinolophus pearsonii</i>	PARL
Least Horseshoe Bat	<i>Rhinolophus pusillus</i>	PARL
Malayan Horseshoe Bat	<i>Rhinolophus malayanus</i>	PARL
Thomas's Horseshoe Bat	<i>Rhinolophus thomasi</i>	NT/PARL
Intermediate Horseshoe Bat	<i>Rhinolophus affinis</i>	PARL
HIPPOSIDERIDAE		
Roundleaf bat	<i>Hipposideros pomona</i>	DD
Least Roundleaf Bat	<i>Hipposideros cineraceus</i>	PARL
Shield-faced Roundleaf Bat	<i>Hipposideros hylei</i>	NT/PARL
Great Roundleaf Bat	<i>Hipposideros armiger</i>	PARL
Stoliczka's Trident Bat	<i>Aselliscus stoliczkanus</i>	PARL
VESPERTILIONIDAE		
Hairy-faced Myotis	<i>Myotis annectans</i>	NT/LKL
Large Brown Myotis	<i>Myotis montivagus</i>	NT/LKL
Horsfield's Myotis	<i>Myotis horsfieldii</i>	
Rickett's Large-footed Myotis	<i>Myotis hasseltii</i>	PARL
Serotine	<i>Eptesicus serotinus</i>	
Lesser Flat-headed Bat	<i>Tylonycteris pachypus</i>	
Pipistrelle bat	<i>Pipistrellus sp</i>	

Family & common name	Species	Global/National Status
Common Bent-winged Bat	<i>Miniopterus schreibersii</i>	NT/PARL
Tube-nosed bat	<i>Murina tubinaris</i>	
Hutton's Tube-nosed Bat	<i>Murina buttonii</i>	NT/LKL
Round-eared Tube-nosed Bat	<i>Murina cyclotis</i>	
Papillose Woolly Bat	<i>Kerivoula papillosa</i>	
Hardwicke's Woolly Bat	<i>Kerivoula hardwickii</i>	
Greater Groove-toothed Bat	<i>Phoniscus jagorii</i>	
LORIDAE		
Slow loris	<i>Nycticebus coucang</i>	LKL
Pygmy oris	<i>Nycticebus pygmaeus</i>	VU/LKL
CERCOPITHECIDAE		
Northern pig-tailed Macaque	<i>Macaca leonina</i>	VU/PARL
Assamese Macaque	<i>Macaca assamensis</i>	VU/PARL
Rhesus Macaque	<i>Macaca mulatta</i>	NT/PARL
Bear Macaque	<i>Macaca arctoides</i>	VU/PARL
Francois's Langur	<i>Trachypithecus francoisi</i>	VU/PARL
Douc Langur	<i>Pygathrix nemaus</i>	EN/ARL
HYLOBATIDAE		
White-cheeked/Yellow-cheeked Crested Gibbon	<i>Hylobates leucogenys/gabriellae</i>	DD or VU & PARL or LKL
CANIDAE		
Dhole	<i>Cuon alpinus</i>	VU/ARL
URSIDAE		
Asiatic Black Bear	<i>Ursus thibetanus</i>	VU/ARL
Sun Bear	<i>Ursus malayanus</i>	DD/ARL
MUSTELIDAE		
Siberian Weasel	<i>Mustela siberica</i>	LKL
Back-striped Weasel	<i>Mustela strigidorsa</i>	VU/LKL
Yellow-throated Marten	<i>Martes flavigula</i>	
Large-toothed ferret badger	<i>Melogale personata</i>	
Hog Badger	<i>Arctonyx collaris</i>	LKL
Otter sp.	<i>Lutra or Lutrogale sp.</i>	
Oriental Small-clawed Otter	<i>Aonyx cinerea</i>	NT/ARL
VIVERRIDAE		
Large Indian Civet	<i>Viverra zibetha</i>	
Small Indian Civet	<i>Viverricula indica</i>	
Spotted Linsang	<i>Prionodon pardicolor</i>	LKL
Binturong	<i>Arctictis binturong</i>	ARL
Common Palm Civet	<i>Paradoxurus hermaphroditus</i>	
Masked Palm Civet	<i>Paguma larvata</i>	

Family & common name	Species	Global/National Status
Small-toothed Palm Civet	<i>Arctogalidia trivirgata</i>	
HERPESTIDAE		
Small Asian mongoose	<i>Herpestes javanicus</i>	
Crab-eating Mongoose	<i>Herpestes urva</i>	
FELIDAE		
Leopard Cat	<i>Prionailurus bengalensis</i>	
{Fishing cat}	{ <i>Prionailurus viverrinus</i> }	NT/LKL
Asian Golden Cat	<i>Catopuma temminckii</i>	NT/LKL
Marbled Cat	<i>Pardofelis marmorata</i>	DD/LKL
Clouded Leopard	<i>Pardofelis nebulosa</i>	VU/ARL
Leopard	<i>Panthera pardus</i>	ARL
Tiger	<i>Panthera tigris</i>	EN
ELEPHANTIDAE		
Asian Elephant	<i>Elephas maximus</i>	EN/ARL
RHINOCEROTIDAE		
{Rhinoceros sp.}	{ <i>Rhinoceros sondaicus</i> or <i>Dicerorhinus sumatrensis</i> }	CR
SUIDAE		
Eurasian Wild Pig	<i>Sus scrofa</i>	LKL
{Heude's Pig}	{ <i>Sus bucculentus</i> }	DD/LKL
TRAGULIDAE		
Lesser Oriental Chevrotain	<i>Tragulus javanicus</i>	
CERVIDAE		
Sambar	<i>Cervus unicolor</i>	PARL
Red Muntjac	<i>Muntiacus muntjak</i>	
Large-antlered Muntjac	<i>Muntiacus vuquangensis</i>	PARL
{Annamite Muntjac}	{ <i>Muntiacus truongsongensis</i> }	LKL
BOVIDAE		
Gaur	<i>Bos gaurus</i>	VU/ARL
Banteng	<i>Bos javanicus</i>	EN/ARL
Southern Serow	<i>Naemorhedus sumatraensis</i>	VU/PARL
Saola	<i>Pseudoryx nghetinhensis</i>	EN/ARL
SCIURIDAE		
Black Giant Squirrel	<i>Ratufa bicolor</i>	PARL
Pallas's Squirrel	<i>Callosciurus erythraeus</i>	
Inornate Squirrel	<i>Callosciurus inornatus</i>	(VU as <i>C. pygerythrus</i>); LKL
Eastern Striped Squirrel	<i>Tamiops maritimus</i>	
Cambodian striped squirrel	<i>Tamiops rodolphi</i>	
Red-cheeked Squirrel	<i>Dremomys rufigenis</i>	
Berdmores's Squirrel	<i>Menetes berdmorei</i>	
PTEROMYIDAE		
Lesser Giant Flying Squirrel	<i>Petaurista elegans</i>	

Family & common name	Species	Global/National Status
Phayre's flying squirrel	<i>Hylopetes phayrei</i>	LKL
Unidentified small flying squirrel	<i>Hylomyscus sp.</i>	
MURINAE		
Unidentified rat	<i>Niviventer sp.</i>	
Fea's Tree Rat	<i>Chiromyscus chiropus</i>	LKL
Red Spiny Rat	<i>Maxomys surifer</i>	
HYSTIRICIDAE		
Asiatic brush-tailed porcupine	<i>Atherurus macrourus</i>	
East Asian Porcupine	<i>Hystrix brachyura</i>	VU
LEPORIDAE		
Siamese Hare	<i>Lepus pequensis</i>	
{Annamite Striped Rabbit}	{ <i>Nesolagus timminsi</i> }	LKL*
RHYZOMYINAE		
Hoary bamboo rat	<i>Rhizomys pruinosus</i>	

CR = Critically Endangered; EN = Endangered; VU = Vulnerable; NT = Near Threatened; DD = Data Deficient; ARL = At Risk in Lao PDR; PARL = Potentially at Risk in Lao PDR; CARL = Conditionally at Risk in Lao PDR; LKL = Little Known in Lao PDR.

Table 2: Tree and plant species recorded from NNT NPA

	Lao Name	Species	Family
1	Sa hom	<i>Goldusia anfractuosa</i>	Acanthaceae
2	Phak kud	<i>Adiatum sp.</i>	Adiantaceae
3	Khon khaen	<i>Dracaena angustifolia</i>	Agavaceae
4	(unknown)	<i>Zephyranthes sp.</i>	Amaryllidaceae
5	Thian phi	Unknown	Amaryllidaceae
6	Mai ho	<i>Allospodias lakhonensis</i>	Anacardiaceae
7	Mai mak muang	<i>Mangifera sp.</i>	Anacardiaceae
8	Ton mak moang	<i>Mangifera sp.</i>	Anacardiaceae
9	Mai ked lin	<i>Rhus succedanea</i>	Anacardiaceae
10	Mai ku	unknown	Anacardiaceae
11	Maimua	unknown	Anacardiaceae
12	Khua hang kuang	<i>Ancistrocladus tectorius</i>	Ancistrocladaceae
13	Khua phi phon	<i>Uvaria rubra</i>	Annonaceae
14	Kok tin ped	<i>Alstonia scholaria</i>	Apocynaceae
15	Khua mak nhang	unknown	Apocynaceae
16	Bon pa	<i>Alocasia sp.</i>	Araceae

17	(unknown)	<i>Monstera religiosa</i>	Araceae
18	(unknown)	<i>Monstera sp.</i>	Araceae
19	Wai sa noi	<i>Pothos scandens</i>	Araceae
20	(unknown)	<i>Rhaphidophora peepla</i>	Araceae
21	Tang	<i>Aralia armata</i>	Araliaceae
22	Wai kheo mi	<i>Calamus sp.</i>	Arecaceae
23	Wai kheo	<i>Calamus sp.</i>	Arecaceae
24	Wai thoun	<i>Calamus sp.</i>	Arecaceae
25	Wai boun	<i>Daemonorops schmidtiana</i>	Arecaceae
26	Kok sa mak	<i>Pinanga sp.</i>	Arecaceae
27	(unknown)	<i>Dischidia sp.</i>	Asciadiaceae
28	Phak kud	<i>Asplenium nidus</i>	Aspleniaceae
29	Nad		Asteraceae
30	Phak kud	<i>Anisocampium cumingianum</i>	Athyriaceae
31	Phak kud	<i>Diplazium subserratum</i>	Athyriaceae
32	Mai kala boun	<i>Betula alnoides</i>	Betulaceae
33	(unknown)	<i>Carpinus viminea</i>	Betulaceae
34	Dok lip	<i>Radermanchera ignea</i>	Bignoniaceae

35	Som seo	<i>Bauhinia purpurea</i>	Caesalpinaceae
36	Mai mak kheng	<i>Dialium cochinchinensis</i>	Caesalpinaceae
37	Mai sa phang	<i>Peltophorum rassyrbachis</i>	Caesalpinaceae
38	Mai tae nam	<i>Sindora siamensis</i>	Caesalpinaceae
39	Mai chod long	<i>Terminalia sp.</i>	Combretaceae
40	Mai hen	<i>Terminaria bellerica</i>	Combretaceae
41	Nha kap	<i>Commelina sp.</i>	Commelinaceae
42	Nha kap nhai	<i>Forrestii griffithii</i>	Commelinaceae
43	(<i>unknown</i>)	<i>Argyria nervosa</i>	Convolvulaceae
44	Nha khom pao	<i>Scleria terrestris</i>	Cyperaceae
45	Kok mak san	<i>Dillenia indica</i>	Dilleniaceae
46	Mai san phaeng	<i>Dillenia kerrii</i>	Dilleniaceae
47	Mai khaen ked	<i>Hopea sp.</i>	Dipterocarpaceae
48	Mai nhang	<i>Dipterocarpus basseltii</i>	Dipterocarpaceae
49	Phak kud	<i>Nectaria sp.</i>	Dryopteridaceae
50	Mai nang dam	<i>Diospyros sp.</i>	Ebenaceae
51	Mai khom fad	unknown	Euphorbiaceae
52	Mai pang	<i>Sapium sp.</i>	Euphorbiaceae

53	Mai mak phak	unknown	Euphorbiaceae
54	Mai khi mod	unknown	Euphorbiaceae
55	Mai pao	<i>Croton sp.?</i>	Euphorbiaceae
56	Mak ko nam	<i>Castanopsis sp.</i>	Fagaceae
57	Mak ko nam khon sang	<i>Castanopsis sp.</i>	Fagaceae
58	Mak ko ta mu	<i>Lithocarpus sp.</i>	Fagaceae
59	Mak ko kio or Ko nhai	<i>Lithocarpus sp.</i>	Fagaceae
60	Mai mak ko ta mu nhai	<i>Lithocarpus sp. (2)</i>	Fagaceae
61	Khua mouy	<i>Gnetum gnetum</i>	Gnetaceae
62	Mai hia	<i>Cephalostachyum virgatum</i>	Gramineae
63	Mai thae or Mai ha	<i>Thyrsostachyum sp.</i>	Gramineae
64	Nha nhung	unknown	Gramineae
65	Mai song	<i>Callophyllum polyalthum</i>	Guttiferae
66	Mai som phong	<i>Garcinia sp.</i>	Guttiferae
67	Mai nga loi	<i>Garcinia sp.?</i>	Guttiferae
68	Mai li khao	<i>Garcinia speciosa</i>	Guttiferae
69	Mai phao	<i>Engelbartia sp.</i>	Juglandaceae
70	Mai sa chuang	<i>Cinnamomum iners</i>	Lauraceae

71	Khing Khai ton	<i>Lidsaea sp.</i>	Lauraceae
72	Kok phai ven	<i>Phoebe lanceolata</i>	Lauraceae
73	Phak kud No223	<i>Lindsaea bouillodii</i>	Lindsaeaceae
74	Phak kud	<i>Bolbitis sinensis</i>	Lomariopsidaceae
75	Mai peouy	<i>Lagerstroemia sp.</i>	Lythraceae
76	Tong ching	<i>Halopegia blumei</i>	Maranthaceae
77	Phak kud No218	<i>Christensenia aesculifolia</i>	Marattiaceae
78	Ben a dong	<i>Melastoma sp.</i>	Melastomataceae
79	Ben a	<i>Melastoma sp.</i>	Melastomataceae
80	Nha ham po dong	<i>Melastoma sp.?</i>	Melastomataceae
81	Mai muad e	<i>Memecylon edule</i>	Melastomataceae
82	Mai khi chak	<i>Walsura angulata</i>	Meliaceae
83	Mai mak kong	<i>Aglaiia merostela</i>	Meliaceae
84	Mai ta sua	<i>Amoora polystachyus</i>	Meliaceae
85	Mai hua lon	<i>Parkia speciosa</i>	Mimosoideae
86	Mai mi theune	<i>Arotcarpus sp.</i>	Moraceae
87	Mai ong nok	<i>Ficus benjamina</i>	Moraceae
88	Mak nod ton	<i>Ficus semicordata</i>	Moraceae

89	Kok sa luad	<i>Knema oblongifolia</i>	Myristecaceae
90	Mai luad	<i>Knema sp.</i>	Myristecaceae
91	Tin cham	<i>Ardisia crispa</i>	Myrsinaceae
92	Mai va dong	<i>Eugenia sp.</i>	Myrtaceae
93	Kok sa mek dong	<i>Eugenia zeylanica</i>	Myrtaceae
94	Pha nang ua	<i>Anoectochilus sp.</i>	Orchidaceae
95	Kouay mai	<i>Dendrobium sp.</i>	Orchidaceae
96	Khuang	<i>Caryota maxima</i>	Palmae
97	Ton kho	<i>Livistona sp.</i>	Palmae
98	Chiang na noi or Dteuy noi	<i>Pandanus sp.</i>	Pandanaceae
99	Mai khi mu	<i>Ormosia combodiana</i>	Papilionoideae
100	Mai hing	<i>Keteleeria davidiana</i>	Pinaceae
101	Mai hing kheo	<i>Keteleeria roulettii</i>	Pinaceae
102	Phou pa	<i>Piper sp.</i>	Piperaceae
103	Phou pa kan daeng	<i>Piper sp.</i>	Piperaceae
104	Phak kud	<i>Drynaria bonii</i>	Polypodiaceae
105	Phak kud	<i>Pteris sp.</i>	Pteridaceae
106	Khua ka bi	<i>Mussaenda saneriana</i>	Rubiaceae

107	Khua nam kho	<i>Uncaria sp.</i>	Rubiaceae
108	Mak hu	<i>Walthera americana</i>	Rusaceae
109	Ko ka	<i>Amesiodendron chinensis</i>	Sapindaceae
110	Kok kho laen	<i>Arytera litholaris</i>	Sapindaceae
111	Mak ngeo	<i>Xerospermum macrophyllum</i>	Sapindaceae
112	Mai ko bia	<i>Sapotaceae</i>	Sapotaceae
113	Maknamnom pa	unknown	Sapotaceae
114	Phak kud khua	<i>Lygodium polystachyum</i>	Schizaeaceae
115	Nha mung tau	<i>Selaginella sp.</i>	Selaginaceae
116	Nha hua	<i>Smilax sp.</i>	Smilacaceae
117	Mak khua khon	<i>Solanum ferox</i>	Solanaceae
118	Mai ham ao	<i>Pterospermum megalocarpum</i>	Sterculiaceae
119	Mai mi	<i>Schima wallichii</i>	Theaceae
120	Mai ked sa na	<i>Aquilaria sp.</i>	Thymeliaceae
121	Mai khom som	<i>Microcos paniculata</i>	Tiliaceae
122	Po hu	<i>Ulmus sp.?</i>	Ulmaceae
123	Mai so	<i>Gmelina arborea</i>	Verbenaceae
124	Kha khom	<i>Alpinia sp.</i>	Zingiberaceae

125	Kha	<i>Alpinia sp.</i>	Zingiberaceae
126	Mak naeng	<i>Amomum avoideum</i>	Zingiberaceae
127	Van	<i>Boesenbergia sp.</i>	Zingiberaceae
128	Pid pi daeng	<i>Scaphoclams sp.</i>	Zingiberaceae
129	No kha	<i>Catimbium bractaetum pox6</i>	Zingiberaceae
130	Som kung ton	unknown	unknown
131	Mai sak No 230	unknown	unknown
132	Khua sen pong	unknown	unknown
133	Ton dang dong	unknown	unknown
134	Mai kan bong	unknown	unknown
135	No 244	unknown	unknown
136	No 247	unknown	unknown
137	Sa pa ping	unknown	unknown
138	Mai sa keun	unknown	unknown
139	Khua mak ka thok	unknown	unknown
140	Mai laev	unknown	unknown
141	Som koi ton	unknown	unknown

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Anon	1995b	Investigation into the Terrestrial Ecology of the Area Affected by the Nam Theun 2 Hydropower Scheme
Anon	1995c	Investigation into the Terrestrial Ecology of the Area Affected by the Nam Theun 2 Hydropower Scheme - Executive Summary
Anon	1995d	Results of a survey of terrestrial wildlife in the areas to be affected by the proposed NT 2 hydroelectric project
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