

**LAO PEOPLE'S DEMOCRATIC REPUBLIC
NAM THEUN 2 HYDRO PROJECT**

**SIXTH REPORT OF THE
INTERNATIONAL ENVIRONMENTAL AND SOCIAL
PANEL OF EXPERTS**

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March 21, 2003

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**For the Nam Theun 2 Hydro Project
Lao People's Democratic Republic**

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LIST OF RECOMMENDATIONS

1. **Company and GOL focus on the NNT-NBCA, the Nakai Plateau and the Xe Bang Fai must not be at the expense of important linkages between those three zones.**
2. **Aside from the portion that falls within the PHP-NT2 corridor, the NT2 reservoir should be excluded from the boundaries of the Watershed Management and Protection Authority.**
3. **So as to avoid the risk of establishing inappropriate priorities and recruiting inappropriate staff, the Watershed Management and Protection Authority initially should take a modest approach dealing with a small number of carefully selected priorities followed by priority expansion and further staff recruitment as experience dictates.**
4. **The WMPA Board should establish a small steering committee, including the Nakai District Governor, to work closely with the Secretariat. The importance of biodiversity linkages to the watershed's population warrants the appointment to the Board of a representative from the Lao Front for National Construction granted the Front's responsibility for carrying out the Government's 1992 Ethnic Minority Policy.**
5. **WMPA procedures are required for carrying over funds from one year to another.**
6. **That WMPA give a first priority to the development of a comprehensive patrolling system, involving village-based patrols, supported as appropriate, by the military; and that the military make a concerted and sustained campaign to stop the incursions into the NNT NBCA from across the international border. Two other priority issues are family planning and a master plan for access tracks.**
7. **That improved access be provided to appropriate villages in the NNT NBCA, but only with the following stipulations:**
 - § **Any access only should be from the Nakai Plateau. The former road from the Bolikhamxay Province to Ban Navang should be converted to a foot path.**
 - § **Any access tracks should be designed for two-wheel tractors with trailers, and should be no wider than necessary for passage of a single tractor with trailer. They must not be designed to allow four-wheel vehicles**
 - § **The WMPA should develop a master plan for access tracks, keeping such tracks at an absolute minimum; and any track construction should conform to that plan and should be approved by the WMPA. There should be no more ad hoc construction of tracks or roads.**
 - § **There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks.**
 - § **Tracks in the NNT NBCA must not link with the Vietmanese road at the border.**
 - § **Improving access by river is important, but blasting rapids to open channels should not be done without very careful studies of the potential impacts of such actions.**
8. **To avoid aggravated losses of biodiversity from trade, alternatives for the use of wildlife and scarce NTFPs in trade for trade goods should be developed, and plans for effective**

management of resources and controls over the increased trade be made by WMPA, before additional access is developed.

9. That plans and preparations be undertaken early to assure that the activities of the large populations anticipated at the labor camps do not impact the biodiversity of the adjacent Corridor and NNT NBCA.

10. That wherever possible, development activities in the NNT NBCA be linked/integrated with conservation activities. It may be most effective to have development activities handled as incentives for conservation, and that the incentives, including direct payments, be based on results of effective conservation efforts.

11. That the Saola Conservation Plan be translated into Lao.

12. That a survey be undertaken to determine whether or not any Sumatran Rhinoceros remain in the NNT NBCA.

13. Because a rate of population increase in excess of 2.2 percent per annum poses a major threat to NNT-NBCA biodiversity and village livelihoods, participatory family planning should be a WMPA priority issue.

14: Village customary use areas, eventually aggregated into catchment management units, should be the primary focus of development activities in the NNT-NBCA that link local practices and knowledge with technical assistance.

15. Stabilization of swidden (shifting) cultivation and hill slope agriculture in the NNT-NBCA should be the primary focus of economic development activities with increased attention also paid to livestock management and Non Timber Forest Products. Production activities must be closely linked to environmentally sustainable market opportunities.

16. While expansion of paddy cultivation should proceed where land and water conditions are favorable, more attention need be paid to the type of constraint that has caused previous efforts for expanding the extent of irrigated rice to fail.

17. With donor assistance, and based on opportunities provided by increased flows of turbined waters, the Government of Laos should pursue a major irrigation program for the benefit of communities along the Xe Bang Fai.

18. Where village consolidation is under RAP consideration, priority should be given to the linkage between resettler preferences and the availability of arable land and other natural resources as opposed to government and Company preferences.

19. Priority is required for UXO removal throughout the 22,000 ha resettlement zone and for the completion of detailed soil surveys for agricultural purposes.

20. Ongoing efforts to reduce the risks associated with each livelihood option must continue to receive priority attention. Prior decisions such as those allocating timber rights to the Nakai Plateau Village Forestry Association and restricting the NT2 reservoir fishery to resettlers must be

implemented and enforced. Preference should also be given to Nakai Plateau residents as employees for NT2 Project construction and other activities.

INTRODUCTION

The Panel, Its Role, and Previous Missions

This is the sixth report of the International Environmental and Social Panel of Experts (PoE or the Panel) for the Nam Theun 2 (NT2) Project in the Lao People's Democratic Republic. It is dedicated to the memory of T.C. Whitmore who served on the Panel from its start in 1996 until his death from cancer in 2002.¹

The Panel's previous reports covered visits to Laos in January and February 1997, July 1997, January 1998, January 1999, and January 2001. An Interim Report was prepared in March 2002.

The Panel's primary responsibility is to provide independent review of, and guidance on, the treatment of environmental and social issues associated with the NT2 Project². The Panel's findings and recommendations are submitted directly to the Ministry of Industry and Handicrafts of the Lao PDR, and thereafter are to be made available for distribution to the World Bank, other cooperating organizations and the public. The Panel is free to make its own determination on which environmental and social issues it should focus. Its area of responsibility includes the entire Nam Theun basin from the border of Vietnam to the Mekong River, the Nakai-Nam Theun National Biodiversity Conservation Area (NNT-NBCA) which includes the NT2 project catchment area, inter-basin transfers from the Nam Theun to the Xe Bang Fai and Nam Hinboun river basins, the NT2 transmission line, and whatever enhancement and other projects are impacted upon by water releases from the Nam Theun reservoir. The Panel is also obligated to assess the extent to which planning for the NT2 project meets relevant World Bank safety net guidelines including those for environment, indigenous people, and resettlement with development.

Summary of Panel Activities

Since the 5th visit in January 1999 members have represented the PoE on the 2001 and 2002 World Bank logging missions and at the July 2002 Round Table Meeting on NT2 in Vientiane. They have also read and commented on a series of NT2 Project reports and documents, held meetings with World Bank staff and the International Advisory Group (IAG) in Washington D.C., and participated in the May 2002 National Laotian-American Symposium on

¹ The Other Two members of the Panel of Experts are:
T.Scudder, California Institute of Technology, USA
L.M.Talbot, George Mason University, Virginia, USA

² The Terms of Reference for the PoE are under Annex 1 of the First Report of the Panel, February, 1997.

US-Laos Relations held in the US Congress. Documents dealt with during 2001 included the Draft Concession Agreement and in 2002 the Draft Environmental Assessment and Management Plan (EAMP), the Draft Social Development Plan (SDP), and the Draft Social and Environment Management Framework and 1st Operational Plan (SEMFOF-1).

For this 6th Mission the Panel members arrived in Vientiane on January 4 and departed January 25th, 2003. Following an initial meeting with GOL and the Nam Theun 2 Power Company (the Company), eight days (January 7 through 14) were spent in the field during which the following locations were visited (see Annex 1 for schedule of activities):

- Upper Nam Hinboun Basin villages followed by ascent up the Phou Ark Escarpment and through the Nam Malou portion of the Nakai Nam Theun - Phou Hin Poun Corridor to Nakai Town.

- Theun Douane Farm; Ban Phonsavang Pilot Resettlement Village (formerly Ban Sailom Pilot Village); and Nakai Town for meetings with district officials including the Nakai District Governor, officials and staff involved with resettlement, the Nakai Nam Theun NBCA, and the World Bank-assisted District Upland Development and Conservation Project.

- Survey by helicopter including the transmission line route from the NT2 power station to the Mekong River; the lower reaches of the Northern Extension; the upper reaches of the Nam Theun; and the upper reaches of the Nam Pheo where the PoE was dropped off to commence its program of conservation and village surveys.

- Four days of surveys along the Nam Pheo and Lower Nam Noy rivers examining conservation issues and village agricultural systems, with descent to the Nakai Plateau by foot, raft, and boat.

- January 15 to 24 meetings in Vientiane with GOL, the Company, and World Bank officials and Company consultants to review in detail the current drafts of the SDP, SEMFOF-1, and EAMP. Meetings were also held with the Minister of Industry and Handicrafts, at the United States Embassy, and with resident experts. Due to the desire of GOL, the Company and the World Bank for the PoE to attend review meetings until date of departure, completion of the PoE's January 2003 report was deferred until the members returned to their home offices.

The objectives of this visit were to examine developments which have taken place since the Panel's most recent visits, to visit areas not previously seen (with special emphasis on the Nam Pheo and Nam Noy tributaries), and to participate in the review of documentation being prepared under Company auspices as a World Bank requirement for project appraisal.

Organization of this Report

The Panel believes that this report would be most useful if it focused on a limited number of issues that warrant priority consideration at this time. These are introduced in the Overview prior to being dealt with in more detail in Sections 2-4. Section 5 deals with NT2 and the World

Bank. Section 6 deals with Action on 2001 PoE recommendations, while Section 7 deals with continuing activities of the PoE.

Acknowledgments - Appreciation

The Panel met with GOL officials at Central, Provincial and District levels, and project staff, as well as with Company, World Bank and Asian Development Bank, non-governmental organization (NGO), and other local personnel, as well as with villagers in the areas visited. We wish to acknowledge with gratitude the information, advice and assistance, as well as the warm welcome, that we received from everyone to whom we talked. Special thanks are due to the Minister of the Ministry of Industry and Handicrafts and to the Nam Theun 2 GOL Office (and especially to Dr. Maydom Chanthanasinh, Khamphong Souligno, Phalim Daravong, and Bounsalong Southidara)

We are particularly grateful for the organization and arrangements made by the GOL NT2 Office, to Nakai District Governor Xiengsy Sengthongdy and Deputy District Governor Khui (who accompanied the PoE to the upper Nam Pheo) and local district and village officials who enabled the Panel to make the field visits, and to Jean Dulac and the staff of the Company, especially Company adviser Loy Chansavat, who organized the field visits. Thanks to these fine arrangements it was possible for the Panel to see and accomplish so much in a short time under difficult field conditions. We also wish to thank Phalim Daravong, IAG representative David McDowell, World Bank NT2 Task Manager Robert Mertz, World Bank consultant William Robichaud, District Development and Conservation Project representative Viloth Singthong, and other GOL and Company staff who accompanied us into the field.

1. OVERVIEW

1.1 The PoE Views on NT2

As in previous reports, the Panel reiterates its strong support for the NT2 Project³. The Project sets new high standards for resettlement and environmental issues and the PoE believes that if it is executed as planned with World Bank involvement NT2 will be a model of global significance. Moreover, the PoE remains convinced that if the NT2 Project is not carried out as planned with WB involvement, the effect will be to increase rather than decrease rural poverty, and to seriously degrade the globally recognized biodiversity values of the NNT NBCA. GOL action undertaken with WB encouragement and support has established a legal basis for protection of the NNT NBCA, deflected logging and inappropriate development away from the

watershed in years past and halted illegal logging. If the WB was to withdraw and the NT2 was not to be constructed by the Company, we believe that GOL would have the greatest difficulty maintaining the present encouraging situation.

³ Description and background information on the NT2 Project are covered in previous PoE reports and will not be reiterated here.

At the same time, if the project is carried out with WB involvement, the PoE realizes that success will not be easy and is not assured. Success depends on executing the world-class plans that exist and maintaining that level of execution for the life of the project. That, in turn, depends on capacity that is in critically short supply in Laos, as it is in other small developing countries, and on political will that is sustained throughout the project. These considerations are the foundation on which the approach of the PoE is based, and they underlie this and all previous PoE reports.

1.2 NT2: The Past 2 Years

During the past two years GOL, the Company and the World Bank have continued their assessment of the potential and the importance of the NT2 project. On April 11, 2002 the National Assembly of the Lao PDR endorsed the project as an essential development initiative. On October 3, 2002 a Concession Agreement was signed between GOL and the Nam Theun 2 Power Company Limited. It is anticipated that the Power Purchase Agreement will be signed April 2003, while the existing agreement with EGAT calls for commercial operation to start in 2008. During 2002 international interest also increased with the Asian Development Bank in particular showing an interest in possible involvement in the NT2 Project.

In response to ongoing World Bank assessment, an Ethnic Minorities Development Plan was drafted for the Nakai Plateau and combined with an updated Resettlement Action Plan in the 2002 Social Development Plan. In October 2002 a draft Social and Environment Management Framework and 1st Operational Plan for the Nam Theun 2 Watershed Management and Protection Authority (SEMFOP 1) was submitted for evaluation. Other new documents include the December 2002 Final Report on the “Xe Bang Fai Socio-Economic, Health and Fisheries Survey, 2001.”

Following the Prime Minister’s Decree 193 of December 2000 that established the boundaries of the NT2 watershed, the Prime Minister’s Degree 25 of 26 February, 2001 specified the objectives and activities of the Nam Theun 2 Watershed Management and Protection Authority and the membership of its Board of Directors which had held its first two meetings by the end of 2002. Scheduled for February 2003, the Board’s third meeting will deal with the establishment of the Authority’s Executive Secretariat, while the Company will release its initial funds for the Authority in April 2003. On the Nakai Plateau, the Prime Minister’s Decree 37 of April 12, 2002 authorized the resettler communities to undertake “sustainable forestry business activities,” including felling and sale of timber, while Regulation 484 of June 13, 2002 by the Governor of Kammouane Province established the financially independent Nakai Plateau Village Forestry Association for managing the forest area.

In the field, significant progress occurred in the pilot resettlement village, with fields cleared, vegetable gardens planted, and the first three houses constructed. Supported by a World Bank Learning and Innovation Loan (LIL), the District Upland Development and Conservation Project was handed over to GOL at the end of 2002. Though little appears to have been accomplished during the first two years of the project, progress during 2002 was reported by the

World Bank's November Supervision Mission due largely to the permanent presence of staff in the three NNT-NBCA pilot zones. Villagers have been selected for training as teachers and health personnel, while two Village Conservation and Monitoring Units have begun regular patrolling in each zone. Reportedly, in the three pilot villages, initial mistrust and non-cooperation have been overcome, with project activities beginning to stabilize the swidden (shifting cultivation) system and to reduce the number of very poor and poor households in each village.

1.3 The Critical Issue of Capacity

As emphasized in the PoE's 1999 report lack of implementation capacity to deal with environmental and affected people's issues in connection with large dam construction is a worldwide problem. That is especially the case in countries with a relatively small population, a liability that the GOL addressed in its 20 September 2000 report on *Macro-economic Policy and Reform Framework* where the second of three development pillars or stages is "structural transformation and capacity building" and the third is "the creation and building up of the prerequisites for a people-centred participatory development." Admirable as these statements are, the implementation of those pillars remains a major task in regard to implementing the NT2 Project's Environmental Assessment and Management Plan and especially the Social Development Plan for the Nakai Plateau and the Social and Environment Management Framework for the Nakai-Nam Theun NBCA. If conservation and development intentions are to succeed, capacity building must be accelerated and continued over an extended time period that may require ten or more years of continuity and effort. They must also involve active village sector participation -- hence linking the second pillar closely to the third.

1.4 NT2 Project Area

Recommendation: Company and GOL focus on the NNT-NBCA, the Nakai Plateau and the Xe Bang Fai must not be at the expense of the important linkages between those three zones.

A major achievement during recent years has been to firmly establish NT2 as the lead project in the economic development of Lao PDR. What remains to be achieved is a better conceptualisation and implementation of the project as a multipurpose one covering two river basins and extending from the Vietnam border to the Mekong River. This will require complementing the dominant hydro component of the project with other development initiatives which in turn will require collaboration with other Lao ministries and departments (such as irrigation and fisheries in the Ministry of Agriculture and Forestry) and the financial assistance of other donors such as the Asian Development Bank.

Of the 13 study areas into which the project has been divided for planning purposes, the key zones are the Nakai Nam Theun NBCA (which includes, but is not restricted to, the reservoir catchment area), the Nakai Plateau, and the Xe Bang Fai river basin. Of these three, the PoE sees the NNT-NBCA as presenting the most difficult problems, following by the Xe Bang Fai river basin, and then by the Nakai Plateau.

There are, however, important linkages between these three zones that need to receive more emphasis on the part of both the Company and GOL. This is especially the case with project-affected people in the NNT-NBCA who have ties with both the Nakai Plateau and the Xe Bang Fai river basin. Granted the danger posed by population increase within the NNT-NBCA to the NT2 project watershed, to biodiversity, and to village livelihoods, future emigration to the 22,000 hectare Nakai Plateau resettlement zone should be viewed as a desirable possibility rather than as a current threat to implementation of the Resettlement Action Plan. Even more important is possible emigration to Gnommalat District should, as agreed upon by the Company and recommended by the PoE, release of turbined water allow over 7,000 hectares to be brought under irrigation along the Nam Khatang. That region includes an area (4B) that the government had designated as a possible resettlement zone that could become attractive to NBCA households in the future once the land in question is irrigated. This could especially be the case with Brou households which constitute the majority in the NBCA and whose history suggests previous residence in Gnommalat where a significant population of Brou remains. The importance of this area for future emigration from the NNT-NBCA is such that NBCA households should be given priority for settlement there.

1.5 Key Issues in the NNT NBCA

For both the NT2 project and the 5,000 villagers living in the NNT-NBCA, the conservation of biodiversity is the number one priority. It is threatened by transboundary poaching of wildlife and non timber forest products (NTFP), and by population increase. On the other hand, the linkage between biodiversity and cultural diversity is crucial if biodiversity is to be conserved and the livelihoods of the village population improved.

The most responsible institution for dealing with those threats will be the Watershed Management and Protection Authority whose conservation activities must concentrate on an effective system of patrolling and whose development activities must be attuned to the significant cultural diversity and indigenous knowledge of the people while involved in the participatory stabilization of the swidden system and of population. These issues will be dealt with in detail in Section 2.

1.6 Key Issues within The Xe Bang Fai River Basin

According to the 2001 Socio-Economic Survey, the affected population along the Xe Bang Fai is approximately 50,000. Though three-fifths of that population lives in the lower Xe Bang Fai Basin which will be the least affected by the NT2 Project, the XBF population is over four times the size of the combined population of the NNT NBCA and the Nakai Plateau. Initial planning emphasized mainly project-related mitigation and compensation. That was not sufficient.

During 2001, the Company funded an ongoing study of the biology and socio-economics of the Xe Bang Fai fishery which, to the PoE's knowledge, is the first such study dealing with transbasin transfers associated with a large dam project. According to preliminary results,

primary productivity can be expected to decline following the release of turbined flows. With water levels rising as much as 3-5 meters in the most affected areas during the dry season, river bank gardens will also be adversely affected (they often cannot be simply moved further up the river bank as has been suggested since the upper slopes tend to steepen).

Since fish is the second most important food for the riverine population after rice, while river bank gardens provide an important source of nutrition as well as of cash, major development activities will be needed to enable affected people to become project beneficiaries. With the project providing sufficient water and electricity, irrigation of rice and other crops during the rainy season and the dry season presents the major opportunity along with an aquatic development program adapted to new riverine conditions and to increased irrigation.

1.7 Key Issues on the Nakai Plateau

Key issues on the Nakai Plateau include risks, dealt with in Section 4, associated with each component of the livelihood options. They also include the relationship of the Watershed Management and Protection Authority to the NT2 reservoir and to Nakai District – an issue covered in Section 2.

2 The NNT NBCA

2.1 The Watershed Management and Protection Authority

2.1.1 Boundary Definitions

Recommendation: Aside from the portion of that falls within the PHP-NT2 corridor, the NT2 reservoir should be excluded from the boundaries of the Watershed Management and Protection Authority.

According to the NT2 WMPA's SEMFOP-1 the southern boundary of the NT2 Watershed-NBCA remains "an outstanding issue" as to the final boundaries of the area of responsibility for the WMPA. The issue that needs to be resolved is whether or not the NT2 reservoir should come under the WMPA's jurisdiction. Legitimate reasons have been proposed both for excising the reservoir at full storage level entirely from the WMPA and for including it. Aside from that portion of the reservoir that falls within the PHP-NT2 corridor, the PoE believes that the reservoir area should be excluded for four major reasons.

First, it is becoming increasingly clear that the reservoir has become a key resource for improving the livelihoods of the population to be resettled. According to the December 2002 version of the RAP, at 30 percent each, fishing and forestry are unchallenged as the two most important livelihood options. Use of the reservoir drawdown area also has potential for flood recession and flood rise agriculture, for grazing, and for aquaculture. Management issues must include restricting reservoir fishing to resettlers, organizing fishers, licensing boats, determining sustainable yields, and enforcing restrictions on fishing gear, techniques, locations, and seasons. They should also include zoning and management of the extensive drawdown area (85 percent of

the reservoir surface area) for other uses. These are tasks better undertaken by the District Administration, the Resettlement Committee, and the Resettlement Management Unit than by the Watershed Management and Protection Authority.

Second, the number one priority of the WMPA is biodiversity conservation not optimizing reservoir-based hydropower generation and resettler livelihood improvement. Incorporating such tasks within the WMPA will not only be an expensive undertaking in terms of finance, staff, and activities but could well detract the WMPA from its main priority of biodiversity conservation and its linkage to the watershed's resident population.

Third, too little thought has been given to the relationship between the WMPA and the Nakai District Administration. Should the reservoir be incorporated within the WMPA, Nakai District will have lost over 80 percent of its territory. Not only that but responsibility for the development of the resettling villages would be split between two government agencies with potentially conflicting goals in regard to the conservation and the development of the reservoir fishery.

Fourth, according to the Prime Minister's Decree 25 of 26 February, 2001 the NT2 reservoir is not included within the definition of the NT2 Watershed which is restricted to Nakai-Nam Theun NBCA, the NNT-Phou Hin Poun NBCA corridor, and the NNT – Hin Nam Nor NBCA corridor.

While the PoE believes that these four reasons effectively counter arguments for incorporating the entire NT2 reservoir within the WMPA's jurisdiction, issues remain that require joint decision making and collaboration. These include how to manage resettler access to the northern shore of the reservoir, how to ensure and protect wildlife access to reservoir waters and islands, and how to manage cross-reservoir access to watershed villages.

2.1.2 Organization and Financing Issues

Recommendation: So as to avoid the risk of establishing inappropriate priorities and recruiting inappropriate staff, the Authority initially should take a modest approach dealing with a small number of carefully selected priorities followed by priority expansion and further staff recruitment as experience dictates.

Recommendation: The WMPA Board should establish a small steering committee, including the Nakai District Governor, to work closely with the Secretariat. The importance of biodiversity linkages to the watershed's population warrants the appointment to the Board of a representative from the Lao Front for National Construction granted the Front's responsibility for carrying out the Government's 1992 Ethnic Minority Policy.

Recommendation: Procedures are required for carrying over funds from one year to another.

World Bank and other discussions of the 16 October, 2002 Social and Environmental Framework for the Watershed Management and Protection Authority tended to forget that the draft document is only a First Operational Plan and that fleshing out that plan should be an ongoing function of the Secretariat rather than a pre-appraisal requirement. Moving too fast to build up the Authority, rather than starting small, could easily result in filling key positions with weak candidates. Rather a modest start dealing with key priority issues would be followed by “staffing up” as experience dictates. As emphasized by the IAG’s David McDowell efforts also should be resisted to pressure the Board now “into making premature decisions on such questions as setting indicators and devising measuring systems for monitoring and evaluating the work of the WMPA – these are fundamentally capacity-building and management functions which the Managing Director of the Authority and his staff should wrestle with and decide” (2003 IAG memo).

Initial planning also risks loading the Authority down with too many responsibilities too soon. The PoE has already mentioned how incorporating the reservoir as a WMPA responsibility could be at the expense of its primary responsibility to conserve biodiversity within the catchment and to work with the catchment village population to manage that biodiversity.

In regard to the Authority’s organization, the PoE is also in agreement with David McDowell on the need for the Board to establish a small steering committee to work closely with the Secretariat. To foster cooperation with the district administration, the Nakai District Governor should be a member of that steering committee. The PoE also believes that the importance of biodiversity linkages to the watershed’s population warrants the appointment to the Board of a representative from the Lao Front for National Construction granted the Front’s responsibility for carrying out the Government’s 1992 Ethnic Minority Policy.

Under financing, issues to be resolved are procedures, considered necessary by the PoE, for carrying over funds from one year to another. Perhaps in the form of a trust fund, an ability to carry over funds is especially important during the Authority’s start-up years when it should not be obligated to spend funds received on an annual basis from the Company.

Should the reservoir be removed from the WMPA, as the PoE recommends, Secretariat staffing need be rethought. Rethinking, without sacrificing the Authority’s primary responsibility for biodiversity conservation, is also necessary in regard to staff dealing with village issues. More attention, for example, need be paid to learning from the various ethnic groups by undertaking the type of short (3-6 month) ethnographic studies recommended by Chamberlain as his first priority action recommendation in a 2002 report to the Asian Development Bank on the economic potentials and comparative advantages of Lao ethnic minority groups. That need is not reflected in suggested staffing for the Secretariat where the overriding emphasis is placed on development. As for technical assistance, again the linkage between the role that existing watershed cultures could play in biodiversity conservation and in choosing development initiatives is neglected. As pointed out by William Robichaud the fact that the time for a Rural Engineer is double that for a Social and Ethnic Development Adviser is not a good sign, nor is

the absence of the type of social scientist needed to advise on the design and analysis of ethnographic and monitoring surveys.

2.2 Biodiversity and Conservation Issues

2.2.1. Introduction

In its previous reports the PoE has described the NNT NBCA and its globally significant biodiversity, so that will not be repeated here. However, the PoE wishes to emphasize that as the PoE=s first hand knowledge of the area has been expanded with each new field visit, the Panel has become increasingly impressed with the importance of the area=s unique biodiversity values, along with the magnitude of the threats they face.

In the PoE=s first report⁴ the Panel emphasized the magnitude of the challenge of Amangement of the NNT NBCA, including conservation of its unique biodiversity, maintenance of its watershed values, and consistent with these objectives, treatment of the people now resident within it.@ We emphasized that, ASuccess in combining conservation and development in this area is crucial to the success of the NT2 Project as a whole. But at the same time, the Panel regards this issue as the most difficult task faced by the project and the one which has the greatest uncertainty of success.@ Each subsequent visit has further strengthened the Panel=s convictions of the validity of those observations.

The Government of Lao PDR has honored its commitment to stop logging and construction of roads from the north. The ban on logging in the NNT NBCA is highly effective. In the same vein, the Government=s collection of village guns appears to have been remarkably effective. The numbers and diversity of birds that the Panel has observed on the plateau have recovered dramatically since the withdrawal of village weapons. Observations by biologists who have spent time in parts of the upper NNT NBCA also indicate that there has been a recovery of the avian wildlife in that area also. During this mission=s field trip the Panel observed an abundant bird life around the villages on the upper Nam Pheo, along with tracks of sambar and smaller deer. During a several hour hike up from the highest village on the upper Nam Pheo the Panel encountered substantial wildlife, including Douc Langurs, Rhesus Macaques, giant black squirrels and wild pigs. In the lower Nam Noy Gorge the Panel found abundant tracks of wildlife including leopards, various smaller wild cats, otters, sambar and smaller deer, monitor lizards and possibly tigers.

However, the problem of transborder poaching remains very serious and there are indications that it is increasing. As noted in previous PoE Reports, there are gangs of well-armed individuals who cross the long and porous border from Vietnam and poach wildlife and collect non timber forest products (NTFPs) in the NNT NBCA. There is also a significant number of traders from across the border, some of whom reportedly are poachers also, who exchange trade

⁴ February 7, 1997. Page 8

goods with the remote Lao villagers in exchange for wildlife products and NTFPs.

Lao villagers report that because of the Vietnamese poachers the larger forms of wildlife, such as elephants and rhinos, have long since been killed or have moved down off the mountains toward the Plateau. Smaller, less mobile animals such as turtles and pangolins have been very greatly reduced, and may well face local extinction.

2.2.2. Access

Recommendation: That improved access be provided to appropriate villages in the NNT NBCA, but only with the following stipulations:

- § **Any access only should be from the Nakai Plateau. The former road from the Bolikhamxay Province to Ban Navang should be converted to a foot path.**
- § **Any access tracks should be designed for two-wheel tractors with trailers, and should be no wider than necessary for passage of a single tractor with trailer. They must not be designed to allow four-wheel vehicles**
- § **The WMPA should develop a master plan for access tracks, keeping such tracks at an absolute minimum; and any track construction should conform to that plan and should be approved by the WMPA. There should be no more ad hoc construction of tracks or roads.**
- § **There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks.**
- § **Tracks in the NNT NBCA must not link with the Vietmanese road at the border.**
- § **Improving access by river is important, but blasting rapids to open channels should not be done without very careful studies of the potential impacts of such actions.**

The existence of the NNT NBCA with its remarkable biodiversity largely intact is due primarily to two factors. One is the low human population with its relatively light impact on the biota of the area. Many of the villagers, especially those who have been longest resident in the area, have established a sustainable relationship with the biodiversity. They have used the wild resources sustainably for their subsistence, and because of these resources many of the villagers in the NNT NBCA reportedly have a higher standard of living than many Lao in other parts of the country.

The other factor is the lack of access. The remoteness of most of the villages has precluded much trade between the villages in the area and outside, other than what can be carried primarily by residents and traders on foot. The effect of this lack of access has been to avoid B until recently B most commercial trade in wildlife and NTFPs.

Both of these factors are fragile and potentially temporary. If there is immigration into the NNT NBCA and/or the rate of local population increase continues, any present sustainability between the villagers and their natural resources will be lost. This issue is discussed further under section 2.3 below. The access by poachers/commercial traders by foot across the

Vietnamese border has already had increasingly serious impacts on the biodiversity. If roads or tractor trails are constructed to provide access from the Plateau, unless there are very strict controls, the effect will be to open the NNT NBCA to greatly increased commercial collection of wildlife and NTFPs and consequently to degrade or destroy the globally unique biodiversity values of the area, as well as to reduce the resources available to the villagers.

Experience throughout the world shows conclusively that the greatest single threat to the integrity and survival of biodiversity in or out of protected areas is access, and that roads allowing vehicular travel are by far the most dangerous form of that access.

The PoE agrees that improved access to many of the villages in the NNT NBCA is needed. However, recognizing that conservation of biodiversity is the primary objective of management of the NNT NBCA, the Panel strongly emphasizes that:

- § Any access only should be from the Nakai Plateau. The former road from the Bolikhamxay Province to Ban Navang should be converted to a footpath.
- § Any access tracks should be designed for two-wheel tractors with trailers, and should be no wider than necessary for passage of a single tractor with trailer, probably approximately two meters. They must not be designed to allow four-wheel vehicles.
- § Access tracks should be kept to an absolute minimum. The WMPA should develop a master plan, and any track construction should conform to that plan and should be approved by the WMPA. There should be no more ad hoc construction of tracks or roads, such as the one started by the Nakai District in 2000 from the Nam Noy at Ban Ka Oy, and the track being constructed in 2002-2003 by the District Upland Development and Conservation Project from Ban Khon Kaen to Ban San. The PoE was extremely concerned to learn about the latter construction for two reasons. First, it was an ad hoc effort with no reference to overall planning and the WMPA. And second, while the Panel has not yet seen the track, it was told that the track was constructed wide enough for two tractors to pass. This is totally unnecessary; there will not be sufficient tractor traffic to require a two-lane road and such a construction constitutes a road which invites access by four-wheel vehicles.
- § There must be monitoring of tractor and other use of the tracks to assure that they are not used as conduits to exploit the biodiversity of the area. Among other things this will require that check points be established near the Plateau end of any tracks, where traffic may be recorded and, as in check points elsewhere in the country, where loads may be inspected.
- § Particular attention should be paid to assuring that tracks in the NNT NBCA do not link with the Vietnamese road at the border. The Vietnamese have constructed a good road right to the international border near the headwaters of the Nam Noy. The Panel has heard speculation that the road is intended to facilitate trade in biodiversity, potentially including logs, from the NNT NBCA, and/or to link with a road to be built through the

NNT NBCA. Both represent major threats to the integrity of the area.

§ It has been proposed to improve river access by removing rapids through blasting. The Panel agrees that there is substantial scope for improving access on the rivers, but strongly warns against seeking to open the channels through blasting without very careful studies of the potential impacts of such actions.

2.2.3. Trade in Wildlife and NTFPs

Recommendation: To avoid aggravated losses of biodiversity from trade, alternatives for the use of wildlife and scarce NTFPs in trade for trade goods should be developed, and plans for effective management of resources and controls over the increased trade be made by WMPA, before additional access is developed.

Many of the remote upper villages in the NNT NBCA are closer to Vietnamese sources of trade goods than to Lao ones. This trade, involving exchange of trade goods for wildlife and NTFPs, is one of the main current threats to the area's biodiversity. Consequently one of the reasons for constructing access tracks from the Plateau is to enable these Lao villages to trade with Lao traders instead of Vietnamese ones. The Panel agrees with this rationale, but emphasizes that it is essential that the villagers develop alternative sources of Acurrency@ for trading. Otherwise the effect is simply to provide wildlife and NTFPs to Lao traders instead of Vietnamese ones, with no benefit to the biodiversity.

It may be possible through cultivation or other forms of management to increase some types of NTFPs to allow for somewhat increased trade. However, many of the villagers report that both wildlife and NTFPs are being depleted in the vicinity of the villages. It takes longer to find items, villagers have to travel farther to find them, and fewer and fewer are available. Increased trade opportunities brought by improved access will increase the exploitation pressures on the biodiversity involved. Consequently, to avoid aggravated losses of biodiversity, the WMPA must develop plans for strong management of the resources and controls of the increased trade which is sure to come. Such planning and the measures which come from it should be in place before additional tracks are constructed.

2.2.4. Patrolling

Recommendation: That WMPA give a first priority to the development of a comprehensive patrolling system, involving village-based patrols, supported as appropriate, by the military; and that the military make a concerted and sustained campaign to stop the incursions into the NNT NBCA from across the international border. Two other priority issues are family planning and a master plan for access tracks.

Experience in protected areas throughout tropical developing countries in Asia (including Laos), Africa and Latin America, has shown that by far the most effective determinant of long

term conservation success is the density of guards. Given the nature of the threats to the area's biodiversity, the Panel believes that this finding has particular relevance to the NNT NBCA.

The development of a comprehensive, area-wide patrolling system is clearly a first priority. This effort involves both village-based patrols and Lao military patrols. The village patrols may use both village militia and other key people from the villages, but in many cases will require additional support from the military. This is needed because of the possibility of village patrols encountering heavily armed poaching gangs. But in addition to the village-based activities there is an urgent need for what David McDowell of the I.A.G. has termed, an early, concerted and sustained campaign by the Lao military to reduce the porosity of the country's long border with its northern neighbor B preferably backed up by an inter-governmental agreement on measures to reinforce these actions. The Panel would also note that there is also need for effective, military-backed patrolling along the border nearest Highway #8 where there are concentrations of Hmong living adjacent to the protected area. The Hmong are renowned for their hunting/poaching abilities and the threat that they pose to the biodiversity of a protected area. However, these abilities may make some of them potentially very effective guards for the NNT NBCA if their honest participation could be enlisted.

The SEMFOP-1 makes allowance for patrolling within the projected budgets for the WMPA. However, in view of the urgency and importance of this activity, the PoE questions whether or not adequate amounts are provided for.

2.2.5. Labor Camp Impacts on Biodiversity

Recommendation: That plans and preparations be undertaken early to assure that the activities of the large populations anticipated at the labor camps do not impact the biodiversity of the adjacent Corridor and NNT NBCA.

The PoE has noted previously its appreciation that the Company has planned to locate the dam construction labor camp outside of the protected area, and to bus the laborers in to the dam site (as recommended by PoE). This action is extremely important to maintain the integrity of the protected corridor within which the dam is located. However, the Panel would also note that unless adequate measures are undertaken early, the very large number of laborers and camp followers involved will still seek food, fuel, and other NTFPs from the adjacent NNT NBCA, potentially creating a major drain on the biodiversity of the NNT NBCA and the corridor. Fortunately there is plenty of time and the Panel recommends that plans and preparations be undertaken early to anticipate and avoid the potential serious impacts. The same recommendation would hold for the other planned labor camps.

2.2.6. Incentives - Conservation and Development

Recommendation: That wherever possible, development activities in the NNT NBCA be linked/integrated with conservation activities. It may be most effective to have development activities handled as incentives for conservation, and that the incentives,

including direct payments, be based on results of effective conservation efforts.

Conservation of biodiversity is intimately linked with the villagers who have been long-time residents of the NNT NBCA. Consequently conservation and development must be linked and considered together. The Panel is concerned that the two are treated substantially separately in SEMFOP-1. It follows that development activities must not be provided separately from conservation. Instead, they should be incorporated as incentives for effective conservation efforts by the villagers. The incentives should be provided for results, not just effort. Consequently the desired outcomes (e.g., sustained or increased populations of certain indicator species, maintenance of old growth forest areas, reduction or elimination of snares and traps) should be articulated and benefits should be tied to those outcomes.

One approach which the Panel recommends is direct payment for specified conservation outcomes. One approach which has been tried successfully on a small scale in an adjacent area by William Robichaud involves the use of camera traps. Camera traps were provided to a village and set according to specific directions. Then, on a periodic (e.g., monthly) basis, the film was collected and developed. The photos from the traps served to monitor certain species of the wildlife, and the villages were paid a significant amount based on the species present. The objective of the camera trap project was twofold. First, it monitored the presence of certain species of wildlife. And second, it provided the village with a positive incentive to conserve those species. The aim was to make the species more valuable to the village as live animals than if they were killed for their one-time value as food or for trade.

Another approach may involve developing research stations. The Panel was informed that two of the villages in the NNT NBCA, Ban Navang and Ban Nameo, have requested field research centers or stations. The village would construct the station, which initially might consist of simple shelter huts but could be expanded later if warranted by the demand. Scientists who wished to conduct research on the area's biodiversity could stay at the station, paying a fee to the village, which also could provide food, other services and field help for suitable fees. These stations might also have a role in ecotourism.

Ecotourism represents another potential source of income for the local villages. The Panel believes that there are good possibilities for ecotourism in the area, possibly involving visits to the river caves in the Khammouane Limestone NBCA area as well as wildlife, wild lands, and village culture in the NNT NBCA. These possibilities should be investigated, making use of experience elsewhere in Lao PDR and the region. Yet another type of incentive, discussed as a development issue under 2.3, could involve payments and technical assistance for stabilizing swidden cultivation so as to reduce the need for further clearing of primary forest.

2.2.7. The Saola Conservation Plan

Recommendation: That the Saola Conservation Plan be translated into Lao

The Saola is one of the most significant species in the NNT NBCA and it requires conservation attention. Fortunately, on the basis of his studies in the area William Robichaud prepared a Saola Conservation Plan, which can provide a blueprint for needed actions. The plan is still only available in English and the Panel recommends that it should be translated into Lao.

2.2.8. Possible Presence of the Sumatran Rhinoceros

Recommendation: That a survey be undertaken to determine whether or not any Sumatran Rhinoceros remain in the NNT NBCA.

During the PoE=s field trip, William Robichaud was informed by a villager that rhinoceros tracks had been seen within the past month, in the same area where such tracks had been reported previously. The reported size of the tracks and their location would indicate that if a rhinoceros is involved, it would most probably be the Sumatran Rhinoceros. This animal is globally threatened and is one of the rarest species in the world. If confirmed, its presence in the NNT NBCA would add greatly to the global biodiversity significance of the area. It would also inform the design of anti-poaching patrols in the area. Consequently, the PoE believes that it would be useful to undertake a survey in the areas where the tracks have been reported, to try to determine whether or not this rare species is present.

2.3 Development Issues

Recommendation: Because a rate of population increase in excess of 2.2 percent per annum poses a major threat to NNT-NBCA biodiversity and village livelihoods, participatory family planning should be a WMPA priority issue.

Recommendation: Village customary use areas, eventually aggregated into catchment management units, should be the primary focus of development activities that link local practices and knowledge with technical assistance.

Recommendation: Stabilization of swidden (shifting) cultivation and hill slope agriculture should be the primary focus of economic development activities with increased attention also paid to livestock management and Non Timber Forest Products. Production activities must be closely linked to environmentally sustainable market opportunities.

Recommendation: While expansion of paddy cultivation should proceed where land and water conditions are favorable, more attention need be paid to the type of constraint that has caused previous efforts for expanding the extent of irrigated rice to fail.

2.3.1 Introduction

Belonging to over 20 ethno-linguistic groups, villagers within the NNT NBCA belong to three major ethno-linguistic groupings with a total estimated population in 1995 of 4,959.

Considered to be the area's oldest population, members of at least 15 Vietic groups numbered 1,443 (29%) in 1995. The second grouping, and the smallest, includes Tai-Kadai speakers. They numbered 811 (16%) in 1995, of whom the Sek constitute the majority. The Brou, at 2,705 (55%), are the largest grouping. Though few figures have been collected, and the reliability of those available is open to question, what evidence is available is that rates of annual population increase exceed 2.2 percent. A continuation of such a rate poses a major problem not just for the biodiversity of the area but also for the livelihood of the people. Though requiring a participatory approach as with all development efforts, family planning should be a priority issue. Though high death rates and the need for labor present constraints, what evidence is available indicates that women in particular are becoming increasingly interested in birth spacing.

2.3.2 Village Livelihood Systems

Located along the five major tributaries that drain the watershed, village livelihood systems are diversified with varying emphasis on foraging for non timber forest products, swidden cultivation and wet and dry season paddy. As on the Nakai Plateau, there is a tendency for NT2 planners to emphasize development issues such as more intensive forms of agriculture and social services as opposed to the strengths associated with existing livelihood systems and cultures. In it not so much that too much emphasis is placed on development, for in every community villagers could list for the PoE their needs, but that too little emphasis has been placed on the value of the watershed's cultural diversity. Furthermore the population's land and water use systems continue to be closely linked to cosmology and ritual as components of complex socio-cultural systems in which people were required to take risks during the war years and in which there are ongoing efforts at experimentation involving all three groupings. One major example is efforts by all three groupings to experiment with dry season paddy.

As emphasized by Chamberlain and colleagues (1997), the indigenous knowledge of the NNT-NBCA population relating to wildlife, edible and medicinal plants, and forest and watershed management, and especially the knowledge of those Vietic groups for whom foraging remains a primary occupation, is a national resource of great value for enhancing the management and sustained utilization of a watershed's biodiversity. In a more recent publication (2002), Chamberlain's first action recommendation is for "short ethnographic studies" of ethnic groups "that will be involved in projects." This recommendation is especially important for the culturally-threatened Vietic groups in the NNT-NBCA whose livelihood "demonstrates, in a way that no other can, the intimate relationship between nature and culture" (1997: 1-1).

2.3.3 The Way Forward

2.3.3.1 Conservation and Development Units

The PoE believes that the village, and eventually the catchment of each of the five major watershed rivers, must be the unit for addressing issues of participatory development that involve culture change and continuity. Efforts to promote rapid change based on the ideas of outside experts should be avoided. Because too ambitious a development program should also be avoided, where to start becomes a key question. Ideally, one Vietic, one Brou, and one Sek

community should be identified for three to six month ethnographic studies, the results of which would become “the primary reference point for development work that ensues” (Chamberlain: 2002: 10).

Continuation of GOL’s current program of village mapping and boundary designation is important. Mapping and boundary formation, however, need be participatory and should include the entire community customary use area. Such use areas are extensive for they include customary use of a wide range of natural resources including non timber forest products and fish. Once defined, such use areas would then become the locus of village and eventually catchment management. The FOMOCOP program has shown that such community management is feasible. Where that program failed was in reference to community sale of timber rather than NTFPs. That problem would be avoided in the NNT-NBCA because no commercial logging would be allowed and because a liberal interpretation of Article 30 of the 1996 Forestry Law allows customary uses of NTFP.

2.3.2.2 Development Approaches

Though research may suggest other approaches in villages pursuing an active program of rainfed and dry season paddy, the PoE believes that development efforts in a majority of communities should focus more on sloping land agriculture, livestock management, and NTFP. Especially important is stabilization of the swidden system (within whatever fallow rotation cycle is necessary to maintain soil fertility) followed, perhaps, by a program of intensification that shortens the swidden cycle through permaculture based on a wide range of tree and other perennial crops. Some households in the Sek community of Ban Beuk have already begun the intensification of upland cultivation. Not only had the clearing of new swidden been abandoned by the mid-1980s, but in some upland fields tea and other perennial crops were being introduced. The PoE recommends incentives designed to spread such stabilization to other communities and to accelerate it where already under way.

Swidden stabilization raises both important policy and cultural issues. As the Government’s land allocation policy is currently being implemented at the district level, a maximum of three fields is allowed. That number is insufficient for maintaining fertility where swidden cultivation continues. The problem, however, may be more an implementation one than a policy one. As Chamberlain points out the language in the Government’s current five year plan is not to stop rotational swiddening (*hay moun vian*) but rather predatory or pioneering rice swiddening (*hay leuan loy*) where farmers clear cut new fields from primary forest following one or two years of cultivation in previously cleared fields. However that may be, allowing stabilization of a longer swidden rotational system is suggested in MAF’s Vision 2020 that considers “the practice of shifting cultivation from a more ‘friendly’ perspective, meaning that improvements of livelihood systems within existing agro-ecosystems are recognized as more sustainable and more socially acceptable alternatives for upland development” (as quoted in Raintree and Soydara, n.d.: 50-51).

At the village level, a cultural constraint brought to the PoE’s attention in at least some communities is that use rights to fallowed land do not remain with the household that last cleared

the land. Rather such land once again becomes available to anyone within a village's customary use area who wishes to clear it. Where land pressure is increasing due to population increase and land degradation, other households are apt to clear the land before fertility is restored.

Greater emphasis on the management of livestock and NTFPs is suggested by customary activities. Livestock would include chickens and pigs for food and sale and buffalos as work animals, as a bank account, and for marriage and other social and ritual purposes. With increasing demand in Thailand and Vietnam and demand for paddy cultivation in Gnommalath District, buffaloes also have potential as a cash crop. As for NTFPs, there is need for a more systematic assessment of their availability and importance to the major ethnic groupings, on indigenous knowledge relating to their management and possible cultivation, and to how best to market them in a sustainable fashion. After the need for ethnographic studies, the second most important action recommendation in Chamberlain's 2002 report to the Asian Development Bank was addressing "the market issue" by which Chamberlain meant the extent to which NTFP marketing is in the hands of "unscrupulous private sector operators whose objectives are short ranged and aimed at non-sustainable quick profits such as those engaged in the wildlife trade" (page 10).

The above emphasis on sloping land agriculture, livestock, and NTFP should not be at the expense of paddy cultivation where people desire it and where land and water conditions are favorable. Without doubt, the extent of dry season paddy has been increasing in the NNT-NBCA since the PoE's first visit in 1997. And without question paddy cultivation is an important means for reducing the need for swidden cultivation and clearance of secondary and primary forest. One impressive example of new paddy involved the Brou community of Ban San which pioneered a new area in 1995 because of the presence of land and water for paddy. At the time of the PoE's 2003 visit, three to four hectares were being cultivated during both seasons. Of approximately 23 families, 7 to 8 households were said to have rice self-sufficiency, with the rest harvesting rice sufficient for five to six months. With land and water supplies said to be adequate, future plans were for all households to gain self-sufficiency.

On the other hand, elsewhere cultivation of paddy land has been stopped both recently and in the past. In the Brou village of Ban Kunae, the last one up the Nam Pheo, the three households that had previously cultivated paddy had stopped at the time of the PoE's 2003 visit. Reasons given were an increase in bird damage (associated with the government's successful gun collection program), weed growth, and pest infestation. Yet when two of those three households were asked about their priorities, paddy cultivation was the first priority mentioned by one and the second by the other. Granted ample land and water availability for the entire village of 17 households, the situation was perplexing. So too was the presence of formerly cultivated paddy fields in the three Sek villages immediately downstream. There also further irrigation was one of two priorities (the other as in Ban Kunae and Ban San being improved access).

On the Nam Theun, irrigation development in Makfeuung (one of three LIL pilot villages) has been spotty at best. During the PoE's January 2001 visit we were told that wet season paddy yields were lower than swidden planted rice due to various pests. During 2002

irrigation activities funded under the controversial household grant program in all three villages were not considered successful according to the World Bank's November 2002 Supervision Mission.

Before a major paddy expansion program is launched throughout the NNT-NBCA, the PoE recommends that more attention need be paid to possible constraints to paddy cultivation. As perhaps in Ban Kuna, which is located in moist cloud forest, are there environmental constraints? And what about labor resources and technology needed for making and maintaining weirs on side streams and gravity flow canal systems to paddy fields?

3. The Xe Bang Fai River Basin

Recommendation: With donor assistance, and based on opportunities provided by increased flows of turbined waters, the Government of Laos should pursue a major irrigation program for the benefit of communities along the Xe Bang Fai.

Because the PoE believed that too little attention previously had been paid to impacts of the NT2 Project on the resident population of the Xe Bang Fai river basin, the Company is to be commended for initiating in 2000 a series of pre-project bench mark studies of the biology and socio-economics of the existing fishery as well as a separate socio-economic, health and fisheries survey in 2001, the results of which were published in December 2002.

Accompanied by the IAG's David McDowell and Terry Warren (the Company consultant implementing the fishery surveys with GOL fisheries colleagues), the PoE visited four of the fishery survey villages as well as irrigation projects along the Xe Bang Fai in March 2002. In Vientiane, the Director of MAF's Department of Irrigation was also visited. As discussed in its March 2002 Interim Report, the PoE believes that use of the NT2 Project's turbined water and electricity for the double cropping of paddy and other crops has potential for raising living standards of the XBF population if properly planned, financed and implemented.

The potential is especially good along the Nam Khatang and the 27 km channel between the regulating reservoir and the XBF. Planned releases of 15 m³ along the Nam Khatang will provide the opportunity for the gravity flow irrigation of 7,500 ha for the benefit of 20 villages. In the case of the 27 km channel, turbined waters can be used for extending the area of the Gnommalath community irrigation project, for the first time, to its full extent of 2,500 hectares. Between the community irrigation project and the Mekong River, increases in dry season flows will significantly increase water availability for dry season cropping as well as reduce pumping costs.

Within both the Government of Laos and the World Bank more thought is being given to NT2 as a multipurpose project and especially to its potential for rainy and dry season irrigation along the Xe Bang Fai. During the PoE's January 2003 visit, the Irrigation Section of Khammoune Province's Department of Agriculture and Forestry submitted an investment plan for irrigation under the NT2 Project for three Xe Bang Fai districts. For the necessary planning, including soil surveys, and implementation to be undertaken, substantial donor support will be

required. Initial interest has been shown by both the World Bank and the Asian Development Bank.

The first two years of fishery surveys suggest that primary productivity will decline in the XBF once commercial operations begin at the power plant. Anticipatory planning is necessary to deal not only with a significant reduction in fish landings, but also with the eventual development of a different type of post-project fishery. Should yields from the NT2 reservoir significantly exceed the livelihood option of 350 tons a year, as the Company fishery consultant believes will occur based on comparisons with the Nam Ngum fishery and reservoir fisheries in Thailand, there will be sufficient surplus for providing a fish ration to affected people along the XBF. Increased irrigation also provides GOL's Department of Fisheries the opportunity to implement existing plans for combining irrigation with increased production of aquatic resources (the department's irrigation cum fishery approach), to pursue plans for aquaculture, and to formulate plans and recommendation for a post-project XBF fishery.

4 The Nakai Plateau

4.1 Introduction

The main constraint to livelihood improvement on the Nakai Plateau is further delay in the implementation of the NT2 Project or project implementation without a World Bank financial guarantee. Without a doubt the effects of implementation delays, as well as the overall impact of the project to date, have been to increase the anxieties of affected people and to lower their living standards. The situation was eloquently put to the PoE by the representative of the Lao Woman's Union during a meeting at Nakai District Headquarters on January 9, 2003. "People become poorer as they wait for the project" she said. "They want to grow fruit trees, but have to wait for the project; they want to open paddy fields but they have to wait for the project." The solution is to get on with project implementation and specifically with the implementation of the different livelihood options.

4.2 Village Consolidation

Recommendation: Where village consolidation is under RAP consideration, priority should be given to the linkage between resettler preferences and the availability of natural resources as opposed to government and Company preferences.

The PoE notes with concern the recent tendency to reduce the number of resettlement village sites. Based on initial soil surveys (the necessary detailed ones have yet to be undertaken), 25 potential sites were identified between the entry of the Nam On into the reservoir and the Nam Malou area. Current maps indicate utilization of only 13 of those sites which means, on the average, approximately 440 people per site. While a government's desire to consolidate villages and villagers so as to better provide social services such as schools and clinics is understandable, as is the desire of the Company to reduce the costs of access roads and village site irrigation costs, the risk – and it is a major one – is that consolidation is done at the expense of the people's access to arable land and other natural resources.

In the NT2 case this risk will be increased should villagers, as in the case of the pilot village, opt to re-establish their customary settlement pattern as opposed to a lineal one whereby each household is situated in the middle of its arable land. That option was selected not just for reasons of improved productivity, but also because during the period of participatory planning, villagers indicated a preference for a lineal settlement pattern so that they could “reside along a road.” But when the time came for moving to the pilot village those involved were unanimous that they wished to aggregate three smaller communities into one larger one so that “they could help one another” as well as replicate a more culturally familiar settlement pattern. The result of that decision, however, is to place the 27 households of approximately 150 people at a distance from their fields. In a village of 440 people the greater distance involved could prove to be counter-productive.

The PoE recommends that the number of resettlement villages be based on the necessary topographical surveys including, granted the low fertility of most plateau soils, detailed soil surveys rather than on administrative and Company preferences. That does not mean that no consolidation can occur but rather than what consolidation is recommended is based on such economic livelihood considerations as the irrigation project being planned in the immediate vicinity of the pilot village.

4.3 Livelihood Options for Resettled Villages

Recommendation: Priority is required for UXO removal throughout the 22,000 ha resettlement zone and the completion of detailed soil surveys for agricultural purposes.

Recommendation: Ongoing efforts to reduce the risks associated with each livelihood option must continue to receive priority attention. Prior decisions such as those allocating timber rights to the Nakai Plateau Village Forestry Association and restricting the NT2 reservoir fishery to resettlers must be implemented and enforced. Preference should also be given to Nakai Plateau residents as employees for NT2 Project construction and other activities.

4.3.1 Introduction

Being revised as conditions change and experience is gained from the pilot village, the Resettlement Action Plan continues to set a global “state-of-the-art” precedent that meets World Commission on Dams’ criteria and guidelines. Its strength lies with two distinguishing features: the extent to which it is participatory and its wide range of livelihood options among which resettlers can choose. As a result of participatory planning, the large majority of resettlers have chosen to remain close to the reservoir on the Nakai Plateau where individual households will be able to choose among livelihood options. The main livelihood options are forestry, fisheries, wage labor, irrigated gardens, livestock management, and collection of non timber forest products. Such a diversified set of livelihood options is necessary because each is associated with risks.

4.3.2 Forestry

Precedent setting for Lao PDR was the Prime Minister's Decree 37 of April 12, 2002 which authorized the resettler communities to undertake "sustainable forestry business activities," including felling and sale of timber, in the forest area of the 22,000 ha Nakai Plateau resettlement zone. Regulation 484 of June 13, 2002 by the Governor of Kammouane Province established the financially independent Nakai Plateau Village Forestry Association for managing the forest area.

Risks associated with the forestry component of the RAP relate to the nature of the forest resources and to implementation issues. Initially estimated at 10,000 ha, the forest management area has now been reduced to 5,700 ha. Partially offsetting reduction in size is the conclusion of the Company's forestry consultant that the sustainable cut of pine and deciduous hardwoods can be increased to provide the planned \$100 dividend for each household. On the other hand, the smaller size of the forest area will require a smaller labor force, hence reducing expected income from wage labor. There are two major institutional risks. As with the World Bank-assisted FOMOCOP community forest project, one is that the Government will have second thoughts about setting a precedent whereby villages can actually cut and sell timber in addition to customary use of NTFPs. The other concerns the ability of the resettlers to manage the forest area through what will be, for them, a new type of institution.

4.3.3 The NT2 Reservoir Fishery

Though there is some skepticism about the productivity of the reservoir fishery and the ability of the resettlers to utilize that productivity, the global experience in the tropics is that both reservoir productivity and local capacity have been underestimated by planners. Believing that to be the case also with the NT2 reservoir, the PoE is primarily concerned about two other risks. One is that the fishery will not be restricted to the resettlers, a risk that will increase if productivity is as high as currently estimated. The other, as with the Nan Ngum reservoir, is that fish marketing is restricted to one or more government-selected concessionaires with adverse effects on prices paid to fishers.

4.3.4 Wage Labor

The main risks associated with the wage labor option are two. One is that estimates of job opportunities are too high, as has been the case with village forestry. The other is that available opportunities go disproportionately to immigrants. Because they tend to have more experience, skills and capital (as would be the case if Nan Ngum fishers were allowed to fish the NT2 reservoir), immigrants tend to out-compete resettlers for project opportunities unless appropriate policies are implemented and appropriate training and resources for resettlers are provided.

4.3.5 Irrigated Gardens

Current plans are for each household to be resident beside a 0.5 ha garden plot which will be irrigated at project expense during the 25 year concession period. Resettlers will also have the option of growing irrigated paddy on an additional 0.15 ha plot. The major risks are that neither of those plans can be implemented. As in the Pilot Village, resettlers have opted to live in a nucleated settlement, with their irrigated plots located at a distance with an expected drop in productivity due to reduced labor inputs and greater danger of theft and pest damage. As for 0.15 ha irrigated paddy plots, it is doubtful that appropriate soils will be available. The RMU and the project authority are aware of both risks. One suggestion, which the PoE favors, is to increase the size of the 0.5 ha garden plot to 0.65 ha so that each household can attempt to grow some rice in addition to the recommended fruit tree, vegetable and fodder crops. The best approach to the settlement pattern issue is through a process of participatory planning that emphasizes the strengths and weaknesses associated with on and off plot settlement and considers such options as a series of nucleated hamlets (as opposed to one settlement) which would be closer to garden plots as suggested by the IAG's David McDowell.

4.3.6 Livestock Management and NTFPs

The main risks associated with livestock management relates to the ability of the resettlers to shift from their present system of open range use by buffaloes and cattle to a much more intensive system based on fodder crop cultivation, stall feeding and controlled herding. The PoE is also of the opinion that too little emphasis is being placed on the importance to villagers of pigs and fowl as a source of nutrition and cash income. As for NTFPs, historically they, like livestock, have been an important source of income for purchasing rice and meeting other basic needs. Due to increasing poverty as well as foraging by outsiders including loggers and NT2 project-related immigrants, the availability of NTFPs has been significantly reduced within village walking distance. Though it is unlikely that they will ever be able to regain their former importance in the villagers' diversified household economies, remaining resources must be carefully managed and, in appropriate cases, domesticated.

4.3.7 The Reservoir Drawdown Area

At full storage level, the surface area of the NT2 reservoir will be approximately 450 sq.km. The minimal operating level will involve a drawdown of over 80 percent of that surface area. Though neglected by project planners elsewhere and not mentioned as a separate livelihood option in the NT2 case, government and Company planners are well aware of the drawdown area's potential for resettler development purposes. Potential includes reservoir recession and reservoir rise (for floating rice) cultivation and grazing, optimization of which will require participatory zoning. The many small streams entering the reservoir create a opportunity to build simple weirs behind which ponds with aquaculture potential will be annually filled when reservoir levels rise. Complementing the various livelihood options, such uses are apt to have important risk reduction importance.

5. NT2 and the World Bank

While convinced of the necessity of World Bank involvement in the NT2 Project, the PoE has been critical of the Bank's lack of staff continuity in assessing the NT2 Project and lack of flexibility in applying its safety net guidelines. The inflexibility with which the safety net guidelines are being applied is especially perplexing granted the Bank's criticism of the inflexibility of the guidelines and criteria proposed by the World Commission on Dams. Though the Bank's January 2003 safe guard mission once again included new personnel with little familiarity with the NT2 Project, the PoE was told that the team's intention was not to further increase the requirements that must be met before appraisal but rather to help GOL and the Company update the necessary documents. The PoE sincerely hopes that to be the case due to our conviction that further delays could well result in the current project authority's withdrawal from the NT2 Project. Such an event would, the PoE is convinced, justifiably tarnish the Bank's reputation as a development and poverty reduction institution. In the meanwhile, GOL and the Company have continued expending resources (and scarce resources in the case of the government) in an ongoing and commendable effort to meet the World Bank's inflexible and escalating requirements.

6. Action on Previous PoE Recommendations

6.1 Introduction

Recommendations in the PoE's January 2001 report were made on the erroneous assumption that the World Bank would initiate project appraisal no later than 2002. The fact that appraisal has yet to occur has had an adverse effect on the extent to which the 2001 recommendations have been dealt with.

6.2 Recommendations for the World Bank

1. that the World Bank should recognize that further delays in initiating the pre-appraisal studies can be expected to make implementation of the resettlement program more difficult (Recommendation 12, Section 6.3). Further delays have occurred since the Panel's January 2001 report as has further village impoverishment simply because households are hesitant to make new livelihood investments.

2. that because further delays will have an increasingly adverse effect on implementation of the NT2 environmental and social components, the World Bank should decide NOW to initiate pre-appraisal (Recommendation 19, Section 8). Action yet to be taken by the World Bank.

3. that, recognizing the extensive studies completed to date, and positive government initiatives in response to those studies, WB pre-appraisal and appraisal should be combined (Recommendation 20, Section 8). Indications are that pre-appraisal and appraisal will be combined should the World Bank proceed with the NT2 Project.

6.3 Recommendations for GOL

- 1. that GOL give urgent priority in the NBCA to reestablishing, expanding and maintaining joint conservation patrols with villagers, village militia, and district army (with suitable per diem), and other relevant activities aimed at conserving the unique biodiversity of the area (Recommendation 1, Section 1.9).** Such a priority has yet to be implemented due in part to uncertainty about World Bank involvement in the NT2 Project.
- 2. that GOL seek appropriate international assistance for the Bolikhamxay authorities to develop an effective and ongoing program to assure conservation of the Northern Extension with its important biodiversity (Recommendation 2, Section 1.12).** Interest shown by the Theun Hinboun Project Authority with possible assistance from the Asian Development Bank.
- 3. that GOL assure that conservation activities, including education and extension, be an effective part of GOL policies and activities (Recommendation 3, Section 1.13).** Such activities will be institutionalized within the Watershed Management and Protection Authority which received legal status during 2002.
- 4. that steps are taken after project approval to fell and utilise the small diameter pine trees in the area of the Nakai Plateau to be flooded (Recommendation 5, Section 5.5).** Project approval has yet to occur.
- 5. that irrigation-cum-fishery projects should be integrated into GOL planning for the NT2-project so as to take advantage of over 20,000 hectares of irrigable land in the middle and lower XBF zones for raising living standards while compensating for any costs which are involved in project-induced flows (Recommendation 18, Section 6.4).** This recommendation has been accepted as indicated by increasing interest in NT2 as a multi-purpose project and, more specifically, by the interest of the central government Irrigation Department and a preliminary Investment Plan prepared by the Irrigation Section of the Khammouane Province Department of Agriculture and Forestry for irrigation for three Xe Bang Fai districts under the NT2 Project.

6.4 Recommendations for WMPA

- 1. that as a high priority, village-based anti-poaching patrols need to be revived and expanded (Recommendation 4, Section 5.1).** The WMPA has only been recently established. According to the WMPA's SEMFOP-1 draft, stopping the depletion of biodiversity is a matter of "highest priority" to be addressed by various means including improved patrolling and improved border posts.
- 2. that steps to conserve saola be started as soon as practicable within the overall framework of the Operational Plan (Recommendation 8, Section 5.7).** Implementation depends on the future institutional development of the WMPA.
- 3. that coordination be assured between WMPA (as soon as it is functional) and the various institutions involved in resettlement (Recommendation 9, Section 5.8).** This

recommendation still stands and has been repeated in the PoE's current report.

4. that, to accelerate conservation and essential village development activities in the NBCA, that survey and construction of a two-wheel tractor access route into the Nam Theun, Nam Noy and Nam Pheo tributary basins be given highest priority as a necessary measure. There should be monitoring to assure that the tractor route is not used, expanded or extended beyond its original intended use (Recommendation 10, Section 6.2). The weakness of this recommendation is that the PoE did not refer to the institutional means for its implementation. Planning of access into the NBCA should be the collaborative responsibility of the WMPA and the Nakai District Administration rather than of the district working alone or with such donor-assisted projects as the District Upland Development and Conservation Project.

5. that no further involuntary resettlements occur, that the current status of Vietic-speakers in the NBCA be surveyed, and that actions be taken to work with them to maintain their cultural integrity (Recommendation 11, Section 6.2). Action has yet to be taken on this recommendation due again at least in part to further delay in approving the NT2 Project.

6.5 Recommendations for the Company

1. that if it does prove possible to develop the WMPA as rapidly as the operational plan specifies, then the Company should consider extra disbursements. Extra disbursements for monitoring (especially logging and poaching) should also be provided if the implementation of the Operational Plan is delayed (Recommendation 7, Section 5.6). No action taken in part because project appraisal has yet to begin.

2. that because of risks associated with each component of the livelihood model, an implementation period of up to ten years should be considered essential (Recommendation 13, Section 6.3). Livelihood risks reaffirm the importance of this recommendation though no action taken one way or the other.

3. that implementation of the resettlement program should expand the number of livelihood options available to each household and village to the greatest extent possible (Recommendation 14, Section 6.3). Current redrafting of the RAP provides strong support for a diversified portfolio of livelihood options.

4. that as soon as project approval is received, construction of the weir in the pilot resettlement area should commence (Recommendation 15, Section 6.3). Planning proceeds, the Company having recruited an Irrigation, Flood protection and Rural Infrastructure consultant.

5. that adequately funded fishery surveys should commence this year and continue until the NT2 project is operational. Thereafter they should continue once every two years for a 7-8 year period (Recommendation 17, Section 6.4). The second year of a four year program of such surveys has been recently completed.

6.6 Joint Recommendations

1. that the Operational Plan starts without delay as soon as the decision is made by WB to proceed to (Pre) Appraisal (Recommendation 6, Section 5.6). The World Bank has yet to make a decision to proceed with (pre) appraisal.

2. that the extent and importance of river bank gardens to the households involved should be surveyed along the entire length of the XBF (Recommendation 16, Section 6.4). With Company financing such a survey that also included agriculture in general, health and fisheries was completed during 2001 and published during 2002.

7. Continuing Activities of the Panel

The Panel anticipates or is available for the following activities in the coming year:

- Desk review of revised studies, plans or other documents as requested;
- Consultations and/or presentations with World Bank, Government officials, NGOs, and others;
- Return visit to Lao PDR by one or more of the Panel members if requested to do so by the GOL (e.g. with public consultations, appraisal and/or logging missions);
- Next regular visit of the Panel to Lao PDR at approximately the same time next year.

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ANNEXES

ANNEX 1: SCHEDULE OF PoE MISSION

Saturday, 4 January

09.30 PoE members arrive Vientiane; Check in Taipan Hotel

Sunday, 5 January

All Day Review of Documents

Monday, 6 January

All Day Meetings with GOL and the Company

Tuesday, 7 January

08.00 Depart Vientiane to below escarpment of Nam Malou via Theun Hinboun Downstream Channel.

- Boating through river cave to Ban Nathane
- Climbing by vehicle Phou Ark to Nam Malou

19.00 Arrive Nakai

- Overnight at NTEC Nakai Guesthouse

Wednesday, 8 January

08.00 Visit Farm and Pilot Village

13.30 Meeting with Resettlement Committee, Resettlement Management Unit, District Resettlement Working Group, and District Upland Development and Conservation Project.

Thursday, 9 January

All Day Fly Transmission Line Corridor; Northern Extension; Upper Nam Noy, and Upper Nam Pheo where night spent in Ban Beuk Village (helicopter returning to Vientiane).

Friday, 10 January

All Day Survey of biodiversity and village activities in the Upper Nam Pheo catchment.

Saturday, 11 January

All Day Survey of biodiversity and village activities in the Upper Nam Pheo catchment.

Sunday, 12 January

All Day Walking down the Nam Pheo and crossing over to the Nam Noy along which the field team camped.

Monday, 13 January

All Day Waking and rafting down the Nam Noy along which the field team camped.

Tuesday, 14 January

All Day Walking, rafting and boating down the Nam Noy to the Nam Theun and Nikom 3 from where departed for Vientiane

Wednesday, 15 January

All Day Document Review with GOL and the Company.

Thursday, 16 January

All Day Document Review with GOL and the Company.

Friday, 17 January

AM Meeting with GOL and Asian Development Bank

PM Document Review with GOL and the Company.

Saturday, 18 January

AM Briefing of Executive Director of the Asian Development Bank.
EAMP Review with GOL, the Company, and SEATEC

PM Document Review and meetings with local experts

Sunday, 19 January

All Day Document Review and meetings with local experts

Monday, 20 January

All Day Initial meeting with GOL/WB/Company on the Social Development Plan and the NT2 WMPA's SEMFOP-1

Tuesday, 21 January

All Day January 20 meetings continue plus PoE meeting at the US Embassy

Wednesday, 22 January

AM GOL/WB/Company document review continues

PM Meeting with H.E. Minister of Industry and Handicrafts
Continuation of GOL/WB/Company document review

Thursday, 23 January

All Day GOL/WB/Company document review continues

Friday, 24 January

All Day Further document review plus meetings with local experts.

Saturday, 25 January

AM PoE departs Laos PDR

ANNEX 2: ABBREVIATIONS, ACRONYMS AND GLOSSARY USED IN POE REPORTS

Ban	Village
Company	Nam Theun 2 Power Company Limited
CPAWN	Center for Protected Areas and Watershed Management of the Department of Forestry, Ministry of Agriculture and Forests
DAFO	District Agriculture and Forestry Office
DFRC	Division of Forest Resource Conservation of the Department of Forestry (formerly CPAWM)
DSPE	Dam Safety Panel of Experts for NT2
EAMP	Environmental Assessment and Management Plan
EDF	Electricite' du France
EGAT	Electricity Generating Authority of Thailand
EGCO	Electricity Generating Public Company Limited
ESM-OP	NT2 Environmental and Social Management Operational Plan
ESMP	Environment and Social Management Plan for Nakai-Nam Theun Catchment and Corridor areas
FOMOCOP	
GOL	Government of Lao P.D.R.
GPS	Global Positioning System
IAG	The International Advisory Group for NT2 of the World Bank
IUCN	The World Conservation Union
Lao P.D.R.	The Lao People's Democratic Republic
LIL	Learning and Innovation Loan of the World Bank
MAF	Ministry of Agriculture and Forestry
Nam	River
NBCA	National Biodiversity Conservation Area (protected areas created by GOL Decree)
NGO	Non-governmental Organization
NNT-NBCA	Nakai-Nam Theun National Biodiversity Conservation Area (a portion of the NT2 Project, most of which is in the water catchment area of the project reservoir) which was created in 1993
NT2	Nam Theun 2 Hydro-electric Project
NTEC	Nam Theun 2 Electricity Consortium
NTFP	Non Timber Forest Products
NT2-WMPA	Nam Theun 2 Watershed Management and Protection Authority
NTSEP	Nam Theun Social and Environmental Project (of the World Bank)
Panel, PoE	The International Environmental and Social Panel of Experts for the NT2

Phou	Mountain
PHP	Phou Hin Poun NBCA
PHRD	World Bank Population and Human Resources Development IDA Grant
RAP	Resettlement Action Plan
SDP	Social Development Plan
SEMFOP-1	Social and Environment Framework and 1 st Operational Plan for the Watershed Management and Protection Authority
STEA	Science, Technology & Environment Agency of GOL (which reports to the Office of the Prime Minister)
UNDP	United Nations Development Programme
UXO	Unexploded Ordinance
WB	World Bank
WCD	World Commission on Dams
WCS	The Wildlife Conservation Society
WMPA	Watershed Management and Conservation Authority
XBF	Xe Bang Fai