LAO PEOPLE'S DEMOCRATIC REPUBLIC
NAM THEUN 2 MULTIPURPOSE PROJECT

NINETEENTH REPORT OF THE INTERNATIONAL ENVIRONMENTAL AND SOCIAL PANEL OF EXPERTS

20 March 2012

DAVID McDOWELL
THAYER SCUDDER
LEE M. TALBOT
# REPORT 19 OF THE INTERNATIONAL ENVIRONMENTAL AND SOCIAL PANEL OF EXPERTS
## For the Nam Theun 2 Multipurpose Project
### Lao People's Democratic Republic
#### 20 March 2012

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Cover photograph: Village children at play, Ban Kunae, NPA
LIST OF RECOMMENDATIONS

The POE recommends:

1/19 That in order to ensure that the resettlement evaluation process is fully informed of trends, the village monitoring system now in place be extended to late 2014 to enable a final evaluation to be undertaken early in the following year.

2/19 That NTPC enumerators make as accurate an assessment as possible of total legitimate incomes and of consumption levels for the LSMS survey scheduled for early 2013.

3/19 That, in support of the intent of PM Decree 24 (13 February 2008) “to improve progressively the living standards of the population of Nakai Plateau area” and the CA requirement for sustainable development, community land titling to legally confirm resettler village rights to land (including islands) and water from the southern (escarpment) edge of the VFA to the channel of the Nam Theun be completed no later than 1 July 2012.

4/19 That the following steps be taken urgently by NTPC to further stimulate diversified household and village production activities across the Plateau:

- that the Village Credit Fund be made fully operational, with adequate initial funds provided, within a month.
- that the use and effectiveness of existing gully dams be evaluated by an independent expert during the next dry season (2012/2013) and recommendations on possible future investments be made thereafter.
- that additional training be provided to villagers by the extension workers in using and maintaining all installed irrigation systems.
- that the sole remaining agriculture centre that is functioning be reactivated to provide the farmer training functions it has been handling and thus be handed over to the District in full functioning mode.
- that an NRO specialist be appointed, as recommended last June, to help establish a wide range of those village-based farm and off-farm activities in which the second generation has an interest and which would provide productive occupations for them.
- that remaining entitlements for a second boat and cattle (for households without cattle) be converted to other livelihood inputs through a mechanism which stimulates small business development and contributes to the development of sustainable livelihood input supply systems on the plateau.
- that the NRO initiate a series of visits to the Theun Hinboun Extension Project to exchange experience and share lessons.

5/19 That the arrangements now in place for Nakai Reservoir fish monitoring, as well as in all other monitored zones, be maintained until 2014.

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in the interests of a well-informed final evaluation of the project and its impacts.

6/19 That the agreement covering the conversion of the VFA into an LLC be expedited and not preclude an early decision by the new Board to provide for the harvesting and transport of the logs to be undertaken by a team made up of already skilled resettlement village forestry workers and that the new five-year contract for processing and marketing of the logs provide a binding commitment for an annual renegotiation of log prices.

7/19 That the Ministry of Finance be approached directly by the Board of the new Limited Liability Company to make clear the objectives of the establishment of the VFA and thus to make the case for the excessive current taxes and levies to be reduced if not removed entirely.

8/19 That for the Rogers report to be integrated into the XBF planning, implementation and monitoring process, GOL, the IFIs and NTPC give the report the close attention that the POE is convinced it deserves.

That in the interest of planning for interim developments that do not preclude longer term options the GOL, in association with the World Bank and the Asian Development Bank, undertake early exploration and assessment of the potential of XBF basin groundwater resources to meet both small scale and larger scale irrigation requirements.

That pilot groundwater projects be set up at an early stage to demonstrate the utility for smallholdings of the use of low-lift pumps for small command areas.

That the GOL and the Khammouane and Savannakhet Provincial authorities move at the same time to ensure that the existing investments in land, water and fisheries be restored and renovated to perform their designated functions, this involving a major commitment to ensure that adequate maintenance for equipment and field channels is undertaken and that functioning pump sets meet their original design specifications.

9/19 That in order to maintain the momentum of the development and livelihood work among the XBF villages during March and April and beyond authorization be given by the Minister of Energy and Mines for the immediate release of the funds already voted by the National Assembly.

10/19 That the World Bank through its KDP program look favorably on the proposal to support VIRF sustainability in the context of village funds throughout the XBF basin.

11/19 That as an interim measure to expand Dry Season production while broader stimulation measures are considered, PAFO and the XBF Districts be assigned additional funds to help build a more effective private/public sector electric pump maintenance and repair system easily accessible to farmers. (See also recommendation 8/19 above).

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• 12/19 That the fish monitoring program in the XBF zone be maintained through mid 2014 in order to continue measuring catch trends and other impacts as an input into the DSP review later that year.

• 13/19 That without delay the externally-funded Biodiversity Protection Technical Advisor be engaged by WMFA for at least a year.

• 14/19 That all equipment acquired by the WMPA and its cooperators, that has been used illegally against biodiversity in the NPA, i.e., in poaching of wildlife, cutting of trees and woody vegetation, and fishing, be confiscated permanently, not be returned to the perpetrators.

• 15/19 That WMPA establish a strong checkpoint upstream from Ban Maka both to cut the existing trade in illegal biodiversity products and to conduct patrol sweeps to stop development of alternate routes as well as to catch poachers. The checkpoint should be manned by well-trained and motivated professional patrol staff.

• 16/19 That the training of health care providers at each clinic pay more attention to family planning, that family planning be a required and active component of regular visits to outlying villages, and that a reliable cold chain be available at each clinic.

That livestock development receive more emphasis in the household and village livelihood system, that veterinary services be significantly improved (with clinic cold chain facilities sufficient for also holding veterinary supplies), and that a special program be planned and implemented to re-establish the buffalo trade to Gnommalath and beyond.

That a redesigned PLUP process be implemented within watershed villages with special emphasis on a “bottom up” emergence of an appropriate conservation ethic.

• 17/19 That the WMPA reduction/reorientation of staff in response to PM 471 involve a significant shift of effort and budget from development to conservation, and that it include provision for a minimum of 16 highly trained, professional patrol staff.

• 18/19 That the IMA, NTPC and WMPA develop a funding procedure that is based at least in part on conservation results achieved.

• 19/19 That no further village consolidation with resettlement be implemented in NT2 and PIZ zones.

That Districts be required to provide services promised, such as water and electricity, where village consolidation has been implemented in NT2 and PIZ zones.

That where Vietic people have been consolidated, GOL, with IFI assistance, recruit a qualified consultant to recommend how best to help them integrate and develop at their own pace and in a very culturally sensitive way.
That in the Ban Mai and Ban Fan Deng Neua cases, GOL contract, with IFI assistance, an independent survey of the land and other natural resources available to the two consolidated villages. The survey’s terms of reference should require the contractor to recommend equitable solutions, including return to previous village sites, should land and other natural resources prove inadequate.
1. INTRODUCTION

This is Report 19 of the International Environmental Panel of Experts (POE or the Panel) for the Nam Theun 2 (NT2) Multipurpose Project in the Lao People's Democratic Republic. The members of the Panel are D.K. McDowell (consultant, Otaki, New Zealand), T. Scudder (Professor Emeritus, California Institute of Technology, USA) and L.M. Talbot (Professor, George Mason University, Virginia, USA). They were accompanied by a consultant, P. Rogers (Professor of Environmental Engineering at Harvard University, USA) engaged to provide advice to the Government of Laos (GOL) and to the Panel on integrated water resource management of the Xe Bang Fai river basin, the region to which the waters of the Nam Theun were diverted to pass through the NT2 turbines. The three main goals of the mission were to undertake an on-the-ground survey and evaluation of the state of the watershed’s biodiversity and villages in the Nakai Nam Theun National Protected Area (NPA) and the work of the Watershed Management and Protection Authority (WMPA), and to review progress made in the process of handling over to the Government of Laos (GOL) the management of the resettlement villages on the Nakai Plateau and the project’s Downstream Program (DSP), and a preliminary assessment of the potential for multipurpose use of the resources of the XeBF river basin. In response to a request from the World Bank, the POE also assessed the relationship between the World Bank’s Safeguard Policies and how GOL’s Village Consolidation policy was being implemented in NT2 Project Zones, Peripheral Impact Zones (PIZ), and the NT2 Watershed.

1.1 The Panel's Mandate

The Panel derives its mandate from the Concession Agreement. This is a 600 page legal document which assigns the POE a contractual responsibility to provide independent review of, and guidance on, the treatment of environmental and social issues associated with the Project, along with some executive functions, and after the Implementation Period of nine years or more, to determine whether the Project’s environmental and social goals have been met. The POE remains a standing body for the period of the concession. The POE submits its findings to the Government of Laos (GOL) Minister of Energy and Mines and to Deputy Prime Minister Somsavat Lengsavadv, addresses recommendations to the GOL, Nam Theun Power Company (NTPC) and the International Financial Institutions (IFIs), and is required to assess the extent to which NT2 meets the requirements of the Safeguard Policies of the World Bank and the Asian Development Bank (ADB) on such issues as the environment, indigenous peoples and resettlement with development. The Panel may engage consultants to help with its work and has done so for the first time in this instance.

1.2 Panel Activities

The three POE members (David McDowell, Thayer Scudder and Lee Talbot) arrived in Vientiane on 4 February 2012, as did consultant, Peter Rogers. Meetings were held on 6 February with the Department of Energy Business (DEB) of the Ministry of Mines and Energy and the Minister of Energy and Mines, the Hon. Souliouvong Daravong, along with the Vice Minister, and attended briefings by NTPC (Nam Theun Power Company), the World Bank and Asian Development Bank. The next day the team met with the newly restructured Ministry of Natural Resources and the Environment (MONRE) and MAF’s Department of Irrigation and was briefed on the results of fish monitoring by an NTPC consultant and on the latest figures from the LSMS survey of social and environmental indicators in the resettlement villages. The team was
The following day the POE team drove to Thakhek, were updated by RMU and NTPC Downstream Program managers and met and dined with the Khammouane Governor Khambay Damlath and representatives of MONRE, the Ministry of Investment and Planning and the Department of Irrigation. A visit to the two comparatively new Specific Economic Zones near Thakhek, briefing on XBF fish monitoring and visits to a multifunctional water gate below Rte. 13 were followed by a working dinner with the NTPC Health Program Team. On 10 February the POE and consultant inspected a large scale Japanese Irrigation Project near Rte. 13, went to a sugar factory funded and run by a Thai private sector company, visited a village near Mahaxai and saw the newly relocated NTPC Aquatic Environment Laboratory at the NTPC Residential compound. Overnighting in Oudomsouk, the team met with WMPA management to discuss the draft Five Year Plan (SEMFOP) for the watershed , had a comprehensive briefing on developments in implementing the Nakai Resettlement Program by sector managers of the Nakai Resettlement Office (NRO) and then went to talk to villagers in areas nearby Oudomsouk, notably Ban Phonesavang.

At this juncture the POE team split up in order to cover the main objectives in more detail. On 12 February Thayer Scudder and Lee Talbot, accompanied by biologist William Robichaud and Phalim Daravong, flew by helicopter to the Thong Kuang Grasslands southwest of the easternmost villages in the NT2 watershed’s Teung Cluster of villages. During the next four days with local village militia and porters they surveyed the status of biodiversity and the activities, encampments and trails made by Vietnamese poachers and rosewood collectors in the Nam Nyang river valley and the area between it and the Thong Kuang Grasslands. Similar surveys were completed in the forests surrounding the Thong Kuang to which they returned on 17 February and in the area between there and the Nam Pheo the following day.

On 18 February they descended to the Nam Pheo spending the night in Ban Kunae –the easternmost village in the watershed which is close to the Vietnam border and a Lao military post. The next night was spent in Ban Beuk so that the POE could compare village livelihood there with livelihood activities ten years earlier when the POE had visited the same village. During the next two days they walked downstream, crossed the Nam Noy above the its junction with the Nam Pheo, and walked from the Nam Noy Basin to Ban Makfueang in the Nam Theun basin where they were met by a WMPA boat that took them back to Oudomsouk. On 22 February they returned to Vientiane, visiting two Thuen Hinhboun Extension resettlement villages on the way.

POE member David McDowell and consultant Peter Rogers went south on 12 February to look in more detail at the water resource management and use situation in the Provinces of Khammouane and Savannakhet and to assess the potential for further development of these and related activities. They drove that day down the Nam Kathang/Nam Gnom valley, talked to Water User Group farmers at a village known to have an irrigation scheme for Dry Season cultivation, then ventured via Rte.12 and rural roads well up into the upper reaches of the XBF before being eventually halted by a non-fordable section of the XBF. On 13 February they met with NTPC engineers on site to view the five outlets for gravity fed irrigation inserted by NTPC in the Regulating Dam and the Downstream Channel, briefly visited the World Bank’s Thathot scheme nearby and then met in Thakhet with the Director of the Provincial MAF (PAFO) and his Deputy, Irrigation and Extension stuff and representatives of the World Bank’s Khammouane Development Project and the ADB’s Smallholder Project.

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On 14 February the team had a discussion first with the Director of the Provincial Department of Industries and Commerce and then with the Director General of the Khammouane Department of Planning and Investment. They were then briefed on the XBF DSP by its NTPC managers and visited the WB and ADB projects in the field, talking to farmers' groups and others. A first (for POE as such) official visit to Savannakhet was made on 15 February to discuss with the Vice Governor and his staff the possible use of turbined water from the NT2 project in the District of Xaiabouly and other water resource issues. A meeting with PAFO followed and the team called on the way back to Thakhek on the manager of another Special Economic Zone on the outskirts of the town of Savannakhet.

A meeting with the Provincial MONRE Vice Minister concluded the field program and the team then drove back to Vientiane for report writing and further discussions with the DDG of the Department of Irrigation and the Vice Minister of MONRE. The debriefing process on 24 February involved all-day consecutive sessions, with the full POE Team (reunited on 22 February) and consultant debriefing a representative meeting of GOL agencies, NTPC and the IFIs, and finally a wrap-up call on DPM Somsavat Lengsavad. The POE flew out of Vientiane on 25 February and consultant Peter Rogers left on 26 February.

1.3 Acknowledgements-Appreciation

The POE expresses its appreciation for all the time and energy invested by NTPC E&S Director Ruedi Luthi and notably Patrick Dye for setting up a complicated two zone, very worthwhile, program for the POE and its consultant. It is particularly grateful to Deputy Prime Minister Somsavat Lengsavad for setting aside the time to meet twice with the POE and also to Minister of Energy and Mines Soulivong Daravong for meeting with us. The POE is likewise grateful to Khammouane Governor Khambay Damlath and Savannakhet Vice Governor Dr.Khampheui Phanthachone for their frank views on all issues raised with them. It is grateful for advice from the new NRO Manager Ian Craig, the RMU Director Sivixay Soukkarath, NTPC CEO Michel Robino, World Bank Country Country Manager Keiko Miwa and William Rex, and Asian Development Bank country director Chong Chi Nai and ADB consultant Elizabeth Mann. NTPC’s Phalom Daravong and WMMA’s Somlor provided field assistance to the watershed team and NTPC’s Olay Phommavong and Boualith Inthirath and DEB’s Souksakhone Philavan did likewise to the XBF/IWRM team. Deputy Directors of WMMA Sukhathia Vannalath, and Dr. Tienmme Vannasouk provided an extensive briefing on the WMMA. As always the POE was received with warmth and willing help from all the Lao and others it had the privilege of meeting, not least the people in the watershed who were so hospitable to POE members spending time in their villages.
2. THE NAKAI PLATEAU

2.1. Introduction

The time is approaching when the POE will be required to begin the process of addressing the requirement in the Concession Agreement (CA) to undertake a final evaluation of the Nakai resettlement process. The Agreement calls for the POE to review the activities performed during the Resettlement Implementation Period (RIP), determine whether the Resettlement Objectives and the Resettlement Provisions in the CA have been achieved and provide advice on this to the Resettlement Committee.

Negotiations among the parties about timing are still ongoing. As decreed by the CA the timeline for the RIP is to be approximately nine years from the beginning of the RIP. The latter date is held to be April 2007, that is the month that the first settlers moved into their permanent homes. On this basis achievement of the CA's household income targets was to have been in April of this year, five years after the RIP began, with the evaluation shortly thereafter. This is clearly impracticable at this point. NTPC has proposed instead that a seventh round of the LSMS monitoring survey be initiated in May 2013 and the resettlement evaluation itself undertaken in early 2014. A final brief review of actions taken as a result of the recommendations of the evaluation team should be completed before February 2016 at the latest since the RIP is due to conclude in April that year. This timetable is acceptable to the POE as a basis for planning. The views of GOL and the IFIs are being sought.

There is another point here. The CA is very clear (para.5.3 of Schedule 4, Part I) that monitoring is to be undertaken until the Resettlement Objectives and Principles have been "achieved and maintained for a reasonable period of time." That provision seems a sensible one. Hence the provision above for a brief review by February 2016 of any actions taken following the evaluation.

The POE recommends:

- 1/19 That in order to ensure that the resettlement evaluation process is fully informed of trends, the village monitoring system now in place be extended to late 2014 to enable a final evaluation to be undertaken early in the following year.

The POE is grateful to the NTPC for having prepared a draft statement of principles relating to the above process. We wholly agree that this is a timely moment to be reaching agreement on quantitative and qualitative targets, indicators, methods and timing of measurement and on the potentially controversial issue of defining and demonstrating sustainability (living standards in the resettlement villages are to be materially improved “on a sustainable basis”). Apart from the matters of scheduling and associated monitoring raised above, the POE has no fundamental problems with most of the statement. We intend to be reasonable about the likelihood that a small number of households will not have the capacity to reach the income targets and are reassured in this regard by what the company is already doing in identifying such households and setting up “safety nets.” That is a very positive and laudable approach.

We do have a remaining concern relating to the issue of sustainability raised in the NTPC paper. We make clear in the section below, for example, why we regard the inclusion of income

2. THE NAKAI PLATEAU

2.1. Introduction

The time is approaching when the POE will be required to begin the process of addressing the requirement in the Concession Agreement (CA) to undertake a final evaluation of the Nakai resettlement process. The Agreement calls for the POE to review the activities performed during the Resettlement Implementation Period (RIP), determine whether the Resettlement Objectives and the Resettlement Provisions in the CA have been achieved and provide advice on this to the Resettlement Committee.

Negotiations among the parties about timing are still ongoing. As decreed by the CA the timeline for the RIP is to be approximately nine years from the beginning of the RIP. The latter date is held to be April 2007, that is the month that the first settlers moved into their permanent homes. On this basis achievement of the CA's household income targets was to have been in April of this year, five years after the RIP began, with the evaluation shortly thereafter. This is clearly impracticable at this point. NTPC has proposed instead that a seventh round of the LSMS monitoring survey be initiated in May 2013 and the resettlement evaluation itself undertaken in early 2014. A final brief review of actions taken as a result of the recommendations of the evaluation team should be completed before February 2016 at the latest since the RIP is due to conclude in April that year. This timetable is acceptable to the POE as a basis for planning. The views of GOL and the IFIs are being sought.

There is another point here. The CA is very clear (para.5.3 of Schedule 4, Part I) that monitoring is to be undertaken until the Resettlement Objectives and Principles have been "achieved and maintained for a reasonable period of time." That provision seems a sensible one. Hence the provision above for a brief review by February 2016 of any actions taken following the evaluation.

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We do have a remaining concern relating to the issue of sustainability raised in the NTPC paper. We make clear in the section below, for example, why we regard the inclusion of income
from illegal rosewood gathering in the current household figures (under "undisclosed income") as unacceptable. These and other matters call for further discussion among interested parties.

2.2 Distortions arising from Rosewood Earnings

The POE sympathizes with the dilemma faced by the enumerators and analysts when villagers are openly, if illegally, gathering rosewood but declining to admit this explicitly. Piles of the valuable hardwood can be seen in or under many village houses and the authorities appear powerless to halt the trade. It is the POE’s firm view that gathering a forest product like this, most of it coming from a protected part of the project area, the watershed, cannot be defined in CA terms as a sustainable activity and thus should not be regarded as legitimate income for the purposes of achieving income targets.

Of course this poses a problem for the company. While rosewood prices hold up on the global market and prohibitions on harvesting it are not effectively enforced, and until the available rosewood supply is exhausted, villagers are going to go on gathering it at the expense of time and energy which would usually go into alternative activities such as fishing and agricultural pursuits. NTPC has put funds into helping with patrolling and other forms of enforcement but to no avail. (We address elsewhere the "demand producing supply" factor represented by the continuing presence of the Phonesack sawmill in Nakai.)

The POE recommends:

- 2/19 That NTPC enumerators make as accurate an assessment as possible of total legitimate incomes and of consumption levels for the LSMS survey scheduled for early 2013.

In the interim the figures estimating household earnings cannot be regarded as definitive, given that the main component does not meet the CA requirement of being a sustainable activity and one which furthermore conflicts with another important objective of the project, which is to protect and conserve the biodiversity of the watershed and the Village Forestry Association (VFA) lands too.

2.3 Finalizing the Household and Village Land Titling Exercise

The POE strongly supports finalizing the Household and Village Land Titling Exercise as a matter of urgency by issuing community land titles to the Nakai Plateau resettlement villages. Security of tenure is necessary to give resettler villages the confidence to get on with longer range planning for the land and water resources at their disposal. Such titling is now government policy and was recently completed in Sangthong District. The POE also understands that the Khammouane Governor and the Nakai District Governor favor such community land titling.

The POE was sufficiently concerned with the importance of the prompt completion of community land titling for Nakai Plateau resettler villages that we discussed it as one of our key recommendations at our 25 February 2012 meeting with Deputy Prime Minister Somsavat Lengsavat.

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The POE recommends:

- 3/19 That, in support of the intent of PM Decree 24 (13 February 2008) “to improve progressively the living standards of the population of Nakai Plateau area” and the CA requirement for sustainable development, community land titling to legally confirm resettler village rights to land (including islands) and water from the southern (escarpment) edge of the VFA to the channel of the Nam Theun be completed no later than 1 July 2012.

2.4 Further Stimulating the Agricultural Sector

Deleting rosewood earnings from household earnings totals means that other sources of income require more attention, the agricultural sector in particular. The bald figures for use of land by settlers in the current Dry Season are disappointing at first glance. Thus only 5% of irrigated land is being used at this time, while only one village (Bouama) is using its 0.66 ha. plots in the Dry Season - though half the villages are now cultivating them in the Wet Season. Bouama is also using a fair proportion (27%) of its irrigated land. There is only 1% of HHs growing in the DDZ and only a handful are, albeit very successfully, using submersible pumps to water crops on land adjacent to the reservoir. By way of contrast around half the village families have flourishing home gardens.

These figures should be seen in the light of several factors:

- security of tenure of agricultural lands is not yet achieved
- the villagers are not permitted to use their old technique of slash-and-burn and the soils on the sloping land where most villages are situated are not as fertile as in the valley bottoms where the villages were before resettlement
- the new technologies, notably dry season irrigated agriculture, are not yet adopted by more than a handful of villagers
- there are also marketing problems and inter-generational difficulties with children apparently less willing to work on the land as a lifelong commitment
- finally, there is what one observer called the Rosewood Syndrome with gathering of this hardwood, along with fishing in the reservoir, seen as more attractive and less labor-intensive activities than working in the fields.

All that said, it is clear that there are some urgent remaining tasks for NTPC management to address before the responsibility for handing over the Nakai livelihood development work to an augmented and strengthened RMU, as recommended in POE Report 18B, is accomplished. The POE welcomes the fact that the contracts of NTPC staff needed for ongoing management of livelihood programs have been extended to the end of 2012 and will apparently be extended further as necessary. That provides some limited breathing space for the deficiencies in the livelihood program to be dealt with before resettlement livelihood responsibilities are handed over to a stretched District administration.

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What is to be done? The POE is of the view that the recommendations on the livelihood side made only seven months ago remain valid. There is progress in setting up a system (temporarily through SERF) to maintain irrigation pumps. 176 Water User Groups are being trained in 15 villages. Perhaps most importantly, a number of useful steps have been taken to set in place the long awaited Village Credit Fund which is needed to provide money needed to stimulate expansion of new farm and non-farm ventures in the villages.

2.5 More emphasis on Diversifying Household and Village Production Systems including:

- Agro forestry. Both the POE and especially the LTA have been emphasizing this for years without avail. On 22 February the POE visited, as official Theun Hinboun Extension (THE) guests, two THE resettled villages. Interesting projects included villagers cooperating with the World Wide Fund for Nature in gathering and growing certified rattan for export to the European Community. Villagers are also encouraged to grow as a future cash crop fragrant bark trees on their home lots.
- Livestock. There should be more emphasis on integrating livestock, with a more active program of vaccination, into the household and village production systems.

2.6 More use of Lao and International NGOs for further increasing the New Emphasis on Household and Village Driven Development.

The POE believes that greater involvement of the NGO community is necessary if the NRO’s Strategic Shift towards Sustainable Development is to be realized. Though working with fewer resettlers, current THE social development staff are 30 people. As in the case of the NRO’s too small staff, their activities include support for “resettler driven livelihood support…tailored to both interests and capacities” (NRO 11 February 2012 Briefing for the POE).

The POE recommends:

- 4/19 That the following steps be taken urgently by NTPC to further stimulate diversified household and village production activities across the Plateau:
  
  that the Village Credit Fund be made fully operational, with adequate initial funds provided, within a month
  
  that the use and effectiveness of existing gully dams be evaluated by an independent expert during the next dry season (2012/2013) and recommendations on possible future investments be made thereafter.
  
  that additional training be provided to villagers by the extension workers in using and maintaining all installed irrigation systems
  
  that the sole remaining agriculture centre that is functioning be reactivated to provide the farmer training functions it has been handling and thus be handed over to the District in full functioning mode

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that an NRO specialist be appointed, as recommended last June, to help establish a wide range of those village-based farm and off-farm activities in which the second generation has an interest and which would provide productive occupations for them.

that remaining entitlements for a second boat and for cattle (for households without cattle) be converted to other livelihood inputs through a mechanism which stimulates small business development and contributes to the development of sustainable livelihood input supply systems on the plateau.

that the NRO initiate a series of visits to the Theun Hinboun Extension Project to exchange experience and share lessons.

2.7 Fishery Trends

As predicted, the reservoir fishery is not producing as much fish as it was during the windfall days after it was first filled. The total catch in all zones including the XBF was up last year after the August/October floods but this was against the trend. The overall catch trend is downward, notably in the figures for the resettlers fishing in the reservoir, where catches have declined from a high of 160,000 kg in December 2008 to less than 20,000 kg in November/December 2011. As is the case with other monitoring exercises it is important that the fish monitoring be maintained at least through 2014 in order to assess impacts as the RIP comes to a close and the final review is undertaken.

The POE recommends:

- 5/19 That the arrangements now in place for Nakai Reservoir fish monitoring, as well as in all other monitored zones, be maintained until 2014 in the interests of a well-informed final evaluation of the project and its impacts.

2.8 Village Forestry Issues

The POE raised with DPM Somsavat Lengsavad the release of the Village Forestry Association's cutting quota for the current year, the proceeds being a substantial part of household incomes on the Plateau. He had already authorized the release of a quota of 6,000 cubic meters though it appears that there remain some bureaucratic hurdles to be jumped before VFA can start the year's operations. The DPM is seeking assurances that the VFA logs in a sustainable way. The Limited Liability Company (LLC) which VFA is to become will need to take account of this legitimate concern.

The text of the agreement creating the LLC is still under negotiation. This is an important and precedent-setting document. Given CA provisions this partial privatization must be scrutinized carefully before it is finalized. The POE's view is that there are two basic provisions which should be met.

The first provision is that it is highly desirable that the original plans requiring that the villagers themselves be heavily involved in cutting and transporting VFA timber, and in such
value-added processing as furniture making, should be put in place now and not be precluded by the agreement or by the pending contract with a Laos-based company.

The second provision is that the processing and marketing contract should have a binding commitment to an annual price renegotiation, given the volatility of tropical timber prices.

The POE has been assured that there already are villagers in the resettlement area, formerly employed in State Forestry Enterprises, who are perfectly capable of undertaking both the cutting and the transport of VFA’s timber quota. At present this is done on contract by Vietnamese logging companies. This is an anomaly. As soon as the LLC is set up the manager (probably the former VFA manager) should present a proposal to the LLC Board for the cutting and transport of the timber quota to be taken over by the company itself, drawing on the expertise already in the villages. A converted Russian truck with winch, log cables and transport stays would cost somewhere between US$5,000 and $30,000 depending on its longevity and state of maintenance. The Board, which is to have a naiban (village headmen) majority membership of five along with PAFO and NTPC representatives, will need to decide whether and when this function can be funded and taken on. Similarly, the existing VFA furniture-making facility should desirably be transferred to LLC management. Employment opportunities for over a hundred villagers would be created by these two moves.

The POE recommends:

- 6/19 That the agreement covering the conversion of the VFA into an LLC be expedited and not preclude an early decision by the new Board to provide for the harvesting and transport of the logs to be undertaken by a team made up of already skilled resettlement village forestry workers and that the new five-year contract for processing and marketing of the logs provide a binding commitment for an annual renegotiation of log prices.

On the question of the inflated taxes and levies which VFA has to pay to GOL - even on dividends - the NTPC has engaged a lawyer to examine whether these are excessive in the Laos context. The POE is led to wonder whether the legal advice being given takes fully into account the fact that while VFA may be seen by the Ministry of Finance as simply another forest enterprise this is to ignore the social context of the VFA experiment. The VFA was set up to help build the incomes of several thousand villagers who had lost their land and houses through inundation, not to fill the GOL’s coffers. For some, such as an impoverished woman the POE spoke to in Phonesavang, the annual VFA dividend payment is the one substantial cash payment they receive. In her case it will, she said, go wholly into buying rice. The MoF would apparently have the authority to make an exception in cases like the VFA one.

The POE recommends:

- 7/19 That the Ministry of Finance be approached directly by the Board of the new Limited Liability Company to make clear the objectives of the establishment of the VFA and thus to make the case for the excessive current taxes and levies to be reduced if not removed entirely.

The POE was surprised to find that despite repeated assurances that the Phonesack mill near Nakai Tai was to be demolished or moved off the Plateau it is still in place, one story being that it is processing timber to build village pagodas. A written undertaking has now been given by value-added processing as furniture making, should be put in place now and not be precluded by the agreement or by the pending contract with a Laos-based company.

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Phonesack that the mill will be removed within 60 days from 8 February (Phonesack reply to the Khammouane Governor’s removal notice Ref. 03/Gov.KM). The POE is counting. The reality is that the continued presence of the mill on the Plateau encourages villagers to keep cutting rosewood even though prices have dipped. A belief in continued demand stimulates continued supply.

2.9 Unresolved issues

There are a number of unresolved issues raised with the POE by the Khammouane Governor. The POE has been involved historically in some of them. Our comments follow.

(1) Building of a bridge near the Oudomsouk pagoda: The NTPC argues that this is not their responsibility but the POE disagrees. Providing an all-weather crossing of a project drainage channel would provide year round relief to project affected people resettled in New Oudomsouk who now have to walk a couple of kilometers to get across the channel. This appears to be a requirement which should have been in the CA.

(2) Upgrading the "Nam Malou" road from Nakai Tai: although POE suggested in an earlier report that the existing track be upgraded in the interests of tourism promotion and access to Nakai District headquarters for Nakai villages in the Nam Hinboun basin, we do not feel that it should be an NTPC responsibility. Some of the revenues from timber removed during its interim upgrading might be accessed to pay for a further upgrading.
3. **THE XE BANG FAI (XBF) BASIN**

### 3.1. Integrated Water Resources Management (IWRM) and Regional Development in the XBF basin

In its second report (29 January, 1999) the POE noted that the least understood of the NT2 Project’s various environmental and social issues were project impacts within the XBF Basin. Recognizing the potential adverse effect on fisheries, based on experience with other large dams, the POE’s recommendation for a fishery monitoring program was initiated in 2001. That same year the Panel noted in its fifth report (22 January, 2001) the wider benefits that could be realized in the XBF basin from NT2 turbined flows and electricity. Recommendation 18, for example, stated that “irrigation cum fishery projects should be integrated in GOL planning for the NT2 project.”

In the years that followed the POE’s interest in how XBF integrated river basin development could serve as a model for other river basins in Laos widened even though the Panel’s main responsibility continued to be on how best to deal with project impacts within the various XBF basin zones. Finally in February 2009, the POE submitted a request to GOL, the World Bank and NTPC for the POE to recruit an internationally acclaimed consultant dealing with river basin regional development. We believed that an overall review of XBF basin development possibilities and potential was needed to help GOL think more broadly about ongoing development strategies. The outcome of that request was an agreement by NTPC’s Board to fund Peter Rogers’s joining the POE as XBF consultant on the Panel’s 4-26 February, 2012 visit to Laos.

Peter Rogers’s Report, *Integrated Water Resources Management (IWRM) in the Xe Bang Fai River Basin, Laos PDR*, is attached as Appendix A. It has also been submitted as a separate document to GOL, NTPC and the IFIs. The POE is especially grateful to Professor Rogers for broadening the Panel’s perspective as to the wider range of development options available to GOL within the XBF Basin. This wider purview is due to Rogers’s emphasis on the need to take the wider perspective provided by Integrated Water Resources Management (IWMR) principles. As Rogers has emphasized, the XBF is essentially a “new river” due to receipt of turbined flows from the NT2 Project. Those flows have yet, in Rogers’s words, to be “appropriated for current uses… The challenge is to exploit this water while at the same time mitigating the diurnal and weekly fluctuations in levels experienced all the way down to the confluence with the Mekong.”

In describing the challenge, Rogers was able to point out the extent to which GOL’s planning, as well as the POE’s thinking, had been too focused on too narrow a range of opportunities, such as gravity flow irrigation, and that limited consideration of such other development approaches as use of ground water. Indeed, Rogers concludes that based on development opportunities realized in other Asian countries affected by monsoon climates, “it is imperative that an assessment of groundwater development for both small-scale and larger scale irrigation be made as soon as possible. Tremendous savings of public investment and water conservation can be made if it proves to be a viable source of supply. The savings in public investment arise from the widespread adoption of the small pumps and tube wells purchased by the farmers themselves. The savings in water come about by the lack of need for extensive canals and field channels where large losses often occur due to seepage and evaporation.”

Moreover, “rather than attempting to control the flooding of agricultural land, the land could be zoned into high, medium, and low risk of flooding and different activities could be...
encouraged in the different zones. So capture fishing could predominate in one zone and fish farming in another. Flood warning systems could be put in place to ensure the safety of individuals and their personal possessions including livestock. Large and complex engineering solutions via embankments and flood gates should be avoided except in areas where human populations are at risk.”

As for the XBF planning process, “the delay in funding the Chinese projects is probably a good thing as it gives the GoL some breathing space before committing to potentially large diversion works in the middle and lower reaches of the XBF.” As for promoting IWRM in the XBF river basin” ... it is important that all the government policies which impact on water use in the overall economy need to be coordinated, not just the part which lies in the XBF basin. ... In addition to establishing the overall water policy, specifically for the XBF, the GoL should actively promote modern global market-based agriculture, diversification of agricultural products, expand rural electrification for more reliable pumping, assess and develop the underground water resources of the basin, and formalize a flood management plan emphasizing less control and more management for the basin particularly in the estuary with the Mekong.”

In the meantime, Professor Rogers continues “...it is imperative that the existing uses of the basin be developed to their fullest extent. This means that the existing investments in land, water, and fisheries be restored and renovated to perform their designated functions. This will imply a major commitment on the part of the GoL to ensuring adequate maintenance for equipment, field channels, and that functioning pump sets meet their original design specifications. It means investing heavily in research on agriculture, agricultural engineering, and agro industries... Above all Laos should get started on planning for interim developments that will not preclude longer term options. This clearly includes exploration and exploitation of groundwater for small holdings, and careful development of low-lift pumps for small command areas.”

The POE recommends:

- 8/19 That for the Rogers report to be integrated into the XBF planning, implementation and monitoring process, GOL, the IFIs and NTPC give the report the close attention that the POE is convinced it deserves.

That in the interest of planning for interim developments that do not preclude longer term options the GOL, in association with the World Bank and the Asian Development Bank, undertake early exploration and assessment of the potential of XBF basin groundwater resources to meet both small scale and larger scale irrigation requirements.

That pilot groundwater projects be set up at an early stage to demonstrate the utility for smallholdings of the use of low-lift pumps for small command areas.

That the GOL and the Khammouane and Savannakhet Provincial authorities move at the same time to ensure that the existing investments in land, water and fisheries be restored and renovated to perform their designated functions, this involving a major commitment to ensure that adequate maintenance for equipment and field channels is undertaken and that functioning pump sets meet their original design specifications.
Neither of these pumps on the Nam Kathang was working.

Some DSP villages turned to making charcoal to compensate for flood losses on their 2011 rice.

So the nearby dry season padi was short on water.

The hand held watering can still has a useful role in household gardens in the Xe Bang Fai Basin.
3.2. The Xe Bang Fai Downstream Program

3.2.1 Introduction

In this section of the report we confine ourselves to assessing the current state of the NT2 project's Downstream Program (DSP).

The CA calls for a final evaluation and review of this Program by the POE, as in the case of the Nakai Resettlement Program. The CA states that this should take place six months before the end of the RIP for Downstream Areas, that is, in late 2014. The evaluation should be preceded by an updating of relevant indicators during 2014 and should be followed perhaps a year later by a POE review of any further work recommended by the evaluators.

3.2.2 The Handover of Responsibilities

We do not necessarily like being proven right. It will be recalled that in its last report (18B) the POE expressed the opinion that a disconnect had emerged between the funding and timing aspects of the Downstream Program with a cap on NTPC funds beginning to result in an overly rushed attempt to consolidate the DSP livelihood programs and a premature handing over of responsibility for the project's social and environmental programs to the GOL. We said that there was an inherent incompatibility between the limited funding provision (US$16 million plus a supplementary $2.3 million) for the DSP and the CA requirement "to at least restore livelihoods of Project Affected Persons in the downstream areas on a sustainable basis."

That incompatibility is about to become a reality. While NTPC has shown considerable flexibility over the past five months in continuing to underwrite handover costs and should get credit for this, NTPC funds for the DSP will finally be exhausted at the end of February. For its part the GOL side now has funds voted by the National Assembly (around $900,000) to pick up some of the handover costs. As of 1 March they have not been released from the Ministry of Energy and Mines for use by the Governor of Khammouane in his capacity as head of the Resettlement Committee. The gap is apparent. It can only be seen as very unfortunate, not least from the viewpoint of the people of the affected DSP villages.

To be fair to the NTPC management and devoted staff, who have been placed in a most difficult position by the project lenders, it has to be said that they have shown considerable ingenuity in continuing to eke out the remaining funds for so long. But the cupboard is now bare.

The GOL processes have been ponderous. While it is understood that the competition for scarce national resources is fierce, it has taken a long time for the funds to be identified - and they are still not available. So both sides bear some responsibility for the situation now unfolding though the chief responsibility rests with NTPC. The POE has raised the matter of the holdup occurring in release of the funds from his Ministry by writing to the Minister on this issue in his absence from Laos.

In the case of the GOL it is already time to be seeking new funds to meet the running costs of the various XBF programs in the 2012/2013 financial year.

3.2. The Xe Bang Fai Downstream Program

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In the case of the GOL it is already time to be seeking new funds to meet the running costs of the various XBF programs in the 2012/2013 financial year.
The POE recommends:

- 9/19 That in order to maintain the momentum of the development and livelihood work among the XBF villages during March and April and beyond authorization be given by the Minister of Energy and Mines for the immediate release of the funds already voted by the National Assembly.

The POE's fundamental belief is that NTPC's implementation responsibilities should remain with them until the CA "restoration of livelihoods" requirement has been fully met. This is not now going to happen. The company's response has been to abandon the endeavour to provide the sort of invaluable technical assistance given to the majority of affected people in 92 villages and instead to compensate the remaining villages in the XBF hinterland areas by providing cash to them. Experience elsewhere has shown that the money soon goes, with not all recipients investing it in productive ventures.

The IFIs have come to the party now. The World Bank will fund continued training of trainers in the remaining villages in the interim. The World Bank and the Asian Development Bank have also responded generously to the situation by expanding their village-level programs along the XBF, apparently covering all downstream impacted villages in the process. The WB has injected a new element into its existing Khammouane Development Project by doing this. Between them they will help keep up the momentum initiated by the NTPC's programs in the basin's villages which is helpful.

3.2.3 Where to from here?

So what happens next? The NTPC will contend, with some justification, that in many respects it has gone beyond what was asked of it in the CA. The Project lands exercise, for example, undertaken to mitigate impacts from construction activities, was wound up last December with, as far as the POE has been able to judge, its objective of restoring the livelihoods of Project Affected Persons (PAPs) who lost houses, lands and other assets including natural resources and businesses or were otherwise impacted by construction activities, being attained. Again, however, there was too much resort to cash compensation rather than technical assistance.

The brilliantly successful NTPC Health Program will be handed over later this year with the quality of life of many people in the project area substantially uplifted. The Program will be adjudged a precedent for elsewhere around the globe in the art of setting up a comprehensive primary health care system at a cost which is affordable to the country and to families. That is a considerable achievement. There is room for debate over the outcome of the rehabilitation of five water gates along the XBF but the village water supply and sanitation program is seen at this point as an overall success, again lifting the quality of life in the rural areas. Meanwhile, maintenance will be a problem.

There are less creditable outcomes in prospect. Apart from the failure to attain a restoration of livelihoods across all affected XBF zones the project's recent success in getting an innovative village credit system up and running is jeopardized by the withdrawal of NTPC support at a critical stage in the scheme's evolution. To expect an agency without expertise or skills in the sector to take over the running of the Village Restoration Funds (VIRF) system at this point is unrealistic. There is some intense last minute training going on and the VIRF has now been set up in 92 villages but overseeing the provision of capital for livelihood restoration activities in the medium term is a daunting prospect. The statement in a recent NTPC presentation...
that "without external support to districts after 2012, the future of VIRF systems appears bleak" is an honest prediction. There is a positive move by the World Bank through its KDP program to look at how to support VIRF sustainability "in the broader context of all government and project related village funds throughout the area." This is an encouraging development which the POE strongly supports. The VIRF scheme must not be allowed to fail.

The POE recommends:

- **10/19** That the World Bank through its KDP program look favorably on the proposal to support VIRF sustainability in the context of village funds throughout the XBF basin.

### 3.2.4 What happens in the "cash compensation" DSP villages?

There are 43 of the 67 impacted villages which will still not have had livelihood activities initiated when the switch to cash compensation occurs shortly. Around K.760,000 per family will be distributed. Advice will be given by NTPC staff on the options for the use of the funds. Some will spend it on consumer goods but there remain such options as the village deciding to aggregate the funds and invest in a communal enterprise like funding the establishment of electricity connections to the village. This might well prove to be the choice, for example, of a Bru village near Mahaxai visited by the POE, where there was unanimity among those spoken to that this was the priority for the village.

Of course there have been indirect benefits from project activities over the years. The Bru villagers, for example, acknowledged this and instanced jobs provided during the construction period and the fact that increased development activities in the area meant that nearly all villagers have at least part-time employment now. As a result of the NT2 upgrading of the Health Service a nurse visits the village every month, they said, and the Mahaxai and Gnommalath medical centers are bigger and better than hitherto. The main road half a kilometer away is surfaced and that helps with accessing all services including the rice mill. They regretted nevertheless that the project, set up to generate electricity, has not enabled their village to have access to the new supplies of power flowing down the lines on the main road. The POE agrees and has brought the attention of NTPC staff to the communal solution suggested above. NTPC is encouraged to promote such positive outcomes.

The adaptability of the Bru villagers to changed circumstance is impressive. When their entire Wet Season rice crop was destroyed by the flood last year they switched to producing and selling charcoal to earn the money to buy rice. So is their clear sense of priorities for the future. The entire Wet Season rice crop was destroyed by the flood last year they switched to producing and selling charcoal to earn the money to buy rice. So is their clear sense of priorities for the future. Beyond electricity they seek improved access to the main road, a more reliable domestic water supply source (well) than the spring among the spectacular rocks which surround the village, a school and a source of Dry Season water for crops. The POE undertook to pass on these wider requests to the GOL authorities and records them here accordingly.

### 3.2.5 Irrigation Issues

While wider policy approaches covering XBF basin irrigation and flood management strategies are addressed in the POE consultant's report, there are some interim matters which should be looked into. For example, the potential of the region to produce bountiful and flood-proof Dry Season harvests is only being tapped in a limited way at this time. There are reportedly historical reasons for this but if the GOL strategy of relying on the Khammouane and Savannakhet plains to produce a high proportion of the nation's rice supplies is to be successful, that "without external support to districts after 2012, the future of VIRF systems appears bleak" is an honest prediction. There is a positive move by the World Bank through its KDP program to look at how to support VIRF sustainability "in the broader context of all government and project related village funds throughout the area." This is an encouraging development which the POE strongly supports. The VIRF scheme must not be allowed to fail.

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let alone realize the basin’s potential for higher value crops, the area under DS cultivation must be significantly expanded. At present the DS crops depend almost wholly on water lifted from rivers and ponds by electric pumps. But the latter are not in service much of the time because maintenance and repair facilities (and funds) are inadequate. In one Nam Kathang village visited both pumps were lying idle, one having been so for a year for lack of funds for repairs. In the ambitious but essentially failed large scale Japanese irrigation project on the lower XBF only two pumps of six installed were operating and only a fifth of the planned acreage was being irrigated. In one area of Nombok only 14 of 33 DS irrigation schemes were counted a success, inefficient earthen canals being a good part of the problem.

The Khammouane PAFO acknowledges what they call an "O & M problem" with maintaining electric pumps and intend putting more emphasis on gravity fed systems, but there are limits to the scope for this. They helped set up a company to repair pumps but it went bankrupt. They still seem to be relying on the private sector to solve the maintenance problem. A combination of private sector ventures encouraged by PAFO and an upgraded maintenance service working through farmers' groups might be a more effective approach. But if GOL plans for lifting production are to be achieved PAFO and the Districts will need more than their existing negligible funding for production assistance. GOL planners need to be aware of this.

Some controversy surrounds the agreed provision by NTPC of outlets from the Regulating Dam and Downstream Channel (DSC) for the purposes of gravity fed irrigation. Additional to the CA provision for an irrigation intake and an outlet channel from the Regulating Dam on the east bank of the Nam Kathang and outlets from the DSC, the NTPC agreed to a GOL request for conversion of a planned mini-hydro outlet in the Regulating Dam to an irrigation outlet with a potential discharge of about 20 m³, two irrigation siphons under the DSC and three "irrigation abstraction facilities" along the DSC. Costing $1.054 million, the NTPC made it clear that they are disinclined to do more to make the outlets operational for irrigation purposes. As already recorded in Professor Rogers' report it seems that perhaps only three of the outlets provided are technically feasible for gravity fed irrigation purposes and only two may be economically feasible. A further comprehensive feasibility study by a consulting firm is underway to report to GOL towards the end of this year. The POE will be monitoring the outcome of an exercise which Rogers has described as "a poor showing for such an already large investment".

The POE recommends:

- 11/19 That as an interim measure to expand Dry Season production while broader stimulation measures are considered, PAFO and the XBF Districts be assigned additional funds to help build a more effective private/public sector electric pump maintenance and repair system easily accessible to farmers. (See also recommendation 8/19 above).

3.2.6 Fisheries monitoring in the XBF and its tributaries

Although there has been a long term downward trend in XBF fish catches that predates the NT2 Project, the project has undoubtedly impacted on fishing catches down the XBF system especially in the Upper Middle Zone. The downward trend is less marked in the tributaries than in the mainstream and in the Lower XBF areas. The declining trend was distorted by last year's extraordinary floods with the decline overall falling by 25% rather than the 35% decline in 2010. The backwater effect from the Mekong brought bigger fish migrations than usual into the Lower XBF.
It is imperative that the effective monitoring of catches and impacts now underway be kept up in order to provide an authoritative scientific input into the review of the DSP due in late 2014.

The POE recommends:

- 12/19 That the fish monitoring program in the XBF zone be maintained through mid 2014 in order to continue measuring catch trends and other impacts as an input into the DSP review later that year.
Wire snares collected by village militia in the eastern NPA.

POE planning the route through watershed grassland area.

Rosewood logs illegally felled and being sawn up for transport in the eastern NPA.

GOL border post above the last village on the Nam Pheo. Better training of Army and Immigration officials is needed if the illegal timber and wildlife trade is to be controlled.

Poachers’ fires maintain and expand grassland in the NPA.

Saola, Large-Antlered Muntjac and Sambar horns on watershed house wall.

Wire snares collected by village militia in the eastern NPA.
4. THE WATERSHED AND THE WMPA.

4.1 Introduction

Previous reports have described and emphasized the national and global importance of the Nakai-Nam Theun National Protected Area (NPA), most of which also constitutes the watershed of the NT2 Project. Consequently this report will not duplicate that material, other than to emphasize that success in managing and protecting the watershed is absolutely essential to the success of the NT2 Multi Purpose Development Project as a whole, and will be important in affecting the reputation of those primarily involved with the Project, including the GOL, NTFC and the IFIs.

The NPA potentially is a world class protected area. It has a world class budget, guaranteed by the NT2 Project. Such a budget for a protected area is almost unmatched worldwide. But the input of this large budget has not been matched by the output of successful conservation and management of the area’s globally important biodiversity resources. Indeed, conservation of the biodiversity of the NPA is in imminent danger of failing, seriously prejudicing the NT2’s potential status as a global model project.

During the present mission the POE held extensive discussions with many individuals, villagers and others who had recent experience in the NPA. In addition we spent nine days on foot in the areas around the Thong Kuang grasslands, the Tong Sek grasslands, the Nam Nyang river valley and the villages on the upper Nam Theun. Away from the villages these areas are little known but are regarded as potentially among the most important areas in the NPA for larger wildlife such as Saola, Gaur; and Sambur.

In 2011 the Thong Kuang area was visited in connection with the POE Mission #18A and at that time it was clear that poachers from Vietnam had and were accustomed to having free reign there. Although most Vietnamese poachers had apparently returned briefly to Vietnam for the New Year celebrations, they had temporarily left a series of camps which would accommodate well over 100 persons. We found over 100 snares, some with dead wildlife in them. Every day we heard shots and the sound of chain saws. Impressive amounts of illegally cut rosewood planks and sections were stacked along the trails and in the camps. Our party destroyed the camps and burned the vast amounts of plastic and other litter that characterized them.

In December of 2011, with support from the Governor of Nakai District, the WMPA carried out a comprehensive sweep through the areas noted above, destroying a large number of poachers’ camps. Many of those between Ban Nameo and Thong Kuang had been rebuilt since the February 2011 POE visit. We noted with appreciation the impact of the December WMPA sweep, and the fact that few of the destroyed camps had been reoccupied since that sweep.

From what we saw on this present visit it appears that the Vietnamese poachers have shifted their tactics. Instead of relying on large, fixed camps that have now been destroyed twice, they are using small, well hidden, temporary camps. However, the poachers are still there. On several occasions we encountered very fresh tracks of poachers who were apparently moving away from us, and on one occasion one of our party met a Vietnamese on the trail. As soon as the Vietnamese saw him he fled. We also heard shots and found snares, one with a long-dead large-antlered Muntjac in it. In addition we found evidence everywhere of illegal harvest of rosewood trees. The standing trees in these forests have been removed so completely that the poachers are now returning and digging up the roots, and certainly in some areas the rosewood is...
commercially extinct. Presumably the poachers will now shift to other, currently less valuable, species. The widespread availability and use of chain saws facilitates and aggravates this illegal destruction of forest trees. In addition to the wholesale removal of the rosewood, we found several large (45-50 inch diameter) trees of other species that had been cut down apparently only for the rattan shoots that grew near the top. The massive tree trunks lay there untouched.

It is clear that the WMPA sweep was effective in altering the poachers’ behavior and probably temporarily reducing the level of poaching. But it is also clear that a series of other patrol tactics will be required to cope with the amount of poaching. And while poaching from Vietnam is a major problem, it is clear to us that this poaching is augmented and facilitated by Lao villagers.

4.2 Biodiversity Protection Technical Advisor

It is clear to the POE that the WMPA needs to totally revise its virtually wholly ineffective law enforcement activities, and that to do so will require outside expert assistance. Such assistance in the form of a Biodiversity Protection TA has been offered to the WMPA by the Saola Working Group, with external funding for at least one year. This is also responsive to the first recommendation of POE Report #18A. In substantial discussions with Governor Khambay, Chairman of the WMPA Board of Directors, and with WMPA senior staff, the POE was assured that this TA would be welcomed, and that his terms of reference should broadly cover the law enforcement needs of the WMPA for all relevant species. We understand that there is a very well qualified Lao who could take this position, possibly to be augmented later by short term international TAs. The need is very urgent so the TA should be engaged as soon as possible.

The POE recommends

- 13/19 That without delay the externally-funded Biodiversity Protection Technical Advisor be engaged by WMPA for at least a year.

4.3 Realistic Deterrents to Poachers

The POE has noted in previous reports that the penalties meted out to the all-too-few poachers who are actually captured are not sufficient to deter them from returning to poaching. At present we understand that most equipment such as chain saws and vehicles that is confiscated from poachers usually is returned to them. Clearly this procedure is absolutely no deterrent, whereas if the poachers lost that equipment permanently it would represent a significant economic loss. We are pleased to note that deterrents is a subject to which the initial Biodiversity Protection TA has already given some attention, and we would urge the new TA to include real confiscation in his initial considerations of deterrents.

The POE recommends

- 14/19 That all equipment acquired by the WMPA and its cooperators, that has been used illegally against biodiversity in the NPA, i.e., in poaching of wildlife, cutting of trees and woody vegetation, and fishing, be confiscated permanently, not be returned to the perpetrators.

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4.4 Helping Close the Border

The Panel has received a number of reports of essentially free flow of illegal biodiversity (rosewood, wildlife) across the border above Ban Maka. The WMPA-built access tracks, motorbikes and boat motors facilitate such movement out of the NPA into Viet Nam using the Vietnamese road that stops at the Lao border above Ban Maka. The existing border police post reportedly has no negative impact on the illegal transport. What appears to be needed is a strong checkpoint upstream from Ban Maka staffed by well trained and motivated professional patrollers who would both cut the existing poaching transport route and conduct patrol sweeps to discourage development of alternate routes as well as seeking to catch poachers.

Both from reports and from the POE’s own observations it is clear that there is substantial unrestricted movement of people across the border. In part this is because those who live near the border often have relatives in the adjoining country. However, this movement makes it very difficult to control illegal trade. The POE renews its past suggestion that consideration be given to much better closing of the border (possibly with photo identification documents for legitimate nearby residents) and the desirability of having periodic border markets for trade in legitimate goods.

We found that while the increased accessibility to Oudomsouk has reduced the cost of Lao trade goods in the NPA, in the more remote villages some Vietnamese goods are still less expensive. Consequently, the objective of shifting the villagers’ trade from Vietnamese goods (brought by traders who often facilitate poaching) to Lao goods has not yet been completely achieved. One reason given to the POE for the price discrepancy was the time required to get to and from Oudomsouk, since there are only three ferry trips a week between Oudomsouk and Ban Makfouang. It appears that it could be worthwhile to increase the number of such ferry trips per week.

The POE recommends

15/19 That WMPA establish a strong checkpoint upstream from Ban Maka both to cut the existing trade in illegal biodiversity products and to conduct patrol sweeps to stop development of alternate routes as well as to catch poachers. The checkpoint should be manned by well trained and motivated professional patrollers.

4.5 The Balance Between Conservation and Development

The Watershed Management and Protection Authority (WMPA) was created to both conserve the NPA’s unique biological diversity and to protect the cultures, livelihood, and welfare of the people who live in the area.

The Prime Minister’s Decree No.471 of 11 November 2010, on the Management and Protection of Nakai Nam Theun National Protected Area and Nam Theun 2 Watershed Area, states as objectives inter alia:

"4. Preserve, and protect the natural biodiversity system and facilitate the maintenance and increase in naturally occupied populations of plants and animals in the Nakai- Nam Theun National Protected Area and Nam Theun 2 Watershed Area, particularly the conservation or multiplication of habitat of rare, endangered or near extinct bird and..."
5. Capacity building and strengthening of the Authority and other parties concerned that are involved in the management and implementation of the Authority’s activities;

6. Contribute towards and facilitate the improvement of the livelihoods of the multi-ethnic people living in the Nakai-Nam Theun National Protected Area and Nam Theun 2 Watershed Area, with a view to poverty reduction by defining activities and sustained development plans in a manner that does not exert a net impact on the environment, with the participation and consent of different ethnic groups in these areas; *

The development efforts of the WMPA have had mixed results. On the negative side, over-emphasis on access has increased unsustainable use of the watershed’s natural resources. Inadequate socio-economic research, including research on indigenous knowledge, has contributed to poor planning and especially poor planning associated with village consolidation (see Section 5).

The WMPA’s inability to work with villagers as partners has resulted in years of missed opportunities to develop a joint responsibility for maintaining the watershed’s biodiversity. Family planning opportunities to support the desire of a majority of younger women for smaller families have been lost; meanwhile, in some of the villages visited population increase has become a threat. The importance of buffalo as the key cash crop in villages in pre-project days has been neglected while veterinary services for all livestock have been totally inadequate.

On the positive side, during the past five years living standards in the NPA have markedly improved. The number of schools and clinics are quadrupled. This rural development progress in the NPA is due partly to the work of WMPA, and doubtless largely as a natural outcome of the vastly improved access provided by the reservoir augmented by WMPA track construction, coupled with income from the illegal rosewood trade.

The combination of improved access and the abundance of natural resources in NNT (e.g., timber that villagers can sell) means that, even if WMPA were to cease its livelihood efforts (which the POE does not recommend), this trend of increasing village living standards would likely continue for some time or at least until the resource base is exhausted. In contrast, improved access has accelerated biodiversity loss in NNT; the POE frequently hearing the comment that the improved access has been a disaster for the NPA’s biodiversity. The system of access tracks that the WMPA has developed frequently is overbuilt for a track system in a protected area. For example, the POE measured bridges on the Ban Thon – Ban Makeuang track. The width of the tire-bearing floor was 281 cm. Contrast this with the total width, between uprights, of 151 cm. of the bridge at the Theun Hinboun Extension project. While both are intended to provide for similar traffic (e.g., up to two-wheel tractors), the WMPA bridges can easily accommodate four wheel drive vehicles. The POE has frequently expressed concern about the overbuilding of the track system and its potentially adverse impact on biodiversity. The system is overbuilt and the biodiversity conservation has been significantly depleted because of it. No further tracks should be built unless they are minimum width for two-wheel tractors, and consideration should be given to reducing the width of existing key bridges.

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The combination of improved access and the abundance of natural resources in NNT (e.g., timber that villagers can sell) means that, even if WMPA were to cease its livelihood efforts (which the POE does not recommend), this trend of increasing village living standards would likely continue for some time or at least until the resource base is exhausted. In contrast, improved access has accelerated biodiversity loss in NNT; the POE frequently hearing the comment that the improved access has been a disaster for the NPA’s biodiversity. The system of access tracks that the WMPA has developed frequently is overbuilt for a track system in a protected area. For example, the POE measured bridges on the Ban Thon – Ban Makeuang track. The width of the tire-bearing floor was 281 cm. Contrast this with the total width, between uprights, of 151 cm. of the bridge at the Theun Hinboun Extension project. While both are intended to provide for similar traffic (e.g., up to two-wheel tractors), the WMPA bridges can easily accommodate four wheel drive vehicles. The POE has frequently expressed concern about the overbuilding of the track system and its potentially adverse impact on biodiversity. The system is overbuilt and the biodiversity conservation has been significantly depleted because of it. No further tracks should be built unless they are minimum width for two-wheel tractors, and consideration should be given to reducing the width of existing key bridges.

aquatic life species;

5. Capacity building and strengthening of the Authority and other parties concerned that are involved in the management and implementation of the Authority’s activities;

6. Contribute towards and facilitate the improvement of the livelihoods of the multi-ethnic people living in the Nakai-Nam Theun National Protected Area and Nam Theun 2 Watershed Area, with a view to poverty reduction by defining activities and sustained development plans in a manner that does not exert a net impact on the environment, with the participation and consent of different ethnic groups in these areas; *

The development efforts of the WMPA have had mixed results. On the negative side, over-emphasis on access has increased unsustainable use of the watershed’s natural resources. Inadequate socio-economic research, including research on indigenous knowledge, has contributed to poor planning and especially poor planning associated with village consolidation (see Section 5).

The WMPA’s inability to work with villagers as partners has resulted in years of missed opportunities to develop a joint responsibility for maintaining the watershed’s biodiversity. Family planning opportunities to support the desire of a majority of younger women for smaller families have been lost; meanwhile, in some of the villages visited population increase has become a threat. The importance of buffalo as the key cash crop in villages in pre-project days has been neglected while veterinary services for all livestock have been totally inadequate.

On the positive side, during the past five years living standards in the NPA have markedly improved. The number of schools and clinics are quadrupled. This rural development progress in the NPA is due partly to the work of WMPA, and doubtless largely as a natural outcome of the vastly improved access provided by the reservoir augmented by WMPA track construction, coupled with income from the illegal rosewood trade.

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Increasing population density in the NPA will threaten extension of rice cultivation from secondary forest as here to primary forest seen in the background.

POE and patrollers spend their first night on the trail.

Ban Nameo village family around the kitchen fire.

Fresh Swidden in old growth forest. Population density in NPA will produce more of this.

WMPA bridges and roadslike this one are overbuilt and facilitate poaching.

Multipurpose motors like this one increasingly seen in watershed villages.
The highly valuable Aquillaria and rosewood trees are commercially and essentially ecologically extinct in many areas of the NPA. Wildlife species such as rhinos, tigers, box turtles, and pangolins are extinct or virtually so. Terrestrial animals in general have been so drastically reduced that most surveys in recent years have reported them almost entirely missing. The primary cause is commerce, not poverty, and it is driven by the increasing demands from Vietnam and China. For example, we understand that rosewood is worth about U.S.$5,000 a cubic meter in Oudomsouk and several times that in Vietnam. Golden turtles sell for around US$10,000 a kg. Virtually every part of a tiger fetches very high prices in Vietnam and China. The demand for such products of biodiversity drives the intense poaching in the NPA, and it shows no sign of reducing. Indeed, with the improved access it is accelerating. Therefore, if the conservation values of the NPA are to be saved, there is a need for much greater emphasis on conservation.

4.6 Development Issues

Before returning to Oudomsouk from the Watershed, the POE spent two days visiting the last four villages on the Nam Pheo in the Eastern Cluster: the three Sek villages (Nameo, Nameuy and Beuk) and, closer to the Vietnamese border, the Bru village of Kunae. We were especially interested in comparing changes with what we had found in those villages during a 2002 visit.

A major change in terms of administration was that all four had been consolidated, with Nameuy becoming the administrative center. In each of the four villages it was clear that much more attention need by paid by Nakai District health workers and by the WMPA to family planning. That was especially the case in Ban Kunae where an overwhelming number of small children were present. We were told, unlike the situation in other NPA villages visited over the past few years, that most women wanted 4-6 children (versus 2-4 elsewhere). As for those who wanted less, they complained that when health workers did come to the area, they stopped at the new health center rather than continuing on to Ban Kunae which was a 30-40 minute walk, that included two river crossings, further up the Nam Pheo. They also suffered from irregular availability of three month injections.

In Nameo and Nameuy good progress was underway with gravity fed irrigation for dry season paddy. Beuk villagers were patiently waiting their turn, their main concern being that, because of limited funds, priority might be shifted away to the three Maka villages near the top of the Nam Noy. Two new schools with trained local teachers were much appreciated as was a new clinic – also with a trained nurse from the area. Those receiving goats and pigs were well satisfied with the small stock program.

Poor progress, on the other hand, was occurring, not just in the four villages but in all villages along the Nam Pheo, in regard to district and WMPA staff working with villagers from the ground level up to develop a conservation ethic; all the more important today not just because of population increase, but also because of easier access to more forest resources and because of increased availability of chain saws. The POE believes that the success of the Participatory Land Use Planning (PLUP) approach recently completed in all Nakai Plateau resettlement villages, with proper re-orientation for dealing with watershed conditions, is the way to go in the NPA.

Progress also is slow in all four villages, as well as other villages along the Nam Pheo, in achieving the necessary diversified production system for consumption and income generating purposes. Much more emphasis is needed now that Rosewood has become scarce and people may be looking for further unsustainable use of forest products. In all four villages, older men told us...
that increased availability of alcohol and smoking among young men was also seen as more of a problem than before.

In our discussions, we concentrated on the important role of buffalo both as a cash crop and in paddy rice cultivation. The NPA is a buffalo production factory to a greater extent than we had realized with trade connecting the NPA with both Gnommalath in the XBF basin and with Vietnam via the Nam Noy and the Nam Pheo. Since the NT2 project, however, the trade with Gnommalath has ended because the villagers can not get their buffalo across the reservoir. Buffalo numbers increased following the filling of the reservoir, with trade to Vietnam draining off a relatively small proportion of the increase. Last year a serious epidemic killed off a majority of the buffalo in over five villages along the Nam Pheo. In Ban Kunae, for example, the two households with the most buffalo lost 32 of 42 buffalos and 32 of 40, respectively. Most buffalos died within a few days with large numbers dying after collapsing from fever in the water. Pigs, dogs, and fowl were also killed with only goats not affected.

Looking to the future, a major program is needed to re-integrate buffalo, complemented by cattle which were less affected, into household and village production systems. Regular veterinary services are required, especially when free-ranging buffalo graze closer to villages so that they can be more easily caught for scheduled vaccination with drugs protected by an adequate cold chain. The buffalo trade within Laos, which we repeat is, to a large extent, a NT2 project casualty, needs be re-established. The most obvious approach is to provide ferry transportation for buffalos across the reservoir so as to re-establish the trade with Gnommalath and elsewhere in Laos. The barge-like boats that NTPC has been using for clearing the reservoir of drift wood are well suited to the task having already been used successfully for transporting captured buffaloes from the NPA below the Middle Hills to Oudomsouk.

As for the feral buffalo that remain, and continue to reproduce, between the Middle Hills and the reservoir, an interesting suggestion was made to the POE that Kri, considered to be the best trackers of game in the watershed, from the three Maka villages be hired by the district, to kill the 400 plus buffalo that remain. The idea warrants further consideration since all other efforts have failed.

The POE recommends:

- 16/19 That the training of health care providers at each clinic pay more attention to family planning, that family planning be a required and active component of regular visits to outlying villages, and that a reliable cold chain be available at each clinic.

  That livestock development receive moreemphasis in the household and village livelihood system, that veterinary services be significantly improved (with clinic cold chain facilities sufficient for also holding veterinary supplies), and that a special program be planned and implemented to re-establish the buffalo trade to Gnommalath and beyond.

  That a redesigned PLUP process be implemented within watershed villages with special emphasis on a “bottom up” emergence of an appropriate conservation ethic.

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  That a redesigned PLUP process be implemented within watershed villages with special emphasis on a “bottom up” emergence of an appropriate conservation ethic.
4.7 Reorientation of the WMPA

As discussed in POE report 18A, Decree PM. 471 profoundly changes the nature of the work of WMPA. The decree emphasizes that most of the work now is to be done by cooperators who are other government bodies such as the district and village authorities, Army and Police, as well as other organizations including NGOs. The WMPA is to provide overall guidance and coordination and it directs, oversees and monitors the cooperators’ work to carry out the requirements of the Socio-Environmental Management Framework and Operation Plan (SEMFOP). As a result WMPA staff now must be coordinators, planners, organizers, managers, supervisors and monitors – not the people who try to do most of the work themselves. Consequently WMPA requires a substantially smaller staff and one with capabilities and expertise that are quite different from most of the present staff.

WMPA has responded with a plan to reduce staff significantly in the next two fiscal years. Their projected staff would then be 35, including a reduced patrol staff of five. We commend WMPA’s efforts to be responsive to the Prime Minister’s decree. Delegation and devolution to the district for implementation of such elements of WMPA’s work as health, education, and livelihood extension is generally consistent with the district capabilities in these areas. But protection and enforcement in a protected area present a different situation. DAFO, for example, has no enforcement arm (the new Dept. of Forest Inspection, DOFI, in Vientiane does, but has almost no staff), and the district police and army, who are frequently re-assigned, do not have expertise in patrolling and protection of nature reserves. Consequently, in view of these factors along with the gross imbalance between livelihood and law enforcement results discussed above, the POE recommends that the patrol staff be a minimum of 16. They should be trained and motivated professionals, working in pairs with district and village patrol personnel.

The POE recommends:

- **17/19** That the WMPA reduction/reorientation of staff in response to PM 471 involve a significant shift of effort and budget from development to conservation, and that it include provision for a minimum of 16 highly trained, motivated, professional patrol staff.

4.8 Provide Incentive for Success by Linking Payment with Results

International experience shows that a key element in successful conservation programs involves payment for achievements, not fixed budgets. This procedure can provide the incentive for success that usually is lacking when there is an assured, fixed budget and a focus on inputs, not outputs. The usual focus is on inputs e.g. how much money, how many patrols, how many patrol person days, how many miles walked. But the proof of success is in the outputs such as poachers captured, snares collected, and materials confiscated and most important, conservation of the resources involved. We note that the WMPA has initiated such an incentive program on a small scale by offering patrols 1,000 kip for each snare collected. We believe that this good start should be scaled up and expanded.

At present the IMA for the WMPA authorizes advance NTPC payment of the WMPA funding based on plans and budget for the coming year. In the POE’s view this procedure does not provide adequate incentive for success, and the conservation results of the WMPA to date strongly support this conclusion. Consequently we recommend that IMA, NTPC and WMPA develop a procedure whereby at least part of payment is determined by achieving results.
Among other things, this effort will require identification of criteria and procedures for determining results.

The POE Recommends

- 18/19 That the IMA, NTPC and WMPA develop a funding procedure for the WMPA that is based at least in part on conservation results achieved.

One way to encourage villagers to protect wildlife is to make the animals more valuable alive than dead. A proposal has been made to provide camera traps around villages in key wildlife habitat areas, to check the resultant images periodically, and to pay the village a set amount per live animal that is captured in a photo. There could be a sliding scale with pictures of some species, such as saola, warranting much higher payments than smaller or more common species. This procedure has worked very well in conservation projects elsewhere.
5. GOL'S VILLAGE CONSOLIDATION POLICY

5.1 A GOL national program, to be implemented by district authorities, is that small villages (generally defined as those with less than 50 families) should be consolidated within larger communities as to foster nation building through provision of improved administration, education and health facilities, electricity, livelihood improvement and improved access. For such reasons, village consolidation has tended to dominate in poor upland ethnic communities as has been the case in the various NT2 project zones and peripheral impact zones (PIZ).

Most affected in NT2 Project zones and the PIZ have been the Vietic Groups, which culturally are the most vulnerable, and the Bru. The most used cultural typology of the Vietics contains 4 groups. Type 1 includes what in recent times were small groups of foraging nomads with their own distinctive cultures including spirit territories. Type 2 include distinctive communities of “emergent swidden sedentists.” Type 3, the Kri who still live in the Upper Nam Noy in the Maka area, “are swidden cultivators who move every two to three years between pre-existing village sites.” Type 4 are Vietic groups that combine swidden and paddy cultivation. All four types have been adversely affected by village consolidation. While the Vietic groups numerically make up the smallest component of the NT2 and PIZ ethnic minorities, the Bru, who combine swidden and paddy cultivation, are the largest single ethnic group in the NPA, on the Nakai Plateau and in the Downstream zones.

Since the POE’s first visit to Laos in 1997, the Panel has had the opportunity to examine a number of cases of the two major types of village consolidation. One type is administrative only; that is, it does not involve the resettlement of smaller communities within or next to a larger community. The other type does involve resettlement which may be required or induced by promising resettling households improved social services and electricity.

Worldwide, village consolidation involving resettlement has seldom achieved the development goals intended. At worst, the POE’s NT2 experience is that the outcome of consolidation has increased poverty, mortality and loss of culture. At best the eight NT2 and PIZ districts too often do not have access to the necessary arable land and natural resource base to support a larger population living in a smaller area nor the staff capacity and budgets to plan, implement and monitor the extent to which national goals might be achieved. As in a number of cases where, at one extreme, women and children must spend several hours a day traveling to and from fields and gardens left behind at old village sites or, at another extreme, men use WMPA’s improved access, motor bikes and chain saws to clear new gardens in previously uncultivated areas.

Unsustainable land use associated with village consolidation cum resettlement is a world wide problem which is why the World Bank’s guidelines for controversial projects like NT2 reject it. The Bank’s 2005 Operational Manual OP 4.10 on Indigenous People, which includes all households discussed in this section and the majority in NT2 project zones except those along the middle and lower XHB, states that “Because physical relocation of Indigenous Peoples is particularly complex and may have significant adverse impacts on their identity, culture, and customary livelihoods, the Bank requires the borrower to explore alternative project designs to avoid physical relocation of Indigenous Peoples. In exceptional circumstances, when it is not feasible to avoid relocation, the borrower will not carry out such relocation without obtaining

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broad support for it from the affected Indigenous Peoples’ communities as part of the free, prior, and informed consultation process.”

In its first report (February 7, 1997. Page 24), the POE emphasized that “Every effort should be made to stabilize existing settlements within their current habitats rather than consolidate them within a smaller number of settlements… Village consolidation has seldom proved sustainable for both economic and socio-cultural reasons.”

The case histories that follow, and which involve quotes from POE notes and reports, further document our conclusions as they relate to adverse village consolidation impacts in various NT2 Zones and the PIZ. In all cases, with the one exception of Pakatan, (pp 30-31), POE recommendations as well as World Bank requests to GOL have not been implemented.

Seventh POE Report (March 2, 2004. Page 26): “During its recent field trip the POE was informed that 34 households of Vietic speaking foragers [Type 1]… from the NPA had been resettled by GOL in the consolidated village of Ban Nakadok during 2000 and ten such households had been resettled in Ban Nathone in 2001.” Not allocated land for farming in either of the two PIZ villages and dependent on wage labor for income, their living standards, including a significant amount of opium addiction, have been deteriorating.

“A group interviewed in Ban Nakadok informed the POE that prior to their being consolidated they had lived in small, frequently moving, family groups in the NPA. On further questioning they also noted their kinship ties to former Vietic foragers who GOL had resettled over 25 years ago into the consolidated village of Thameung on the Nam Xot. The POE had visited several such Ban Thameung households during a 1997 visit. The majority of those resettled had died while the remainder was impoverished. Worse yet, the POE learned that all eight of the Vietic foraging families that had been moved in the mid-1970s to Ban Nathone had died; the same village in which 10 more families were resettled in 2001.”

Eighth POE Report (February 7, 2005. Page 13): The POE: “recommends that Vietic households previously consolidated in Nakadok, Nathone, and Thameung villages must have the option, if they so wish, of establishing a separate Vietic village, with school, in the middle or upper Nam Xot Basin [that is, where sufficient arable land and natural resources exist further up the Nam Xot from Thameung].” Unfortunately this recommendation is no longer feasible.

During the POE’s January 2006 visit we found some households consolidated in Thameung Village in the 1990s now living in their fields further up the Nam Xot tributary, while in January 2007 we found Vietic households consolidated more recently in Ban Nakadok and Ban Nathone moving back to live, at least temporarily, in old village sites. In each such case, the POE is of the opinion that such movements are a response to the non-sustainability (culturally, economically and environmentally) of the government's village consolidation efforts.

Eleventh POE Report (23 February 2007. Pages 19-21): 2.4.2.1

The POE recommends that:

- **9-11.** A permanent all Vietic Village be established [during the reservoir resettlement process on the Nakai Plateau] at a location within their spirit territory acceptable to the concerned Vietic households in Ban Sop Hia.
“After elaborate consultations, the majority of Vietic [Type 2 Ahoe] households in Ban Sop Hia have emphasized first, that they want to be resettled within their current spirit territory, second, that they want their own Vietic Village, third that temporary or permanent resettlement in either Area 8 [the new Sop Hia resettlement village] of or Area 7 [the new resettlement village of Nam Nian] on the Nakai Plateau is unacceptable to them, and fourth, that temporary resettlement above their current houses in Sop Hia to avoid dam-related flooding during 2007 is acceptable.

The wording of the Concession Agreement clearly states that the Government and NTPC are obligated to accept the decision of a majority of the Sop Hia Vietic households as outlined above. According to Clause 7.3.3 “The parties agree that the primary factor in determining size and location of the resettlement villages must be the preference of the Resettlers themselves, linked to the capacity of the sites to provide the necessary economic opportunities.” More specifically, Clause 9.1.4 requires “relocation of Vietic or other vulnerable groups into separate administrative village units with clearly demarked boundaries and rights to resources.”

The Constitution of Lao PDR is fully supportive of those requirements of the Concession Agreement. For example Articles 1, 2, 3, 8 and 22 emphasize the equality of all ethnic groups in the political process and protect their rights to preserve and improve their cultures. More specifically Article 8 prohibits discrimination against any ethnic group that breaks up the group.

March, 2009 POE Pakatan Notes: Pakatan is a Type 4 Vietic Village affected by the NT2 project in the Khamkeut PIZ. To the best of our knowledge it remains as the only fully functioning Vietic Village remaining in that district or within NT2 project zones with the exception of the Kri (Type 3) Vietic villagers in the NPA.

Pakatan is the oldest village within its surrounding area that was vacant until several Hmong villages, including Ponsa-art, moved there some thirty years ago. Pakatan villagers farm 16 hectares of paddy and have access to 50 hectares of swidden and 30 hectares of secondary forest for grazing land. Village buffalos, numbering 165, are owned by 24 of the 33 households which is a high ratio of household ownership for upland communities. Two-wheel tractors number nine.

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Though children learn Lao in the make-shift school that the villagers made in 2007, they also continue to speak their own language which adults say they want to keep forever. Of common origin in the distant past, the village population belongs to three different kinship units. Marriage is largely with other Vietic people living, for example, in Nakadok, Sop Hia, Nahao and Thameung. No marriages have occurred with Hmong.

When the POE first visited Pakatan it had been administratively incorporated within Ponsa-art and one other Hmong Village. Ponsa-art provided the headman and the first deputy headman, with the second deputy appointed from Pakatan. In 2009 the district authorities told Pakatan to move into Ponsa-art. That year Pakatan villagers were told to clear their new site, with 20 square meter house plots per family. The government would provide transportation but no wood for building new houses or special assistance for vulnerable families. The POE visited the site selected. While Pakatan would accept the government’s village consolidation policy, the people did not want to move. Reasons given included:

- Cultural and Ethnic differences (differences in funeral customs, for example).
- The new location is too small and next to the Hmong Cemetry. Even if the cemetery was moved (and Hmong apparently said that not possible), land available was insufficient for second generation households.
- All agricultural land around the new site was already used by Hmong.
- Different levels of economic development between the two communities make it difficult to live together.
- We want to keep our name on the map as a separate village.

When we revisited the village in February 2010, the villagers told us that GOL officials had come to explain to them that Pakatan can remain a distinct village with its own name and that village lands would remain as had been the case before consolidation. The villagers were told, however, to leave their old village site and to move to the edge of Route 8 so as to have more land for village housing and improved access to the full primary school in Ponsa-art. When we passed by Pakatan in 2012, we noticed that the shift in location had been completed, with villagers hopeful of soon receiving electricity from the roadside lines.

A new problem was strained relations between Pakatan and the nearby WMPA NPA border post. Granted the relevance of their indigenous knowledge to WMPA conservation activities, the villagers wondered why none had been employed. They also complained that WMPA employees would not allow them to use snares to catch vermin entering their paddy fields that lay outside the NPA.

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- Different levels of economic development between the two communities make it difficult to live together.
- We want to keep our name on the map as a separate village.

When we revisited the village in February 2010, the villagers told us that GOL officials had come to explain to them that Pakatan can remain a distinct village with its own name and that village lands would remain as had been the case before consolidation. The villagers were told, however, to leave their old village site and to move to the edge of Route 8 so as to have more land for village housing and improved access to the full primary school in Ponsa-art. When we passed by Pakatan in 2012, we noticed that the shift in location had been completed, with villagers hopeful of soon receiving electricity from the roadside lines.

A new problem was strained relations between Pakatan and the nearby WMPA NPA border post. Granted the relevance of their indigenous knowledge to WMPA conservation activities, the villagers wondered why none had been employed. They also complained that WMPA employees would not allow them to use snares to catch vermin entering their paddy fields that lay outside the NPA.
The district wants to consolidate Nakoknai within the larger villages along the road. Prefering their present site, the villagers have resisted the government request even though the government has refused to provide them with electricity – the villagers number one request – unless they move to the road which was to be accompanied by promises of electricity and improved social services.

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The POE recommends:

- That no further village consolidation with resettlement be implemented in NT2 and PIZ zones.
- That Districts be required to provide services promised, such as water and electricity, where village consolidation has been implemented in NT2 and PIZ zones.
- That where Vietic people have been consolidated, GOL, with IFI assistance, recruit a qualified consultant to recommend how best to help them integrate and develop at their own pace and in a very culturally sensitive way.
- That in the Ban Mai and Ban Fan Deng Neua cases, GOL contract, with IFI assistance, an independent survey of the land and other natural resources available to the two consolidated villages. The survey’s terms of reference should require the contractor to recommend equitable solutions, including return to previous village sites, should land and other natural resources prove inadequate.
APPENDIX A

Integrated Water Resources Management (IWRM) in the Xe Bang Fai Basin, Laos PDR
Report of a field visit, February 4-26, 2012, by Prof. Peter Rogers

1. Brief description of Assignment.

I was requested to assist the POE in assessing the potential for multipurpose use of the Xie Bang Fai river basin including fisheries, flood control, irrigation, navigation, and rural and urban water and sanitation. This task involves a review of the relevant reports including those of GOL, NTCP, the IFIs and the POE concerning development of the downstream river basins depending on the new realities due to the building and operation of the NT2 dam and the potential availability of new financing from the PRC, the IFIs and other sources. It also included considerations of expanding agricultural product and value chains taking advantage of the road connectivity in the region and the two Khammouane Industrial Zones in Thakhek District, the Savan industrial park in Savannakhet.

Arriving in Vientiane on February 4th I joined the POE briefings of the government of Laos in Vientiane and made an extended field trip to the XBF basin to explore the development potential of the basin and discuss preliminary findings with DEP, the inter-ministerial secretariat and brief the Minister of Energy and Mines, the Deputy Prime Minister, and members of his new committee on approaches to strategic planning for the basin. A preliminary report to the POE was shared with the GOL and the other stakeholders on February 24, 2012.

2. What is IWRM and why it is important for the XBF basin:

Integrated water resources management grew out of the realization in the late 1980s that water was becoming an extremely scarce resource with ramifications in all aspects of modern economies and that it had to be managed and husbanded carefully so that all agents in the economy and society had to have a voice in its management. Moreover even earlier, serious strains were being noticed in many ecosystems which rely on water, leading to concerns with the survivability of many biological systems. This set of broad concerns forced the water planning community to widen its purview from river basin management to integrated water resources management (IWRM). The emphasis of this new approach is on wise use of water in all of its uses including ecosystem maintenance.

As a result of this shift in water management concepts many projects that were originally conceived as single-purpose, such as hydro power in Nam Theun 2, were faced with reappraisal as multi-purpose projects dealing with, downstream water uses such as irrigation, fisheries, flood control, wetland management, and erosion control. The concerns broadened from electricity to sustainable regional development. In the case of the Nam Theun 2 project this shift was spearheaded by the POE. What still needs to be developed is the harmonizing of regional, national, and the international institutions which are increasingly regulating the Mekong River and the Greater Mekong Subregion and which have their own set of development goals. The World Bank has recognized the need for IWRM in its planned Mekong project.

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3. Development potential of the XBF basin:

The Xe Bang Fai is located in the central parts of Laos covering 10,345 km² and the Provinces of Khammouane and Savannakhet and with an estimated 2005 population of 231,000 people. The XBF basin has rich soils, plenty of water (annual rainfall of 2,600 mm), a good climate for multiple cropping, good farmers, serviceable agricultural infrastructure, plentiful cheap non-polluting electricity, and excellent regional and international trade and transit access. It also has an evolving support for private investment by government and strong international support from IFIs and national aid agencies. In addition, of all the South East Asian countries in the region, Laos is the one with the smallest population and the most land available for expanding agricultural exports in a region where demands for food and other agricultural products are amongst the most rapidly rising in the world. All these conditions are prerequisites for establishing a strong and vibrant agricultural basis for sustained development. Given these resources there is no reason that the XBF should not be the engine for development of central Laos.

A major factor that makes the XBF such an attractive development option is that the diversion of the flows from the Nam Theun 2 Dam has essentially created a “new” river by almost doubling its mean flows. The advantage is that this new water has not yet been appropriated for current uses—it is available for new developments downstream such as irrigation, fisheries, and industry. The challenge is to exploit this water while at the same time mitigating the diurnal and weekly fluctuations in levels experienced all the way down to the confluence with the Mekong. The Panel of Experts has until recently focused most of its attention on mitigating these impacts, but now is the time has come for exploring the huge development potential of the XBF basin.

4. Economics, society, and technology in the region:

Interactions among the economics of modern water resources management and irrigated agriculture, sustainable ecosystems, social organization and technology have only recently being articulated. Since the dawn of the modern era technology has played a central role in how societies have developed. This process is still ongoing today and we see it at work in the XBF. In this case we see that the introduction of a large-scale hydro project has radically changed the landscape and the economy of a large region in central Laos. Apart from the obvious effects of building a large dam and reservoir in a remote upstream location with all of its impacts on the local residents, the local ecosystem has also been majorly impacted. The most notable downstream effects are the seasonal and diurnal changes in the stream hydrology and the magnitude of the additional releases. This provides some opportunities for the downstream water users, but also causes some social and economic costs to them.

Fortunately there is a wide range of technical choices available to mitigate the impacts and to take advantage of the potential benefits facing the downstream users. What is not usually understood by the single-purpose water planners is the full range of these options. In the water business it is often assumed that the conventional approaches are the only viable choices because they have been widely used in the past and have become increasingly efficient at meeting their goals. However, in a multi-purpose setting trade-offs among conflicting goals may expose different technical choices that are more efficient in the broader sense. One case in point could be small-farmer irrigated agriculture.

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Conventional wisdom has it that gravity is cheaper than pumping, and that pumping using electricity is cheaper than using diesel. Unfortunately, this truism can lead to serious mistakes in advocating one approach over others. In many irrigation systems around the world gravity systems perform very well and very efficiently, but only under a complex set of centralized management and maintenance rules which ensure timely water deliveries to the farmers with a minimum of water losses in delivery canals. Any deviation from these rules can lead to severely inefficient water use and poor economic performance of the system. Many surface water systems rely upon low-lift pumping from rivers and lakes. Using this technology the water delivery channels can be shorter and local managers or water using groups have much more direct say in the timing and magnitudes of the water releases. Sometimes these systems are used in conjunction with gravity systems and can be very successful from an economic point of view.

For groundwater systems the delivery canals are typically much shorter and hence potential losses are lower, meaning that less water has to be pumped, and they can be scaled to the individual farmer or to groups of farmers. Often the natural groundwater recharge may not be adequate to irrigate a full dry season crop, in this case the conjunctive use of surface and groundwater may be used. This is a particularly attractive option in many monsoon settings; where a heavy rainy season is followed by a very dry season. This means that every year the water table is replenished and the groundwater can be replenished by the monsoon rainfall year after year leading to sustainable irrigation systems.

Many of the lift irrigation systems around the world rely on the use of electrical pumps rather than diesel powered pumps, because it is cheaper. The choice is an obvious economic one unless the pump operators are faced with an erratic supply of electricity, variable voltage, and lack of nearby access to low tension power supplies. Then the choice of electricity over diesel is not so obvious and we find millions of small irrigation pumps around the world fueled by diesel. A farmer can store a 40 litre container of diesel fuel in his house for pumping emergencies, but there is no such storage option for on farm electricity. The important point here is that the important measure of success in irrigation is not the cost of the inputs, but the net value of the farm output. So we see in places like West Bengal in India, or in Bangladesh (from 7,000 shallow tubewells in 1976 to over 1.3 million in 2007), small farmers engaged in successful irrigated agriculture using diesel which is nominally twice the cost of using electricity were it available (the replacement cost of shallow tubewells declined from $680 in 1988 to $195 in 2007, mainly based on Chinese 4-6 hp engines costing around $160).

As the above example shows the choice of technology is an important determinant of social and economic outcomes. A shift away from the large diversion works gave the incentive for irrigation systems controllable by individual farmers. There are many more examples of water using or controlling technologies that may not be the best economic and social choice in a given situation. Other examples are of flood management which relies upon zoning land uses which allow trading some flood damages for fisheries benefits, or relying on road embankments rather than direct flood control of agricultural areas.
5 The present and the near future:

It is imperative that the existing uses of the basin be developed to their fullest extent. This means that the existing investments in land, water, and fisheries be restored and renovated to perform their designated functions. This will imply a major commitment on the part of the GoL to ensuring adequate maintenance for equipment, field channels, and that functioning pumpsets meet their original design specifications. It means investing heavily in research on agriculture, agricultural engineering, and agro industries.

As the demand for food and higher quality diets grows they are stressing the world food system. In order to be competitive in this global food market Laos needs to explore the potential of large concession and contract farming. Given the problems that have sometimes occurred with concessions in Laos, major attention should be paid to creating an investor friendly environment for Foreign Direct Investment (FDI) in the agriculture, fisheries, and forestry sectors. This is not easy, but Laos has already developed trade and transit routes with its neighbors and with corridors to the global markets.

Above all Laos should get started on planning for interim developments that will not preclude longer term options. This clearly includes exploration and exploitation of groundwater for small holdings, and careful development of low-lift pumps for small command areas.

6 Long term options:

In the long term Laos should plan on moving toward large scale industrialized agriculture integrated with food chains and value chains which would link the farmers to consumers wherever they may be. There are global agricultural systems that rely on precision farming techniques which rely on exploiting dry seasons in monsoon climates. Some of these will require production and marketing skills typically only available to the large global agri-biz firms. To stay competitive and to take advantage of its many natural and human resource endowments I see no other options for Laos in the long term. This cannot, and should not, be a crash program, but rather should be a carefully staged development over the next few decades. The developments considered could include mega-projects like massive groundwater recharge to reduce the impacts of floods on the region and to intensify the irrigation potential of the basin. In order to do this in an orderly fashion there will be a need to plan for more efficient use of the other economic sectors of the Lao economy. This gets close to the heart of IWRM; the way water sectors interact with the other sectors to expand the overall economic pie.

7 Preliminary findings of the field visit:

First Impressions

My first impressions were influenced by three days of intensive meetings in Vientiane with the POE, senior GoL officials, World Bank, ADB, the NTPC, and independent consultants. It was a confusing mix of high policy and bureaucratic territoriality. Just dealing with the myriad central government, provincial, and district agencies all vying for control of funds and programs was daunting. Overlying this are the many NTPC supported programs in the upstream areas around the reservoir and in the downstream reaches of the XBF. It was, and still is, a veritable alphabet soup of acronyms. What became apparent at these meetings was that the GoL was looking for programmatic support for developments in the downstream reaches. This has been intensified by the
current unavailability of the large Chinese funding for water development projects in the XBF basin. It was also apparent that the concern of the POE which had originally been largely focused on the upstream reaches of the catchment and the resettlement and compensation of the impacted populations was now firmly focused on the downstream basin. I got the impression from the meetings with the GoL officials that food security was the overriding water policy goal of the government.

Field Review
Nothing beats going to the field and looking at the problems on the ground and in Laos this is a reality check. My major impressions from the field visits were one of the size and scope of the NT2 Project. I had not expected to find such a large and well trained staff with excellent facilities in such a remote place as Nakai. While the concern in Nakai was focused on the upstream issues, it did give me an opportunity to appreciate the magnitude of the hydrological changes that would occur downstream from the powerhouse.

In the upstream reach we visited the 5 outlets at the Regulating Dam and were briefed on their potential use for irrigation on the Gnommaith Plains. Of the 5 outlets it was suggested that only outlets 1, 2, and 3 could be technically feasible for gravity irrigation in the region and maybe only outlets 1 and 3 might be economically feasible. This appears to be a poor showing for such an already large investment.

As we moved to the downstream reaches from the plateau to the plains I was impressed by the amount of flat fertile land not being cropped in the dry season—land that had obviously been cropped in the wet season was now fallow and would remain so until the arrival of the next rainy season. I was also impressed by the apparent shortage of farmers. My experience in Bangladesh and Bihar (India) had led me to assume that there would be many farmers trying to figure out how to grow crops in the dry season. The observation wells were close to the river bank, or it was too salty to use, or the yields are too small, or it was some combination of all four. What we have observed, however, is that there have been many (hundreds) of wells drilled along the XBF by the Public Health department for protected domestic water supply including for drinking. Personal observations were that the ground water levels were very high (it was quick and easy to lift water out of the wells) even in the middle of the dry season. Some studies of transboundary aquifers in northern Thailand show yields of 30-50 cubic meters per hour which would be adequate for small and medium farm irrigation. This together with the Public Health data indicate that there may be significant quantities of high quality water possibly in quantities required for irrigation. An assessment of groundwater availability is absolutely essential. One reason for the lack of interest in groundwater development is the obsession of GoL officials with gravity! Pumping options are considered the last resort. This resistance may be due to the focus on costs of irrigation not its net benefits.

As far as we could discern there have been no, repeat no, groundwater appraisals for irrigation in the XBF basin. When asked about the potential for groundwater development we had an almost universal response; it was too deep to be economical, or the observation wells were close to the river bank, or it was too salty to use, or the yields are too small, or it was some combination of all four. What we have observed, however, is that there have been many (hundreds) of wells drilled along the XBF by the Public Health department for protected domestic water supply including for drinking. Personal observations were that the ground water levels were very high (it was quick and easy to lift water out of the wells) even in the middle of the dry season. Some studies of transboundary aquifers in northern Thailand show yields of 30-50 cubic meters per hour which would be adequate for small and medium farm irrigation. This together with the Public Health data indicate that there may be significant quantities of high quality water possibly in quantities required for irrigation. An assessment of groundwater availability is absolutely essential. One reason for the lack of interest in groundwater development is the obsession of GoL officials with gravity! Pumping options are considered the last resort. This resistance may be due to the focus on costs of irrigation not its net benefits.
In the field visits we observed several examples of developments that were functioning well and fitted into an overall integrated development picture and we encountered many that did not. As indicated earlier, IWRM attempts to integrate water into the overall economic and social picture of a country or region, hence, in our field visits we were looking for evidence of this. One case that we observed was the MitrLao Sugar Refinery in Savannakhet. Based upon our brief visit this appeared to be a successful example of large-scale industrialized agriculture with well thought out production and value chains connecting the farm to the world market consumers of sugar. On about 10,000 ha (of which 3,000 ha were contract farming) employment for 3,000 workers for harvesting and 600 for planting was provided as well as the employment on the 1,300 contract farms. High yields were achieved for the cane production and the enterprise gave the impression of being a good exemplar of this type of integration of land, labor, and water.

Being interested in agri-biz we visited three Special Economic zones in the region where agro-industrial processing was happening but not on the scale of the MitrLao operation. The existence of the zones close to good transit access to regional and global markets is important and the agro-industrial aspects need to be pushed more aggressively.

The other visits we made were to smaller scale activities mostly involving lift irrigation from the rivers. We found major problems with the availability and timeliness of the maintenance facilities needed to service the pumps, motors, and field channels. On the Japanese project only two of the six pumps were working and the others had been out of service for as long as a year. We also found similar maintenance and repair delays in the smaller stations. Maintaining government facilities is a serious drawback in the basin and should be promptly addressed. The farmers WUA seem to be incapable of moving government maintenance personnel to respond more quickly. They attributed it to the lack of budgets for maintenance.

Integration of fisheries and flood control with flood recession agriculture is a good idea, but extremely difficult to achieve in a system that not only includes large monsoonal changes in water levels but also diurnal fluctuations due to power releases from the upstream reservoir. The 5 gates that the NTPC is committed to renovate are examples of the imposition of large engineering solutions to systems which require a much more resilient approach. There also seems to be a deficit in fish ponds based on storing wet season water in excavated tanks which one sees elsewhere under similar landscape and water conditions.

The integration of livestock into the high value production systems did not appear to be well integrated with the available water supplies. We did pass some large pig farms, but little was said about them by the Provincial Department of Planning and Investment or the PAFOs. This was similar to the lack of apparent enthusiasm for the introduction of cash and high-valued crops; sugar cane, corn, and tobacco, and rubber and Eucalyptus plantations were mentioned, but we heard no mention of potential industrial crops such as cotton.

It was only on our return to Vientiane that we were briefed on the full extent of the World Bank’s $26 million Mekong Integrated Water Resources Management Project. The project is an ambitious attempt to correct some of the problems of the past technical choices and to explore more fully the potential for conjunctive groundwater development in the middle and downstream reaches of the XBF basin. It was noted that
the project would permit an assessment of the groundwater resources and some pilot projects to test its potential use. The project is for the whole of Laos, but we urge that the XBF basin be one of the regions taken up as soon as possible.

Some Suggestions

Trying to put these impressions into a coherent set of recommendations is a complex and inherently risky activity. Based upon my brief visit I believe that there is tremendous potential for development of the water resources of the XBF river basin. This conclusion is based upon several important precursors of regional development; plentiful supply of natural resources, good access to regional and world markets, and a supportive social and political system. With these conditions in place and an encouragement to expand the role of the private sector in agriculture, the economics of global agricultural demand should draw in the right amount of FDI and local investment. To achieve this development, however, the GoL must be heavily involved in the monitoring and regulation of the developments and less in being the promoter of specific infrastructure which may not be the most appropriate to support this development. It would be better to let market forces choose the technologies. For example, the development of irrigation systems based upon fairly large lifting of water from the rivers and tributaries may be too expensive and cumbersome in the short-run where farmers need much more direct control of the amounts and timing of water applications than can be easily achieved in multi-farmer settings. The large diversion and lifting technologies may be, however, appropriate under large concession agriculture.

It is imperative that an assessment of groundwater development for both small-scale and larger scale irrigation be made as soon as possible. Tremendous savings of public investment and water conservation can be made if it proves to be a viable source of supply. The savings in public investment arise from the widespread adoption of the small pumps and tubewells purchased by the farmers themselves. The savings in water come about by the lack of need for extensive canals and field channels where large losses often occur due to seepage and evaporation. Even on larger blocks of commercially farmed land the same holds true since the water supply is always localized.

A reassessment of the government’s policies on flood management needs to be carried out in order to integrate fisheries and homestead safety in efficient ways. For example, rather than attempting to control the flooding of agricultural land, the land could be zoned into high, medium, and low risk of flooding and different activities could be encouraged in the different zones. So capture fishing could predominate in one zone and fish farming in another. Flood warning systems should be put in place to ensure the safety of individuals and their personal possessions including livestock. Large and complex engineering solutions via embankments and flood gates should be avoided except in areas where human populations are at risk. Rehabilitation and modification of the 5 floodgates are part of the new World Bank project.

The delay in funding the Chinese projects is probably a good thing as it gives the GoL some breathing space before committing to potentially large diversion works in the middle and lower reaches of the XBF. Ultimately some large diversion works might be required as the development of the basin proceeds; at this stage it is important to have a much better sense of the long term potential before proceeding with activities which may preclude some of them.

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Finally, we started out with promoting IWRM in the XBF river basin. In order to do this it is important that all the government policies which impact on water use in the overall economy need to be coordinated, not just the part which lies in the XBF basin. National and regional water policies will impinge on the choices of development in the XBF. Unfortunately there is no single apex institution that will articulate national water policy and coordinate it with the other government agencies and the industrial sectors. The current structure of the government policy control via interlocking series of committees may be the least efficient way of getting the central government’s policies implemented at the provincial and district levels. The Deputy Prime Minister in charge of development is by default acting in this role. In addition, Laos is already a member of important regional institutions, such as the Mekong River Commission and the Greater Mekong Subregion, which have their own regional and transboundary water treaties and policies. It is incumbent upon the GoL to ensure that these policies are reflected in local actions. The current Lao water policy implementation process appears to be cumbersome with too many lines of authority to able to say exactly who controls what.

In addition to establishing the overall water policy, specifically for the XBF the GoL should actively promote modern global market-based agriculture, diversification of agricultural products, expand rural electrification for more reliable pumping, assess and develop the underground water resources of the basin, and formalize a flood management plan emphasizing less control and more management for the basin particularly in the estuary with the Mekong.