

Review of Draft Final EIA/EMMP for Theun-Hinboun Expansion Project, Lao PDR

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FOREWARD

The objective of this report is to provide a short critique of the Environmental Impact Assessment (EIA) and Environmental Management and Monitoring Plan (EMMP) for the Theun-Hinboun Expansion Project (THXP) in Lao PDR. The document reviewed is dated August 2007, which would appear to be the most recent report released by the project developer.¹

The assessment is brief and only covers the main points and issues relevant to the documents reviewed, based on the author's understanding of the general context with regard to hydropower development and environmental impact studies in Lao PDR and several field visits to the Theun-Hinboun Hydropower Project impact area (in 2000, 2004 and 2007). It was not considered necessary to provide in depth background information to the Theun-Hinboun Expansion Project, further details of which can be found at
<http://www.internationalrivers.org/en/node/964>

INTRODUCTION

The THXP project design proposes constructing a 65 m high concrete dam across the Nam Gnouang River, just upstream of the existing project's headpond, to create a 107 km² storage reservoir. This reservoir will be utilized to generate 60 MW of electricity for the local grid and to supply water to the Theun-Hinboun Hydropower Project (THHP) headpond, which from 2008 will have less inflow due to the closure and filling of the Nakai Reservoir for the Nam Theun 2 Project. The Theun-Hinboun power plant will be expanded with the addition of a new diversion tunnel and powerhouse with an installed capacity of 210 MW, doubling discharges through the turbines and releasing the extra water into the Nam Hai and Nam Hinboun rivers downstream. There is not anticipated to be any major civil engineering works downstream of the existing surge pond to protect against erosion and sedimentation. Project construction is expected to begin in mid-2008 (if project financing can be secured in time) and be completed by late 2011 or early 2012.

TWO VERSIONS OF THE EIA/EMMP

After THPC first publically announced their intention to study the feasibility of an expansion to the existing THHP in March 2004, the company hired the services of Resource Management and Research (RMR), a British-based environmental consultancy firm with a decade-long involvement in hydropower projects in Lao PDR. RMR had earlier been hired to draft a ten-year Mitigation and Compensation Program (MCP) for THHP, after the Asian Development Bank (ADB) admitted that social and environmental impacts resulting from the original project were far worse than originally believed.

¹ Theun Hinboun Power Company, 2007, *Draft Final EIA/EMMP, Theun Hinboun Expansion Project*, August 2007, Prepared by NORPLAN AS. Approved by Eric Borset.

In October 2006, before they had completed their report, the contract with RMR was terminated and a new company - Norplan AS – was hired in their place to complete the EIA. RMR's work submitted to that point was retained by THPC. Apparently, after that point RMR received no more communication from THPC, although it is understood that tensions had been running high between the two companies for some time.²

Norplan completed their draft final versions of the EIA/EMMP and Resettlement Action Plan (RAP) in August 2007. These reports were not publicly released until shortly before a hastily arranged “National Workshop” on THXP, held on 22 October 2007, attended by just THPC and their representatives and GoL officials. THPC later held another “public workshop” on November 29, 2007, which some representatives of civil society and external institutions attended. Norplan did not officially consult or collaborate with RMR in the compilation of the second EIA, and RMR have publicly sought to distance themselves from it³.

According to the Norplan, “The original RMR reports are....written in a format, volume and level of detail that is incompatible with the prevailing Lao PDR EIA standards and requirements.” This implies that the Norplan EIA and EMMP (which are actually written at a demonstrably lower level of detail and accuracy than the RMR reports) are considered by its author/s to be more “compatible” with Government of Lao PDR (GoL) standards (see p1-1). However, Norplan’s report does not appear to comply with simple GoL requirements such as the need to take a non-incremental approach to impact description or analyzing alternatives. It is also notably inferior to an earlier EIA prepared by Norplan (1996) for the original THHP.

This paper briefly summarizes some of the more important issues raised by the EIA and EMMP and highlights where Norplan’s views diverge from or contradict other expert opinion. It also takes a critical look at the process and methodology employed by the author/s in producing such a report.

FAILURE TO EXAMINE IMPACTS FROM EXISTING PROJECT

The EIA states from the start (p. 1-1) that the report “is largely based on previous reports and documentation”, and, “the main information source has been the Social Action and Environmental Management Plans produced by RMR.” Other sources mentioned include SWECO Feasibility and Hydrology Studies and various “thematic reports addressing environmental issues in the THPX (sic) impact zones.” Apart from a few other references (e.g. to a 1995 WCS report on wildlife), the Norplan EIA is lacking broad and representative references, both for the existing THHP and for other hydropower projects in Laos and other Lower Mekong Basin countries.

EIA reports are required by law in Laos for large hydropower development projects and are submitted to the executing agency – the Science, Technology and Environment Agency (STEA) – for review and approval. STEA issued national EIA regulations for electricity projects in 2001. In this EIA, there seems to have been several contraventions of the EIA regulations and a clear conflict of interest, as STEA national and provincial offices will be involved in plan implementation and monitoring of the EMMP.

² RMR Director, Dr Murray Watson, made a public statement about the process of the THXP EIA reports and RMR’s findings at a talk given at the Foreign Correspondents Club of Thailand, Bangkok, on 13 December, 2007. These are available at <http://tinyurl.com/6o6ldq>

³ Letter from Dr R.M. Watson to Norplan dated 11 December, 2007, available at : http://rmruk.com/archive/index.php?option=com_repository&Itemid=26&func=select&id=5

The EIA is written using an assumption of “incrementality” of impacts. This is to say that when describing the impacts expected for the Expansion Project, Norplan takes as its unstated baseline the environmental situation pertaining at the present time, after 9 – 10 years of THHP operations. It assumes the current project has had a relatively low impact compared to others’ assessments, and is very much at odds with the position of RMR’s EIA, especially over the issues of hydrology and impacts of downstream erosion and sedimentation on the Nam Hai and Hinboun rivers. These issues are critical for gaining a comprehensive understanding of the ongoing and unmitigated impacts of THHP to date, yet it is clear that Norplan’s approach and conclusions have ignored the empirical research generated by RMR on both issues.

At the same time as under-estimating the impacts from erosion and sedimentation on the downstream environment and livelihoods of approximately 30,000 people living in communities along the two rivers as far as the Mekong confluence, Norplan has used unsubstantiated hydrological data from a SWECO (2007) report to minimize the expected impacts of THXP on downstream flooding, according to RMR analysis⁴. Table 4.3 (p.4-15) has used annual rainfall data that is higher than any recorded in previous studies or that measured at the THHP operator’s village to calculate mean flow and flood data for the Nam Hai and Hinboun rivers, which then skews the picture unfairly in favor of the project’s relative contribution to flows. The data collected over two years by RMR on hydrology, flooding, erosion, sedimentation and livelihood impacts is supported by empirical research and secondary data analysis to illustrate the role of THHP in aggravating floods and thus is more credible. RMR’s long involvement with the project dating back to 1999 has allowed them to get unparalleled access to the impacted areas and build up a considerable database of environmental parameters. It also supports independent anecdotal observations of hydrological changes, such as those referred to in the FIVAS (2007) and Barney (2007) reports.

The TOR for RMR’s EIA stated that the impacts of the existing and planned projects should be treated according to the “Principle of no Sub-Project Incrementality”, which is a legal requirement under STEA regulations. This requires the EIA consultants to examine the impacts of project works in total, including, “previous, current and intended operations, with or without modifications, and the already executed mitigation and compensation works and those taking place and planned by THPC’s Environmental Management Division (EMD)”. Norplan, while not revealing its TOR, fails to examine existing impacts resulting from THHP to any degree of diligence or discuss the extent to which mitigation and compensation measures implemented have dealt with the impacts. This is a major deficiency of the EIA, which would appear to run contrary to STEA guidelines.

Examination of the Norplan EIA has uncovered significant discrepancies, factual errors, technical shortcomings, unwarranted generalizations, critical omissions of information, blatant biases, misrepresentations and unprofessional editing standards for an international consultancy company.

⁴ Comments by RMR on the Norplan EIA, are available in document archives at: <http://tinyurl.com/3ckqwg>

MAJOR COMMENTS ON THE EIA

Below are some of the major points of contention with the EIA by section, followed by a brief discussion highlighting some of the more serious weaknesses or contradictions inherent in the document. It should be stressed that there are many other issues or concerns raised within the EIA that space does not permit to be included, but are nevertheless a signal that the EIA contains serious flaws and misinformation.

3 Project Description

To contain possible **seepage** through porous limestone geology bordering the NG8 reservoir, the report proposes building a retaining dyke (Section 3.3.5) if necessary *after* reservoir flooding, but ignores an earlier Acres International feasibility report that stated the NG8 site was “too risky” and rejected it due to its potential for leakage. Later on, while acknowledging the potential for underground water movements (Section 4.7.5), the EIA fails to recommend a thorough and transparent geological and hydrological study that would determine the exact nature and extent of the risk of seepage occurring from the NG8 reservoir.

Regarding the **Tailrace Channel and Surge Pond** (Section 3.3.7) the report portrays a misleading picture about the efficacy of the existing flow regulation infrastructure below the powerhouse, which has failed to adequately mitigate the erosive power of the present variable discharges and even suggests that it can “accommodate” a doubling of flows under the Expansion without major modifications. In reality, the 3.5 km tailrace channel and “surge pond” (originally described as a “re-regulation pond”) were far too small to fulfill their purpose and further live volume has since been lost through sedimentation, thus increasing the erosive power of downstream flow discharge. The reason they were not built to an adequate size to actually “re-regulate” flows appears solely to be cost saving by THPC.

4 Physical Environment

With regards to the **hydrology** of the Nam Hai/Nam Hinboun basin (section 4.7), the EIA bases its position on SWECO (2007) rainfall, run-off and annual flow data which are not supported by other empirical data and appear to be significant over-estimates, which thus tend to diminish the contribution of the project to the present flow regime, under existing and future scenarios. On the subject of flooding (Section 4.7.4) in the Nam Hai and Nam Hinboun valley, the EIA tends to be contradictory, closely following the official THPC line that the company’s operations are a minor contributing factor to floods while also admitting in certain sections that the project has had impacts on flooding. The Norplan EIA fails to identify and take into account the critical role of sediment accumulation from increased erosion in the Nam Hai caused by THHP in reducing the capacity of the downstream river channel to carry floods, or overwhelming local evidence of aggravated flooding since project started.

With **water quality** (Section 4.8), the EIA gives selective (and rather narrow) data from earlier studies, but fails to provide an adequate spatial and temporal overview of the dynamics of the system, nor provide a real sense of how the water quality parameters have changed since implementation of the THHP. It also obfuscates and trivializes data concerning critical parameters for villagers’ livelihoods, such as changes in suspended solid levels downstream in the Nam Hai and Hinboun since 1998, which should be prominently examined for cause and effect, given the period of time elapsed since the dam was commissioned.

5 Biological Environment

Aquatic ecology (Section 5.3) - this section paints simplistic, misleading and sometimes incorrect information about riverine habitats, river flows, aquatic biodiversity, fisheries, and fish migrations specific to the Nam Theun-Kading and Nam Hinboun river systems. It uses generalized descriptions that have been subjectively selected from an earlier fishery report by Schouten et al. (2004) and nothing original appears to have been added by the Norplan author/s. At the same time it ignores the findings of several important reports on fisheries and aquatic ecology of the area (e.g. Warren (1999) and RMR (2006)). Several of the sentences are nonsensical (e.g. "Migration between different aquatic habitats has often triggered flow conditions that change concentrations of suspended solids and water transparency") or unsubstantiated (e.g. "The fish species composition of Nam Gnouang upstream the Headpond does not seem (sic) to have been significantly changed by the THHP"). The report fails to adequately describe pre-THHP aquatic ecology or identify and explain the changes that have occurred post-THHP. The report also fails to examine any mitigation measures that were employed and their relative success or analyze threats to habitats and aquatic biodiversity or resource usage by local populations. The whole section is unprofessional and was clearly written by someone without specialized knowledge in this field.

6 Project Impacts

The Norplan EIA fails to use the "non-incrementality" principle in describing impacts arising from THHP and does not compare them against a "No-Project Case" or other viable alternatives, as is stipulated under GoL regulations.⁵. The EIA should examine the continued impacts of THHP without an expansion, but taking into account external factors, and compare these against at least two other cases, one being the selected alternative and the other being a feasible alternative. Instead, the report mainly considers impacts of the NG8 reservoir and diversion on a stand-alone basis and assumes that no new compensation or mitigation measures are required for the on-going impacts from THHP, which is clearly an unacceptable stance (e.g. RMR, 2006; FIVAS, 2007). The language of the report is unnecessarily cautious in describing future environmental impacts, even when the impact is well known and documented after ten years of operations and observations by locals and outsiders. A case in point is describing the effect of NG8 reservoir flow alterations to the Nam Gnouang and tributaries as "potential backwater impacts", when these impacts are certain to occur. Elsewhere it downplays the complexity or severity of hydrological and geomorphological impacts that should be understood by now, given the length of time since THHP commissioning.

Operational Water Quality Impacts (Section 6.2.3) contains numerous factual inaccuracies and misinterpretations, while dealing with complex and often synergistic impacts on a rather superficial level. It seriously underestimates the risks related to poor water quality episodes during construction and subsequent operations in the new reservoir, especially in the early years of biomass decomposition. Based on quick comparisons with two other Lao reservoirs, the report predicts that oxygen deficient water will be found in water depths of over 10 – 15 m in the NG8 Reservoir at the end of the dry season, but it is "likely that the deepest parts of the reservoir will be constantly anoxic." Despite this, Norplan asserts that, "The permanent anoxic layer will, however, be found below the intake level of the NG8 power plant and thus not have

⁵ Regulation on Implementing Environmental Assessment for Electricity Projects in Lao PDR, No 447, 20-11-2001.

an impact on downstream water quality." However, as the report fails to give technical details of the intake structure from the reservoir, there is little reassurance that sufficient attention has been devoted to avoiding this scenario or the consequences if it was to occur. Furthermore, the report goes on to contradict itself in several places by admitting that at certain periods of the year "the water released from the NG8 reservoir into the Headpond and further into the Power Plant will have a reduced content of dissolved oxygen."

In fact RMR, which devotes considerable attention to water quality issues in their EIA (Chapter 4), believes that there are "significant risks" of anoxic and poor quality water from the by-products of decomposition (e.g. ammonia, hydrogen sulphide and methane) being released downstream from the NG8 reservoir into the headpond and beyond to the Nam Hai-Hinboun and Theun-Kading rivers systems. The risks will be significantly exacerbated by the reduction of flows into the THHP headpond following NT2 reservoir closure, scheduled for June 2008. The rejection or downplay of risks associated with anoxic water formation in the NG8 Reservoir and Nakai Reservoir are a matter of considerable concern, given the devastating impacts to aquatic life a downstream release could cause.⁶

Erosion and Soil Degradation (Section 6.2.5) - Here again, Norplan seriously underestimates the potential impacts and risks arising from increased potential for erosion arising in the NG8 reservoir and downstream Nam Hai-Hinboun river zones, but instead employs a language of vagueness and uncertainty about impacts that is unwarranted. For example, regarding increased riverbank erosion along the Nam Hai from a doubled discharge, the nature of and consequences of the erosion and sedimentation downstream can be surmised from past experience, including rice crop damage from elevated turbidity, aggravated flooding, aquatic ecology decline, channel sedimentation, loss of deep pools, and loss of riverbank gardens and farmland. Similarly, while the EIA acknowledges an increased risk of landslides in "the upper narrow part of the reservoir", it fails to mention the increased likelihood of karst rock falls near the damsite creating a Seiche wave⁷ event, which RMR believes is a more serious risk to life and property. In fact, RMR states in comments on Section 6.2.6 that Norplan have underestimated the volume of limestone rock sections that might fall causing a Seiche wave by a factor of ten, without justification⁸.

Aquatic Ecology (Section 6.3.3) and **Fish and Fish Production** (Section 6.3.4) – These sections are very brief and lack detail for such important topics related to a trans-basin diversion scheme where local livelihoods are highly dependent on living aquatic resources. Even the 1996 Norplan EIA was of a higher standard and contained more detail than this present EIA. It uses a narrow reference base (apparently based mainly on one report) and displays a poor understanding of aquatic ecosystem complexity to draw biased conclusions about the impacts of the existing THHP on fisheries, and projects this bias into the future, thus creating a false impression about the scale and nature of those impacts and how best to mitigate them. For example, the report states that with regards to the Nam Kading, "...the combined effects of NT2 and NG8 will not have any fundamental impact on the aquatic ecosystems downstream compared to the system with the existing regime based on a riparian release of 5m³/s

⁶ Source: RMR (2007) "Summary of Comments on Microsoft Word – Draft Final EIA without Ex. Sum.doc" Available from: <http://tinyurl.com/3ckqwg>

⁷ In simple terms, a seiche is a standard wave forming in an enclosed or partly enclosed body of water by strong winds, atmospheric pressure jumps, landslides or distant earthquakes. (source: <http://www.islandnet.com/~see/weather/almanac/arc2004/alm04jun.htm>)

⁸ Source: RMR (2007) "Summary of Comments on Microsoft Word – Draft Final EIA without Ex. Sum.doc" Available from: <http://tinyurl.com/3ckqwg>

throughout most of the year.” This is patently a ludicrous statement, given that there will be an 87 % reduction in pre-project flows over the dam in August according to Norplan’s own data (Fig 8.2) and the number of days a year when the minimum riparian release is the only flow passing down the Nam Kading for many kilometers will increase manifold. This will compromise aquatic biodiversity, production and fisheries potential greatly, irrespective of expected declines in water quality.

Similarly, the EIA portrays impacts on the Nam Hai – Hinboun aquatic ecosystem to be of little consequence, arguing that “as the value of these fisheries is already very low the incremental damage will mot (sic) likely be small.” The reality is that for most villages along the Nam Hai and Nam Hinboun, although greatly damaged by the THHP, the river provides an invaluable source of animal protein for the majority of households and seasonal income for many. To suggest that a doubling of discharges with attendant water quality declines will create a small extra impact on “valueless” fisheries is both flawed and callous on the part of Norplan, considering the original impacts on aquatic-resources livelihoods from THHP remain uncompensated and unmitigated.

Overall, the aquatic ecology and fisheries sections go to quite some lengths to present serious negative impacts affecting thousands of households along hundreds of kilometers of river as being relatively minor impacts or even in some cases as positive impacts e.g. golden apple snail (an exotic rice pest) spread or common carp (a non-native fish) proliferation in the Headpond. These biased assertions lower the credibility of Norplan as a result.

Conservation Areas (Section 6.3.5) - Contradicting earlier assertions that there is little biodiversity of any significance near the NG8 reservoir, the report admits that the project will impact streams within the proposed Phou Kadoung Saola Management Area (PKSMA), where remnant populations of the extremely rare and vulnerable Saola are thought to exist. Table 6-8, showing areas of “protected land” affected by the project indicates that 25,600 ha of the proposed PKSMA may be fragmented and 64,400 ha made more accessible by the NG8 reservoir, thus opening the area to encroachment from loggers and poachers.

Summary of Potential impacts (Section 6.4) - is based on a tabular formula (Table 6.9) ranking impacts on a seven point scale from “high negative” to “high positive”. This appears to be an attempt to sway regulators and potential investors who may not be familiar with the impacts and risks associated with such a complex project into believing that impacts will be less serious and more manageable than in reality. For example, several potentially negative impacts such as loss of biodiversity or lost fisheries in the NG8 reservoir zone are presented as “insignificant” and “medium positive” respectively when these assessments are patently false. Norplan’s assessment is highly subjective. Furthermore the methodology is flawed by not adopting the “non-incrementality principle” and by presenting impacts in isolation without considering cumulative and synergistic impacts.

General comments

The EIA report fails to correctly identify several of the most severe environmental impacts that have resulted from the THHP and thus could be expected to compound and intensify under the THXP. The downstream erosion and sedimentation of the Nam Hai and Nam Hinboun rivers is a case in point. The report does not quantify the loss of land or volume of material that has occurred from exacerbated erosion along the Nam Hai, and what the eroded sediment’s fate may be. Compelling evidence from RMR’s EIA, which corroborates observations by local people reiterated in FIVAS (2007), suggests that most of the material has ended up filling the pools of the Nam Hinboun in a “sediment wave” that has had profound effects on the ecology and flood-

carrying capacity of the channel. Floods are more frequent, deeper and last longer than before the THHP, according to villagers. It has also increased turbidity substantially which has caused mortality of rice plants and the gradual abandonment of wet season rice over at least 860 ha of land. The potential for further compounding erosion and sedimentation related impacts from a doubling of flow is essential information for any rational consideration of the true economic costs of the project. None of this critical information is included.

The EIA fails to identify and analyze many risks to project operations that could affect its **operational efficiency and human safety**, such as the possibility of seepage occurring on first filling with no mitigation measures in place, the risk of “flood surcharging” over the NG8 damcrest by waves during full supply level, or the full risks to downstream communities posed by extra flooding caused by a doubling of downstream flows in the wet season. Without this due diligence, appropriate mitigation and monitoring measures cannot be prepared or costed in advance, opening up the probability of greatly increased economic liabilities in the future.

THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

THPC has reorganized its present structure to establish a new Social and Environmental Division (SED), which will replace the existing Environmental Management Division (EMD). It will be managed from Vientiane by an SED Manager and comprise an Environmental Unit (EU), Resettlement Unit, Social Development Unit and Downstream Unit to be based near the power plant in Bolikhamsay Province, plus administrative support and public relations personnel to be based in Vientiane. Other new positions will be a GoL Liaison Officer and Monitoring Unit, suggesting a greater role for and closer relationships with local government institutions than in the past, when EMD had a remarkable degree of operational independence for the Lao PDR context. This was a strength under EMD during the early years of MCP implementation as it removed much bureaucracy and red tape, which is often cited as an impediment to other rural development projects in Laos.

Whose Independence?

The EMMP proposes hiring “independent professionals or NGO’s for specialized tasks” (p. 9-10), such as ecological studies, fish and water quality monitoring, and training/education of local communities, construction workers and operational staff. In particular, it mentions the challenges that will arise from management of the ecologically sensitive Nam Gouang catchment, but makes no mention of the Nam Hai-Nam Hinboun basin ecological and hydrological challenges, which are arguably greater given the serious nature of the impacts expected. This is especially relevant given the repeated calls by RMR for THPC to engage a fluvial scientist or a group of experts to study the hydrological and geomorphological processes occurring in the Nam Hai and Nam Hinboun river channels as a result of the water releases from the THHP, but so far these requests appear to have fallen on deaf ears. Thus it makes one wonder just how open to independent advice THPC really are, given their propensity to ignore sound advice from hired consultants when it does not meet with their own predetermined agenda (e.g. Warren, 1999; Blake et al, 2004).

The SED now proposes to be mostly self-monitoring, forming its own “Monitoring Unit” which it curiously describes as “independent.” It also intends to establish a “Panel of Experts” (POE) Sect 9.7.5) to provide “....independent review and guidance on the treatment of environmental issues associated with the THXP.” This presumably will be similar to the NT2 Project’s Panel of Experts (themselves frequently accused of impartiality with regards to NT2), but with the difference that any POE for THXP will likely have less teeth to remedy problems and non-

compliance with “laws, regulations and general environmental best practice”. Norplan fails to provide any recommendations about how the POE will be selected, who they will be accountable to, their level of authority and how often they will be required to visit the project. Hence, their independence and ability to make a real difference must be called into question until these questions are answered.

Budgetary blunders

Surprisingly, in a publicly released “Final Draft” document for a large dam project that intends to begin construction in mid-2008, there is no overall budget table plan within the EMMP. Instead, there are a series of individual tables for each main budget line item proposed, which do not have a linked or logical numbering system, and neither is there a total monetary figure provided by Norplan for the EMMP. This is somewhat odd and suggests that details were still being debated when the EMMP report was released. And detail is what the implementation and financial plans sorely lack. However, taking each table individually and combining them into one, the following figures for each line item can be tallied up to reach a total proposed sum of \$7,075,700 broken down as follows.

EMMP Table #	Budget line item	Budget proposed (\$)
9.3	GoL and Environment Unit Budget	
	- Staffing	1,605,000
	- Environmental team	1,597,500
	- GoL allowances	7,500
	Sub-total	3,210,000
10.1	Reservoir Clearance and Filling Plan	381,000
11.2	Protected Area Plan	1,102,200
11.4	Forest Regeneration Programme	2,029,500
12.2	Water Quality Monitoring	105,000
13.1	Fish Monitoring and Mitigation Plan	99,000
14.1	Downstream Riverbed Management Plan	100,000
18.1	Environmental Awareness Training	49,000
TOTAL EMMP BUDGET		\$ 7,075,700

It should be borne in mind that this budget allocation is for a total of 11 years (i.e. 2007 -2017 or COD+5 years) and thus works out to approx \$640,000 per year. Considering the extent, complexity and diversity of the impacts caused by the THXP, this sum is patently inadequate and would go little way to mitigate the far-reaching impacts of the project. Furthermore, most of the budget would seem to be allocated to staff and personnel expenses (45%) and much of the rest is designated for monitoring studies and running costs, with a pittance devoted to actual mitigation activities e.g. \$45,000 for downstream “bank protection and hydraulic works” and \$24,000 for unspecified fishery “compensatory works”. It can be safely stated that no useful fishery protection or improvement measures or Nam Hai/Hinboun erosion and sedimentation mitigation can be achieved over 11 years with such paltry sums available.

Another example of the skewed priorities of the budget is illustrated by the fact that less than \$10,000 per year on average is planned to be spent on water quality monitoring over two large river systems, with a pittance available post-COD. No budget has been allocated for mitigation works to protect against poor water quality events, just one episode of which (such as a release

of rotten water from the NG8 Reservoir) could kill most of the fish and aquatic life in the Nam Kading and Nam Hai – Hinboun rivers downstream for many kilometers, thus wiping out the main accessible and cheap protein source for tens of thousands of villagers.

With regards to the “Construction Activities Environment Plan” (Section 15) which roughly outlines the planning and management of environmental impacts and hazards during the construction phase for the project, no budgetary figure has been given in the EMMP nor time schedule drawn up. This odd state of affairs is described thus (p.15-10), “The cost will be integrated in the overall construction and operations costs. It will not be possible to separate ‘environment cost’ from other cost elements. The schedule will be determined by the progress of the construction activities.” In other words, this is an ad hoc plan which THPC can follow or ignore as it sees fit, and at this stage sees little need to plan ahead in terms of a fixed budget.

Forest Regeneration or Plantations in the pipeline?

Relatively considerable sums have been allocated for the Protected Area Plan (\$1.1 million) and the Forest Regeneration Program (\$2 + million). The latter project is intriguing as it is an extraordinary large sum of money to allocate to what essentially should be a low-cost activity, especially given the stated aims of the project to resettle villages inundated by NG8 Reservoir to other parts of the District, away from the shores of the lake. The very process of swidden agriculture on revolving cycles of fallow (but invariably termed “slash and burn” farming by GoL and hydropower developers) demonstrates that natural regeneration of multi-species vegetation occurs rapidly in most areas of Lao PDR, and all that is required is to leave the area for 5-10 years and it will revert to forest. But the EMMP proposes to initiate a number of activities and interventions to allegedly allow “natural regeneration” through mapping and designating areas for the scheme, then producing and planting “suitable” trees. While section 11.5.1 states that “Seeds from suitable species need to be collected from the surrounding forested areas” then grown in nurseries prior to being planted in the “regeneration areas”, it is suspected that this project activity will rapidly revert to monoculture plantations of exotic tree species, which have ease of planting, rapid growth and a ready market in their favor. And given local realities in central Laos of rapidly expanding eucalyptus and rubber plantations being grown by corporate interests and promoted by the state, it would not be inconceivable that the lands around the reservoir could be subject to some kind of private concession agreement, either now or in the future. The figures given in Table 11.4 estimate a yearly cost of \$50,000 for 2010 and 2011 and then \$300,000 for the next six years to pay for the regeneration activities, although no detail is given to how this considerable sum will be spent.

OVERALL COMMENTS ON EMMP

- The quality of both the EIA and EMMP are below those of international standards in several areas, both in terms of analysis of technical data and conclusions drawn. They make many unwarranted assumptions and erroneous conclusions about present and future water quality impacts and risks. Paramount amongst these are the EIA’s underestimation of risks posed by anoxic water release from the NG8 reservoir on downstream ecology and livelihoods and the inadequate or even absence of mitigation measures to deal with the possibility of serious pollution events occurring. Although the EMMP claims (Section 12.3), “The current THXP design includes plans for a variable which will [take?] water from the more oxygen rich upper water levels (epilimnion)”, no evidence is provided to back this up. The entire 11 year budget of \$105,000 is devoted to monitoring water quality, which in itself is a paltry sum, with nothing set aside for mitigation measures.

- The EMMP budget is pitifully small (\$7 million) and bears no relationship to actual needs based on a sound understanding of where impacts are expected to fall the heaviest, while minimal money is designated for any mitigation works, demonstrating that THPC is quite content to carry on with the current *laissez faire* attitude towards environmental impact costs which are nearly all externalized onto the environment and society, with local communities bearing the heaviest burden.
- The emphasis and tone of the EMMP is overwhelmingly geared towards GoL national priorities, rather than those of the needs of the local environment and communities in the impacted areas. This is illustrated by the relatively high budget apportioned to protected area plans (\$1,102,200) and a “forest regeneration programme” (\$2,029,500), with pitifully little devoted to water quality monitoring (\$105,000), fishery monitoring and mitigation (\$99,000), and downstream “riverbed management” (\$100,000) (NB: not mitigation).
- There is a disturbing lack of clarity and detail in the EMMP and it appears that little thought has been put into its compilation. There are several contradictory passages and glaring omissions that suggest it has been largely the work of people with poor insight into mitigating impacts resulting from a complex trans-basin diversion and large reservoir hydropower project that draws few lessons from THHP over the last decade. It inspires little confidence that even some of the on-going impacts can be mitigated for, let alone a whole tranche of new and aggravated impacts expected in the future.

CONCLUSIONS

The EIA and EMMP documents both give the impression that they were rather hastily compiled, with little oversight and diligence, both technically and editorially, to merely tick a box for the developers. Quality and accuracy of data were apparently of low priority, even though Norplan presumably had full access to project-related data including RMR’s EIA document archive. Yet surprisingly the two reports come to remarkably different conclusions about expected impacts, their magnitude and ways to mitigate them. Good examples would be the tenfold difference in volume estimations of potential karst limestone rockfalls into the NG8 reservoir (RMR’s estimation = 120,000 m³; Norplan’s estimation = 12,000 m³) and associated risks to the dam structure, or, the underlying causes and relative contribution of THHP/THXP to downstream flooding on the Nam Hai and Hinboun rivers.

The proposed budget for the environmental management and monitoring plan is clearly inadequate both for the scale and magnitude of the environmental impacts that will result from THXP and the length of time that the impacts will be felt. Priorities for budget allocation would seem to far more closely match that of THPC minimizing exposure to actual costs and the Government of Lao PDR’s national development plan, than the demonstrable needs of a complex trans-basin diversion hydropower project with multiple and synergistic impacts over a huge spatial ecological footprint affecting tens of thousands of people.

Norplan AS appear to have merely cherry-picked the parts they like from the RMR documents, discarded the parts they disliked or believed would cost too much to implement, to concoct an asinine new version. This state of affairs is likely to have been in response to pressure from THPC, given their past record of consultant coercion and data manipulation for desired outcomes. Both the EIA and EMMP are littered with factual inaccuracies, exclude critical data which is already widely reported and in the public domain, and fail to comply with even the basic environmental regulations of Lao PDR. Rarely does one see such a cynical attempt to write a report that so blatantly distorts or ignores empirical data to create a sanitized version of events and plans to achieve a pre-determined outcome. The fact that this report has come from a

Norwegian consultancy company, (a country with supposedly one of the highest environmental standards in the world) only makes it all the more surprising. But as a senior official at the NORAD commented in November 2007 when asked about licensing or industry standards for Norwegian environmental consultancy companies: "There are none."

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