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Trip Report

# NAM NGUM 5 AND NAM LEUK HYDROPOWER PROJECTS, AND THEUN HINBOUN EXPANSION - Laos

Site Visit:

November 12 - 27, 2009

Prepared by:

Leslie Johnston

*Laos - Hydropower Projects*

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A USAID/Washington team traveled to Laos to conduct site visits of several hydropower projects that have been financed or are expected to be financed by the World Bank (WB) or the Asian Development Bank (ADB). These site visits were carried out to fulfill USAID's due diligence responsibilities under the International Financial Institutions Act, Title XIII, Section 1303(a)(3), which requires USAID to review multilateral development bank (MDB) projects with potential adverse environmental and social impacts.

The USAID/Washington team visited Nam Ngum 5 Hydropower Project, Nam Leuk Hydropower Project, and Theun Hinboun Expansion Project, and held meetings with project sponsors/operators, project-affected community members, Government of Laos (GoL) and other stakeholders in Vientiane.

Comments included herein are based on observations, meetings, and documents in the public domain and do not reflect the views of USAID or the United States Government (USG); not all comments have been substantiated by USAID.

This report is divided into the following sections:

**Section 1. Laos National Hydropower Policy**

**Section 2. Nam Ngum 5 Hydropower Project**

**Section 3. Nam Leuk Hydropower Project**

**Section 4. Theun Hinboun Expansion Project**

**Section 5. Status of Other Hydropower Projects**

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**Section 1. Laos National Hydropower Policy**

The GoL seeks to electrify 90% of households by 2020, with the expectation that 30% of households will be powered by renewable energy, 10 to 12% by biofuel, and the remainder by imported fossil fuel. An important aspect of this plan is the continued development of hydropower projects on both the mainstem and tributaries of the Mekong River.

In 2005, Laos developed the National Policy – Environmental and Social Sustainability of the Hydropower Sector – with WB support through the Lao Environment and Social Project (LENS).

The National Policy reflected a commitment by all parties concerned following the World Bank and Asian Development Bank’s financing of the Nam Theun 2 (NT2) hydropower project. As a result of the MDBs’ involvement in the sector, it was proposed that environmental and social standards for hydropower development in Laos would be elevated. Key components of the National Policy include improving the environmental and social standards of future projects; bringing existing hydropower projects into compliance with environmental and social standards; the public disclosure of Environmental Impact Assessments (EIAs); and project revenue contribution to the Environmental Protection Fund (EPF). The Water Resources and Environment Authority (WREA), with departments that review project EIAs and develop water resources development regulations, was also established under the National Policy.

The Department of Electricity (DoE) is the government entity responsible for implementation of the National Policy. Implementation of the National Policy continues to be a challenge since the required laws and regulations are not in place for many of the provisions and the National Policy post-dates the agreed concession agreements. Partial implementation of the National Policy depends on the enforcement of laws or regulations already in place. For example, according to the Environmental Protection Law of 1999 and Environmental Assessment Regulations 1770 of 2000 or successor decree, project developers must produce EIAs and Environmental Management Plan (EMPs).

The DoE’s implementation strategy for the National Policy focuses on four priority areas:

- Ensuring compliance with government regulations through project-by-project assessment and compliance monitoring by DOE/Ministry of Energy and Mines (MEM) and other agencies.
- Strengthening effective regulations and institutional framework, including consultation and information disclosure.
- Forging effective cooperation among key agencies (WREA, Ministry of Finance – MOF, MEM) through training and capacity building, including promoting stakeholder involvement.
- Establishing sustainable funding for the sector, including watershed protection and management.

Examples of provisions in the National Policy that have not been implemented include:

- *Third party oversight:* No progress has been made on this provision. Reportedly, a study was commissioned but it was unsatisfactory and did not provide adequate guidance.
- *Public availability of EIAs:* The hydropower project EIAs are still not in WREA’s Public Information Center – it only contains the EIA and supporting documentation for NT2. WREA would like to use an IT program to make this information available to the public, but the program is not fully installed. The DoE reported that they have a library with all the project EIAs which the public and students can access.

- *Project revenue:* Guidance and mechanisms for projects to contribute to the Environmental Protection Fund have not been established (more detail is provided below).

USAID understands that a study analyzing how hydropower projects have complied with the National Policy and recommendations to improve its implementation will be completed by June 2010.

A few recommendations were provided during the course of discussions to improve implementation of the National Policy:

- As it is currently written, the scope is too wide and general. As a result, line agencies have had to interpret the policy as best they can to determine how it governs their activities leading to inconsistency in the implementation of the National Policy. The EIA law needs to be adapted to the Lao environment.
- The National Policy has to be changed to fit within Lao current situation.

#### **Environmental Protection Fund:**

The Lao Environment and Social Project was designed by the World Bank as a complementary program to prevent NT2 from being an isolated, stand-alone “enclave” project by extending environmental and social standards beyond the NT2 project area. The three main components of LEnS include the Environmental Protection Fund, established in 2005 with US\$ 5 million from the ADB as an endowment and US\$ 4 million from the WB for its operations.

The EPF is designated in the National Policy as the entity to receive a portion of revenue from each hydropower project to support nation-wide environmental protection and conservation efforts. Since 2006, the EPF has funded 148 projects (47 projects in Policy Implementation and Capacity Enhancement and 101 projects in Community and Biodiversity Investment) totaling US\$ 2,807,505.60.

At present, there are no regulations in place regarding revenue from projects going into the EPF. Since the amount of revenue was not defined in the National Policy, and the EPF is not contained within the active [agreed] Concession Agreements, individual negotiations with each project sponsor/developer to determine their contribution must be undertaken. Discussions are underway regarding who should pay and how much should be paid into the EPF. The MOF holds authority for making these decisions. The percentage of revenue going into the EPF may depend on the size of the project. Voluntary contributions will be difficult since project sponsors feel that this payment should come from the revenue that they have already given directly to the government in the form of royalties or taxes. If the project sponsor/developer will not or cannot contribute funds to the EPF, the funds will need to come from the GoL budget. In order for this to occur, the EPF will have to become eligible to access the regular GoL

budget. Several interviewees stated that this process will be clearer once the Commercial Operation Date (COD) for NT2 arrives and revenue will be required to go into the EPF.

### **Stakeholder Views**

Decisions to proceed with hydropower projects continue to be centrally managed, without coordination among the various projects.

Some stakeholders are concerned that the GoL will become dependent on the small conservation grants (10-30,000) awarded by the EPF, which is not a sustainable approach to conservation.

Others expressed the viewpoint that the EPF is working – because funds are being disbursed and projects are being implemented.

Although funds are being disbursed, the USAID team is looking forward to seeing an analysis that documents the types of monitoring and evaluation occurring for each project and an assessment of project impacts. It is also not clear to USAID whether the small-grant approach to conservation is effective in reaching the goals of the EPF.

The current recognition by the GoL of the consequences of hydropower projects is a major shift from prior government positions.

### **Section 2. Nam Ngum 5 (NN5) Hydropower Project**

The Nam Ngum 5 Hydropower Project is located on the Nam Ting, a major tributary of the Nam Ngum, upstream of the Nam Ngum 3 hydropower project (ADB-proposed financing), in Northern-Central Laos. The project involves construction and operation of a 104.5 m dam with a gross reservoir storage of 314 Mm<sup>3</sup> and reservoir surface of 15 Km<sup>2</sup>, an 8.9 km headrace tunnel, a 2.4 km penstock and powerhouse with 120 MW output and 115 kV capacity transmission line. The project's economic life is projected to be 50 years.

The project sponsor, Sinohydro Corporation, has approached the Multilateral Investment Guarantee Agency (MIGA) for political risk insurance guarantee. This is the first time that Sinohydro or any Chinese company has approached MIGA on a project. NN5 is estimated to cost US\$ 170-196 million. The project EIA and associated documents were posted on MIGA's website in November 2007.

Project construction started in April 2008. The project is expected to be finished in July 2011 and COD is expected to be May 2012.



Construction activities at dam site.

USAID discussed the following issues with the Project Sponsor:

- **Road construction** from the main highway to the dam site – little to no action had been taken to prevent and mitigate soil erosion and run-off from above and below the road surface. Of particular note is the erosion into and sedimentation of local tributaries and streams that intersect the road. Currently, there is no monitoring of water quality or aquatic impacts associated with the erosion. NN5 staff provided the following reasons for the situation:

- Mitigation measures were not undertaken since it was thought that after the first rainy season grasses would grow and thus mitigate erosion by stabilizing the soil. Since this has not occurred, a plan has been submitted and a local company will undertake road erosion mitigation measures – e.g., grass planting – before the next rainy season in 2010.



Access road going to dam site.

- MIGA has also recommended that NN5 undertake these activities.
  - They are currently waiting for financing from China ExIm/MIGA for conducting slope stabilization, drainage, and erosion protection measures.
- Based on the EIA and discussions with NN5 staff, **terrestrial biodiversity or habitat surveys** do not seem to have been undertaken. Consequently, there is no baseline biodiversity information for the area. Although the area along the access road to the dam site looks quite degraded due to the impacts of slash-and-burn, forest patches, particularly in high-grade, high-altitude and riparian areas exist. The forest patches are deciduous and mixed deciduous/conifer. USAID understands that a biologist hired to conduct a wildlife survey of the Nam Ngum basin has not been allowed access to the hill areas and has not found any existing information on biodiversity in the area.

In the Project’s Social and Environmental Obligations document, NN5 is obligated to carry out biodiversity surveys over time.

- Based on the EIA and discussions with NN5, **aquatic biodiversity baseline data**, which would typically include an assessment of fisheries status, fish species, and level of dependence of local people on capture fisheries, has not been conducted. NN5 staff said

that fisheries are a very complicated issue. There is a budget for fisheries, which will be a focus during the livelihood compensation and restoration phase of the project. However, from NN5’s perspective, there are not many fisheries of importance in the Nam Ting.

- There is no baseline data to determine **environmental flows** when the project is in operation. NN5 will be collecting the necessary data to determine environmental flows during construction.
- Dam construction has been going on since April 2008. It was reported to USAID that **water quality** tests were done early in the process, but at this point water quality monitoring is not being conducted. Discussions with NN5 staff revealed there does not appear to be a plan to monitor water quality in the future, even though construction activities have already had an impact on water quality.



River diversion, upstream of cofferdam.

Ban Xiengdet, downstream of the dam, has reported problems with water quality, including an increase in sedimentation as a result of the construction activities. In the NN5 project EIA, Ban Xiengdet is not considered to be impacted since the village will be inundated by the NN3 reservoir. However, after a period of unsuccessful discussions with NN3 and NN5 project sponsors (ADB and WREA), the villagers requested that the District assist them in writing a letter to MEM. This action finally resulted in NN5 installing a new water system.

This incident raises serious concerns about how to handle overlapping project impacts since there is no common grievance procedure or identification of who has responsibility. Additionally, there is no mechanism to independently collect data to validate the legitimacy of claims.

Ban Xiengdet has been told for the past 15-17 years that it would be moved and therefore has been excluded from development plans. The financial crisis has resulted in the delay of NN3 and prompted discussions about reorienting the project’s electricity toward domestic use (primarily to support mining operations in the area) rather than for export. In that case, the NN3 reservoir footprint could possibly be reduced, which could impact Ban Xiengdet. Regardless of what the project’s electricity is used for, one consultant believes that they should get livelihood support programs.

- The only village considered to be directly impacted by the project is Ban Chim. Although it will not need to be resettled, some agricultural lands will be inundated. USAID was not able to visit Ban Chim because we had not requested the proper GoL permissions prior.

### **Stakeholder Views**

Meetings with other stakeholders raised the issue that other villages, in addition to Ban Chim, have been impacted by the project, in different ways. For example:

- Grassland that is shared by many villages for grazing cattle will be submerged, but this impact is not being taken into account.
- It is uncertain whether reservoir aquaculture will be a livelihood option because of the fluctuation of the reservoir.
- The forest villagers use for non-timber forest product extraction will either be inundated or difficult to reach because of the reservoir.

The Government of China mandates that Chinese companies abroad must be perceived as “good actors,” that is, demonstrating good environmental and social practices. MIGA financing provides one opportunity where Sinohydro could benefit from MIGA’s knowledge of environmental and social practices. There is genuine interest on the part of Sinohydro to learn about and to develop their capacity on environmental and social aspects.

Reportedly, Sinohydro is having problems with the mainstem at Pak Lay, which are slowing progress on development of the site. They are moving ahead faster on the Nam Ou 7-8 hydropower cascade where there is presently less international scrutiny. The project’s Initial Environmental Examination is completed and the EIA phase is underway. The Nam Ou development poses difficult issues due to high levels of biodiversity, and is considered an indigenous peoples’ “hotspot.”

MIGA’s value added to the project is being questioned. Reportedly, MIGA required an additional study for the resettlement component of the project. A Lao consulting firm was hired. Apparently, Sinohydro did not have a role in the process, which prevented NN5 staff from fully understanding the process. The procedural challenges were compounded by the poor quality of the consulting firm’s study, which failed to deliver both solid recommendations and cost information.

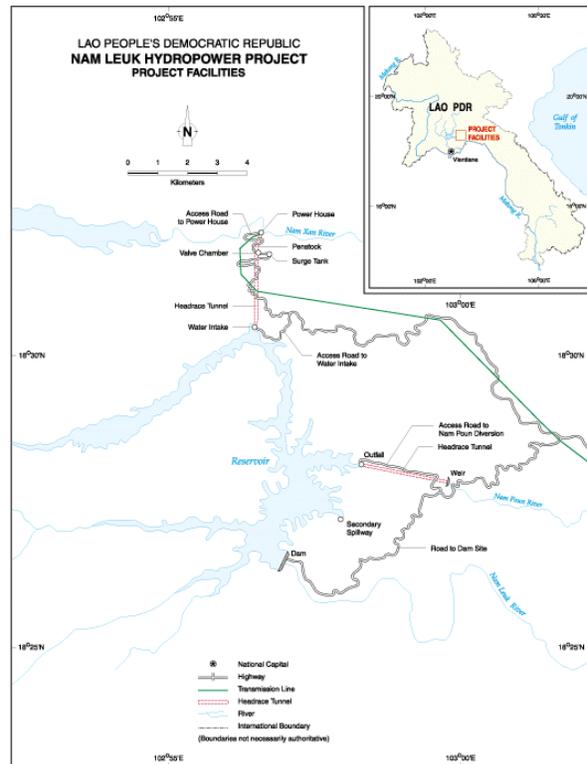
As the Project was agreed under MIGA’s old public disclosure, MIGA does not have to disclose anything until after financing.

### Section 3. Nam Leuk Hydropower Project

The ADB approved a loan for \$52 million as part of the financing for the Nam Leuk Hydropower Project in 1996. The total project cost was \$111.2 million. The project involves the transbasin diversion of the Nam Leuk into the Nam Xan, with an installed capacity of 60 MW. The dam is 51.5 m high with a reservoir storage capacity of about 185 million m<sup>3</sup>. The project also augments the Nam Ngum powerplant output by 30 Gigawatt-hours. Because the project area is within the Phou Khao Khouay National Biodiversity Conservation Area (PKK-NBCA), the project was designed to provide long-term support for the effective protection and management of PKK-NBCA. Commercial operation began in March 2000.

In 2004, the ADB's Operations Evaluation Department undertook a project performance audit. As a result of the audit, an ADB loan of \$200 k was provided to carry out an Environmental Mitigation Implementation Plan (EMIP, 2006). The mitigation and development packages in the EMIP were designed to provide people in the project area year-round access to clean water supply, support for livelihood development, and improvements in the security of the food supply, especially fisheries. Electricité du Laos (EdL) is responsible for implementing the EMIP, which covers 11 villages in Hom and Thaphabath districts. To fulfill this obligation, EdL continues to hire specialists to assist in the areas of fisheries and water supply.

The loss of **fisheries** still has not been satisfactorily mitigated, particularly in downstream villages. EdL has organized workshops for villagers to learn about fish pond management. However, a statement was made that there was no need to use fish ponds because villagers can depend on the main river fisheries. The community fish ponds only started last year so their yield is unknown. EdL provided fingerlings for these fish ponds. One village visited raised reduction in fisheries as a significant problem. Prior to the dam, families could catch enough to feed their families and to sell – but now they only catch enough to feed their families. The village currently has one common fish pond and three to four smaller villager ponds. The fish in the smaller ponds are a different species that was brought into the area, whereas the fish in the larger pond are a native species that is replenished



by the mountain stream that flows into the pond. The villagers have not yet harvested from the ponds but the fish population seems to be growing in the larger pond. Other villagers want their own fish pond but they are constrained by: 1) not enough money to buy fishmeal; 2) not enough money to buy fingerlings; and 3) not enough money to buy an electric pump to divert water from the river. In addition to fisheries, they raise cattle and poultry and go to the forest to collect mushrooms, bamboo, etc. For income, villagers are selling their cattle, buffalo and chickens.

**Year-round water supply** continues to be a challenge. One village visited stated that water quality is also a problem. The current supply built by the project has resulted in high levels of sedimentation and acidity. EdL is aware of this problem and finding a new water source. At the time of our visit a survey was being conducted and a plan was to be finalized by the end of November 2009, although it was unclear when the village would get access to their new water source. Currently, water for drinking is being collected from another well installed by UNICEF.



Although the project was designed to provide long-term support for the effective protection and management of **Phou Khao Khouay National Biodiversity Conservation Area (PKK-NBCA)**, the 2005 Operations Evaluation Mission (OEM) did not find that this was being achieved and stated that unless PKK park management was strengthened, its long-term sustainability was not assured. The PKK-NBCA is to receive 1% of the annual export revenue generated by exporting electricity to use for its protection and management. This revenue has fluctuated over the years due to variations in the amount of electricity exported to Thailand. The table below summarizes payments from 2002 to 2008.

Year	kWh to Thailand	1% (USD)
2002	143,879,410	40,824.67
2003	66,148,170	19,140.33
2004	85,121,020	24,818.57
2005	101,456,540	30,047.14
2006	87,325,000	29,417.10
2007	39,400,350	14,541.41
2008	4,324,550	1,563.00 (EdL did provide additional funds)

The funds are used to set up an annual plan, forest protection/enforcement, guarding, security surveying, fuel, fire protection, workshops/seminars for villagers so they understand how to manage their activities within the PKK-NBCA. The 1% revenue from electricity exports is clearly

insufficient for effective park management, particularly when it is inconsistent from year to year. Limited by year-to-year budgeting, no overall park management plan informs annual activities. The Ministry of Defense (MOD), which manages the PKK-NBCA, submits a budget/plan each year to EdL for approval. The budget covers recurring costs such as fuel, fixing vehicles, and conducting surveys for illegal activities. Since the 1% revenue is not enough, EdL has had to use an ADB loan for the workshops and seminars. The 2005 audit found that the management and use of these funds was ineffective. Based on discussions with EdL staff, it does not sound like a more effective mechanism has been put in place for the management and use of these funds.

About 70% of the staff overseeing the PKK-NBCA have military backgrounds, with the remainder having forestry backgrounds. Some of the soldiers assigned to the park are former forestry officials and are now deputized under the Min of Defense. Based on discussions with EdL and others, it is clear that the Ministry of Defense has neither the technical capacity, such as protected area planning or ecosystem management skills, nor the numbers of staff to be able to effectively manage the PKK-NBCA.

Considering the amount of external pressure on the park, it may be appropriate to have a high level of enforcement, but the type of enforcement needs to be tailored to the illegal threats. Staff need to learn how to patrol in order to deter these threats, instead of staying in limited areas (camps/roads). Also enforcement should not be stand-alone component but integrated into overall park management. From EdL's perspective park management is still inadequate, because illegal logging and poaching continue. It was stated that although the soldiers are good at protecting, they are not technical and need better training.

The management of the park is insufficient to address the massive threats to the habitat, ecosystems and wildlife of PKK-NBCA. Illegal activities are still occurring – such as logging, cutting of forest, and hunting – in part because the PKK-NBCA is a much larger area than can be sufficiently patrolled and managed by park staff (currently military). The OEM reported that the EIA draft did not envisage construction of a power transmission line from the powerhouse to the dam, but its impact has been allowing access to large vehicles into the PKK-NBCA.

Both locals and outsiders are exploiting resources inside the park. It was claimed that local people still have access to NBCA resources such as NTFP collection (as opposed to hunting and timber extraction). Relations with NBCA and villagers were reported to be good except when they undertake certain activities such as logging. The EdL meeting did not make clear the relationship between the MOD and local communities, but in conversations with one village group it became clear that the MOD has interactions with communities through workshops informing them not to hunt and why not. One community leader was very insistent that there was currently no hunting and never had been any. At this time local residents and communities are not actively involved in the management or monitoring of the park and its resources.

Nam Leuk project has a very inconsistent monitoring budget and has appears to lack a robust set of indicators for monitoring dam and intervention impacts on a regular basis. The following actions were recommended by the audit.

- Monitor impacts on fisheries and water quality and provide mitigation measures for impacted villages
- Evaluate the impacts of Nam Leuk funds on PKK-NBCA activities
- Develop a suitable mechanism for managing the 1% of hydro-funds going to the management of PKK-NBCA

Recommendations for improving PKK NBCA management include:

- Establishment of a multi-party park management committee (co-management) that includes the MOD, national park management, forestry officials and members of local communities who live in and around NBCA. The legislation facilitating co-management arrangements currently exists in the Lao forestry law.
- At the least, conservation NGOs and others with technical experience in National Protected Areas (NPA) and ecosystem management should be called upon to provide sustained technical assistance to park management at all planning and management stages through training, exchange programs and embedded experts. Developing an arrangement with a conservation/park management NGO could provide more substantial support to the co-management committee.
- Development of a technically robust 10-15 year NBCA strategic plan which includes social, environmental and financial elements (in particular, a focus on sustainable financing and economic valuation of park ecosystems).
- Greater involvement of local people and communities in the stewardship of the NBCA, through inclusion of relevant communities in management committee, development of a community-based ecosystem monitoring program, and establishment of a community-based ranger and anti-poaching patrol program.
- Implementation of a robust biological, threat and social monitoring program for the NBCA, which feeds directly into park management decisions and actions.

ADB continues to follow up on this project and planned to conduct a site visit to all of the affected villages the week following USAID's visit.

#### **Section 4. Theun Hinboun Expansion**

The Theun Hinboun Hydropower Project (THP) is a trans-basin diversion project that diverts water from the Theun-Kading River into the Hai and Hinboun river basins. The project became operational in 1998 and received \$60 million in financing through an ADB loan. Since becoming operational, the project has delivered 220 MW of generating capacity: 210 MW is exported to Thailand and 10 MW supplies local power demands in the host provinces.

THPC is now expanding the project to offset reduced water flows as a result of NT2 and increase its total generating capacity to 500 MW, including export capacity of 440 MW and 60 MW supply for EdL. The expansion project will enable growth of the new Lao power

transmission system by extending the 115 kV transmission grid to the area, increasing electricity supply to the grid, and improving the reliability and quality of the EdL system.

Construction of the expansion project started in 2008 and is expected to be completed in 2012. The filling of the reservoir will start in 2011. The level of 439 masl will be reached in June/July 2011 and the full supply level should be reached within 2011. The COD for the expansion is expected to be in September 2011.

Meetings with Theun Hinboun Expansion Project (THXP) staff focused on the following environmental and social components of the project:

**Water quality:** The project has established 17 water quality monitoring stations in five rivers to assess water using WHO, WB and Thai water quality standards.

- During a visit to the construction site, USAID noted a significant amount of sediment going into the river during construction of the upper cofferdam without any mitigation measures taking place to reduce sediment load into the river.

**Greenhouse Gas Emissions (GHG):** A Norwegian institute is undertaking specific GHG emissions measurements before and after operations.

**Fisheries:** Fish monitoring will take place in 27 villages. Natural fisheries have declined due to sediment loads. However, there is not an adequate baseline so it is difficult to know how much they have been reduced. The location of villages makes a difference as to how much income is based on fisheries. For example, in the high Hinboun, 1-7% income is from fisheries and in the middle Hinboun it ranges from 7-16%.

**Erosion:** Erosion monitoring is occurring at 17 stations, with 7 on the Nam Hai and 3 on the Nam Hinboun. The plant will operate at peak and it is expected that with the expansion the water fluctuations will be reduced. During the water fluctuations, the banks will become saturated and collapse, thereby increasing the river's width. So far, the river banks have not stabilized but they are expected to over time. The expansion will add more water, but reduce the fluctuation. The river has widened in some areas and the project is preparing for the worst case scenario.

**Reporting:** Monthly reports are not available to the public. The company is not under any obligation to provide any information to the public. Noncompliance issues are very sensitive and this type of information can be used by certain organizations against the project. From the company's perspective, transparency can work against them. When asked about monthly



reports to villages, the company questioned whether villages really need to know the levels of turbidity in the water and what would be achieved by giving them this information. The villagers' capacity to understand technical information is considered very low, and the company believes that people want to know whether their water is safe without details. Responsibility for monitoring could be transferred to locals at some point but this will need to be done in phases.

**Waste:** THXP is currently working to hire a private operator to recycle project waste.

**Reservoir biomass clearance:** Biomass must be removed from a third of the area before March/April, since the dam will begin to fill in the next rainy season.

**Resettlement:** Three host villages have been identified with the same livelihood targets: fish ponds, vegetables, rice and cattle. Two villages (112 families) have already been resettled into Nong Xong village. The resettlement of the remaining HH will be completed before the rainy season. Most of the people from the villages to be resettled have not lived in the area long – only over the past 50-150 years as they have been moving down the river. Special follow-up will be required for the 12 HH of Vietic (ethnic minority), who have been resettled into Nong Xong. The Vietic felt more comfortable with the Dai Lao group, so they are located in close proximity to them, facilitating collaboration on water maintenance issues.

**Water supply at resettlement village:** Water is provided through a gravity supply system. A small fee is assessed depending on the amount of water used. The major issue is the maintenance required. Neighborhood groups have formed based on taps. As soon as the village committee is developed they will take over responsibility from the neighborhood groups. Six villages are paying for water and believe that the system is fair.

A **livelihood package** has been provided to ensure adequate food production. Each family has been given – 1 ha of rainfed rice land; ½ ha of upland, and 1000 m<sup>2</sup> for a vegetable plot. THXP paid market value for excess productive land. THXP also distributed a limited amount of rice, even though they thought it was probably unnecessary.

Fifteen technical assistants will provide assistance to the resettled residents for 3-5 years.

THXP's resettlement plan differs from the NT2 resettlement plan in several significant aspects. Concerns of the NT2 resettlement plan included the following:

- The amount of land (0.6 ha) is considered small and requires long term conditioning.
- Insufficient pasture for cattle resulted in not only financial but also psychological loss.
- The water sources for market gardens were not piped in for everyone and the HH had to pay the cost of putting in the irrigation
- An early boom in reservoir fisheries has since declined. Because these fisheries have been a primary source of income, their decline is expected to have a major impact. At the same time, the rice supplement also is planned to be stopped.

THXP-resettled villages will have greater amount of land to grow rice and other crops and will be able to take their cattle with them, as there is enough pasture land.

**Health/Education:** A new health center has been established in Nong Xong. THXP is supporting local health offices to improve community health and deploying staff to villages for outreach programs every 2-3 months. Population is at >90% immunization levels.

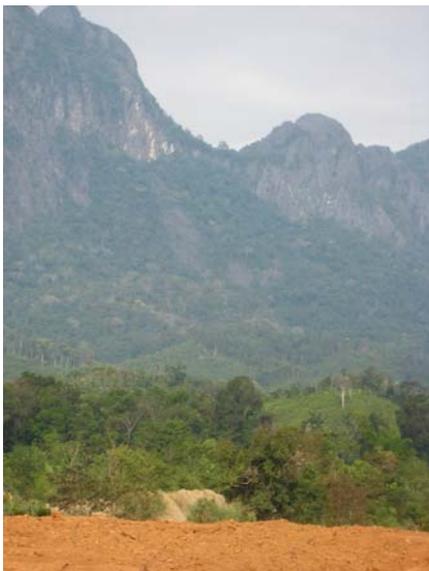
THXP is supporting educational programs to minimize the impacts on children due to resettlement.

**Public Involvement and Community Development** – Information is disseminated by THXP staff who are assigned to particular regions so villagers will know them by face.

**Project-affected villages:** Eight villages are impacted by construction activities. This could result in massive immigration, an increase in market prices, increase in prostitution and the number of beer shops.

**Biodiversity:** THXP generally played down the biodiversity presence and value of the project area-particularly the reservoir zone. The EIA includes many contradictory statements regarding the biodiversity value of the reservoir area (in some places saying it is of low or no-value and then in other places stating there is a high diversity of wildlife in the area).

- In examining monitoring data presented at the meeting, it came to light that significant wildlife diversity has been recorded throughout the THXP area, including the reservoir zone as evidenced by the community-level monitoring conducted by THPC in cooperation with Wildlife Conservation Society (WCS) on an annual basis. Gaur, tiger, elephant, macaque, civet, porcupine, and wild boar have all been recorded throughout the area. The reservoir area has the greatest biodiversity in the survey.



During the visit to the reservoir area, fragmented forest cover (including secondary and mature forest) was observed and the area surrounding the reservoir area seemed to contain a significant level of intact forest. It is likely that the reservoir will bisect and further fragment a forest ecosystem with considerable biodiversity value (including wildlife). The area to the east of the reservoir area is important habitat for the critically endangered and elusive saola.

It is clear the project will have powerful negative impacts on aquatic biodiversity and ecosystems. However, it is not clear what actions can and will be taken to mitigate these negative impacts, particularly given the lack of understanding of aquatic biodiversity issues reflected in the EIA.

THXP does not appear to be addressing through the EMP several of the key impacts on biodiversity and wildlife raised directly in the EIA, including the following:

- Road building and the flooding of the reservoir both have a very high potential to contribute to increased wildlife hunting, wildlife trade and habitat loss by making these areas more accessible. Additionally the project is located in an area known for high-levels of illegal wildlife trafficking across the Lao-Vietnam border further increasing the threat from hunting and trade.
- All three resettlement communities are planned to be adjacent to Provincial Protected Areas (PPAs), which may have impacts on the exploitation of ecosystem resources not currently being addressed by THPC.
- Concerns have been raised regarding wildlife exploitation by construction camp workers and others associated with the project. It was reported to USAID that road and construction crews are buying and consuming wildlife, even on Hwy 13.
- The “biodiversity offset” described below (agreement between WCS and THPC) doesn’t address many of the potential impacts on biodiversity/wildlife raised in the EIA (see above). A ‘biodiversity offset’ should be above and beyond environmental compliance actions and the mitigation of impacts of project. In this case it seems that the THPC is using the ‘biodiversity offset’ as a substitute for many of the actions necessary to mitigate potential impacts on biodiversity/wildlife raised in the EIA.
- EIA does not consider the dewatering of the Nam Gnouang and any impacts (including ecological) of this action.

As a “biodiversity offset,” THPC is partnering with WCS to implement a 10-year, \$5 million program. This partnering is seen as a new mechanism for environmental mitigation since THPC did not want to set up the same system that is in place for NT2 – (Watershed Management Protection Authority – WMPA) since from their perspective it has not worked well. This agreement includes the following activities:

- Development and management of a PPA north of the reservoir area. WCS hopes to use this area as a corridor increasing connectivity between Nam Kading National Protected Area in the west, through the new PPA to the proposed Saola Conservation Area in the east. Although the PPA should have been declared at this point in the process, steps are now underway. This is a three step process which includes: 1) the production of a satellite map, 2) WCS working with different districts to delineate the boundaries, and 3) WCS working with villagers to understand how they perceive the land. It is unclear how much time will be required before the PPA is officially declared.
- Establishment of a “checkpoint” in the northern reaches of Nam Kading to intercept illegal activities.
- Sufficient resources to hire staff and provide operating funds for the PPA.
- One goal is to make the reservoir part of the PPA and protect the wetlands that will be formed. The PPA is seen as a stepping stone and will help deal with climate change and adaptation issues.

WCS thinks that the resources will be adequate to support two substations in Nam Kading; four substations in the new PPA, and eight substations on the border with Vietnam to provide anti-poaching assistance. In addition, there will be outreach teams between the three protected areas, development of management plans, enforcement of illegal wildlife trade activities and activities to mitigate or prevent human-elephant conflict. Part of the outreach will also be with villagers concerning nontimber forest products (NTFP) and developing mechanisms to value villagers' use of NTFPs. If this approach to national park management and biodiversity conservation is successful it will be a model for future efforts.

THPC expects to have 50% of the company's contribution to the EPF returned for conservation in the project area. However, stakeholder view is that the EPF is meant to fund conservation activities in areas of Lao which wouldn't otherwise have resources and therefore, it should not take the place of funds THPC should be directly dedicating to the conservation of the project area.

**Downstream villages:** Currently, income targets for livelihoods are 10-50% higher than existing levels because of some residual impacts of the original project. This percentage changes because it is based on the GOL consumer price index.

There are 57 target villages in 2 districts. At least 4 villages will be relocated outside of the flood zones – not resettled, because their new location is adjacent to areas they are already occupying. Rainy season rice will be impacted so HH will have to switch to dry season rice. Road systems will be improved for HH to have access to services and markets.

THXP is looking at the whole land use area on a holistic level, taking into account cash crops, food security (rice), and land use planning. THXP will continue to support livestock until there is steady growth. Food security will be achieved through rice production. THXP will link farmers to markets – rubber, orchard (NTFP – domestic rattan), and mushroom products – as well as conduct riverbank replacement and plant 10 fruit trees per HH in new areas. Performance will be based on sampling 25% HH for monitoring. The THXP budget for the downstream area is planned to continue through 2017.

Village labor opportunities with the project are estimated at 30,000 person days/year.

***Independent Monitoring:***

There are three levels of monitoring for the project –

- THXP
- WREA
- Lenders' technical advisors (LTA)

THXP rejected the idea of a Panel of Experts (modeled after NT2) stating that the LTA monitoring is sufficient.

The project's transmission line will go through populated and mining areas of the NBCA.

***Villages visited:***

One village visited was located on a main highway within 1 km of the dam construction area. This village has about 89 HH, including both long-term residents and recent migrants who have moved into the village in the past five months to two years to work and sell their goods. The village water supply is from the Nam Gnoung. THXP provided two water systems – one for drinking and one for household use.

One HH interviewed has been in the area 30 years. In discussions with this family, they stated that previously they caught enough fish to feed their family, but now, with the barrier across the river there are fewer fish. Nevertheless, they believe they are better off now because they have electricity.

Another HH interviewed has been in the area 15 years and has three sons working for THXP. They also mentioned the decline in fisheries as a result of low water levels. Because of their village's proximity to the construction site, it has experienced several changes. Company employees come to the village to buy things and to drink; currently, there are no prostitutes. They would prefer move if compensated, but they believe that the GoL will only compensate housing land, not productive land. A construction camp is on their farm land; reportedly, the company is still calculating how much to compensate them. They would prefer to be given kip in order to buy land. With no land available nearby, the entire HH would have to move. A total of 5 ha is affected by the construction camp, with 18 HH expecting compensation sometime this year.

***Nong Xong resettlement village***

In this meeting, seven men and six women discussed the positive and negative aspects of their new home. The primary advantages of their old village were that the land was more productive for rice and they could find food easily, which is no longer the case in their new location. They were able to fish and go into the forest for NTFPs. In their new location, the closest river and closest forest is 1 km away. There is no place for hunting because the conservation area starts from the bottom of the mountain. Their new location provides them with road access which they appreciate and did not have before but at the same time they stated that there was a shortage of food.

Based on their knowledge, THXP provided each HH with the following:

- 60 kg/month rice and 20 kg/month sticky rice for one year, and
- 1 ha of upland rice area. THXP paid the host villagers to cut grass/clear the land before they got there. They believe this land is not as good as their previous land for growing rice, because of its slope, lack of irrigation, and poor soil. Members of the resettlement community have complained to the company about this issue.

Their former houses were larger, although their current houses are newer. The villagers had lived along the river, which allowed them to tend riverbank gardens. The gravity-fed water

systems being installed appear insufficient. They expressed doubts there will be enough water because the borehole was dug during the rainy season -- not the dry season -- so the water table could be different.

The narrow road in front of their homes makes it difficult for walking and turning properly onto other streets. The road and intersections need to be widened.

Many said they would prefer to negotiate with THXP to receive money as compensation rather than land so they can choose their own piece of land, but THXP offered them another alternative, about which they are not enthusiastic – one to two years of technical assistance in growing on this land. Farming inputs appear to be greater on the new land.

In their new location, they have to buy pork from traders; a small committee purchases a pig for the community. During the rainy season, they fish in the river and visit the forest to collect NTFP (bamboo shoots, mushrooms), but they do not have this access to this year round. During the dry season, there are no NTFPs. In their old location, food was plentiful – in the forest, there were small frogs, rattan flowers, grubs, snails), and in the river and tributaries there was fishing.

Some HH brought their domestic animals (chickens), but others had to sell them. They could not bring their cattle because there is no pasture for grazing, and they decided to sell their pigs because of the cassava needed. They are now using the money that they got from selling their livestock to survive. When asked, they could not say where they will get their money in the future when the current resources from the sale of livestock runs out.

**Host village:** From discussions it appeared that their relationship with the host village is not ideal. Instead of being welcomed by the host village, they had to go and introduce themselves and ask them how to survive in their new environment. The host community did not seem to want to share any information as to where to find food etc. No problems were reported at the school, where the children of both the resettled HHs and the host village attend. Due to time constraints, the USAID team did not visit with the host village.

**Work Opportunities:** The women said that there were no work opportunities for them (notably in the textile/garment area). Previously, they could sell their woven cloth to traders from Vientiane. One woman stated that the trader she used to sell her cloth to doesn't know where she is now. The women are particularly interested in learning new skills so they can earn money.

### ***Ban Kongphat***

Ban Kongphat is just upstream of the Nam Hai and the Nam Hinboun confluence. Due to the time of day we arrived at the village, the team was only able to talk to one person. Based on our discussion with him, the river fluctuates at least 1 meter/day with the river levels highest in September – October. Although there are still fish in the river, they can now only be caught in specific areas. Not enough fish are being caught and families need to buy more at the market.

The person described the trees that have disappeared from the riverbanks because of erosion. The river used to be narrow enough to walk across, but is now too wide. Erosion has increased since the THP. They now need to plant their riverbank gardens to match the level of the river to avoid being flooded out.

### ***Ban Thonglom***

Ban Thonglom is located on the Nam Hinboun, approximately 35-40 km downstream of the tailrace. The village is subject to severe flooding, during which they can only move by boat from HH to HH. The villagers we met with were informed 3-4 years ago that they will have to move in 2011 due to THXP, because their village would be flooded during the rainy season. They will be moving close to Ban Fangdeng, a few km away and further from the Nam Hinboun. The consensus of the discussion was that if they had access to electricity and the road was paved, they would like to move.

Some villagers said they would be able to keep their rice fields but would have to change how they farm, to irrigation with electricity or rainfed, because their land will be flooded during the wet season. Currently one harvest can yield up to 2 ton/ha of rice. They expect a lower yield during the dry season because of the impacts of the winds on the seedlings. One woman verified this based on her past experience. Others said that they would lose their rice fields permanently because they were on the other side of the river. Those who will lose their rice fields do not know where they will farm. Ten families have rice fields on the other side.



River gardens that will be lost during the rainy season.

The Nam Hinboun fluctuates on a daily basis. They can only catch fish during low river levels. In the past they could catch enough fish both to feed the family and to sell, but now they can't. When asked when this change started, they said it was when they built the dam. One person stated that the amount of fish is the same except when the river level is high.

Everyone has a river garden but the size is reduced every year due to erosion.

They do not know how this move will impact or change their livelihoods. They were told they had to move and not that this was an option. Currently they are waiting to move so they do not want to invest too much into their current place.

### ***Ban Fangdeng***

Ban Fangdeng is 3 km from the Nam Hinboun, going inland. They do not use the Nam Hinboun but use the Nam Kah Nha, which is only 1 km from their village. The women in this village said that they were also told they would have to move about 3 years ago but don't know why or when. Based on our conversation it seems that they will be moved close to Ban Thonglam's new location, approximately ½ km from their current location. They said that there are three villages that will be moved. The reason they were given for moving was that the water levels will increase and flood the village. They will keep their rice fields but will only be able to use them in the dry season.

The women said that they don't want to move but they had no choice.

### ***Ban Xang***

Ban Xang is about 60 km downstream of the THP power station tailrace. This village is about 50 years old. Villagers were also informed about three years ago by an entity (possibly, THP)



that they would have to move to another nearby area because of THXP. From what they understand, when THXP is in operation, they will only be able to grow upland rice during the dry season because the low lying land will be flooded. This means they will have to grow rice where they are now growing rubber trees. In the past they used paddy land but cannot do that now because of the floods. In the past, the river was low enough to walk across, but now it is too high.

Fields that will be flooded when the project is operational.

Although there are fish, the amount is not sufficient for meeting family needs and selling on the market. The river also used to be clear but now it is cloudy. They now have to go to the market to buy meat because of reduced fish catch.

During the rainy season their buffalo go to the mountain for pasture, so they should be able to take them when they move.

They want to move, because their village is now flooded every year. They are not able to grow enough rice. THP has promised them that 1 ha of irrigated land will be enough for one family. Bank erosion is more pronounced since THP became operational. As a consequence, they are losing land for their riverbank gardens. They will also lose rice fields that are across the river.

Oji Laos Forest Plantation Co Ltd. started planting tree plantations in the area three years ago on land owned by the villagers and given to Oji in return for a road. The road is better than

nothing but is in poor condition and not being maintained. The 100 ha was their surplus growing land for swidden agriculture and they now cannot grow enough rice. Oji said they would put in electricity for irrigation but for now they do not have surplus land for rice cultivation and consequently do not have enough rice. Oji hires very few workers for their plantation. For example, only one person worked for Oji for 10 days and they hired another one to take care of the entire area at 500,000 kip/month (~58 USD equivalent).

Oji has also requested an additional 100 ha across the river where the villagers collect NTFP. They agreed to 50 USD/ha, but they do not know when they will be paid. The head of the District came with the Oji representatives when they requested this additional land. If Oji comes back requesting more land, they will not give them any more.

### **Section 5. Cross Cutting Issues**

WREA is still a young institution, established in 2005 as a mandate of the Laos National Policy. Swedish International Development Cooperation Agency (SIDA) has provided bilateral assistance to WREA under the SEM II Project. One more year remains of SIDA assistance; it is highly likely that the Finnish Government will support continuation of assistance for 4 more years. Capacity building continues to be a critical need.

The EIA Department houses six divisions (industry, mining, forestry, hydropower, infrastructure, and planning) with a total of 83 technical staff. Most staff are young, recent graduates, without EIA experience. Experienced staff are needed to complement the younger staff. In addition, EIA staff are not permanent staff or government workers – some are funded through LENS, not through the normal government channels. The hydropower division has 14 staff assigned to it.

The EIAs are primarily written in English and summarized in Lao. Some parts of the social component of the EIA are translated into Lao because the document goes to the provinces for discussion. A working group with representatives from the line ministries reviews the EIAs. There are mixed opinions as to whether the younger staff have adequate English skills to fully understand the technical aspects of the EIAs.

The institutional framework for the EIA process and approval is outlined below:

- WREA will be responsible for the ESIA review, approval, issue certificate and detail monitoring of the project EMP, SAP, WMP and RAP activity.
- WREA will be responsible for the IEE review, approval, issue certificate and detail monitoring of the project EMP, SAP and other relevant plans.
- Ministry of Agriculture and Forestry will be responsible for the implementation of the project's Watershed Management Plan, including reservoir clearance.
- MEM will be responsible for the ESIA, IEE review and comments/feedback regarding the technical design of the project. MEM is also responsible for the overall management of

the project's compliance with the National Policy. Compliance information will be provided to WREA for monitoring.

The National Assembly has the final approval of all hydropower projects. Reasonable justification must be provided to the National Assembly to not proceed with a hydropower project. One viewpoint raised was that the GoL recognizes that there should be an EIA, EMP and resettlement plan but after those plans are in place, regardless of the findings and impacts, it will be possible to go forward with the project. Therefore it is difficult to promote sound environmental and social safeguards since there is limited monitoring and enforcement of the required environmental documentation. Additionally, several stakeholders stated that mainstem dams will never be decided on based on EIA – the process is political.

**Monitoring:** WREA's EIA office monitors the projects within the project area. It is recognized that organized biodiversity and wildlife monitoring is important since 80% of Laotians live in the forest/mountain areas and depend on these systems for food and livelihood.

**Projects out of compliance:** Until the new Environmental Law comes into effect, WREA is not able to issue fines if a project is out of compliance. WREA can warn/criticize the project sponsor/contractor to make them improve their activities, but no monetary fines can be levied. However, WREA can ask the project sponsor to cut money from the subcontractor. If the subcontractor's activity is not identified in the plan, there is no separate regulation to fine.

**Environmental flows:** There is an understanding that appropriate environmental flows are required for both people's livelihoods and fisheries/ecosystem. Reportedly, the release criteria are based on the dry month flow. However, in discussions it was difficult to determine how this flow was actually calculated – over how many years. The Department of Electricity is responsible for determining the amount of water released. In Nam Leuk, environmental flows were not released since it was felt that with the many small tributaries, flows were not needed; in Xekaman, however, the project releases a minimum environmental flow.

Ambient standards for water quality are in draft and under discussion. Concern was expressed that if the standards are too stringent, they will negatively impact investments. A wide variety of standards were compared for incorporation into the draft. WB standards are currently being followed.

WREA is making progress in the following areas:

- Revision of the environmental protection law and new EIA regulation has been approved in principle. The new EIA decree clarifies roles; gives WREA stronger authority, including monitoring and inspection activities; and provides for capacity building associated with inspections and EIA reviews. The revision is designed to integrate environmental elements (biodiversity, forestry, wetlands) with social elements. WREA would like to have an open discussion/workshop of the new law and regulations before it goes to the National Assembly.

- For hydropower projects, WREA has been more involved in the Concession Agreement (CA) process which has required them to work closely with MEM Energy Promotion Development. Every hydropower project CA now has an annex on environmental and social obligations. The process is underway to prepare a standard approach for obligations based on best available technology. This will set very clear standards of performance, provide a penalty regime, and require a revised EMP when circumstances change. There will also be a requirement to clean up any contamination.
- WREA is working to complete standard environmental and social obligations that should be introduced at the MOU stage.
- In the CA Annex there will be an obligation for funds to go to WREA for monitoring, inspection, capacity building and budget for EPF. There will not be an appeal mechanism associated with fines in the CA. The fine penalty regime is hard enough to serve as deterrence.
- The 9 provincial WREAs can be authorized to review an IEE, participate in the review process, and conduct monitoring/inspections. During construction there are to be 6-7 visits from WREA HQ and the provincial and district officers should be monitoring on a daily basis.
- Guidelines on biomass removal are in the final stages of drafting.

#### **Strategic Environmental Assessments (SEA)/Cumulative Impact Assessments (CIA):**

SEAs are envisioned as tools for assisting the GoL with strategic planning of their hydropower development. Within Laos, there is little experience with this tool although SEA activities are being undertaken under capacity building initiatives funded by the ADB through their Greater Mekong Strategy. Even with the workshops, there is no capacity and still limited understanding to undertake SEAs. SEAs are not defined within the GoL policy or legal framework.

Another major issue is that individual provinces are forging ahead with their own development plans without paying attention to impacts on other provinces or countries. It is thought that the SEA will enable different line agencies to have a voice.

One stakeholder stated that the SEA should be able to influence GoL decisions even after an MOU has been signed or after a feasibility study has been conducted.

CIAs are donor driven and the two that have been conducted in Laos – Nam Ngum Basin and Nam Theun Basin – do not appear to have factored into hydropower planning and development. For example, the Nam Theun 1 hydropower project is located downstream from Nam Theun 2 and Theun-Hinboun, approximately 30 kilometers from the Mekong confluence. Nam Theun 1 was discussed in the Nam Theun 2 CIA, which concluded that the “Nam Theun 1 involves the building of a high dam that makes the project both economically marginal and environmentally doubtful. It is therefore not included in the 20-year plans for hydropower development in Lao PDR.” Preconstruction activities (including road building along the Theun River into the Nam Kading National Park) were initiated at the Nam Theun I site. During the

public consultations for the Nam Ngum CIA, the GoL requested that one recommendation from the CIA be rewritten since the contract with the project sponsor to develop the site had already been signed. The recommendation from the CIA was to not dam another river in the basin, the Nam Lik, because the damming would result in the fragmentation of one of the last intact Mekong tributaries, with serious impacts for fisheries, biodiversity and habitat management. To USAID’s knowledge, a CIA on the cascade of dams on the Nam Ou has not been proposed, yet plans for dam construction and operation are being developed.

### **MOUS and Concession Agreements (CAs)**

DoE’s Environment/Social Department wants to include an environmental bond into the Concession Agreements. The bond would be held by a bank and not with a company. This idea is currently under discussion.

Progress is being made to include relevant GoL agencies in negotiations. Unlike in the past, a WREA representative is now being included when MOUS are being discussed and signed. Although hydropower CAs include a provision for monitoring with a budget, the problem still exists with the process since the developer has already fixed tariffs with previous negotiations with Purchase Price Agreement and so can argue against and safeguard measures that would increase their cost.

### **Status of Other Hydropower Projects:**

Nam Lik 1 – Reportedly, the project sponsors are asking for a high tariff from EdL so this project could be delayed.

Nam Theun 1 – Due to the global financial crisis and the slowing of the Thai economy, construction has ceased on this project, at this point in time. The USAID team was unable to visit the Nam Theun 1 construction site because proper permissions were not sought or obtained and the team was also barred at the gates from entering the Nam Kading National Park. From the road, it did not look as if erosion mitigation measures were in place along the road that cuts through the National Park to the dam site which would



prevent soil and sediment from entering into the Nam Kading during the period of time construction was halted. Additionally, since USAID’s last trip to the site, there has been a very noticeable expansion of charcoal production in the area along with the presence of trucks piled high with large logs.



Charcoal kilns outside of Nam Kading NP.



Logging truck on road from Nam Kading NP.

NT2 – Due to problems with the turbines, COD is not expected until early 2010.

One stakeholder interviewed felt that NT2 was surrounded in a gold-plated aura and that there was not a sophisticated debate on this project as it was a global lightning rod. NT2 is a medium-sized facility and the WB went well beyond its safeguard standards. Accountability for the private sector of livelihood outcomes was transformational. This resulted in a different risk is associated with the project and for the project sponsor with not a lot of upside for the project sponsor.

There are conflicting perspectives as to how well the WMPA is functioning. Currently the Technical Assistance team is in flux and there is no interest on the Laotian side for international experts. Poor management was raised as a key concern and questions regarding the \$ 1 million budget which some view as a slush fund. Additionally, several interviewees felt that the \$1 million budget was not enough to do both Protected Area management and rural development.

Nam Ngum 3 - Because of the financial situation and the slowing of the Thai economy, construction has slowed down on this project, at this point in time. There is discussion as to whether the project should be re-oriented towards domestic use (mining industry) instead of for export.

### **Status of Mekong Mainstem Hydropower Projects:**

There are 11 mainstem dams planned all at different stages of feasibility– 2 (Cambodia); 1 (Lao/Thai); 8 (Lao). Some of the projects are moving more quickly than others. A number of stakeholders are of the opinion that the upper Mekong dams will have less impact than the lower ones - especially on fisheries. In addition to the fisheries issues, there are more concerns with the lower ones concerning transboundary impacts. There are already significant impacts

on the mainstem; including the trapping of sediments and nutrients by the Chinese dams. Reportedly, foreign direct investment required for these projects is at least 24 billion USD.

In addition to fisheries issues, some of the projects will have major impacts. The scope of the impacts is being discussed. An estimated 10-11 million people in the LMB will be affected. Fisheries are already impacted due to other factors. There is already a 47% reduction in sedimentation from the Chinese dams and 3S system in Cambodia contributes 47% sediments going into the Mekong. With human impacts, encroachment – will the dams be the tipping point?

Other issues being raised are: Ban Koum will cause major flooding in Pakse requiring the resettlement of large segment of the population. Pak Beng will impact communities on the Thai side which raises the question of transboundary frameworks for resettlement. SEA is seen as a tool to strengthen the FPIC discussions but the transboundary framework is missing.

The proposed hydropower facility at Don Sahong and the falls has been a focal point of concern for significant adverse impacts on fishery migrations. Recently, a French company (Thako) has proposed a diversion channel off the Mekong, above Don Sahong and the falls. Some stakeholders interviewed, felt that this project has potential for reducing impacts since it is not blocking the mainstem and therefore it could be a viable, sustainable alternative. This project is a direct competitor of Don Sahong since water will be removed upstream and released below the proposed Don Sahong hydropower site.

MRC is designing guidance at basin wide level and conducting an SEA which will be finished mid-2010. The design guidance is looking at potential transboundary issues. The SEA is looking at incremental impacts with the baseline including China's dams and development of the 3S in Cambodia. The upper Chinese dams are in channel reservoirs and are expected to be finished in 2020.

It was reported to USAID that plans for the upper two dams in Laos are developing quickly. Laos has made 2 agreements, one with Thailand for export of 7,000 MW and one with Vietnam for export of 5,000 MW. Therefore it appears that these countries are moving bilaterally without discussion of regional implications. It is highly likely that there will need to be extra resources dedicated to pay for mitigation measures.

Under MRC obligations, hydropower projects on Mekong tributaries require country notification if there is significant impact on the mainstem. However, the MRC continues to be in the process of defining what is significant.

**NGO focus:**

There are NGOs that are focusing on the Lower Mekong Basin (LMB) dams since these dams will have the highest impact on livelihoods and greater severity of impacting the ecosystem. Part of this reasoning is that most fish are in the LMB not in the upper China section.

- For example, WWF is developing a connectivity mapping to show where tributary dams exist and where there are free flowing tributaries. They are asking the question whether it is better to build a cascade of dams on 1-2 tributaries knowing there will be impacts instead of spreading impacts across all tributaries.

### **Implications of the new ADB Safeguard Policy**

Although southern hydropower projects associated with the ADB transmission line are currently considered as associated facilities, with the new policy they will not be. This is a weakening of the safeguards – in the old resettlement policy a minimum due diligence with associated facilities was required, but no longer.