

NEW LAO DAM EMBROILED IN CONTROVERSY

Report from a Fact-Finding Mission to the Nam Mang 3 Hydropower Project



Nam Nyang River, threatened by construction of Nam Mang 3.

International Rivers Network
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This report has been revised in light of information that was unavailable to IRN at the time of publication of the original March 2003 version but was subsequently made available to us.

EXECUTIVE SUMMARY

On November 22, 2002, an unprecedented protest took place in Laos. Some 40 ethnic Hmong men from Ban Phou Khao Khouay marched to the site of the Nam Mang 3 Hydropower Project armed with sticks and guns and demanded to speak with project officials. The villagers were infuriated that they might be evicted from their lands for the project and yet had received no information about where they would be relocated, when they would be moved, or what compensation they would receive. They threatened the contractors, telling them “to pack up and go home” if they failed to answer their questions about resettlement. The protest triggered a halt in dam construction that lasted five days.

This is the first time that a villager-led protest against a dam has been recorded in Lao PDR and the first time that a protest has stopped construction of a dam project in the country.

The villagers who protested took great personal risks by voicing their concerns in a country where political freedoms are restricted and opposition is repressed. The action can be considered a positive step in people’s participation in relation to major infrastructure projects in Laos, if it does not lead to a state backlash against the affected communities.

IRN had been receiving anonymous reports on the social, economic and environmental problems with Nam Mang 3 when this incident came to its attention. The incident prompted IRN to send a researcher to the site to investigate the situation and find out more about affected villagers’ concerns. This report summarizes the findings of a January 2003 field trip to Lao PDR and the analysis of available project documents.

BACKGROUND

The Nam Mang 3 Hydropower Project, located 80 kilometers northeast of Vientiane, has been planned, approved and financed in a nontransparent manner. It is expected to be completed by 2004. Construction began in late 2001 despite the fact that the project design had not been finalized and studies required under Lao laws had not yet been conducted.

The World Bank, International Monetary Fund and Asian Development Bank have expressed concerns about the implementation of the project. Their concerns over the project approval process and procurement procedures, in particular, reportedly halted construction temporarily in 2002.

According to the World Bank, Nam Mang 3 is not economically viable. It is being financed with a non-concessionary loan from China. The World Bank and IMF are concerned that Nam Mang 3 is undermining the Lao government’s efforts to improve the transparency, accountability and fiscal health of its

financial sector. They are concerned that the decision to build the project was made behind closed doors and that it will increase the debt load of the already heavily debt-burdened Lao government.

Some observers believe the World Bank’s real concern is that poor implementation of Nam Mang 3 will cast serious doubts on the Lao government’s capacity to implement the controversial \$1.1 billion Nam Theun 2 Hydropower Project, which the Bank is planning to finance.

At least 15,000 people are likely to suffer impacts to their livelihoods as a direct result of Nam Mang 3 – a huge number given the dam will have an installed capacity of only 40 megawatts. Affected people are frustrated with the lack of transparency surrounding the project. People living in the proposed reservoir area have not been informed of possible plans to relocate them or provide compensation for their lost assets. When questioned, many said they were opposed to moving from their lands.

Efforts to mitigate the impacts of Nam Mang 3 are likely to fail. The project’s own environmental management and social action plan points out the difficulties in successfully mitigating the impacts of Nam Mang 3 due to lack of adequate financial resources and problems with institutional capacity in Laos.

POOR RECORD OF IMPLEMENTATION

The experience with Nam Mang 3 thus far echoes that of other hydro projects in Laos. The Asian Development Bank-funded Nam Leuk Hydropower Project, located in the same river basin, was troubled by cost overruns, poor construction work, inadequate project studies and serious impacts to people’s livelihoods, which remain unmitigated. The Theun-Hinboun Hydropower Project, financed by the ADB

and Norwegian government, also suffered from a poor process of implementation and impacted the livelihoods of thousands of villagers, the majority of whom are still waiting for compensation.

The concerns with Nam Mang 3, coupled with the experiences with Nam Leuk and Theun-Hinboun, point to the great difficulties in implementing large-scale infrastructure projects in Laos. The same problems have been repeated, regardless of which financial institutions, bilateral agencies or contractors are involved.

These experiences bring up fundamental questions regarding the Lao government's institutional capacity and political will to ensure that infrastructure projects are adequately monitored, that compensation is fairly and fully distributed and that environmental issues are properly addressed.

RECOMMENDATIONS

As the World Bank, International Monetary Fund and ADB reportedly pressured the Lao government to stop construction of Nam Mang 3 in 2002, these institutions should urge the government to halt the project until the outstanding problems outlined in this report are resolved.

Furthermore, international financial institutions should not support the construction of any other dams in Laos as long as the Government of Laos does not have the institutional capacity and political will to implement such projects according to international standards. To do otherwise will only harm local communities and the wider population and environment of Laos, which will ultimately bear the long-term costs.

1. PROJECT BACKGROUND

The Nam Mang 3 Hydropower Project is currently being constructed in the Phou Khao Khouay National Protected Area, in an area of relatively high population density, mostly settled by people from the Hmong ethnic minority group.

The project is estimated to cost \$63 million, 20 percent of which will be financed by the Government of Laos and 80 percent of which is being financed by a loan from the China Export-Import Bank. The project will be owned and operated by the state owned utility, Electricité du Laos (EdL). The construction contract was awarded to China International Water and Electric Corporation (CWE) and is described as a “turnkey contract.” CWE was the main contractor for the ADB-financed Nam Leuk Hydropower Project.

The Nam Mang 3 project, which is supposed to be completed by December 2004, will create a 22-meter-high dam and 10 km² reservoir on the Nam Nyang River. Water from the reservoir will pass through a powerhouse with an installed capacity of 40 megawatts. The power is expected to be both used domestically and exported to Thailand. Water discharged from the powerhouse will then be diverted to the nearby Nam Ngam River. Nam Mang 3 is also supposed to irrigate 2,900 hectares in the Nam Ngum plain and is expected to generate annual revenues of \$6.0 million.

IRN had been receiving anonymous reports on the social, economic and environmental problems with Nam Mang 3 when the November 22nd protest came to its attention. The incident prompted IRN to send a researcher to the site to investigate the situation and find out more about affected villagers’ concerns. This report summarizes the findings of a field trip to Lao PDR on January 16-25, 2003 and is also based on the analysis of available project documents.

2. PROJECT ISSUES AND ANALYSIS

2.1 UNPRECEDENTED PROTEST

The researcher spoke with one of the men involved in the protest at the dam site on November 22. The man reported that the incident occurred because villagers were frustrated with the lack of information that government authorities and EdL made available to them about their future. Most of their concerns had been shrugged off.



Proposed Nam Mang 3 inundation area.

Prior to the November 22nd protest, Hmong people living in the affected villages of Ban Vang Hua and Ban Phou Khao Khouay actively protested against relocation from the reservoir area. They wrote letters to district authorities and demanded answers to their questions at local meetings. Some government officials wanted to relocate all 2,700 people (or 374 families) from the villages located in or nearby the inundation zone to the lowlands. When construction of Nam Mang 3 recommenced in November 2002, Hmong villagers living near or within the inundation area began to worry that they would be forcibly resettled and not adequately compensated for their losses.

On November 22, 2002, about 40 men from Ban Phou Khao Khouay marched to the dam site armed with sticks and some guns. They demanded to speak with the officials from CWE and EdL. If they were not given answers to their questions, they wanted the contractors “to pack up and go home.” They were given assurances by the EdL boss onsite that their problems would be considered. After about an hour, the men returned to their village.

Two days later, a large contingent of military personnel and trucks carrying artillery pieces streamed into Ban Phou Khao Khouay, intimidating the villagers, who feared a backlash. By this time, however, the men involved in the protest were spread out in their fields and in the forests so there was no one for the military to confront apart from women and children. The source said that the men came home after the military returned to their barracks. No one was arrested for the incident, but it prompted a halt to dam construction for five days and prompted CWE to write a letter to EdL informing them of the incident. A series of meetings with district authorities ensued.

The villagers who protested took great personal risks by voicing their concerns in a country where political freedoms are restricted and opposition is repressed. The action can be considered a positive step in people's participation in relation to major infrastructure projects in Laos, if it does not lead to a state backlash against the affected communities.

2.2 ECONOMIC VIABILITY

According to the World Bank, Nam Mang 3 will not be economically viable even under the most optimistic projections. The Bank estimates that project costs would have to be reduced by at least 20 percent to make the project viable. Although construction has only been underway for a little more than a year, the project is already experiencing serious cost overruns. According to one source, Bank staff were "scathing about the prices being paid for electro-mechanical equipment." The source estimates that equipment purchased in China by CWE was overpriced by \$5 million.

Nam Mang 3 is being financed with a non-concessionary loan from China, which the World Bank and International Monetary Fund feel contravenes the Lao government's efforts to reform its financial sector. Last year, the World Bank approved \$45 million in credits for the Lao government to improve the transparency, accountability and health of its financial sector. The World Bank and IMF are concerned that the decision to build Nam Mang 3 was made behind closed doors and that it will increase the debt load of the already heavily debt-burdened Lao government.

Some observers believe the World Bank's real concern is that poor implementation of Nam Mang 3 will cast serious doubts on the Lao government's capacity to implement the controversial \$1.1 billion Nam Theun 2 Hydropower Project, for which the Bank plans to provide financing and guarantees.

There is no separate power purchase agreement with Thailand to buy power from Nam Mang 3. Power from Nam Mang 3 will likely be shipped through the existing transmission line at the Nam Ngum Hydropower Project, and covered under the Nam Ngum power purchase agreement, meaning that Thailand will pay a very low price for the power and the Lao government will receive little economic benefit. The Lao government may also have difficulty collecting payments from Laotian electricity consumers. EdL recently reported that it is having problems collecting money owed by

electricity users in the country, especially state organizations, which have racked up \$7.9 million of unpaid debt.

There is concern about whether the project will be able to produce as much power as predicted. One anonymous source claims that the contractor, CWE, exaggerated the amount of water in the basin available for power generation. This supposedly allowed CWE to eliminate a second reservoir and pumping station below the main dam from the overall design. This should have saved CWE considerable construction costs, however, these theoretical savings have not been factored into the overall cost estimate.

It is likely that there will not be enough water in the reservoir to generate power during the dry season, when power and irrigation demand are heaviest. A simple calculation shows that Nam Mang 3 may only be able to generate power for two months during the dry season before the reservoir is drained to its minimum operating level (based on 24 hour per day operation). This could be extended to four months if the dam is operated for 12 hours a day. However, this is still only a portion of the six to eight month long dry season.

Construction of roads and other project infrastructure and the potential expansion of cultivated areas by relocated villagers is also likely to increase erosion in the watershed. This could lead to the filling of the reservoir with sediment, which would greatly reduce the dam's operational lifespan.

2.3 VIOLATION OF LAO REGULATIONS

Nam Mang 3 was never considered a high priority project for construction. Therefore, observers were surprised when construction began in November 2001, before the project design had been finalized and before an environmental impact assessment, social action plan or environmental management plan were produced. These studies are required under Lao PDR's Environmental Protection Law and Regulations for Environmental Assessment.

The World Bank and International Monetary Fund have voiced criticisms to the Lao government about allowing the project to proceed. The ADB, which funded the original Nam Mang 3 feasibility study, was also critical that construction was proceeding without an environmental impact assessment.

According to the British consultant company Resource Management & Research (RMR),

TABLE 1 – PEOPLE AFFECTED BY NAM MANG 3

Location	Number of People Affected	Potential Impacts
Reservoir and catchment area	2,745 people (or 374 households) in 3 villages	Loss of houses, land, graves and agricultural production areas; possible forced resettlement to lowland areas yet to be developed for agriculture
Nam Nyang (Donor River)	At least 6,000 people (or 900 households) in 6 villages along Nam Leuk and Nam Mang rivers; An unknown number of villagers who depend on the Nam Nyang and its resources during the dry season	Impacts to livelihoods due to declines in fisheries, poor water quality; possible decline in non-timber forest products along riverbank
Nam Ngam (Recipient River)	6,800 people (or 1,136 households) in 7 villages	Impacts to livelihoods due to increased flows, erosion, sedimentation, flooding, decline in fisheries
Transmission line	Undetermined	Loss of land and homes

construction was temporarily halted during the 2002 rainy season after these institutions expressed concerns about the project approval process and procurement procedures. They reportedly urged the government to halt construction for at least a year until the required social and environmental studies could be completed. However, construction resumed after a short work stoppage.

This poor implementation process reportedly prompted the World Bank to request Electricité du Laos to hire a consultant company to carry out the required studies. As a result, CWE hired RMR in March 2002 to prepare a “catch up” environmental impact assessment, social action plan and environmental management plan in 4½ months.

This is an inadequate period of time to conduct comprehensive studies of such a complex project. RMR admits that it normally takes at least two years to prepare these documents. Nevertheless, the studies were approved by the Science, Technology and Environment Agency (STEA), under the Lao Prime Minister’s Office, and presented to selected stakeholders at a meeting on September 16, 2002.

RMR consultants are now implementing the environmental and social plans, although it is unclear whether CWE and the Lao government will fund all the measures recommended in the plans.

According to RMR, Nam Mang 3 has been granted “Emergency Procedure” status. The project has

continued virtually unhindered except for the two temporary halts to construction in 2002.

2.4 SOCIAL IMPACTS

Nam Mang 3 will potentially disrupt the lives and livelihoods of about 15,000 people. The parts of Vientiane and Bolikhamsay Provinces that will experience direct negative impacts as a result of Nam Mang 3, with approximate numbers of people who will be affected, are included in Table 1.

The following information is based on a rapid investigation of villages to be impacted by Nam Mang 3. The researcher spent four days in the Nam Mang 3 area talking with villagers about their situations and knowledge of the project. The researcher visited three villages on the Phou Khao Khouay plateau; the Nam Ngam village located near the powerhouse and at the head of the Nam Ngam River; and three villages situated along the Nam Leuk River, all of which utilize the natural resources of the Nam Nyang River.

Due to the political system in Lao PDR, it is not possible to name all sources of information as the anonymity of the parties involved must be ensured for their safety. This report is not exhaustive or comprehensive and a number of other important issues should be researched more thoroughly before coming to any final conclusions.

2.4.1 Villages in Reservoir Area

The researcher spoke with villagers in the inundation area to hear their opinions about possible resettlement. About 2,700 villagers living in three villages will be impacted by inundation for the Nam Mang 3 reservoir. Many will lose homes, rice paddies, fruit trees, plantations, fish ponds, grazing lands and gravesites. These three villages are Ban Phou Khao Khouay, Ban Vang Hua and Ban Phou Khao Keo.

Despite government reports to the contrary, people living in the two Hmong villages of Ban Phou Khao Khouay and Ban Vang Hua are adamant that they do not want to be resettled to the lowlands. They want a compensation package that would give them the option of buying land on the open market themselves and would adequately cover their loss of land and property.

Lack of transparency/resettlement plans unclear

From this visit, it became apparent that villagers have different understandings of the resettlement and compensation issues. Clear information has not been made available to communities as a whole and individuals are at the bottom of a very top down process of decision making. The only common thread was that after dam construction started in 2001, villagers knew about the dam and the possibility of having to be resettled.

Although construction is well underway, it is still not clear whether residents will be relocated. The RMR consultant currently recommends relocating Ban Phou Khao Keo to a new lowland site in Thoulakhom District and allowing the two other villages to remain in or near their present sites. The Government of Laos has been ambivalent about the fate of the three villages. According to one source who has worked in Lao PDR for many years, some people in the National Assembly, the Lao Front for National Construction and the Vientiane Provincial administration are opposed to forcibly relocating the villagers; others are in favor of moving them all to the lowlands, preferably within a government planned settlement.

As of December 2002, it sounded like Ban Phou Khao Keo would be willing to move to a new village in Thoulakhom District provided by the government; Ban Vang Hua would not move; and villagers in Ban Phou Khao Khouay would decide whether they wanted to move or not.



Women who may be displaced by Nam Mang 3 embroidering cloth in Ban Phou Khao Khouay.

It is questionable whether it is possible to prepare an adequate resettlement site, which does not conflict with the interests of existing land users, within the next two years before Nam Mang 3 is complete.

Ban Phou Khao Khouay

All villagers spoken to in Ban Phou Khao Khouay (where 38% of household structures and 70% of paddy fields are to be flooded) said they do not want to move to a new location in the lowlands and would prefer to relocate as close to their present site as possible. They gave several reasons for their decision: they prefer the cool and benign climate on the Phou Khao Khouay plateau; their health declines when living in the lowlands, especially amongst the children; they are used to living in a mountainous environment; they can maintain a reasonable living where they are at present by cultivating paddy fields that will not be inundated and expanding new ones outside of the reservoir area; and they can adapt to new conditions by the reservoir.

The villagers are also aware of the relocation of Hmong and Ieu-Mien ethnic groups in Lao PDR that have failed and do not want to make the same mistake themselves. They have little trust in the Government of Laos' promises of "a better life" in the lowlands and have heard of many incidents where money allocated for compensation has been skimmed off before reaching the intended beneficiaries. One

person raised four examples of unsuccessful relocation attempts and said in each case the people “ended up poorer.” Until they see a prepared site with irrigated rice fields and better living conditions than they presently enjoy, they will be very suspicious of any attempts to relocate them.

The villagers in Ban Phou Khao Khouay would prefer direct cash compensation for their losses, judged at a fair rate, so they can purchase paddy land in other areas to make up for their loss of rice production. This solution would allow them to remain at or near their present site and maintain their traditional livelihoods (such as the collection of non-timber forest products and raising cattle, goats and buffalo), whilst taking advantage of new opportunities provided by the reservoir, like fishing. (Note that the reservoir is not expected to be very productive for fisheries due to its relatively high altitude and expected low water levels in the dry season.)

The villagers interviewed had different ideas about what constituted “fair” compensation. Their main concern was compensation for the loss of paddy land, which at present produces annual yields of 1.5 - 2.5 tons per hectare. This provides the basis of their food security. Values of \$3,000 - \$8,000 per hectare were given. Land in the lowlands (where rice yields are generally higher), now sell for between \$4,000 - \$5,000 per hectare. Other assets they would like to be compensated for include their houses and outbuildings, fish ponds, fruit trees and grave sites. At least 147 grave sites will also be flooded according to the RMR study, but to date, no decision has been made about where they should be moved to.

Ban Vang Hua

The attitudes of villagers in Ban Vang Hua are similar to those of people from Ban Phou Khao Khouay. Although no homes are to be flooded, the village will lose an estimated 36% of its paddy land and 189 hectares of grazing land, plus a significant number of fish ponds, fruit trees and graves. Most of the villagers who were interviewed said they want to stay in their existing homes and receive cash compensation for any losses incurred. Moving to the lowlands is not an option they want to consider. If they do have to move, they prefer to receive assistance in the form of money and rice over a number of years and then move to relatives’ villages in Vientiane and other provinces where they could start anew. However, this option would break up the community.



Man and granddaughter from Ban Phou Khao Keo who may be resettled by Nam Mang 3.

A preferable option would be to open up and develop new production areas on the plateau for villagers who will lose paddy land to the dam. Apparently there is land available in the vicinity of Ban Papek (one of the three sub-villages included in the larger community of Ban Vang Hua). According to one villager in Ban Papek, this option is being considered. However, the area available and suitability for rice cultivation are uncertain. Some villagers were under the impression that the English RMR consultant living in Ban Vang Hua, while conducting the social and environmental studies for the dam, recommended a higher rate of compensation (\$3,000 per hectare) than district officials (\$2,400 per hectare). While they feel this rate better reflects their potential losses, villagers said it is insufficient to buy lowland paddy at current prices and therefore are demanding \$3,600 per hectare.

Ban Phou Khao Keo

Ban Phou Khao Keo villagers (27 households) are willing to move to a new site, which they have inspected, on the Nam Ngum plain in Thoulakhom District. They believe the Government of Laos will provide houses, land plots and irrigated paddy fields for each family. However, they are not sure of the timetable for relocation or how long it will take to develop the new site. The majority of the villagers

are ethnic Lao and are retired or family of military personnel who were originally stationed on Phou Khao Khouay about 25 years ago to protect an airfield and were later employed to raise cattle belonging to the Lao army.

An elderly villager said it would be better for their families to move to the lowlands so they would be closer to schools and medical facilities, and they could get much higher yields of rice from irrigated fields than they currently harvest. However, the villagers raise a lot of cattle as one of their major sources of income. It is not clear whether there will be suitable grazing lands in the more densely populated lowland plains to support the same head of cattle, bearing in mind that they will lose at least 472 hectares on the plateau. Based on experiences with the Nam Leuk Dam, it seems likely that benefits expected by the villagers will not be forthcoming, or will be less than expected.

2.4.2 Villages Along Nam Nyang (Donor River)

Transbasin diversion projects, like Nam Mang 3, typically have severe wide-ranging impacts on ecosystems and communities because they disrupt the hydrological patterns of multiple river systems. Nam Mang 3 will divert water from the Nam Nyang and thus dramatically lower water levels downstream of the dam. This will certainly reduce fish populations, impact riverbank gardens and impair drinking and other domestic water supplies. It may also reduce the water table near these downstream areas, as has been the case along the Kading River downstream from the ADB-funded Theun-Hinboun Hydropower Project in Khammouane Province. Decreased flow will also restrict the migration of fish populations.

Located close to the dam site, Ban Vang Hua and the smaller sub-village of Ban Gang rely heavily on water from the Nam Nyang for drinking and for their livestock, especially in the dry season. During the dry season, the diversion of water for Nam Mang 3 is expected to dry up the Nam Nyang River. Long sections of the Nam Nyang will probably become little more than a series of stagnant pools for possibly 4 - 6 months of the year. This will have severe consequences for aquatic biodiversity, fisheries productivity, riparian vegetation diversity and quality, water table levels and water quality. Lower water levels will make it more difficult for fish migrating upstream to negotiate past the Tat Nyang waterfalls and other rapids. This will block



Families increasingly rely on hunting in the Nam Nyang valley since the Nam Leuk Dam caused a decline in fisheries.

their access to upstream spawning and feeding habitats. Water quality changes will damage habitat.

Though the project is not yet completed, impacts are already being felt. People in the first village below the Tat Nyang waterfall report that for the first time the typically crystal clear Nam Nyang water was running slightly cloudy in January.

Nam Mang 3 will dramatically impact the fishery in the Nam Nyang, compounding the hardship and livelihood loss already felt by families relying on fishing in the lower Nam Leuk and Nam Mang basins. The Nam Nyang flows into the Nam Leuk, before joining the Nam Mang River. People living along the lower Nam Mang and Nam Leuk rivers have already suffered from serious impacts to fisheries caused by the Nam Leuk Hydropower Project.

In 1994, Ian Baird estimated that at least 900 families in 6 villages (Ban Nyang Kheua, Ban Phone Ngam, Ban Houay Leuk, Ban Hat Khai, Ban Tha Bok and Ban Palai) lived along the banks of these two rivers and would be negatively affected by the combined impacts of the Nam Leuk and Nam Mang 3 projects.

However, the total number of people who will be negatively impacted by reduced flows and declines in fishery productivity will be much higher than the population of the immediate villages suggests, as Baird also pointed out. People living in the two villages closest to the Nam Nyang – Ban Nyang Kheua and Ban Phone Ngam – report that villagers from further afield in the Mekong floodplain also utilize the Nam Nyang fishery in the dry season, camping on the banks for several days at a time, and setting gill nets, baited hooks, etc.

2.4.3 Villages Along Nam Ngam (Recipient River)

Nam Mang 3 will divert water from the Nam Nyang River to the Nam Ngam River, impacting at least 1,100 households in seven villages who depend on the Nam Ngam for fisheries, irrigation and riverbank gardens. With such large numbers of people currently living along the Nam Ngam River, it is critical that their needs be given high priority.

The controversial Theun-Hinboun Hydropower Project, completed in central Laos in 1998, is a good indicator of the possible future impacts of Nam Mang 3. Theun-Hinboun diverts water from the Theun River to the Hai and Hinboun rivers. As a result, people living along the Hai and Hinboun rivers have suffered from declines in fisheries, inundation of dry season drinking water sources and flooding of vegetable gardens. The added flow has also severely eroded riverbanks along the Hai River for several kilometers. This has impeded villagers' access to the river and destroyed vegetable gardens and threatens to lead to the eventual collapse of some homes.

The added flow to the Nam Ngam from Nam Mang 3 is expected to be environmentally and economically damaging to downstream users. Villagers in this area currently consume about 1 - 8 kilograms of fish per month on average, most of which comes from the seasonal streams and ponds scattered over the plains. The riverine ecosystem of the Nam Ngam will be radically altered by the new flow regime, which will likely destroy spawning habitat for migratory fish. This may reduce wild fisheries, as native migratory species find it difficult to adapt to the new flow regime.

Mekong basin fish are highly vulnerable to habitat change, and there is growing evidence that this has caused far greater declines in biodiversity and populations than overfishing (i.e., Pak Mun Dam, Northeast Thailand; Theun-Hinboun Dam, Central Laos; Yali Falls Dam, Northeast Cambodia, etc.).

In addition, exotic fish species stocked in rice fields and ponds will be more vulnerable to escape by increased flooding, causing economic losses to villagers. Native fish species could also decline due to increase in diseases and competition with these escaped exotics. Altered water quality and temperatures are also likely to cause changes in lower foodweb diversity and availability of food. Increased water flow may also lead to erosion and flooding.

2.4.4 Impacts of Other Project Infrastructure

Roads, tunnels and transmission lines

Construction of roads, penstock, tunnels and transmission lines for Nam Mang 3 has the potential to cause serious impacts to the protected area and watercourses below. Already, there are reports that a road has been cut up a steep mountainside and fill has been carelessly placed on either sides of the road. When the rain comes, this soil and debris will be washed into the fragile irrigation systems located below.

The roads and tunnel built on the steep slopes of the Phou Khao Khouay escarpment are likely to lead to severe erosion during the rainy season, especially in the first two years after construction when vegetation has not yet become established and bare soil is exposed.

Greater erosion may lead to increased flooding, sedimentation and severe ecological changes in the downstream watercourses. This would impact the ecological balance of the river, affecting processes such as fish spawning and feeding. More serious erosion events and landslides could put downstream users and physical structures like weirs and bridges in danger as well.

When CWE constructed the Nam Leuk Dam, it initially used very poor standards for road and infrastructure construction. This resulted in excessive sedimentation in the Nam Leuk River and prompted the Asian Development Bank to suspend construction for several months in 1997. Without close supervision and tight environmental controls, the problems with sedimentation at Nam Leuk are likely to be repeated with Nam Mang 3.

Further, the works underway have physically separated what was once contiguous healthy forested land into two separate blocks along the escarpment, with no wildlife corridor in between. This may diminish the ecological value of the NPA, fragment



Construction of roads for the project will damage fragile ecosystems.

wildlife populations and possibly lead to the extinction of some species. The main impacts of transmission line construction will be felt in a straight corridor running across the Nam Ngum and Mekong floodplain to the outskirts of Vientiane, where it will link up to the national grid. This will entail the loss of agricultural land and houses along a 66-kilometer stretch.

Villagers have expressed concern about logging operations on the plateau, apparently in preparation for the reservoir. Some very large trees are being cut down, and villagers are concerned that logging may be occurring outside of the proposed inundation area.

Irrigation

Critics have argued that there is neither the land available nor the institutional ability of CWE and EdL to plan, construct, implement and mitigate the negative effects of the Nam Mang 3 irrigation scheme in such a short space of time. Existing small-scale irrigation schemes (some only a few years old) in the target area would be impacted. These irrigation systems were not in place when the original plans for Nam Mang 3 were drafted and have not been taken into account. In addition, many families will lose production land for construction of the regulation pond, canals, roads and other infrastructure.

Heavily centralised irrigation schemes have a poor track record in Lao PDR because of steep maintenance costs, poor local participation and lower than predicted output; there is no reason to believe that this scheme will be any different. A study in 1994 across 17 villages in the Nam Mang 3 impact area on the Nam Ngum plains found that there was only 1,821 hectares of paddy land in total (Lahmeyer/Worley, 1994). This is about 1,100 hectares shy of the amount of land expected to be irrigated. Therefore, it appears that the projected area to be irrigated by Nam Mang 3 has been greatly exaggerated.

The village that will feel the full effects from the regulating pond and tailrace is Ban Nam Ngam, a Hmong village which has been located at the foot of the Phou Khao Khouay escarpment since 1973. This community will lose land and livelihood opportunities to make way for the project.

Although this village is located nearest to the powerhouse and base camp of CWE, villagers have not yet been informed of the potential impacts of Nam Mang 3 or of possible compensation or mitigation measures. Their location also places them at greater risk of contracting diseases such as HIV/AIDS. Villagers believe the new irrigation canals will not impact their existing irrigation project that is funded by the Japanese International Cooperation Agency, but there is no official verification of this. Ban Nam Ngam villagers will also be impacted by the reservoir as they still utilize the plateau area heavily for livestock grazing and collection of non-timber forest products.

2.5 MITIGATION LIKELY TO FAIL

The RMR environmental management and social action plan outlines a course of action to mitigate impacts to villagers and the environment. The report itself highlights the difficulties in mitigating the impacts of Nam Mang 3. It states,

“The present arrangements for taking care of the social and environmental impacts of the Project are inadequate, in terms of budget, institutional capacity and compliance monitoring and enforcement, for the risks being taken.”

This is a strong charge against the Lao government’s ability to carry out the mitigation program. The report continues that there is a “significant risk” that the social action plan and environmental management plan “may not be executed to the satisfaction of

affected persons, and other stakeholders, particularly multilateral lending institutions...”

The report also states that “Both ADB and EdL, and initially the Consultants, were misled into believing that the NM3 Project had only minor social impacts. The question which now must be asked is whether the expensive and complicated measures needed to mitigate the negative social and environmental consequences of the NM3 Project can be managed by EdL.”

The RMR consultants express concern that the mitigation programs will not be fully funded. The social and environmental mitigation costs of Nam Mang 3 were originally capped at \$2 million by CWE and EdL, before studies on which to base potential costs were completed. The RMR report estimates that mitigation costs will reach \$6.5 million. It is unclear whether CWE or EdL will pay for the additional mitigation costs.

The RMR environmental management and social action plan calls for carrying out baseline studies, monitoring impacts and compensating villagers. The measures proposed underline the scale of the potential impacts on the recipient river and sheer amount of extra work that would have to be carried out in a relatively short period of time if the full impacts were to be mitigated before electricity generation starts in 2005. However, at this late stage, production baselines have not been established. To establish these, extensive studies would have to be carried out for at least one year by trained experts. The likelihood of this measure being completed is very slim at best.

Some of the villagers impacted by the Nam Leuk Hydropower Project report that they have not received adequate compensation for impacts to fisheries, drinking water supplies, vegetable gardens and health. This experience indicates that problems with compensation and mitigation for Nam Mang 3 may likely be repeated.

2.6 IMPACTS TO PROTECTED AREA

Nam Mang 3 is supposed to help conserve and protect the Phou Khao Khouay National Protected Area (NPA). However, this is impossible given the project’s nature. The Nam Mang 3 reservoir will destroy vital wildlife habitat. Two of the rivers that support Phou Khao Khouay’s biodiversity will be severely altered. The reservoir, roads and other



Villagers return from a fishing trip on the Nam Leuk River. Thousands have suffered from unmitigated impacts to fisheries due to the Nam Leuk Dam.

project infrastructure will further destroy and fragment important wildlife habitat.

The lower Nam Nyang also supports a population of Asian elephants, which is reported to range from the Nam Hi watershed right across to the lower Nam Leuk valley. The exact size of the herd is unclear, but is thought to number between 20 - 40 individuals. Considering the increasing rarity of viable wild elephant populations in Southeast Asia, the presence of these animals in the NPA “take[s] on great significance for conservation in the region,” according to a 1994 report by the Wildlife Conservation Society. Any degradation or change in vegetation, habitat and water quality to the lower Nam Nyang could alter elephant migration and feeding areas, with grave consequences for the survival of the herd.

Other mammals of high conservation significance and key species confirmed or reported in the general area of the lower Nam Nyang include sun bears, Asiatic black bears and rare species of small cats, monkeys and bison (Payne *et. al.*, 1995).

The health of Phou Khao Khouay will also depend on whether the three villages in the inundation area are relocated to the lowlands. If they are, it is very likely that the NPA authority (which in this case is the Lao army), in conjunction with EdL, will develop the area for tourism by constructing lodges, restaurants and other infrastructure. If poorly planned and executed, these actions will incur further impacts and risks to the Phou Khao Khouay National Protected Area.

The researcher noted intense logging of pine trees around Ban Phou Khao Keo, but it was impossible to ascertain if this was occurring within or outside of the

inundation zone. Recent reports in the Lao press indicate that illegal logging, facilitated by new roads which have improved access to the area, is already rampant inside Phou Khao Khouay NPA, and is considered a very serious threat to the park.

Furthermore, the reservoir is located at a relatively high altitude on mainly shallow, acidic, sandy soils that are easily eroded and nutrient deficient, and vegetation is relatively sparse. Due to poor water quality, low fertility and low dry season water levels, the reservoir is unlikely to support a significant fishery. Reduced water flow on the Nam Nyang will also diminish the scenic value and tourism potential of the Tat Than and Tat Nyang waterfalls.

The Nam Leuk Hydropower Project, which was also built in the Phou Khao Khouay NPA and involves some of the same mitigation measures as Nam Mang 3, has had a negative impact on the environment. The project was supposed to help conserve the protected area and provide revenues for its management. However, there are concerns that management of Phou Khao Khouay is inadequate and that the one percent of revenues from Nam Leuk required under the ADB loan agreement to be allocated towards the park is not being properly distributed.

There is also an inherent conflict of interest as EdL has had a lot of input into the management plans of the NPA even though its objectives do not necessarily tally with those concerned with the conservation of Phou Khao Khouay. Given this, it is easy to question the viability of Nam Mang 3 to protect natural resources and develop the eco-tourism potential of Phou Khao Khouay.

3. CONCLUSION

Nam Mang 3 is a relatively small hydropower project. It will in all likelihood have negative social and environmental impacts far beyond its proposed worth as an income generator for Lao PDR. The project has been rushed through the loose environmental and social regulations in Laos with little or no public scrutiny. Local communities, who will suffer the consequences of a poorly conceived and implemented hydropower project, have been excluded from the decision-making process and are not aware of their rights to compensation and redress.

The experience with Nam Mang 3 thus far echoes that of other hydropower projects in Laos. The Nam Leuk Hydropower Project, financed by the ADB and

Japanese government, was troubled by cost overruns, poor construction practices, inadequate project studies and serious impacts to people's livelihoods. The Theun-Hinboun Hydropower Project, financed by the ADB and Norwegian government, suffered from a poor process of implementation and impacted the livelihoods of thousands of villagers, the majority of whom are still waiting for compensation. These problems are being repeated with Nam Mang 3. The only difference is that affected villagers have raised the stakes by resisting the project and organizing a first-of-its-kind protest.

The concerns with Nam Mang 3, coupled with the experiences with Nam Leuk and Theun-Hinboun, point to the great difficulties in implementing large-scale infrastructure projects in Laos. The same problems have been repeated, regardless of which financial institutions, bilateral agencies or contractors are involved.

These experiences call into question the ability of Electricité du Laos to carry out such projects, and bring up fundamental questions regarding the Lao government's institutional capacity and political will to ensure that infrastructure projects are adequately monitored, that compensation is fairly and fully distributed and that environmental issues are properly addressed.

Electricité du Laos and the Asian Development Bank claim that improvements have been made in Laos. However, the implementation of Nam Mang 3 highlights ongoing problems with accountability, transparency and environmental sustainability.

As the World Bank, International Monetary Fund and Asian Development Bank reportedly pressured the Lao government to stop construction of Nam Mang 3 in 2002, these institutions should urge the government to halt the project until the outstanding problems outlined in this report are resolved.

Furthermore, international financial institutions should not support the construction of any other dams in Laos as long as the Government of Laos does not have the institutional capacity and political will to implement such projects according to international standards. To do otherwise will only harm local communities and the wider population and environment of Laos, which will ultimately bear the long-term costs.

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