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# The People and their River, the World Bank and its Dam: Revisiting the Xe Bang Fai River in Laos

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**ABSTRACT**

Sustained criticism in the 1980s and 1990s resulted in a decline of World Bank funding for large hydropower dams. The Bank subsequently participated in the World Commission on Dams process, which set higher global standards for hydropower dams. In 2005, the World Bank agreed to support the Nam Theun 2 Hydropower Project (NT2) in Laos, and in 2010 NT2 began diverting water from the Theun River into the Xe Bang Fai River. The World Bank has promoted NT2 as a successful model of poverty alleviation, justifying support for other large dams. Assessing actual impacts and associated mitigation and compensation is thus timely. This article presents qualitative field research from early 2014 about the downstream impacts of NT2 in the Xe Bang Fai River basin and a description and analysis of efforts to compensate for losses. The authors consider the situation with the assistance of baseline data collected in 2001, before project approval. Findings suggest that NT2 has had a significant negative impact, including on the livelihoods of large numbers of people dependent on the river's resources. Many of those impacted view compensation and mitigation efforts as having failed to adequately address their losses. Further independent investigation and documentation are needed.

## INTRODUCTION

In the 1980s and 1990s evidence of serious social and environmental consequences of large-scale hydropower dams mounted. The World Bank became the focus of criticism due to its key role in financing hydropower projects in developing countries — projects associated with forced resettlement, the

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impoverishment of local communities, human rights violations, and serious environmental damage (Goldsmith and Hilyard, 1984; McCully, 1996; Scudder, 1994). Faced with intense public scrutiny — including by dam-affected communities themselves — the World Bank drastically reduced direct funding to large-scale hydropower in the 1990s. The controversy led to the establishment, in April 1997 and with World Bank support, of the World Commission on Dams (WCD), in order to investigate the environmental, social and economic impacts of large dam development globally. The WCD's final report, released in 2000, acknowledged many of the criticisms that had been made of large-scale hydropower and its financiers and recommended higher global standards for future projects (WCD, 2000).

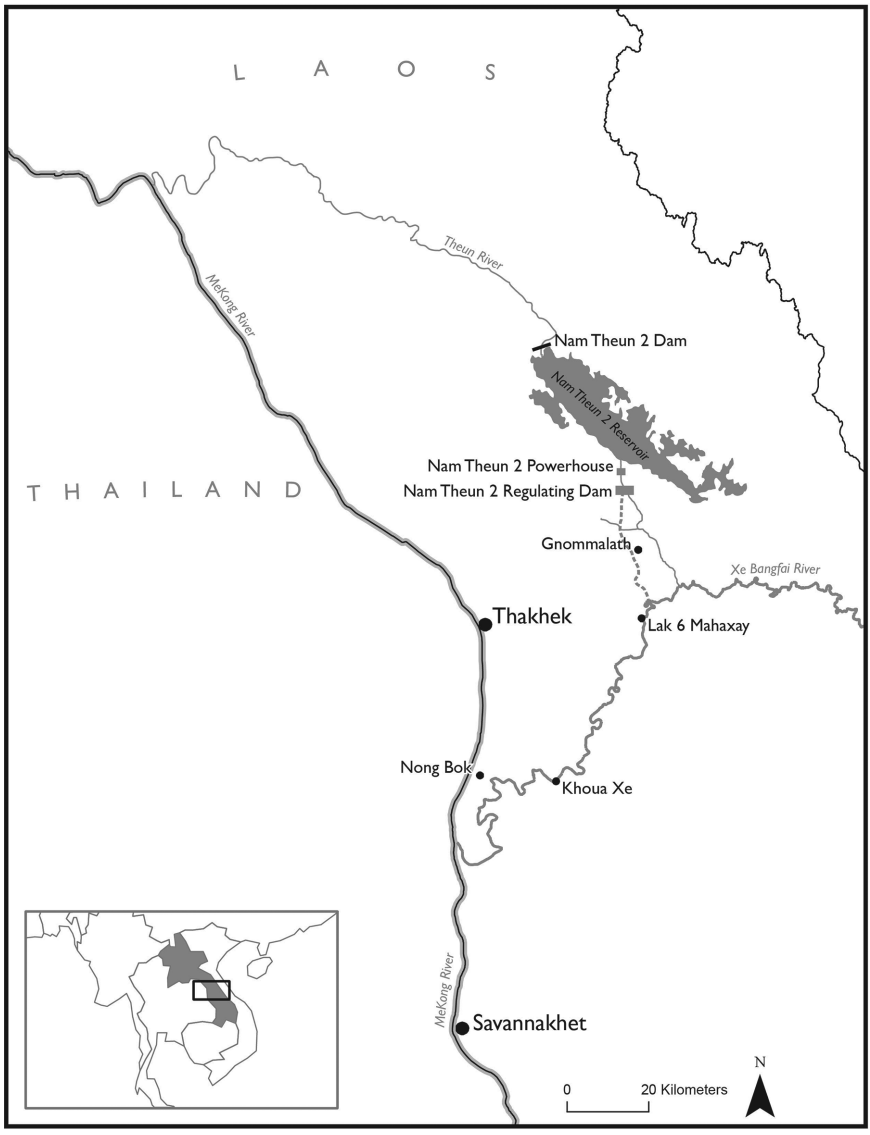
Despite the earlier criticisms and the WCD's findings, the World Bank soon began to explore a resumption of funding for large dams. Jamal Saghir, World Bank Director of Energy, Transport and Water, has since stated:

> In a world of growing demand for clean, reliable and affordable energy, the role of hydropower and multipurpose water infrastructure, which also offers important opportunities for poverty alleviation and sustainable development, is expanding . . . . Hydropower as a renewable energy also plays a unique dual role in climate change: as an adaptation strategy for growing weather variability and as a renewable resource to move economies to a lower-carbon future. (World Bank, 2009: 1)

In 2005, after sixteen years of planning, consideration and controversy, the World Bank agreed to provide financial guarantees and other support for the proposed US$ 1.45 billion, 1,070 MW Nam Theun 2 Hydropower Project (NT2) in central Laos (Porter and Shivakumar, 2011); see Figure 1. While planning began well before the WCD report, NT2 has more recently represented an attempt to create a new model for large dams in the post-WCD era, at a time when higher social and environmental standards were expected. The project moved ahead within the context of increasing global concerns about climate change and the rise of narratives associated with contested attempts to reconstruct energy produced by large hydropower dams as 'clean energy' (Fearnside, 2007) and using a 'poverty alleviation' discourse: 'The NT2 project that was approved by the World Bank in 2005 has a development objective of generating revenues, through the environmentally and socially sustainable development of NT2's hydropower potential, that will be used to finance priority poverty reduction and environmental management programs' (Porter and Shivakumar, 2011: 4).

In May 2013, the World Bank announced that 'it was back' and ready to resume lending for large hydropower globally (Schneider, 2013). As Rachel Kyte, the World Bank's vice president for sustainable development — and an influential advisor to the World Bank's President, Jim Yong Kim — put it, 'Large hydro is a very big part of the solution for Africa and South Asia and Southeast Asia. . . . I fundamentally believe we have to be involved'. The earlier move away from hydro, she stated, 'was the wrong message. . . . That was then. This is now. We are back' (ibid.).

*Figure 1. The Project Area of the Nam Theun 2 Dam*




The World Bank has pointed to the purported success of NT2 as a primary justification for a wider scale re-engagement in large hydropower: it considers NT2 to be a new model for such development not only in Laos but globally. According to Porter and Shivakumar (2011: 2), '[NT2] provides strong evidence of the World Bank's reengagement in the hydropower sector'; '[with NT2's] large geographic footprint and multiple impacts, it

constitutes a test case for project-specific environmental and social protection policies that have the potential to be broadly replicated' (ibid.: 8). Based on this, the World Bank is now moving ahead with plans to support new large hydropower dams in various parts of the world, including the Congo, Zambia and Nepal (Schneider, 2013).

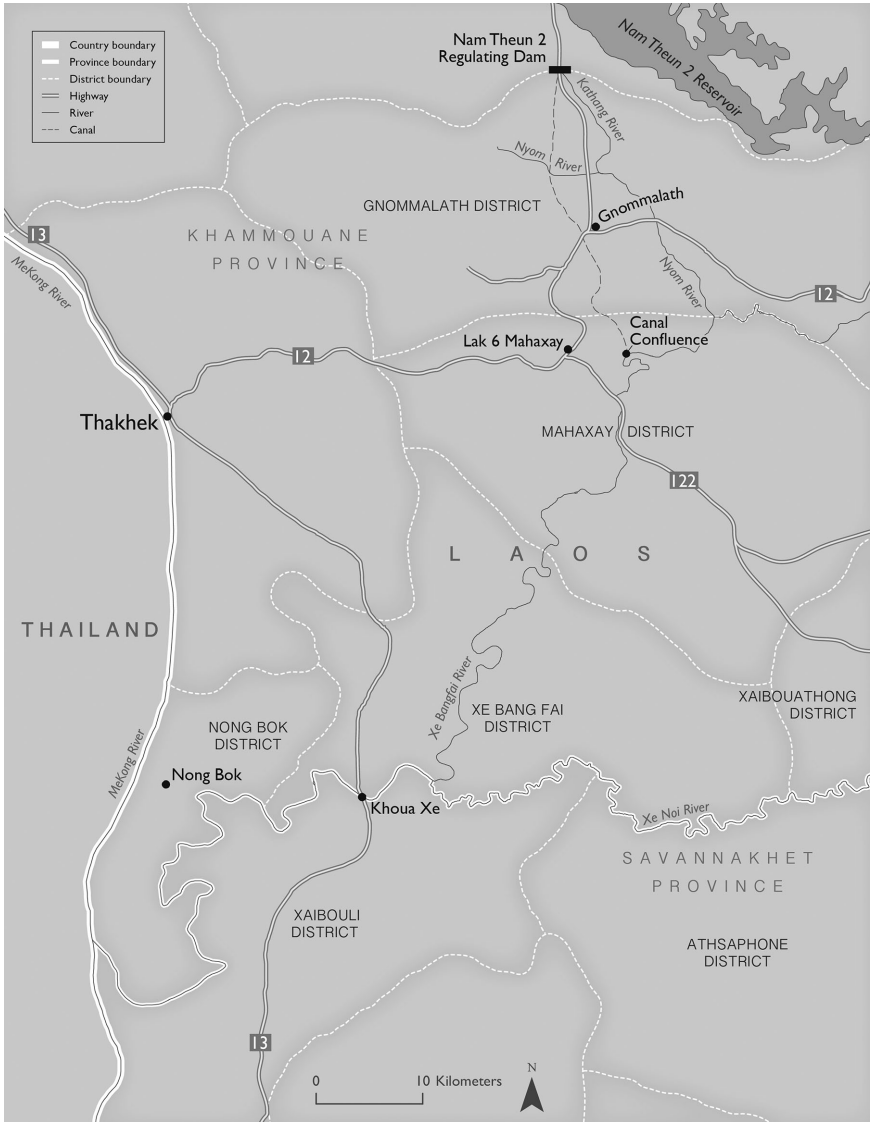
The World Bank's promotion of NT2 as a successful model justifying its re-engagement with large-scale hydropower is worth examining. The social and environmental issues associated with NT2 have focused on three areas: 1) the resettlement of 6300 people and loss of wildlife habitat in the reservoir zone; 2) management and conservation of the adjacent Nakai-Nam Theun National Protected Area; and 3) downstream impacts in the Xe Bang Fai (XBF) and Theun-Kading river basins. While most NT2-impacted people live in the XBF basin, more attention has been placed on resettlement issues on the Nakai plateau, in the reservoir zone. This is not unusual: Richter et al. (2010) and Scudder (2005) have pointed out that globally much more attention has been paid to resettlement issues in reservoir areas of dams than to impacts in downstream areas. However, negative downstream impacts of dams have received increased attention in the Mekong Basin (Molle et al., 2009), including a focus on mainstream Mekong dams in China (Hirsch, 2010), Vietnam's Yali Falls dam (Wyatt and Baird, 2007), a tributary dam in Laos (Shoemaker, 1998; Whitington, 2012), and, most recently, large dams planned for the Mekong River in Laos (Kuenzer et al., 2013).

In this article we examine the downstream impacts of NT2 in the XBF basin and the efforts made by the project developer and financiers to mitigate impacts and compensate for losses, presenting recent village-level research findings. In particular, we consider the present situation compared with baseline data about river-based livelihoods collected in 2001 (Shoemaker et al., 2001), several years before NT2 was approved. Revisiting the XBF, following the completion of a Downstream Programme meant to mitigate impacts and provide compensation in the area where most project-affected people live, allows for a consideration of the World Bank's claim to have reduced poverty through its involvement in NT2 and its promotion of the project to justify its re-entry into lending for large-scale hydropower. The XBF is only part of the NT2 story — this article does not attempt to assess downstream issues below the dam in the Theun River basin, nor to evaluate NT2 as a whole — but it is an important part.

## METHODOLOGY

This study follows up on research conducted in February–March 2001, which was the basis for publication of *The People and Their River: A Survey of River-based Livelihoods in the Xe Bang Fai River Basin in Central Lao PDR* (Shoemaker et al., 2001). Two of the three authors of that study are also authors of this article.

*Figure 2. The Study Area*




The authors, who all speak Lao and have considerable training and experience doing qualitative research, conducted fieldwork for this article between 30 December 2013 and 18 January 2014. In total, twenty-six villages in seven districts and two provinces in the XBF basin were visited and people from a number of other communities in the basin were interviewed (see Figures 1 and 2). Many of these were the same villages visited in 2001, and

both the 2001 and 2014 studies involved similar amounts of fieldwork. We took a qualitative approach to the research. We prepared interview guidelines with key questions formulated prior to going to the field. Our study was not designed to provide a detailed assessment of all aspects of impacts in each village we visited. In some cases we only spoke with a few people in particular villages. We were, however, able to gain a detailed understanding of the overall circumstances in the XBF basin in relation to the impacts of NT2. We often operated as individuals or pairs when in the villages, thus allowing us to conduct a relatively large number of interviews within a short period of time. Indicative of the depth of the broad-scale nature of our assessment, well over 100 people, about half of whom were women, were interviewed throughout the study, for varying lengths of time, and on various topics.

The research methodology was based on the current Lao political and cultural context. Hydropower in general and NT2 in particular have been controversial. Conducting an official study, if approved, would have meant that Government of Laos (GoL) and project officials would have joined the study team for its village visits. Given the GoL's strong support for NT2 and the lack of tolerance for dissent or opposing views in the country, it would have been highly unlikely that villagers would have been willing to speak openly, engage in frank discussions, or have been comfortable making critical remarks. Therefore, we chose a more informal approach, visiting villages on our own, travelling by boat, foot, truck and public transportation, and staying in or near the villages we were studying. Rather than organizing formal village meetings, we spoke with small groups and individuals, at their homes, in their rice fields, along their river banks and elsewhere. We did not associate ourselves with the project developers but informed people that we had previously lived and worked in Laos, had conducted the previous study, and were interested in learning how the river and people's livelihoods had changed since then. We spoke with the better off and the poorer, women and men, younger and older people. We heard a variety of perspectives, which would have been more difficult had we been part of an official study. While we acknowledge having a healthy scepticism about some of the project's claims, we were open to learning about both positive and negative aspects of NT2 and maintained a neutral stance during our interviews. We conducted an extensive literature review and had a number of pre-trip and follow-up interviews with people familiar with the project. We have also considered our findings in relation to the NT2 Panel of Experts (POE) reports.

This approach has some limitations. Nevertheless, it is the most in-depth independent study of the situation in the XBF to have taken place since the completion of NT2. We also believe that our research methodology has considerable advantages over more formal approaches, as outlined above. This study should not be considered the final word on this topic, but rather one particular contribution to understanding the aspects of NT2 directly related to the XBF basin.

## THE NAM THEUN 2 HYDROPOWER PROJECT

NT2 is the largest dam in Laos; when construction began in 2005, it was the biggest foreign investment project in the country. The Nam Theun 2 Power Company (NTPC) is 40 per cent owned by Electricité du France, 35 per cent by Electricity Generating Public Company in Thailand and 25 per cent by the GoL. A number of European banks, export credit agencies and the Asian Development Bank (ADB) also provided financing. The World Bank guaranteed loans in relation to 'political risk' and provided various other forms of project support (Porter and Shivakumar, 2011). The World Bank's role in the project was crucial; it has been referred to as the 'deal maker' (ibid.: 13). NT2 has a twenty-five-year concession agreement that allows NTPC to build, own and operate the power station, after which it will be handed over to the GoL. NT2 is expected to generate considerable revenue for the concessionaires (Porter and Shivakumar, 2011). GoL revenues are supposed to fund poverty alleviation programmes for the country as a whole.

NT2 is a 'trans-basin diversion project' that moves water from the Theun River to the XBF. Water flows from the reservoir into a headrace tunnel and vertical pressure shaft through a tunnel to a power station approximately 348 metres below. After leaving the powerhouse, up to 350 $m^3$/second of water exits into a tailrace channel leading into a regulating pond and dam (see Figure 1).[1] The regulating dam helps even out daily water releases during periods of high electricity demand. Up to 315 $m^3$/second of water flows into a 27 km downstream channel and on into the XBF (World Bank and ADB, 2013). The amount of water in the middle and lower XBF, running for 150 km downstream to the Mekong River, has doubled annually since before the NT2 started operating (Richter et al., 2010). While in terms of water flow, the XBF is a much smaller river than the Theun, it is still an important Mekong tributary and historically had a particularly productive fishery (Shoemaker et al., 2001). Fisheries biologist Terry Warren found fish catches in the XBF between 2003 and 2005 to be considerably higher than in other rivers he had studied in Laos.[2] Of the electricity generated, 995 MW is exported to Thailand, with 75 MW used domestically in Laos (Porter and Shivakumar, 2011). The concession agreement specifies that power is to be purchased by Thailand for twelve to sixteen hours a day, when demand is highest, and not on Sundays, and that NTPC must cease power production when pre-defined flood risk levels are reached in the XBF (Serra et al., 2011: 59).

Early in the project preparation period, the World Bank established a three-person International Environmental and Social Panel of Experts tasked with providing independent monitoring and assessment of NT2. The POE reports directly to the GoL. It has issued reports from 1997 up to the present. In

1. A smaller amount of water is also released into the Kathang River, which runs into the Nyom, and then finally into the XBF.
2. Terry Warren, pers. comm., 14 March 2014.

its early years the POE provided the project with considerable credibility (Porter and Shivakumar, 2011), and the unprecedented involvement of an independent POE has been a unique aspect of NT2. The POE has produced a series of detailed public reports which provide an important record of the project's social and environmental aspects. While the bulk of the POE's attention has been on other aspects of NT2, such as resettlement on the Nakai Plateau and biodiversity conservation issues, its periodic examinations of the XBF basin have provided important information and recommendations which have been helpful in providing context and detailed information for this study.

## THE XE BANG FAI AND RIVER-BASED LIVELIHOODS IN 2001

In early 2001, Shoemaker et al. (2001) conducted a detailed study of river-based livelihoods in the XBF basin. That book documented the importance of the XBF and its associated tributaries and wetlands for local livelihoods, including how flood regimes along the XBF and its tributaries were crucial for the productivity of fisheries and rice and vegetable agriculture. Shoemaker et al. (2001) also detailed the fragile ecological balance of the river basin — one that provided great livelihood benefits but that also made downstream communities particularly vulnerable to changes in river flows. The study was released in late 2001, at a time when the NTPC was preparing various social and environmental studies for NT2.

NTPC had not allocated any significant funding to compensate people in the XBF basin for downstream impacts; the focus was instead on resettlement and biodiversity conservation issues associated with the proposed reservoir and adjacent Nakai-Nam Theun national protected area. In early 2001 the POE had raised concerns about the lack of focus on downstream areas:

> The PoE is of the opinion that one of the NT2 project's most serious impacts on livelihood can be expected in the densely populated (over 50,000 people) Xe Bang Fai basin where greatly increased river flows from the powerhouse can be expected to alter fish behavior, fishing technology, and access to river bank gardens. While project-induced flows will almost double the annual flow at Mahaxai, the greatest impact can be expected during the dry season with water levels at Mahaxai increasing by 3.4 to 4 meters. (Scudder et al., 2001: 29)

This occurred in the context of the ADB having recently accepted, after a long period of denial, that the Theun-Hinboun Hydropower Project, another trans-basin diversion project located close to NT2, was causing serious harm to downstream communities (ADB, 1998; Shoemaker, 1998; Whitington, 2012).

*The People and Their River* study caught the attention of World Bank staff and the POE. The findings revealed that the developers had overlooked many livelihood issues and potential downstream impacts. In contrast to NTPC's estimate of 50,000 people potentially being impacted (Scudder and

Talbot, 2003; Scudder et al., 2001), Shoemaker et al. (2001) estimated that 120,000–150,000 people derived significant livelihoods benefits from the XBF. At the same time, groups such as International Rivers and others were campaigning on NT2 and pressuring the World Bank to uphold high standards of consultation, compensation and mitigation as recommended by the WCD. Subsequently, project developers were required to pay more attention to the XBF, funding fisheries studies and preparing a compensation plan. According to a senior NTPC official, *The People and Their River* study 'cost us US$ 16 million'.[3] This was the amount specified in the concession agreement for providing compensation for people living downstream from the project (McDowell et al., 2010). The POE eventually acknowledged that NTPC's initial estimate of impacted people in the XBF basin was a gross underestimate. In 2010, 155,000 people living in 100 riverside and fifty-six 'hinterland' villages[4] were included as project-impacted (ibid.: 24–5). Most of the inhabitants of these villages, who are mainly rural lowland rice farmers, are ethnic Lao or Kaleung, but there are also significant numbers of ethnic Phou Thai and Brou ethnic minorities living in the basin (Shoemaker et al., 2001).

Following World Bank approval and the signing of the concession agreement in 2005, a five year period of construction ensued. Water began flowing from the Theun basin into the XBF in 2010. In recent years visits by outside advocacy groups have raised serious concerns about the impacts of NT2 along the river (Matsumoto and Doi, 2010; Mekong Watch, 2010). POE visits to XBF villages have tended to be only for a day or two once every two years, with the last one occurring in late 2012. Our assessment represents the most in-depth independent assessment of the impacts and compensation efforts on the XBF conducted to date.

## REVISITING THE XE BANG FAI RIVER BASIN

In early 2014 we encountered a drastically changed XBF. The additional water from NT2, which more than doubled its previous dry season flow, has had dramatic impacts, altering the river's ecology and, in doing so, fundamentally changing its relationship to local communities. As one villager put it, 'The XBF has been completely changed. This is because of the Theun River dam'. The World Bank and ADB (2013: 23) have acknowledged that significant changes to the river have occurred, stating that, 'some characteristics of the water in the XBF have been affected by the project, including volume and flow rates, PH, temperature and color'. Indeed, there is little that has not changed, and these changes are particularly acute around the

3. Chris Flint, pers. comm., to Bruce Shoemaker, Vientiane, 2006.
4. The number of DSP (Downstream Programme) villages ranges between 150 and 159 in various NTPC and POE reports.

issues of fisheries and aquatic ecosystems, rainy season flooding and rice production, riverbank vegetable gardens and water supply and quality, all of which are addressed below.

**Impacts on Fisheries and Other Aquatic Resources**

There are hundreds of fish species in the XBF basin (Kottelat, 1998). Although obtaining quantitative data on fish catch was beyond the scope of this study, the overwhelming consensus of people we interviewed is that NT2 has led to a severe decline in the diversity and quantity of fish and other aquatic life in the XBF and its associated tributaries and wetlands. Many of these impacts had been predicted years earlier (Blake, 2005; Roberts, 1996). Fisheries in some tributaries, such as the Xe Noi (Figure 1), have been negatively impacted because many species of XBF fish migrate in and out of its tributaries (Shoemaker et al., 2001). The head of a village along the Xe Noi stated that, 'Fish migrate up from the XBF but over the last few years fewer fish have come from there'.

The POE reported a decline in fisheries in the XBF of 35 per cent in 2010 and 25 per cent in 2011 (McDowell et al., 2012). Changes in water flow and quality have also made those fish that remain in the river more difficult to catch. Villagers reported that some important fisheries have virtually disappeared, such as the early rainy season one for *pa phanh* (probably *Schistura* or *Nemacheilus* sp. or spp.) near the mouth of the Nam Phit tributary, as mentioned by Shoemaker et al. (2001: 16). They also reported that another important fishery for the fish *pa doke keo* (ibid.: 14) has seriously declined since NT2 was built. Many other fisheries based on migratory fish have reportedly been similarly impacted. Large fish have become much rarer.

Our findings suggest that there has been a fundamental shift in the ability of villagers to support their food security and income from XBF fisheries. Right below the NT2 powerhouse, in the Nam Kathang, all the villagers living near the stream to whom we spoke reported that changes in water hydrology, quality and temperatures have led to a severe decline in fisheries. Serious impacts are also evident far downstream, at the XBF's confluence with the Mekong, where local fishermen reported that many species no longer enter the XBF in significant numbers, choosing to stay in the Mekong. The *pok heu* fishing method (putting bundles of sticks and bamboo into the river with gill nets over the top, so as to catch fish as they rise up to the surface), was commonly used in the dry season near the mouth of the XBF. One man living near the confluence told us, '*Pok heu* has been abandoned; there is too much water in the river'. Fish have always been more abundant in the rainy season (Shoemaker et al., 2001). While this is still true, all the villagers we spoke with living along the river reported that fisheries have declined in all seasons, a typical comment being, 'Fishing is reduced in both the wet season and the dry season. Ever since the water changed due

to the Theun dam, fish populations have dramatically fallen'. All along the river sandbars and rapids have disappeared, and seasonally inundated plant species adapted to flourish under natural hydrological conditions, such as *kok khai* (cf. *Phyllanthus jullienii* Beille Euphorbiaceae) bushes, have died due to hydrological changes. River bank erosion has increased, steepening some river banks.

NT2 related hydrological changes have also impeded the ability of villagers to catch fish and collect other aquatic resources. Women, especially widows and those in poorer families, are often especially reliant on the collection of aquatic animals and the catching of smaller fish using scoop nets in dry season shallows, along sandbars and near rapids. Increased dry season flows in the XBF have eliminated or drastically reduced access to these resources for women. One woman told us, 'We used to catch small fish in shallow areas of the river, but now there are many fewer fish and the water is too deep for us to fish in'. Changes in water quality and quantity have resulted in the loss of some types of aquatic plant life, such as the edible algae known as *nye* in Lao. According to another woman, 'We used to collect a lot of *nye* in the river during the dry season, but now the water is more turbid and there is no more *nye*'. A reduction of calcium carbonate in the water coming from the reservoir into the river has also resulted in reduced shellfish growth.[5]

People in villages located several kilometres from the XBF previously kept boats at the river and would go there frequently to fish (Shoemaker et al., 2001). This occurs much less frequently now. A typical comment, from a villager located 10 km away from the river, was that, 'It is not worth the effort to go to the XBF. There are not enough fish to justify the trip'. A certain amount of fishing still occurs. In the area of Dang Village, in Mahaxai District, upstream from where water from NT2 enters the XBF, people reported catching more fish on days when the river level drops due to power generation fluctuations, as fish presumably move downstream from less impacted areas upstream. Mekong basin fish migrations are often triggered by such hydrological changes (Baran et al., 2005). Generally, however, fishing has become much more difficult, and changes in hydrological conditions have negatively impacted fish migrations. In 2001, we found an overall abundance of wild fish in many parts of the basin, especially in the rainy season. Villages such as Keng Pe in XBF District were the sites of thriving fish markets with traders coming from Thakhek daily to purchase fish from local villagers. In Keng Pe the XBF fishery was the single most important livelihood resource for the villagers (Shoemaker et al., 2001: 44). Due to the decline of the XBF fishery, that market no longer exists. Villagers reported that the sale of labour (including through illegal migration to Thailand) is now their most important source of income. There is not even sufficient fish

5. Richard Frankel, pers. comm., to Ian Baird, 29 May 2013.

for local consumption: villagers reported having to buy canned fish from Thailand. Two village women lamented having to make traditional Lao fish dishes using fish from Thailand.

**Impacts on Wet Season Rice Cultivation**

In 2001, Shoemaker et al. described the delicate balance that has long existed for rainy season rice farmers along the flood-prone XBF. The annual floods were both an asset — bringing in essential nutrients for the soil — and a potential threat if they were too severe or long lasting. While flooding might destroy significant amounts of the rice crop every few years, this was balanced by high productivity in other years. Changes in river hydrology brought about by NT2 appear, however, to have tipped this balance in significant parts of the basin, in areas both upstream and downstream near to the NT2 canal confluence as well as further downstream and in some tributaries. We observed large areas of abandoned rainy season rice fields in a number of villages during our investigations, for instance along the road between the new and old Mahaxai district centres. From Gnommalath down into Nong Bok and Xaibouli districts (Figure 2), almost all the villagers we met reported that increased levels of flooding since 2011 have made rainy season rice farming more challenging and risky — or, in some places, impossible. This has led to significant declines in wet season rice cultivation. The severe flood of 2011, during the first full year of NT2 operation, has also had an influence on the perception of risk. In some places villagers did not plant rainy season rice in 2012 and/or 2013 due to the trauma of the extraordinary flooding of 2011, even though in retrospect some of them might have successfully done so. However, in other areas villagers reported that their rice fields did flood excessively in all three years.

The extent to which NT2 exacerbated an unusual rain event in 2011 is uncertain. Many villagers and some local officials believe that the dam operators failed to halt water flows into the XBF as quickly as they should have done, adding to the intensity of flooding. Analysis of electrical sales to Thailand during this period suggests that the flood event lasted longer than the cessation of NT2 operations (MEENet, 2012: 27–8). In any case, NT2 has certainly added to the perception of flooding risk within downstream communities. While the concession agreement specifies that NT2 is supposed to stop or reduce operations when natural flooding is occurring along the XBF, so as not to increase the impact of flooding (MEENet, 2012; Potter and Shivakumar, 2011), some villagers believe that the level at which water is to be cut off is too high and that they have therefore suffered increased flooding in their fields due to NT2 even when the water level does not trigger a shutdown. It is not known whether NTPC has conducted any reassessment of the water shut-off level since project initiation.

**Impacts on Riverside Vegetable Gardening**

Riverbank gardening has long been an important supplemental source of food and income for Lao villagers. Lawrence (2009) and Shoemaker et al. (2001) reported on its importance in the XBF basin. In our latest visit, we observed a dramatic decline in the number and size of such gardens, now confined to the upper parts of the riverbank. Fluctuating dry season flows caused by NT2 have greatly altered the ability of villagers to garden along the lower banks. Gardens are reduced in size; since they now need to be above the riverbed to avoid flooding and thus are farther away from the river than previously, they also require significant additional effort to water. As one former gardener put it, 'We used to grow various vegetables along the banks of the XBF, but now cannot do that because there is too much water during the dry season'. In some places gardens have been relocated to the banks of smaller streams, near homes within villages, or along dry season rice fields. This is, however, only an option for some people. In many places villagers reported that dry season vegetable gardening has declined. Growing vegetables higher up requires more external inputs, such as chemical fertilizer as well as electricity to pump water from the river, or more labour to haul it manually. NTPC recognized these potential impacts; surveys determined that 3,180 households along the XBF were eligible for compensation specifically for the loss of riverbank gardens (World Bank, 2012: 22–3).

**Impacts on Water Quality and Supply**

Shoemaker et al. (2001) observed that villagers all along the river used it for drinking water, washing, bathing and other domestic uses. We received many reports of severe water quality problems during the first two years of NT2 operations. A high percentage of villagers along the XBF below the NT2 confluence developed skin rashes and had to cease bathing in the river (see also Matsumoto and Doi, 2010). Over time water quality has improved substantially although NTPC recognizes that there are still water quality problems (World Bank and ADB, 2013). Fewer people, including children, bathe in the river now. Some women wash clothes in the river and take water for domestic use, but we did not meet any villagers who acknowledged presently drinking river water. While hand pump wells were provided to villages located along the XBF, many reported that the well water was not suitable for drinking. In many villages, 15–30 per cent of wells have broken down (see also Matsumoto and Doi, 2010). Some villagers reported that they did not have the technical knowledge or parts to fix the wells that have been provided. The vast majority of villagers are now buying bottled water to drink (ibid.), something that was extremely rare in 2001 (Shoemaker et al., 2001). While there has been a generalized increase in the use of bottled

water in Laos, many villagers reported that the very high level of bottled water use in this area is, at least in part, NT2 related.

### Summary of Impacts

The view of the vast majority of villagers interviewed is that the cumulative impacts resulting from the changes to the XBF brought about by NT2 have had a significant negative impact on their communities. In some cases the combined impact of fishery losses, the loss of rain-fed rice fields, and the loss of riverbank gardens appears to have led to severe declines in villager well-being. It tends to be the poorest and most vulnerable communities, families and individuals who are most dependent on communal natural resources, such as rivers and related aquatic resources, which have been the most severely impacted. As one woman stated, 'We are poor. We used to rely on the river for food and income. Now there is nothing'.

## COMPENSATION AND MITIGATION: THE DOWNSTREAM PROGRAMME

The NT2 concession agreement obliged NTPC to allocate US$ 16 million for a Downstream Programme (DSP), meant to assist people negatively impacted by the project (McDowell and Scudder, 2011; World Bank and ADB, 2013). An additional US$ 2.3 million was eventually provided by NTPC in order to allow the programme to operate through 2012 (McDowell et al., 2012). While planning began in 2005, the XBF DSP only became fully operational in 2010. Intended to reach 155,000 people in 156 villages, it started activities in seventy-seven villages in 2010. Another twenty-three were to be added in 2011 with the final fifty-six 'hinterland' villages (located off the river) to be included in 2012 (McDowell et al., 2010: 24). But 2012 ended up being the final year of the DSP as it was 'handed over' to the GoL on 31 December 2012 (World Bank and ADB, 2013).

In 2010, NT2's POE praised the DSP as 'a model not only for other river basins in Laos but also around the world' (McDowell et al., 2010: 24). The panel's assessments in more recent reports, however, have become increasingly less optimistic. Our findings suggest that neither the DSP's approach to compensation nor its specific project components have adequately addressed the cumulative impacts to livelihoods that are the most serious negative legacy of NT2 in the XBF basin. In the following sections we examine two DSP components — dry season irrigated rice cultivation and village development funds — that were to be the cornerstone of the DSP's attempt to address livelihood/food security issues for impacted communities. We then review some of the overall issues with the DSP including its structure and approach, villager perceptions of the programme, its grievance procedure and, finally, issues relating to the lack of sufficient resources for the DSP and the subsequent externalization of project costs.

**The Promotion of Irrigated Rice Cultivation**

One of the most visible and capital-intensive development interventions supported by the DSP, as well as complementary World Bank and ADB projects, has been pump irrigation for dry season rice farming (*na seng*). This involves the provision of electrical pumping stations and related infrastructure needed to bring XBF water into rice fields. The implicit rationale is that the benefits of pump irrigation will more than make up for project-related losses of fisheries and wet season rice farming. The World Bank, NTPC, the POE and the GoL have long seen such development as an important potential benefit of NT2.

Dry season pump irrigation has, however, a problematic history in the XBF basin, Laos and the wider region. We first noted this in our 2001 study which found that diesel pumps provided by a GoL programme for dry season rice farming were uneconomical and unpopular with XBF basin farmers:

> Most villagers view *na seng* [dry season rice cultivation] as a supplement to — not a substitute for — the main rice crop grown during the rainy season . . . they do not see irrigated dry season rice cultivation as either a panacea or replacement for their rainy season crop . . . . In fact, while *na seng* continues to be promoted heavily by government and international development institutions, in reality its expansion and whole economic basis are increasingly problematic. (Shoemaker et al., 2001: 56)

Those diesel pumps were largely abandoned within a few years. A study by International Rivers (2014) also reported that farmers living downstream of the Theun-Hinboun dam in nearby Khammouane Province have frequently found dry-season pump irrigation to be relatively uneconomic and thus unattractive. A wider study found that dry season wet rice pump irrigation in Laos has been much less successful than originally hoped, largely due to high costs (Hoanh et al., 2009).

Our discussions with farmers in many villages in the basin during this study have reinforced our earlier concerns about pump-irrigated *na seng*. When various costs are figured in — electricity for pumping water, fertilizer (much more is needed than for wet season rice) and, in some cases, labour/opportunity costs (due to the tight timeframe required to coordinate planting in adjacent fields) — the economics of *na seng* remain marginal, especially when compared to rainy season rice farming (*na pi*). This is true even using more cost-efficient electrical, rather than diesel, pumps. Some villagers also reported that *na seng* cultivation has caused soils to decline in fertility, which has led to reductions in *na pi* productivity, and has resulted in farmers having to add fertilizer in the rainy season, something that was previously rarely required (see Shoemaker et al., 2001). Following the 2011 flood event, many villages received subsidized electricity for one or two seasons. That has now ended and farmers must pay full price for electricity. This is rapidly changing the economic calculation.

The vast majority of farmers we interviewed indicated that, whenever they have a choice, they prefer *na pi* over *na seng*. Villagers from Dong Kasin Village, Nong Bok District, for example, have the option of conducting *na seng* in new locations near the XBF. But since their long-established rice fields located further away have not flooded in recent years, villagers have rejected the option of doing *na seng* and are exclusively cultivating *na pi*. As one farmer put it, 'If *na pi* grows well, we don't want to do *na seng* because there is little profit'. Only in villages with no other option (such as Keng Pe) is *na seng* being developed with any enthusiasm.

Nevertheless, cultivating rice remains very important for villagers, for economic and cultural reasons, and dry season cultivation is still substantial in many communities. In villages where irrigation projects have recently been introduced, there is more initial enthusiasm and interest and some increases in *na seng* can be observed. A few women had positive comments about its potential. Given the overall economics of *na seng* cultivation in the region, however, this initial enthusiasm may well be short-lived. In many locations in the XBF basin the cultivation of *na seng* is already declining significantly. Overall the situation seems to be a repeat of what Shoemaker et al. (2001) found: dry season irrigated rice cultivation is much more popular with government agencies and international development organizations than with farmers.

**Village Development Funds**

As a step towards providing compensation for the loss of fisheries and other aquatic resources, the DSP established village revolving loan funds, valued at US$ 250 per family, in project villages adjacent to the XBF.[6] Essentially, money can only be borrowed for a limited number of 'productive activities', such as buying inputs for lowland rice cultivation, raising animals or aquaculture. There is little flexibility to use funds differently. Loans must be repaid with interest, often 6 per cent per year. Individual villagers were not able to choose to receive cash compensation versus the establishment of village loan funds, even though many reported that they would have preferred direct compensation; they have more confidence in their own abilities to use such funds for their own benefit than in the potential of participating in the loan programme. There is never a point when villagers can withdraw money from the fund permanently.

The funds are supposedly overseen by village committees, but are kept in banks at district centres and controlled by district-level government. Despite reservations expressed by the POE, which stated that doing so without

6. Families in villages included in the DSP that have links to the XBF but that are located some distance from it were eventually provided with the equivalent of US$ 100 in cash compensation.

proper technical support and follow-up would be a 'recipe for disaster' (McDowell and Scudder, 2011: 15), district-level Women's Unions were given initial responsibility for management of the programme. Later, a new provincial institution, the Rural Development and Poverty Eradication Office (RDPEO), established Village Revolving Funds Committees to manage the money.

Microfinance and these types of village revolving funds have, at best, a mixed track record, both in Laos and internationally. Lamia Karim's path-breaking study from Bangladesh illustrates how microfinance institutions, even the much-lauded Grameen Bank, often entangle rural women in social webs of debt and disempowerment. Typically it is the poorest people — those most dependent on communal resources such as fisheries and the collection of aquatic resources — that suffer disproportionately from the loss of natural resources. They are, however, the ones least likely to be able or willing to take advantage of microfinance/village loan funds (Karim, 2011). Practitioners familiar with microfinance in Laos report that such experiences are typical. The funds are often unsustainable and the capacity of district-level institutions to manage them varies widely and has, in many places, declined in recent years. At the very least, ensuring even short- to medium-term success requires a transparent process (in which villagers retain control over the funds) and an extended commitment for support, training and monitoring[7] — all features that were lacking in the prematurely terminated DSP.

In villages we visited, it appeared that the loan funds are used most by better-off villagers and hardly at all in ethnic minority villages. Ethnic minority villagers, and other relatively poor people, have in general been reluctant to access the funds out of fear of not being able to pay back the principal and interest. In some minority communities, we were informed that almost no one had dared borrow money from the funds. In villages where people have taken out loans some interviewees reported being threatened with jail or the loss of their land when they had difficulty making repayments. Many villagers expressed scepticism about the future of these funds.

### The DSP's Overall Structure and Approach

Rather than recognizing and respecting the rights of impacted villagers to be compensated for project-specific impacts, the DSP positioned itself as a rural development project, a common approach for many infrastructure projects in Laos. Compensation implies the rightful redress of lost assets or livelihood opportunities due to external causes. Development aid is more about

7. Ng Shui Meng, former UNICEF Laos Women's Development Programme Officer, and Jacqui Chagnon, development consultant and former country representative of American Friends Service Committee, pers. comm., January 2014.

providing people with new opportunities and may imply some level of risk-taking (time and energy if not financial investment). In the DSP, much of the 'compensation' due to impacted villagers came in the form of development schemes, some of which entailed substantial risk and failed to benefit many of those most impacted by NT2. For instance, some villages were provided with chickens to raise. All those interviewed who were familiar with this initiative said it had failed. The chickens had either died of disease or were quickly sold or consumed due to the high cost of buying feed. All villagers who spoke out about this reported that attempts to release non-indigenous fish into the XBF to revitalize fisheries have failed. Some World Bank reports and the NT2 POE express great optimism over efforts to introduce 'submergence-resistant rice' (*khao ton nam*) and 'floating rice' (*khao loi*) to flood-prone villages (McDowell et al., 2010: 12). However, the relatively few villagers we met who were even aware of the attempted introduction of these rice varieties reported that they had been unsuccessful, as even these new flood-resistant varieties of rice could not survive long periods of flooding. Many DSP inputs were for rural infrastructure — such as primary health centres or toilet construction. While these inputs have value, they do not address or sufficiently compensate for the livelihood/food security impacts people have experienced. Other than the problematic programme components described above, and some short-term training and inputs on crop production, aquaculture and other potential income-generating opportunities, no substantive direct compensation was provided for the loss of fisheries and related aquatic resources, even though this is one of the most visible and acute impacts of NT2.

The concession agreement between NTPC and the GoL is for a twenty-five-year period. However, the DSP was based on the assumption that single, one-time development interventions are sufficient to compensate for long-term ongoing impacts. As noted, the value of village development funds, or cash payments, was the equivalent to one-time contributions of US$ 100–250 per family. But while a few of the impacts related to water quality have lessened, other negative impacts will continue for the life of the project and beyond. Many villagers also received one-time cash payments for the loss of dry-season riverside gardens. Interviewees expressed varying degrees of satisfaction with these payments, but it was frequently reported that compensation was barely sufficient to cover even one or two years of losses in revenue from vegetable garden production, let alone losses over the twenty-five-year project span. There were many reports of failures to compensate all of those impacted and a general perception that the compensation process was non-transparent and inadequate. Even before costs for consultants, studies and project management are subtracted, the total expenditures per impacted person by the DSP averaged only US$ 119. Over the twenty-five-year life of the project this is well short of US$ 5 per impacted person per year.

Overall, the DSP's reliance on risky short-term development interventions, many of which are proving unsustainable, and its use of minimal one-time compensation payments, have not adequately addressed the long-term compensation requirements of impacted communities. Over 90 per cent of the villagers we interviewed stated that the compensation provided by NTPC has not come close to making up for their project-related losses. Some even mockingly laughed at the notion that they have received fair compensation. The village we visited that had the most positive impression was away from the XBF mainstream and had been able to make up for its fishery-related losses through a fish conservation project in an adjacent expansive wetland area — a rare asset not available to most communities. A small number of villagers reported appreciating aspects of the DSP. Some described it as 'better than nothing'. Village leaders and those connected to government and party structures tended to be more positive about NT2, but even this was frequently not the case. The predominant perception is that NT2 has been a net negative in their lives, that it has made them worse off overall. This was the prevailing view of those we interviewed ranging from villages close to the NT2 power station all the way down to the XBF's confluence with the Mekong, and along some tributaries.

**Villager Views and the Grievance System**

NTPC and the World Bank have long promoted their 'grievance process', which they claim is closely linked to NT2's accountability approach (Porter and Shivakumar, 2011). James Adams, Vice President of the World Bank's East Asia and Pacific Region, stated in November 2010: 'Local consultations and international workshops have been undertaken to an unprecedented degree for Lao PDR, and the availability of public information has been considerable' (Porter and Shivakumar, 2011: x).

In discussing the XBF in 2004, a NTPC representative stated that 'the project would work through the relevant government committees, and that the grievance mechanism would let the villagers go from the village level to the district level to solve their problems' (NTPC, 2004: 6). The World Bank, ADB and NTPC continue to claim that the grievance process is functioning well: 'The Project's grievance mechanism is still active in the downstream area, and Project Affected Persons can submit any complaints they may have to the relevant grievance committees' (World Bank and ADB, 2013: 23). At the NT2 Visitor's Centre in Gnommalath District, an information board explains NT2's grievance process as follows: 'A grievance process was set up to review possible mistakes or oversight in the compensation process. When legitimate grievances were found, extra compensation was quickly made available. As construction drew to a close, lives returned to normal'.

We could find no evidence of a grievance process as an actual effective working mechanism at the village level. Almost nobody we interviewed

had anything positive to say about it. Apart from village leaders and local officials, most had never heard of the process or did not think it existed. Not one interviewee thought it could lead to a more just level of compensation or having specific issues addressed. In eight villages — ranging from the Nam Phit canal down to the Mekong confluence — individuals specifically mentioned that they could get into trouble or be arrested for complaining too much about the project. The common understanding was that NT2 was 'a government project' and that it could be dangerous to criticize it openly. These villagers reported that district officials had told them not to complain or criticize NT2 or to blame it for flooding or other problems and that by criticizing NT2 they could be arrested.

The World Bank has faced previous criticism for ignoring the political and cultural reality in Laos when it tried to characterize its earlier NT2 public consultation process as open and participatory (Goldman, 2005; Guttal and Shoemaker, 2004; Lawrence, 2009; Mirumachi and Torriti, 2012; Singh, 2009). This remains a concern. Our findings suggest that the mechanisms the project has set up to measure villager views and to log their complaints are not compatible with the realities of the authoritarian Lao political system.

**Insufficient Resources and the Externalization of Programme Costs**

NTPC's legal compensation obligations for people resettled on the Nakai Plateau require it to meet certain benchmarks for success before the programme can be terminated (McDowell and Scudder, 2011). In contrast, the DSP did not require this. The POE has stated that the 'funding disconnect' associated with the DSP is primarily linked to the inadequacy of the original concession agreement. There are no provisions in place should the funding allocated to the DSP prove insufficient to restore the livelihoods of impacted people. In fact, the matter was hardly considered (McDowell and Scudder, 2011). Even in 2010, as the DSP was beginning large-scale implementation, the POE was already raising concerns over it having insufficient resources: 'the sustainability of an innovative program, the livelihoods of over a hundred thousand impacted people and the reputation of all those involved are at stake. Completing the Downstream work is fundamental to the overall success of the NT2 project' (McDowell et al., 2010: 22).

Despite the POE's recommendations for a more robust DSP, the World Bank and ADB declined to increase funding (McDowell and Scudder, 2011) or to require a reappraisal of costs, something they had previously claimed would occur 'if required' (Illangovan and Jude, 2009: 7). The POE subsequently expressed its concern over a World Bank/ADB May 2011 Aid Memoire which stated that the 'handing over' of the DSP needed to be 'accelerated' because funding was rapidly depleting. The POE predicted that such a rapid handover was destined for failure and that more should be done: 'Our reading of the CA [Concession Agreement] . . . is that morally and

ethically the Company, the Government of Laos and the IFIs [International Financial Institutions] continue to have an obligation to see the livelihood restoration process completed' (McDowell and Scudder, 2011: 27).

Originally intended to run for five years from project commencement, once the allocated funding was spent, at the end of 2012, NTPC closed the programme. While the GoL was supposed to continue DSP implementation until April 2015 (World Bank and ADB, 2013), the lack of ongoing external funding led to a quick cessation of almost all DSP activities (McDowell et al., 2014: 36). We found almost no indications of any substantive ongoing follow-up by the GoL. The overwhelming consensus of villagers was that the programme had ended. While the World Bank and ADB were strongly supportive of this early termination, the POE was not, stating that there is an 'inherent incompatibility between the limited funding provision and the requirement to "at least restore livelihoods of Project Affected Persons in the downstream areas on a sustainable basis"' (McDowell and Scudder, 2011: 6). Furthermore: 'Granted the understandable emphasis on making NT2 fully operational as a hydro project there is a tendency on the part of NTPC as well as GOL and the IFIs to consider the project as a success. However, the environmental, social and livelihood components are still far from being successful; and could well fail to meet CA requirements' (ibid.: 5).

Having failed to obligate NTPC to cover the full costs of compensation during concession agreement negotiations, the World Bank and ADB have instead supplemented the DSP with additional public resources. In February 2012, the World Bank approved an additional US$ 5 million grant to its Khammouane Development Project, bringing its total contribution since 2008 to US$ 9.19 million. This is largely designed to 'support the province's capacity (through provincial and district agricultural offices) to take over and sustain the livelihood achievements of the DSP' (World Bank and ADB, 2013: 25). Similarly, the US$ 17 million ADB's Smallholder Development Project, initiated in 2002 with the goal of supporting agriculture development in Khammouane, Savannakhet, Champassak and Vientiane Provinces, has provided considerable support to people directly affected by NT2 (ADB, 2014). The POE has acknowledged that supplemental World Bank and ADB funding has been in response to the lack of resources for the DSP (McDowell et al., 2012: 20).

## CONCLUSIONS

According to the World Bank, '[NT2] demonstrates that hydropower projects can be designed and implemented to deliver sustainable outcomes through state-of-the-art environmental and social practices and strengthened public financial management systems, but this takes a long time' (Porter and Shivakumar, 2011: 2).

Our study, which was uniquely informed by baseline data from before NT2 was approved, suggests that, at least for downstream communities within the XBF basin, the situation is much less positive than has been portrayed. Our findings are more in line with concerns identified earlier by outside groups about the situation along the XBF, and reinforce, in large part, the concerns that have been raised by NT2's own POE in recent years. Specifically, our findings suggest that NT2 has caused serious downstream impacts in the XBF basin and that, while some impacts associated with water quality changes have gradually reduced over the last couple of years, significant downstream impacts are continuing. NTPC has been unable to fully mitigate the impacts of the added water being released into the XBF. Insufficient attention has been given to research on these impacts, particularly regarding fishery declines, the economics of wet versus dry season rice cultivation, and the ongoing impacts due to the loss of riverbank vegetable gardens. While NTPC has acknowledged declines in XBF fisheries, it has not yet publically released its detailed fisheries studies. No comprehensive independent evaluations of the DSP and related mitigation measures have been conducted.

The assumptions, structure and inordinately short timeframe of the DSP have been inadequate and inappropriate. While further research is needed, it is clear that NTPC, the World Bank and other donors have not done nearly enough to protect and restore the livelihoods of those in the XBF basin harmed by NT2. There is also little evidence that the GoL — a NT2 shareholder that receives royalties and taxes from the project — is using project revenues to alleviate the impacts of NT2 in affected XBF villages. This contradicts the poverty-alleviation rhetoric of the World Bank, ADB and other NT2 supporters (see Mekong Watch, 2010) and conflicts with what is considered to be best practices in relation to large hydropower development (Baird, 2009; WCD, 2000).

There is a long track record of neglecting downstream impacts in the rush to develop large-scale hydropower in the region. Unlike earlier projects, however, the World Bank and the developers were well aware of the likely impacts of NT2 prior to project initiation and they vowed to address them. The up-front acknowledgement of potential downstream impacts, the extensive planning for mitigation and compensation, and the use of an independent monitoring mechanism (the POE) are all unique features of NT2 and an improvement over earlier projects. But in its approach towards facilitating private sector investment in NT2 — something that is becoming increasingly important in the Mekong Region and beyond — the World Bank failed to ensure that the concession agreement obligated those investors to pay the full costs of mitigation and compensation for downstream communities. In particular, no substantive direct compensation was provided for the loss of fisheries and related aquatic resources, even though this is one of the most visible and acute impacts of NT2. NTPC stands to gain several billion dollars over the life of the project. Ongoing compensation could have been

provided over the project's entire lifetime but was not. Instead, the approach endorsed by the World Bank appears to have maximized profits for NTPC at the expense of local communities.

Costs that should have been the responsibility of the NTPC have instead fallen on the public, as both the World Bank and the ADB have had to provide additional grant and loan financing to try to address livelihood improvements for impacted communities. More importantly, in our view, the impacted communities themselves have had to bear a high cost. Villagers are in effect subsidizing the profits of NTPC through their ongoing livelihood losses. While NT2 was promoted as a new model of benefit sharing and revenue transparency, this has not, to date, translated into substantive benefits for those impacted downstream by the project. In addition, the lack of independent media and firm limitations on civil society and community organizing in Laos, combined with the ineffective and inappropriate system developed to measure villager views and log complaints, appear to have contributed to the lack of recognition to date of NT2's downstream impacts. This has allowed project proponents, such as the World Bank, to portray NT2 as generally successful, including using the project's claims of reducing climate change and alleviating poverty to mask many of the realities on the ground.

In early 2014, NTPC began preparations for a feasibility study for an expansion of NT2 (*Vientiane Times*, 2014). Such an expansion would bring even more water through the project's turbines, exacerbating the impacts already occurring along the XBF. Our findings suggest that it would be premature to proceed with an expansion of NT2 at a time when NTPC, the World Bank and other project financiers have been unwilling and unable to address the serious harm already caused to downstream communities by the existing project. At the very least, any consideration of such an expansion should be contingent on the findings of further detailed independent study of the impacts of NT2 and the effectiveness of its mitigation measures.

Indeed, our findings suggest that further comprehensive and independent research and evaluation is needed regarding NT2's impacts along the XBF and the effectiveness of the DSP in addressing these impacts. While the XBF is only part of the full NT2 story, the apparent severe downstream impacts of the project and the flaws in NTPC's DSP cast serious doubt on whether NT2 should be considered a model that justifies future World Bank support for other large-scale hydropower projects, whether in Laos, regionally or internationally. Many officials in the GoL and most foreign private investors consider NT2 to have been costly and time-consuming, yet the World Bank continues to justify new large dam construction by referencing NT2. That is something this study should call into question, based on cost and time, but also with special attention being paid to social and environmental justice, and the failure to appropriately or effectively prepare for and respond to downstream impacts.

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