

Nam Theun 2 Resettlement

Taking Stock at the Halfway Point
2010



THE WORLD BANK

ADB

ASIAN DEVELOPMENT BANK

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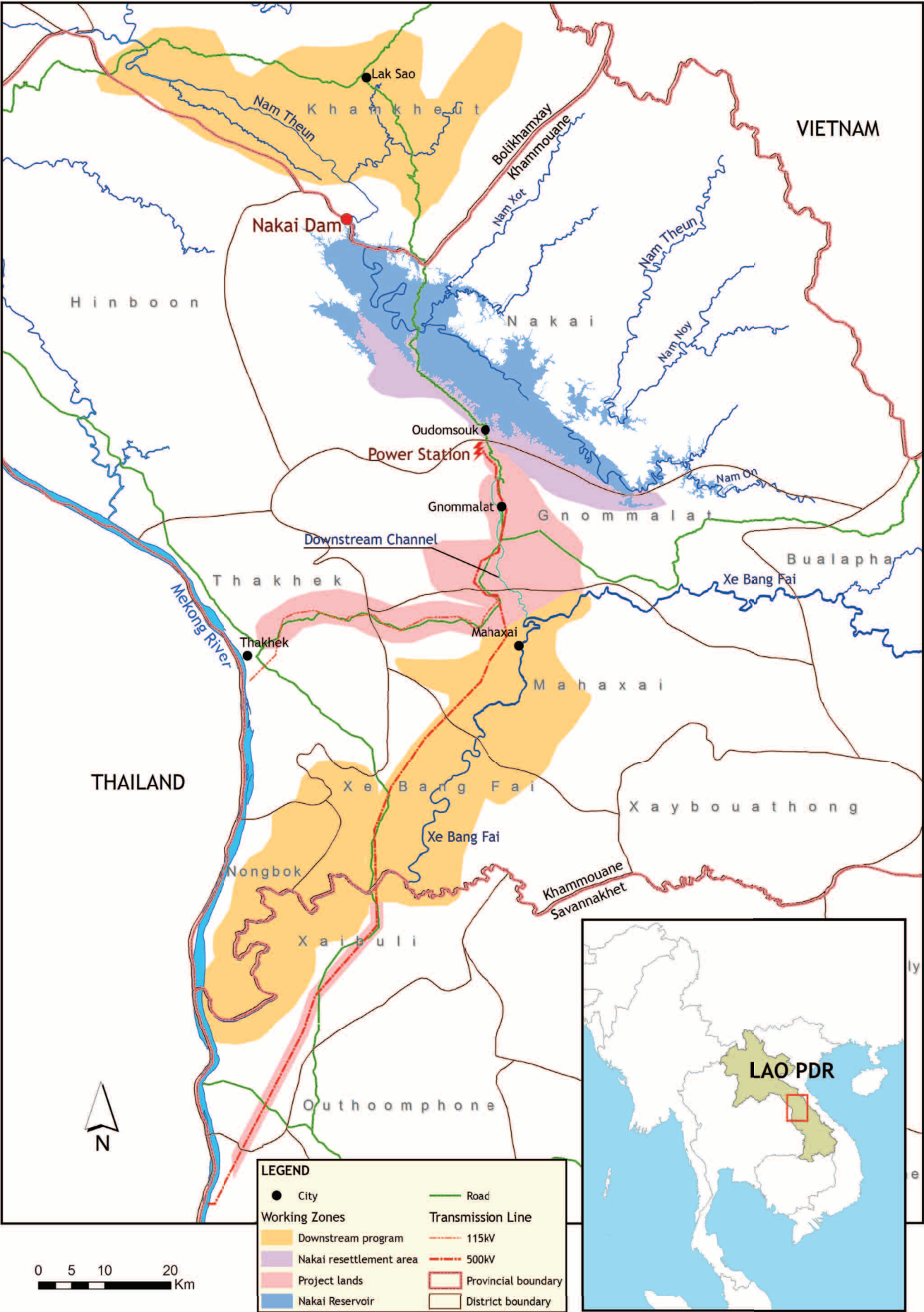
The Role of the World Bank and ADB in Supporting NT2

The World Bank Group and ADB, along with AFD, EIB, PROPARCO, COFACE have all supported the Nam Theun 2 project because of its huge potential for stimulating growth, poverty reduction and environmental protection in the Lao PDR. While the bulk of the US\$1.45 billion financing envelope came from the private sector, the entire project has been implemented according to the safeguard policies of the World Bank and ADB. The World Bank and ADB operate a joint NT2 implementation support and supervision team from their offices in Vientiane. The team, including both international and Lao staff, travel regularly to different parts of the project site to observe project progress, and talk to local communities, Government officials, and NTPC staff. Since one of the core approaches of the NT2 project is adaptive management, one role of the World Bank and ADB team is to pro-actively identify problems and agree with Government and NTPC -- and other oversight agencies where necessary -- about how they should be resolved. The World Bank and ADB also closely monitor project implementation to ensure compliance with their safeguard policies, as well as provide technical advice on development topics if needed. Finally, as public institutions, the World Bank and ADB also play an important role in communicating to the outside world about the NT2 project.

ACRONYMS:

ADB	Asian Development Bank	NTFPs	Non-Timber Forest Products
CA	Concession Agreement	NTPC	Nam Theun 2 Power Company
DAFO	District Agriculture and Forestry Office	PLUP	Participatory Land Use Planning
IAG	International Advisory Group	POE	Panel of Environmental and Social Experts
IFIs	International Financial Institutions	RFA	Reservoir Fisheries Association
IMA	Independent Monitoring Agencies	RMU	Resettlement Management Unit
LAK	Lao Kip National Currency	SDP	Social Development Plan
Lao PDR	Lao People's Democratic Republic	USD	United States Dollars
LSMS	Living Standards Measurement Survey	UXO	Unexploded Ordnance
LTA	Lender's Technical Advisors	VFA	Nakai Plateau Village Forestry Association
NPA	Nakai-Nam Theun National Protected Area	VFG	Village Fishing Groups
NT2	Nam Theun 2 Multipurpose Project		

Nam Theun 2 Project Area Map





Resident of Sop On Village, Nakai. Photo: NTPC/Stanislas Fradelizi, 2010

INTRODUCTION

The Nam Theun 2 (NT2) project reached commercial operations in April 2010 and is now generating revenues for poverty reduction and environmental investments in Lao PDR. Over the next 25 years NT2 will generate around US\$2 billion in revenues for the Lao Government, some of which is already being spent on rural roads, education, health and environmental projects. While these national benefits are large, the project is also committed to ensuring that the local people who are directly impacted by the project are fairly treated and compensated. **This report summarizes progress to date on one of the most important commitments of the project – to build improved and sustainable livelihoods for the people resettled because of the project.** Information on other aspects of the project is available on the Project website (www.namtheun2.com) and the World Bank website (www.worldbank.org/laont2).

Country Context

The Lao People's Democratic Republic (Lao PDR) is a land-locked country bordering Thailand, Vietnam, Cambodia, Myanmar and China. Lao PDR remains one of the poorest countries in South East Asia. More than one third

of the population lives below the international poverty line. According to the United Nations Human Development Index for 2007, Lao PDR ranks 133rd out of 182 countries. Food insecurity and malnutrition, especially among children, are widespread. Poverty rates are highest in remote, rural areas without road access, in upland areas, and among non Lao-Tai ethnic groups, who tend to live in these areas.

The Lao Government's national development priorities are focused on lifting the country from the ranks of least developed nations by 2020. The country faces many human development challenges, not the least of which is that the majority of the population lives in rural and remote areas without access to basic infrastructure and services. Nonetheless, the Lao PDR has made encouraging progress over the last decade, averaging GDP growth of around 7% and reducing the percentage of people living below the national poverty line from 46% to 28% of the population between 1992 and 2007. One key element of the country's socioeconomic strategy is to use its impressive natural hydropower endowments to supply electricity to its rapidly growing neighbors, thereby increasing government revenues and raising living standards of the Lao people.

Box 1. NT2 Decision Framework

From early in the project development process, the World Bank recognized that NT2 would be particularly challenging. The project site was remote, local capacity to manage a project of this scale was limited, there would be significant social and environmental impacts to address, and the right approach to hydropower development was being debated in the international community. To address this range of issues, the World Bank and the Government agreed on a decision framework that addressed:

1. Helping Lao PDR prepare for the project, including strengthening the overall policy environment;
2. Ensuring the project was ready for development, including extensive community consultation, background studies, legal agreements, safeguard documentation etc.;
3. Engaging with the international community to build support for the project, including public consultations in Asia, Europe and the United States.

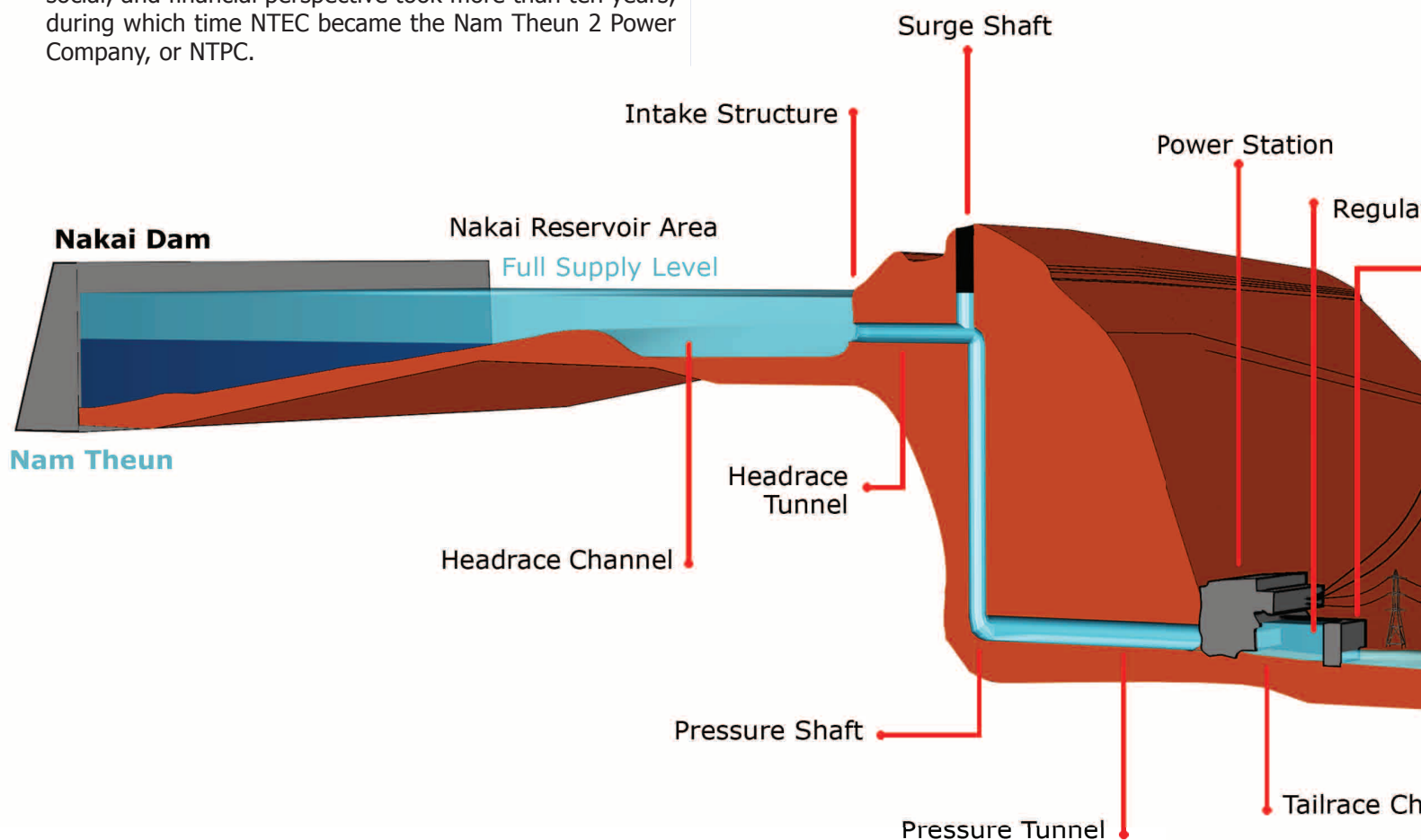
These issues were successfully addressed and the World Bank Executive Directors formally approved the project in March 2005. The Executive Directors of the Asian Development Bank also approved the project shortly afterwards.

I. THE NAM THEUN 2 PROJECT

The potential of the Nam Theun (Nam means River) on the Nakai Plateau for hydroelectric power was identified as early as 1927, but it was not until the mid-1970s that detailed feasibility studies of a project began. In the late 1980s, the Lao government targeted Nam Theun 2 as a key vehicle for the economic and social development of the nation, including the households living in the districts affected by the project, and invited the World Bank, among others, to participate in the project.

The government and various private investors set up the Nam Theun 2 Electricity Consortium (NTEC) in 1993 to research and develop the scheme. In 1994 Electricité de France and the Italian-Thai Development Company of Thailand joined the Project, and Nam Theun 2 moved from concept to its development phase. The design and preparation of the project from a technical, economic, environmental, social, and financial perspective took more than ten years, during which time NTEC became the Nam Theun 2 Power Company, or NTPC.

Project financing was put in place, the World Bank and ADB Boards committed to support the project, and full construction activities commenced in June 2005. The Nam Theun river diversion was created in March 2006 and then closed in April 2008 following the completion of the Nakai Dam wall. Impoundment of the Nakai Reservoir occurred over the 2008 wet season and the reservoir was close to full supply level by the end of 2008. Test hydropower generation began in mid 2009 and finally, in March 2010, the project's four export production turbines started full commercial operations, supplying the Electricity Generating Authority of Thailand with 1,000 MW of electricity. According to the Government of Lao PDR, "the project is an essential part of the country's development framework and the Project's implementation is likely to be the first real possibility for Lao PDR to reduce gradually its dependence on official development assistance."¹



Design and Operation

The NT2 Concession Agreement provides for NTPC to build-own-operate, and finally transfer the NT2 project back to the Government at the end of the 25 year concession period. The project includes the development, construction, and operation of a trans-basin diversion power generation system that uses water from the Nam Theun River, a tributary of the Mekong River, releasing the water into the Xe Bang Fai River (see Figure 1).

The project site is located in Khammouane and Bolikhamxay provinces in central Lao PDR, around 430 kilometers from Vientiane by road. It stretches from the Nakai Plateau to the lower Xe Bang Fai River confluence with the Mekong. Besides the 1,000 MW of electricity sold to Thailand, NT2 also supplies around 80 MW of electricity for domestic use in Lao PDR. The project is expected to earn an average of US\$80 million per year for the Lao Government over the first twenty-five years of its operation. At the end of the concession period, the project facilities will be transferred to the government free of charge.

Social and Environmental Impacts

The construction and operation of the NT2 project creates environmental and social impacts on the Nakai Plateau and in the downstream areas of the Nam Theun and Xe Bang Fai rivers, as well as in the watershed area upstream of the reservoir. To address these issues, the NT2 project includes a full set of economic, environmental and social programs to mitigate its effects on people and ecosystems, and to compensate them where necessary. These programs cover the watershed, plateau, and downstream areas, and have been designed in consultation with local villagers, under international guidelines, and with recommendations from various international financial institutions, including the World Bank.

This publication focuses on the main social impact on the Nakai Plateau: the resettlement of people living in villages impacted by the reservoir inundation. Information about environmental and social impacts in other parts of the project, and the various programs to address them, is available on the Project website (www.namtheun2.com) and the World Bank website (www.worldbank.org/laont2).

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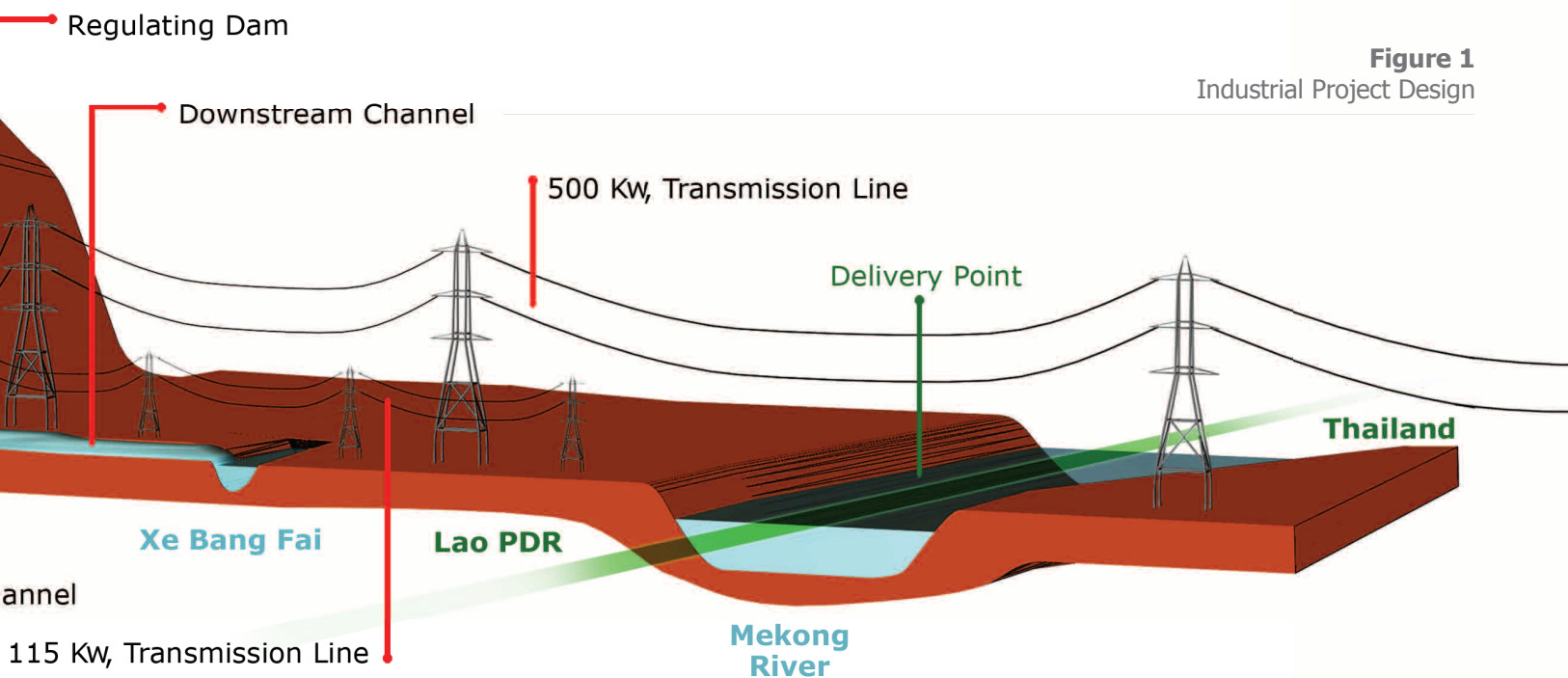


Figure 1
Industrial Project Design



II. THE RESETTLEMENT PROCESS

The NT2 project required building a dam on the Nam Theun on the Nakai Plateau (see previous map), resulting in a reservoir of around 450km² at maximum operating level. The creation of this reservoir led to the resettlement of some 6,300 people living in 15 villages on the Nakai Plateau. **The NT2 project's commitment to these resettled people is not only to compensate them for the move, but to help them develop better livelihoods and living standards than they had before the project.**

The NT2 Approach to Resettlement

Reviews of other dam projects suggest that rebuilding sustainable livelihoods for those resettled by large dams is particularly challenging. The broad reasons are easy to understand: dams often require the resettlement of entire communities (rather than, for example, the resettlement of specific households to make way for a road) which can be immensely disruptive to the social and cultural fabric of communities; dams are often developed in remote and mountainous areas, and therefore impact poor or vulnerable peoples; and dams may also significantly impact existing livelihood opportunities, by, for example, flooding agricultural areas that communities have historically relied on.

The team designing the NT2 project's resettlement program was fully aware of these challenges during the project planning phase, and there are a number of unique steps that the NT2 project has taken to address these challenges, including:

- Establishing socioeconomic targets within the Concession Agreement. The targets are considerably above baseline levels, legally binding, measurable, and are intended to be reached 5 years after the main impact on resettler livelihoods has occurred;²
- Providing a package of financial, technical and social assets, opportunities and support to resettlers to build new livelihoods (see Box 2);
- Providing a safety net to those who need it during the transitional period in order to help people adapt to their new circumstances, and take the risks (such as changing agricultural practices) necessary to build a new life;
- Investing in significant and regular socioeconomic monitoring to enable adaptive management during

program implementation and the measurement of the targets after five years;

- Establishing external and independent monitoring and oversight groups that ensure the overall integrity of the process, as well as provide expert advice to the project (see Box 3).

As with other resettlement processes around the world, the NT2 resettlement process has unfolded in three broad (and slightly overlapping) phases:

1. Consultations and Planning;
2. Physical relocation;
3. Livelihoods development.

Before describing the resettlement process in more detail, it is useful to get a sense of the baseline situation – what life was like on the Nakai Plateau prior to the NT2 project.

Life on the Nakai Plateau before NT2

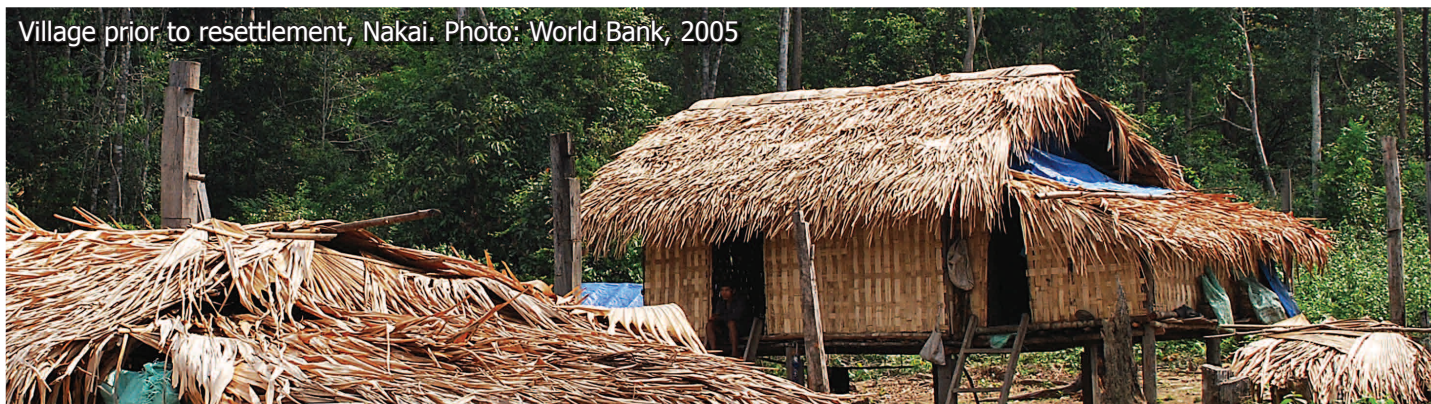
The NT2 resettlement area is located on a plateau between the Annamite mountain range, which defines the border between Lao PDR and Vietnam, and the lowland areas stretching down to the Mekong River and the border with Thailand. The plateau is in Nakai District of Khammoaune Province: historically one of the poorest districts in Lao PDR. The area was historically very isolated, and even in the dry season it took half a day to travel between the Nakai district capital, Oudomsouk, and the provincial capital of Thakek, a journey that is completed today by car in 1 hour. During the wet season, the Nakai Plateau could be virtually inaccessible. Of the 15 villages resettled, 8 had no road access, and some were accessible only by boat. Most families lived in houses constructed of traditional materials of wood, bamboo and thatch or shingles for roofing.

The communities were dependent mostly on swidden (shifting cultivation of upland rice) farming, hunting, and gathering of timber and non-timber forest products (NT-FPs), fishing, livestock and wage income. Only 17% of the families could produce sufficient rice for the year and 50% suffered rice deficiency for more than six months per year. Average household income on the plateau was \$450 per year, well below the national poverty line. Agricultural production was constrained by poor soils and lack of access

Box 2. NT2 Resettlement Package

The resettlement package is outlined in detail in Schedule 4 of the Concession Agreement, which was publically disclosed at the time of project approval. The following table summarizes some of the key elements of the package that were offered to resettlers.

Type of Benefit	Summary of Package
Community Infrastructure	<ul style="list-style-type: none"> • All weather access roads to each village; • Meeting hall, village office, warehouse and roofed market for each village; • Primary school (combined with the nursery school) per each village with complete school equipment and supplies for the classrooms; • Teacher's house for each teacher family; • Seed processing and storage facilities; • Organic fertilizer factory; • Electricity distribution system for all villages along with wiring and appropriate safety devices in each community building; • Good quality year-round domestic water supply (1 outlet per 5 households) with adequate drainage facilities; • Fish landing and trading place to allow easy boat and road access for each village.
Household Infrastructure and Assets	<ul style="list-style-type: none"> • Residential land and house with joint title to husband and wife. Households with 7 or more people containing 2 families provided with option to have two houses; • Flush toilet with appropriate septic tank in each household; • Standard electricity supply to each house; • 0.66ha of land for agricultural purposes, with partial irrigation; • Drawdown Zone plot; • Granary; • Specific compensation for lost paddy, fruit trees.
Livelihood Program	<ul style="list-style-type: none"> • An agricultural development program, including: UXO cleared land; seeds and seedlings; fertilizer; compost bins; various agricultural tools; demonstration and extension activities; • A community forestry program, including: a 70 year 23,400 ha forestry concession in the area surrounding resettlement villages, household membership in the Village Forestry Association, which can be inherited and passed on to future generations, and forestry equipment to be used by VFA (sawmills, logging trucks, carpentry tools, etc.); • A fisheries program including: full access to fisheries in the reservoir for subsistence purposes; access to fisheries in the reservoir for commercial purposes in accordance with Reservoir Fisheries Management Program; fisheries equipment and gear (boats, fishing nets, etc.); • An off-farm marketing program including: access to skill training for off-farm employment such as tailoring, weaving, small shops, processing of locally produced goods, marketing of locally produced goods and other services related to tourism and construction for developing unskilled and semi-skilled labor.
Transitional support	<ul style="list-style-type: none"> • Monthly rice support of 18kg per adult and 12kg per child for all households during the transitional period. As the majority of households have been able to access new income sources, from October 2008 the rice support was targeted at around 35 vulnerable households; • Monthly protein support of 8 eggs, 800g of dried meat and 800g of fresh meat per person, for all vulnerable households, throughout transition and up until the present; • Wages for clearing land and constructing houses during transition.



to markets as well as lack of modern farming techniques. Most households had no electricity, access to clean water was limited, and paved roads were unavailable. Social conditions were similarly precarious, with more than 60% of the population lacking access to schooling and with the average distance to the nearest health facility being 11 kilometers, usually traveled by foot.

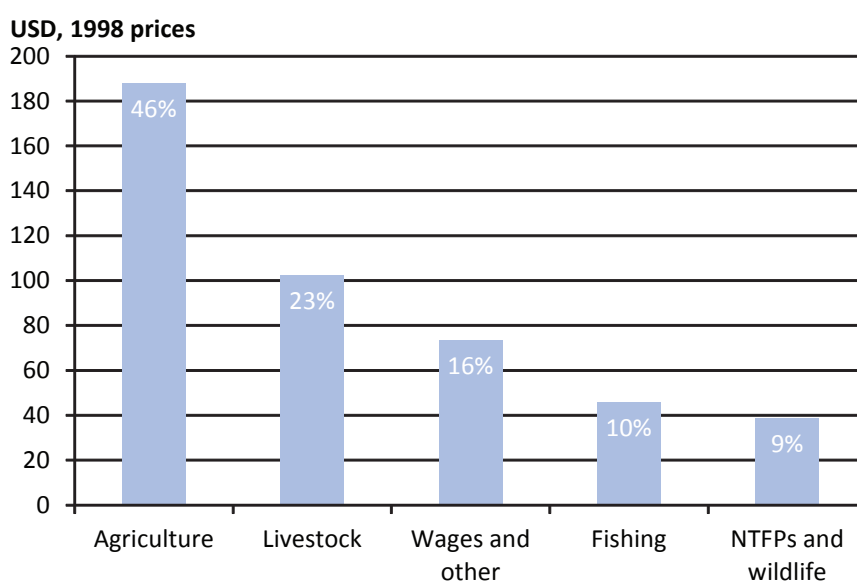
In order to cope with natural shocks and make the most of their limited natural resources, households living on Nakai had diverse livelihoods, as shown in Figure 2. Agriculture and livestock accounted for the bulk of income, while the only significant sources of cash income were wages and jewelry sales. Incomes from fishing, NTFPs and wildlife were also important – around 10% of total income. Only a few households in the wealthier villages had paddy land, while the poorest households had

no land at all that was suitable for rice cultivation, and relied mainly on NTFPs for subsistence. Some households sold or bartered forest products, and occasionally livestock, to merchants in Ban Oudomsouk. But it was mainly a life based on subsistence, with at least 55% of household income in-kind, namely crops produced and consumed by the household.³

Resettlement Stage 1: Planning and Consultations

Initial planning for relocation started as early as 1996, when preliminary socioeconomic surveys were carried out. It was essential for the project to understand the pre-relocation

Figure 2 - Composition of household incomes prior to resettlement (1998 Baseline)



Data from Social Development Plan (SDP), volume 2, chapter 2, NTPC website

The exchange rate of 4162LAK/USD used here was the exchange rate for 1998 used in the SDP

livelihood base of affected people. Baseline studies provided measurement points from which livelihood impacts on people could be measured at different stages of the resettlement process. Indicators measured in the baseline included household size, livelihood options, asset ownership, food sources and seasonal food security, as well as the different skills, needs and resources of different households. Detailed analysis of the different livelihood patterns, needs and characteristics of Nakai's diverse ethnic groups was also carried out. Detailed consultation, community outreach, and planning then followed to determine where people would be resettled, design of new houses and village layouts, and to identify patterns of livelihood support and opportunities.

Pre-relocation community consultations. Photo: NTPC, 2005



Resettlement sites were chosen by project managers and villagers in a joint consultative process taking into consideration a wide variety of factors, including social considerations such as village spiritual areas and customary boundaries, agricultural considerations including access to water, land availability, and soil quality, as well as issues around access to roads, reservoir waters, forest and grazing areas.⁴ Resettlers were offered the option of moving to a location off the plateau where good agricultural land was available, but rejected the option, preferring to remain close to the land where their spiritual ties were strong, despite the subsequent livelihood challenges this would present.

The resettlement package provided to all resettlers included housing, water supply and electricity, agricultural land, and community infrastructure (see Box 2), as well as food support and other assistance to help ensure living standards did not fall during the transitional period – a common risk in resettlement projects. The provision of infrastructure was preceded by the topographic survey and mapping of each resettlement site. The resulting maps were used as a basic tool for the on-going consultations with the villagers, who participated in the planning and design of the village, their houses, community buildings and other facilities.

By the end of this process a plan was in place to manage the resettlement. This Social Development Plan (SDP) was influenced by the views of the affected communities, approved by the Lao Government, and endorsed by the International Environmental and Social Panel of Experts as well as the World Bank, Asian Development Bank, and other IFIs supporting the project.⁵

Resettlement Stage 2: Physical Relocation

6,300 people from 17 villages moved from the area that became the NT2 reservoir on the Nakai Plateau to custom-built villages along the edge of the reservoir. The physical relocation started in 2006 with the first group of villages along the portion of the Nam Theun River upstream of the dam site. The villagers were first relocated to temporary housing as the civil works and initial construction of the dam site around the river bed rock required immediate relocation to ensure their safety. The second group of villages, on the other hand, moved directly into their new houses in the relocated villages. By the end of June 2008, the relocation of all villages was complete.

The affected communities were directly involved in the process of constructing the new villages and clearing agricultural land. This helped not only build community engagement in the process, but also provided them with paid employment during a time when they could not engage in some of their traditional livelihood activities. The socio-economic surveys show that resettlers saw a major spike in their income during this period from project-related wages. Because the livelihoods of many were disrupted during the transitional period, as they busied themselves preparing new land and housing, households received rice support in addition to wages: a monthly ration of around 18kg of rice per adult and 12kg per child.⁶ Today, all families are settled in new homes, with electricity and supporting community infrastructure in place. The construction of suitably equipped schools and health centers, housing for teachers and health care workers, community buildings and water

Box 3. Monitoring and Oversight at NT2

Monitoring and oversight at NT2 take three broad forms: 1) Internal monitoring, 2) External monitoring and 3) Independent monitoring. These monitoring arrangements and their outcomes play an important role throughout the project's lifetime. Internal, external and independent monitoring agencies and bodies all provide important advice and recommendations to ensure that the project is well-implemented. They also help to share information publically and transparently, in order to reach all project stake holders. The table below provides a brief description of some of the agencies and bodies that conduct external and independent monitoring and oversight functions with responsibility for environmental and social aspects.

AGENCY	TASK	REPORTING	FREQUENCY
International Environmental and Social Panel of Experts (POE)	Established in 1997, is mandated by CA to provide independent review of and guidance on the treatment of environmental and social issues. Consists of 3 international experts with extensive experience in hydropower, environment, social development and resettlement.	Government of Lao PDR and Public	At least once a year
Lenders' Technical Advisors (LTA)	Reviews compliance with the Concession Agreement obligations across the construction, finance, environmental and social areas.	Project Financiers	Quarterly site visits
Independent Monitoring Agencies (IMAs)	The CA stipulates that the Government of Lao will engage IMAs to check and verify monitoring data and reports of NTPC as well as to assess the progress of implementing entities. The firm Halcrow has been engaged since 2007 as IMA for the Resettlement Management Unit.	Government of Lao PDR	Ongoing
International Advisory Group (IAG)	Appointed by the World Bank, its responsibilities cover implementation of the project, including revenue management arrangements as well as environmental and social aspects. The IAG provides guidance to the World Bank on how it can improve its handling of environmental and social issues.	World Bank President; Public	At least once a year
World Bank, ADB, and other International Financial Institutions (IFIs)	Conducted in the form of site visits and management missions and covers all aspects of project implementation – focused both on ensuring compliance, and on providing technical advice. Both the World Bank and ADB have staff in Vientiane as well as in other places. These staff closely monitor developments, report the wider team, and help to "trouble shoot" challenges as they emerge	World Bank, ADB, and IFIs	Ongoing- usually a member of the World Bank or ADB team visits Nakai every week or so



Nakai Tai Resettlement Village. Photo: NTPC/Stanislas Fradelizi, 2010

wells is complete. Village access roads have all been completed.

Housing conditions and access to infrastructure and services have improved dramatically. All new houses are made of wood, with a sheet metal roof and wooden floors, and average house size has more than doubled. Whereas in 2006 only 13% of vulnerable households judged their house to be in “good” condition, 93% thought so about their new homes in 2009.

Among the priority issues were the provision of domestic water and sanitation for basic needs and health. In 2006, the main water sources were rivers and unprotected wells, but by 2009 all households used an improved water

source: either a pump or rainwater. Each household was provided with a pour-flush latrine, and use is almost universal. The time taken to collect water fell from an average of 9 to around 1.5 minutes each way.⁸ This is a particularly important improvement for women and children, who are often responsible for collecting water. Villagers have also received education and training programs on health and sanitation issues. **Overall, the project has provided each resettled household with access to water and advanced sanitation, higher rates of access than in many urban areas in Lao PDR.** Positive health impacts became evident very rapidly.

The project has also put arrangements in place to ensure that the infrastructure provided will be sustainable

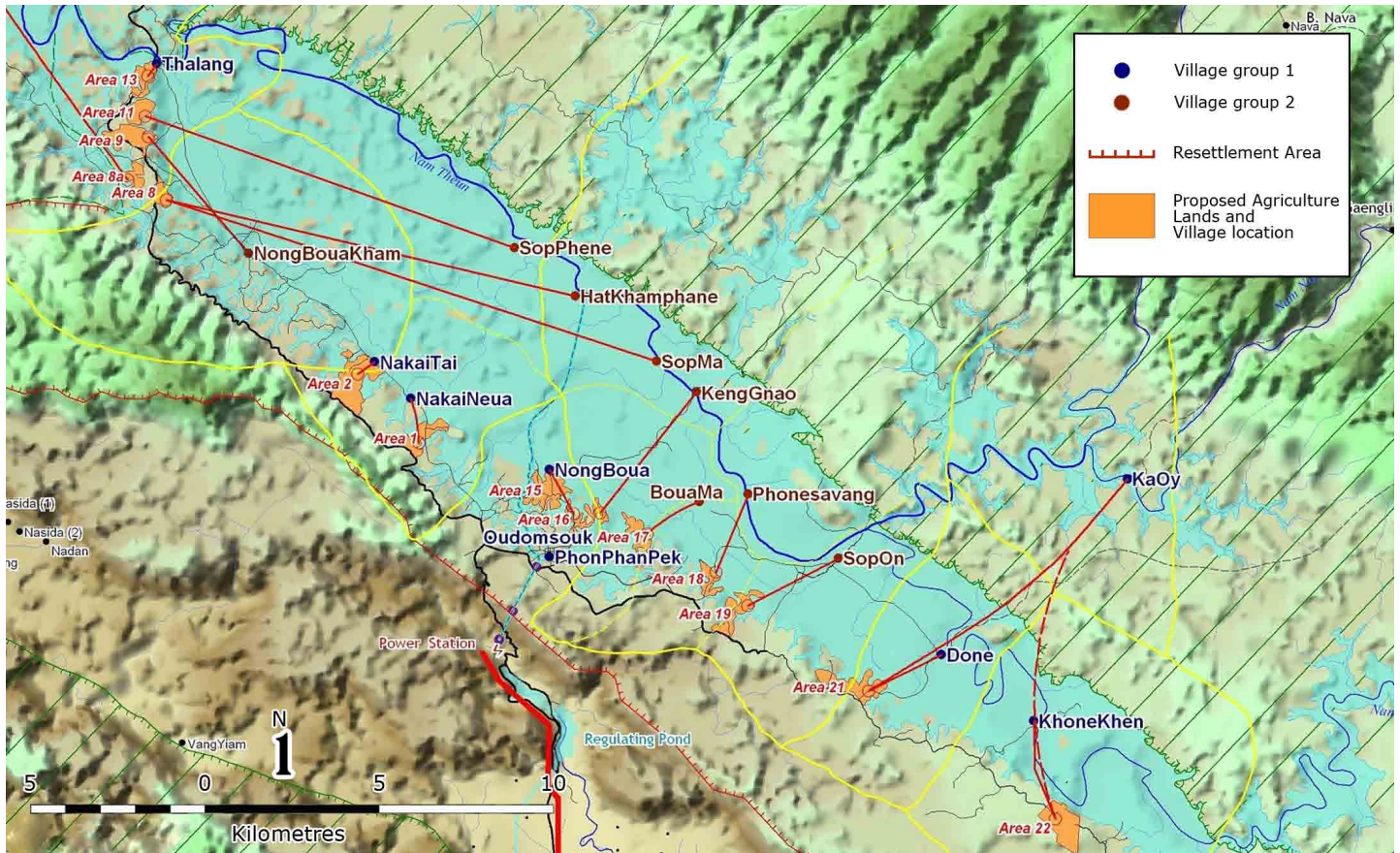
Box 4. Vulnerable Households on the Nakai Plateau

The Nakai villagers are a diverse group of households, with different skills, assets, capabilities and desires. As with any development project, it was clear from the start that while some would quickly make the most of new opportunities provided by the project, others would need support to re-establish their livelihoods and improve their standard of living.

The 1998 baseline survey identified 207 “potentially vulnerable” households on the basis of characteristics including lack of adult labor (i.e. a very young, very old or handicapped household head) and other socioeconomic factors (i.e. female headed households). These households have received additional support throughout the resettlement process, including rice and protein support and priority access to livelihood programs.

The list of vulnerable households is periodically revisited by the district authorities and NTPC. This is necessary to ensure that the households in need are supported, but that the households who can cope on their own do not become dependent on the project for assistance. This report presents data on these “vulnerable” households separately from other households, because it is important to analyze not just whether the average household has achieved a higher standard of living, but whether these vulnerable households are also able to benefit.

Map of Villages moved on Nakai Plateau



and adequately maintained. A Social and Environmental Remediation Fund (SERF) will provide \$300,000 for every year of the operating period to cover the operating and maintenance costs of the community water and irrigation systems, as well as other resettlement and livelihood activities. However, sustainability will be achieved only with the involvement of the communities themselves, which is still a work in progress.

Resettlement Stage 3: Livelihoods Development

Some elements of the livelihoods development program began during the planning and consultations phase, where a variety of demonstration activities were developed, partly to better understand the agricultural potential of the resettlement area, and partly to start to engage communities in more practical discussion about their new lives and livelihoods. By the time physical relocation was complete, activities based on agriculture, livestock, fisheries, forestry and off-farm opportunities were all underway. The post-relocation livelihood program took into consideration the

natural resources available to resettlers, their skills, traditions, and previous livelihood patterns.

It is important to recognize that livelihood development in a resettlement situation is not simply a technical process, but also one of profound social change. The livelihood program has therefore been designed to help people understand their new opportunities, encourage learning within communities, and also to support people as they endeavour to succeed in their new lives.

The project has put in place socioeconomic monitoring systems to track progress towards meeting the stated commitments across a wide range of areas, from health and education to environmental protection and household income. As noted above, the achievement of the household income targets will be measured in 2013, and it is therefore too early to judge whether the goals and objectives have been achieved in full and livelihoods are entirely sustainable. Early indicators show both impressive progress and also highlight areas for improvement, as outlined in more detail in the following section.



III. BUILDING NEW LIVELIHOODS

The pillars of the livelihood program are: (1) Agriculture and Livestock; (2) Community Forestry; (3) Reservoir Fisheries; and (4) Off-farm Income. The expectation during the planning stage was that each of these pillars could make a substantial contribution to the livelihoods of the resettled communities. As well as allowing households to achieve an acceptable level of income, having a diverse set of livelihood opportunities helps households insure themselves against seasonal variation in income from crops, volatility in reservoir fisheries, and other forms of external and internal setbacks. **However, it is important to recognize that the households themselves decide which combination of livelihood opportunities to pursue – this will likely depend on their interests, skills, experience, and the availability of labor within their household.**

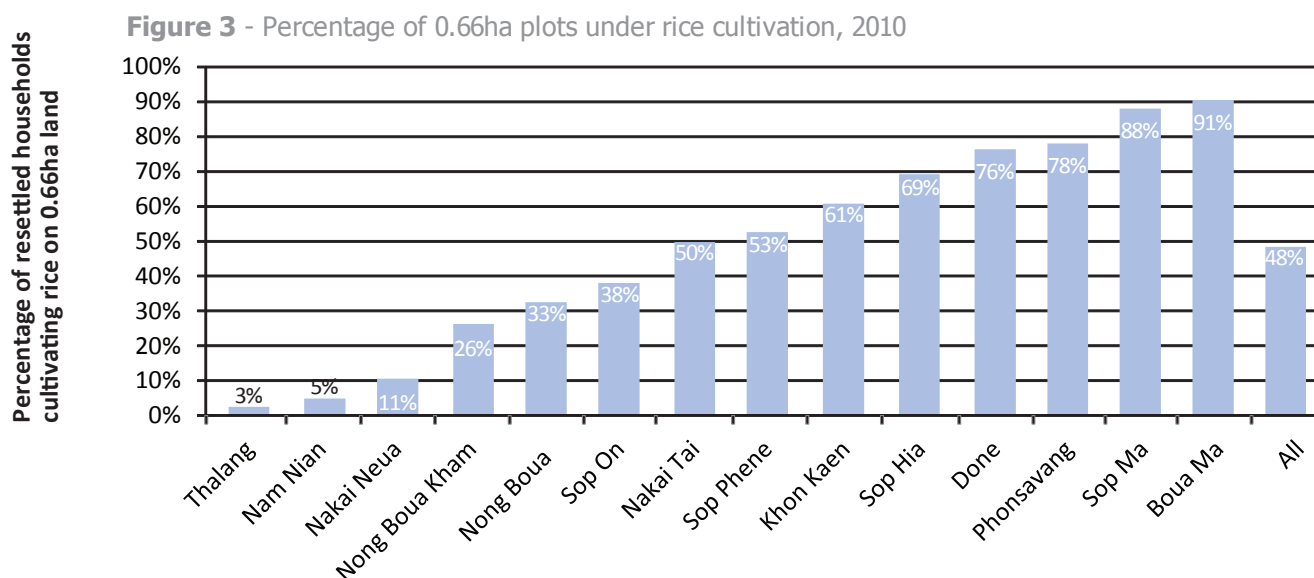
Agriculture & Livestock: Pillar 1

Rice plays a central role in Lao culture, and before resettlement most of the households on the Nakai plateau cultivated upland rice. Production was based on rotation, roughly every seven years. No external inputs were used: soil fertility was obtained by accumulating organic matter in the soil and biomass. The latter was burned before planting and the ash used as a fertilizer. Only a few better-off households – mainly in Nakai Tai, Nakai Neua, and

Done – were able to grow paddy rice. Average yields were around 0.8 tonnes/ha for upland and 1.5 to 2.0 tonnes/ha for paddy rice. In 1996 only 17% of families were able to produce sufficient rice for a full year (see SDP), and about half of all families had a rice deficit for more than six months of the year.

The filling of the reservoir not only required physical resettlement, but also flooding of large areas of land used by households and communities. While all households were provided with agricultural land as part of their compensation package, the land available is considerably less than many used before as part of their rotating agricultural system. In addition, as was true before the project, the soil on the Nakai Plateau is also of relatively poor quality. The objective of the agricultural livelihoods pillar is therefore not to encourage self-sufficiency in rice or other subsistence crops (which, as noted above, did not exist prior to the project), but to promote the use of this land for the most productive purposes possible, as one element of a broader set of livelihoods activities.

Recent data (June 2010) show that resettlers are now cultivating upland rice on around half of the plots. Use varies by village: the richer villages and those with better access to off-farm opportunities, such as fishing and livestock-raising, display a lower tendency to use their plots for rice



Data from NTPC, June 2010

cultivation. The livelihood team aims to encourage and facilitate those resettlers who choose not to cultivate rice to take up alternative uses of land, as a means to maintain the soils and provide an additional income source. Some are already using their land for alternative crops, such as fruit trees. Many resettlers also grow vegetables and other crops in the gardens surrounding their houses. Villagers are also starting to use land that has become available in the “draw down zone” – the area exposed every year as water levels in the reservoir fall during the dry season – to cultivate rice, maize, vegetables, cassava and corn and to use for livestock grazing. While the draw-down zone has considerable potential, a full draw-down of the reservoir has not yet occurred, and land use planning and outreach will be needed to help villagers understand exactly what areas they can use, and for how much of the year it is likely to be exposed.

For the agricultural livelihoods pillar to be successful, clear and secure land use rights will be essential, especially as households grow in size because of natural population increases and relatives moving in from outside of the plateau.

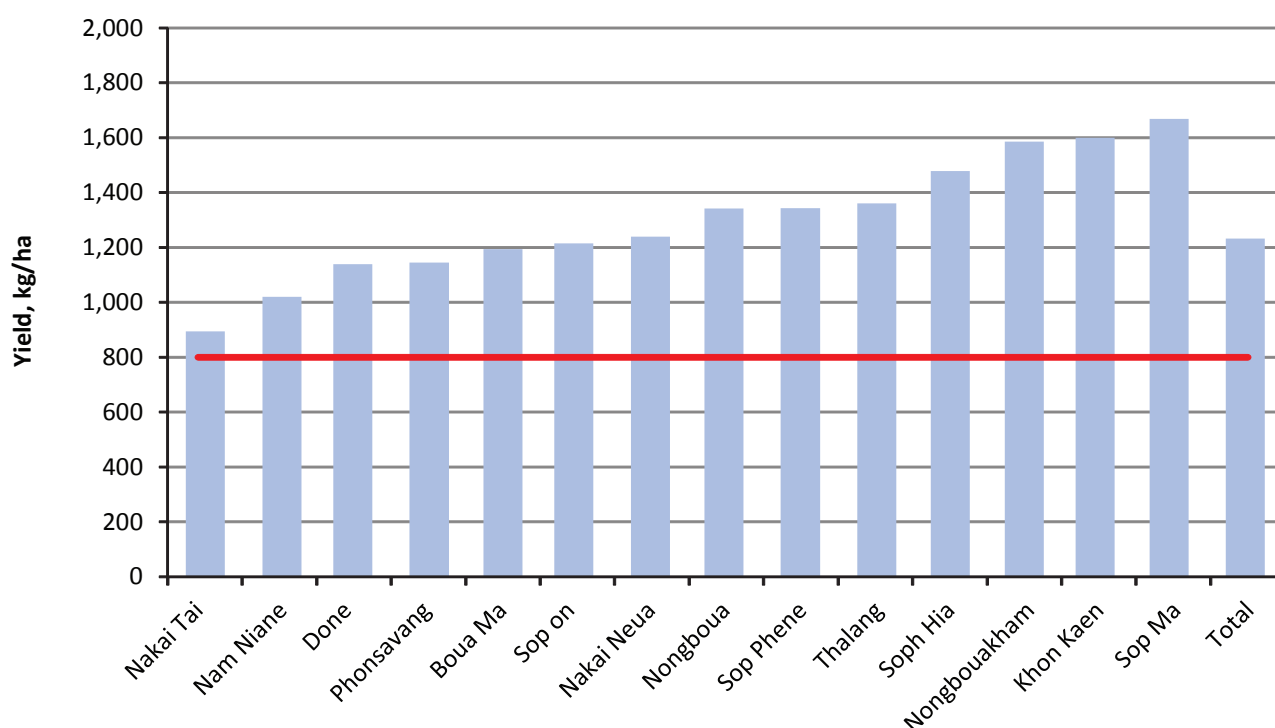
A Participatory Land Use Planning (PLUP) process (see Box 5) is underway, in order to demarcate village bounda-

ries and to identify extra potential land for households, including for second generation resettlers. Once the PLUP is completed, the next step will involve more detailed livelihood planning by the communities. Working in partnership with the Lao government to implement the results from this process, and to ensure that the land use rights of the resettled households are secure, will be crucial to securing sustainable futures for farming.

Secure access to land is essential for agriculture to succeed, but is only the first step: resettlers will also need to improve the productivity of farming. NTPC has provided resettled households with technical assistance, through extension workers and demonstration plots in each village, as well as free or subsidized agricultural tools, fertilizer and improved crop varieties.

Despite the relatively poor soil of Nakai, demonstration plots have generated yields of over 3 tonnes per hectare. The agricultural system that has proven most suitable for the conditions on the plateau is based on rotation of crops with a type of legume called “stylo.” This plant helps to fix nutrients into the soil, prevent erosion, and can be used as animal fodder. In addition, the system uses fertilizers, manure, and improved crop varieties. Very high yields are likely infeasible for the majority of farmers, as they are

Figure 4 - Average Upland Rice Production Yields, wet season harvest, 2009



Data from NTPC November 2009⁹

— 1998 yield, average upland rice

dealing with significant social adjustments and farming under new circumstances, and the average yield to date has been around 1.2 tonnes. However, all villages have already achieved upland rice yields above the 1998 average, and some are even recording yields comparable to those previously documented for paddy rice.

Some villages in the south of the plateau have reported particularly successful harvests. For example, the farmers of Khon Kaen village had subsisted on the poorest soil of Nakai for generations and were keen to take up new technology that would allow them to get as much as they could from every inch of their land. Despite having some of the least fertile soil in the area, in 2008 Khon Kaen achieved an average rice yield of 2.4 tonnes/ha, significantly more than the pre-resettlement average. Yields

declined slightly in 2009, but they remained around the average level that resettlers had previously achieved on paddy land.

Another challenge lies in the sustainable management of livestock. Lao households keep buffalo and cattle as a store of wealth and insurance, as well as a source of cash income. Around 35% of resettled households owned cattle or buffalo in early 2010, and these households had on average more than 4 animals, similar to 1998 figures.¹⁰ That resettlers are able to invest in livestock is an indication of progress with livelihoods. However, there is some concern that herds may become too large to be manageable. Large livestock numbers pose problems for environmental management, for the health of the livestock during lean months, by eating crops or otherwise

Box 5. Participatory Land Use Planning: Logic and Utilization

Participatory Land Use Planning (PLUP) is a method of creating shared understanding of land use rights and responsibilities. PLUP enforces NT2's Concession Agreement as well as the policy and law of the Government of Lao PDR (particularly land and forest laws).

PLUP is being used in NT2's Resettlement Area to demarcate village boundaries, clarify what land resources are available within these boundaries, and reach village-by-village agreements. Not only does this process help to establish permanent legal rights of resettlers over their land-based resources for the long-term, it also clarifies public and private responsibilities with regard to such resources. In addition, PLUP helps to train district and provincial authorities to apply new methodologies that were approved as national policy in 2009. By August 2010, PLUP had been completed in 2 southern villages (Khon Kaen and Ban Done) and demarcated all village boundaries. These outputs have now been formally approved and endorsed by the project's Resettlement Committee. Land zoning and land use planning is now being scheduled for all the remaining resettlement villages.

The participatory approach helps to ensure that diverse opinions will be heard and different interests and priorities given equal consideration. For example, the process has revealed some interesting gender differences, with women more interested in gathering non-timber forest products (NTFPs) for family consumption and men more interested in gathering NTFPs for sale.

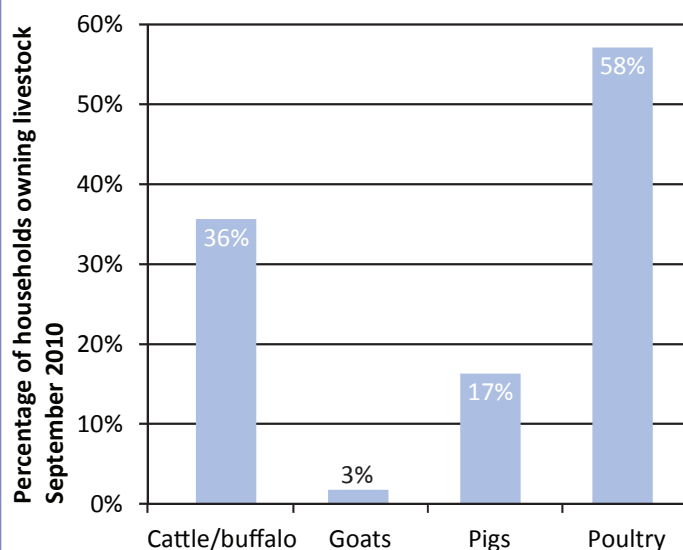
Improvements in infrastructure, roads and community facilities, mean that the area has become very attractive to outsiders. PLUP is helping to ensure that outsider interests do not overtake interests of affected population, by identifying new households as well as the reasons why they are coming into the area. This helps the project's Resettlement Management Unit to work with district and provincial authorities to restrict encroachments, as well as to ensure that the development benefits of the project are transferred to the second generation of resettlers. People remain very concerned about their current land allocation and their ability to feed their families as a result. PLUP is helping each village to prepare resource information for the project to identify additional land for second generation households, and to design viable agro-forestry approaches in consultation with affected people, which may be different from village to village, depending on different resettler interests and opportunities. This village-based livelihood planning process is a critical next-step to follow immediately after PLUP, and incorporates people's knowledge and interests as to how forest and agriculture resources may be developed for environmentally and economically sustainable livelihood options.

degrading the land and can undermine other livelihoods sources. Historically, several commercial interests have taken advantage of the forage available on the plateau to keep large herds. In addition, many resettled households are keen to accumulate buffalo, a highly prized savings vehicle in Lao culture. As a result, by 2008 the number of buffalo and cattle was well above the resettlement area's estimated carrying capacity of 1,500. This led to animal deaths due to lack of suitable grass land, and the damage done by these animals set back the process of crop rotation considerably. The damage done by roaming herds of buffalo, which destroyed the stylo planted to provide nutrients for the next growing season, was one factor contributing to the reduction in yields witnessed in 2009.

Many households have switched from buffalo to cattle, which use less grazing land and reproduce more frequently. And large commercial herds have been taken off the plateau. However, concerns about maintaining a sustainable herd size remain. Figures from late 2010 show a significant increase in the number of cattle on the plateau, driven by success in raising 66 new calves and the purchase of cattle from outside the plateau.¹¹ It will be important for the current PLUP process to identify how available land can best be used by resettlers and to assess the carrying capacity for livestock, village by village. **It may also be necessary to provide resettlers with alternative, safe and profitable ways to invest their new surplus incomes, rather than relying on cattle as a traditional savings vehicle.**

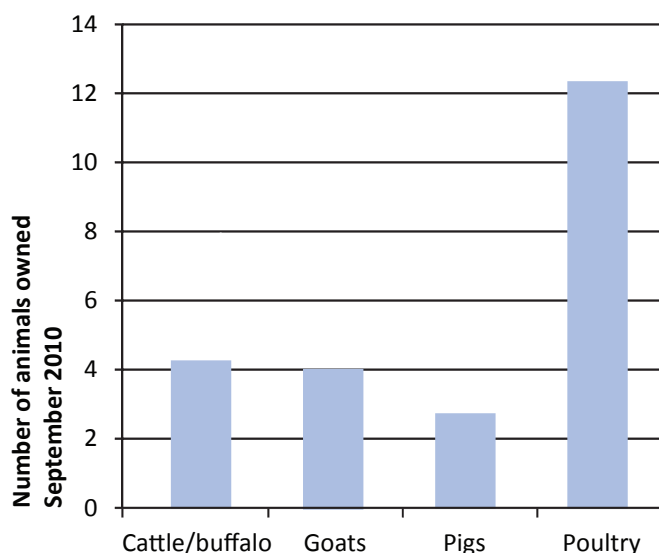
In addition, the project is trying to encourage the keeping of smaller livestock, such as pigs, chicken and ducks, which are more suitable to the conditions and easily marketable in small quantities. Suitable breeds of smaller livestock have already been distributed to interested resettlers, and some households have been keen to take up this opportunity. More than 50% of resettlers now own poultry, and 15% own pigs. If agricultural livelihoods are to flourish it will be essential for the communities to maintain control over the number of cattle and buffalo, find locations where they can safely graze, promote the development of cattle yards and grass growing at the family level, encourage the transition from buffalo to cattle and smaller livestock, and maintain a balance between the needs of smallholders and the environmental damage done by large commercial herds.

Figure 5 - Percentage of resettled households owning livestock.



District Agriculture and Forestry Office (DAFO).

Figure 6 - Average number of animals owned by those keeping livestock.¹²



District Agriculture and Forestry Office (DAFO).

These figures exclude livestock owned by non-resettler households in Oudomsouk and Phon Phan Paek



Village Forestry Association Worker, Nakai.
Photo: World Bank, 2010.

Community Forestry: Pillar 2

Before resettlement, forest resources, and particularly Non-Timber Forestry Products (NTFPs), played a central role in household livelihoods. They were an important seasonal source of cash income in some villages and a significant overall source of food, particularly in the agricultural low period, when most households were rice deficient. In poor families, NTFPs were often the only source of monetary income. In 1997, villagers could identify 306 species of NTFP, including 223 food and 67 nonfood products. Kisi resin, fish, frogs, edible rattan shoots, cardamom and wildlife were considered the most important.¹³

Post-resettlement, both men and women are still collecting a wide range of NTFPs for food and sale, with many people describing their abundance as "reasonable."¹⁴ The availability of and ease of access to fish, previously gathered in small ponds and streams and therefore considered an NTFP, has increased dramatically. However, a significant number of households complain about reductions in access to NTFPs and the longer distances they need to travel to find them. Prior to resettlement many villagers had easier access to the Nakai-Nam Theun National Protected Area (NPA). Between 2006 and 2009 more households used the forests to collect fuel wood, herbs and mushrooms, but the numbers collecting honey, rattan and bamboo products have decreased. The percentage of households selling forest products has declined since 2006 for all products except for kisi resin, which remains the most commonly marketed NTFP. Other NTFPs still regularly gathered from forest areas include bamboo shoots, cardamom, rattan shoots, and other fruits and vegetables. The number of animals caught also fallen; however, as the hunting and sale of wildlife is illegal in Lao PDR, this is not necessarily a bad thing.¹⁵

Change in access to NTFPs is one of the consequences of the project, and attempts to domesticate selected NTFPs are already in progress. The PLUP process is helping to identify forest and land areas that could be used for that purpose. The most promising NTFPs are rattan, bamboo, bong bark, cardamom, hemp and medicinal orchids. Sustainable collection or domestication of these resources could improve household incomes and give the resettlers an incentive to protect, rather than deplete, forest resources. Illegal harvesting of timber and wildlife needs to be carefully monitored and addressed if forest resources and

biodiversity are to be preserved for future generations.

In addition to the collection or domestication of NTFPs, the Nakai Plateau Village Forestry Association (VFA) is expected to provide significant income for resettled households. The VFA was established in 2003 and has a 23,400 hectare concession, in the mainly forested area surrounding the resettlement villages. The concession has been granted to the resettled people for their exclusive benefit for a seventy-year period and is to be managed by the association within the national regulatory framework.

The main objectives of the VFA are to develop livelihoods and generate income for the resettled population. This will include cash dividends and access to opportunities to earn money from forestry-based activities. The VFA management plan includes the following activities:

- Sustainable timber harvesting, processing, and marketing of wood products;
- Sustainable harvesting, processing and marketing of NTFPs;
- Forest plantation development;
- Agro Forestry and grazing development;
- Outdoor and recreational tourism.

The VFA is a particularly significant potential source of income for the most vulnerable people on the plateau, as it will provide dividends to all resettled households on the plateau, even those who are unable to work.

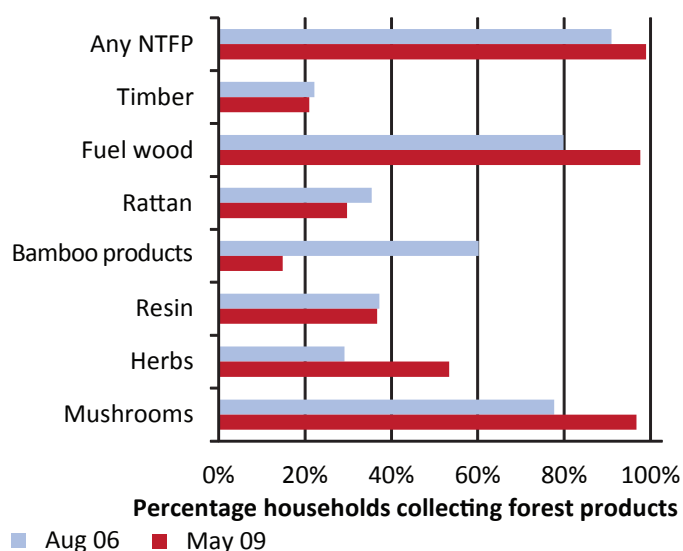
In its first five years, the VFA focused its forestry business activities on supplying wood for construction of resettlement houses. Sawn hard wood was sold to NTPC, generating gross revenues to the VFA of approximately \$1.5 million. A dividend of 1 million kip (approximately \$120) paid in May 2009, and another dividend of around \$150 was paid to each household in October 2010. Significant revenues also accrue to the local authorities through tax payments by the VFA. The association has also been involved in livelihood related activities, including charcoal production, domestication of orchids, handicrafts and small-scale furniture production. However, uptake among resettled households has so far been limited, in part due to their interest in other opportunities available on the plateau.

A number of steps still need to be taken to make the VFA a sustainable source of income for resettlers. The VFA is

being re-established as a licensed limited liability company with the resettled people as shareholders so that they can legally operate as a for-profit wood processing company. A one-year trial agreement was signed with a wood processing company to provide the technical expertise and market knowledge required to process and export value added products, and as this arrangement has worked well, it is likely to be extended. Finally, the PLUP process is facilitating villagers' understanding of their land use rights and obligations with respect to VFA forest areas. One objective of the process is to clarify roles and responsibilities over types of forest areas. This will help to avoid encroachment of these areas and facilitate the sustainable development of other forest uses, such as NTFP cultivation and contained areas for livestock grazing.

As its profit centers are developed, the VFA should be able to build up its working capital while distributing dividends to its members. By 2014, it is planned that the VFA will be able to support itself. Achieving this transition of the VFA into a mature and viable business organization will require continued technical support, practical training, and governmental assistance through policy and legislative measures that facilitate VFA operations.

Figure 7 - Percentage of households collecting forest products, 2006-2009¹⁶



Data from living standards monitoring survey (LSMS), NTPC



Fishing on Nakai.
Photo: NTPC/Stanislas Fradelizi, 2010

Reservoir Fisheries: Pillar 3

Reservoir fisheries have developed into a major source of income for most resettled people. The right, laid out in the CA, of the resettlers to be the primary beneficiaries from fishery resources in the reservoir for the first 10 years of its existence has been combined with the provision of boats, fishing gear and training on fish processing. Resettled households can fish anywhere outside of the conservation zones. This has provided all resettled households with a unique opportunity to develop their livelihoods from fishing in the NT2 reservoir.

The NT2 reservoir is large and shallow, creating what should be favorable conditions for fish populations. Experience from similar reservoirs has shown that fish production in the first 2 to 10 years after inundation is high, because large amounts of biological material create nutrient-rich water, favorable for plankton feeding fish, as well as large areas for spawning and low density of predators. The substantial variation between high and low water levels also means that nutrients are continuously added to the reservoir. However, new reservoirs are often volatile, suffering from shifts in both water quality and ecosystems. The large number of variables that influence fisheries makes it difficult to predict how the fisheries in the NT2 reservoir will evolve. It is likely, however, that they will stabilize at a level lower than the fish catch peaks witnessed in the early period of the reservoir.

So far, the NT2 reservoir has been highly productive, and results from fish catch monitoring show that households have been able to derive substantial monetary incomes and consumption from fishing. Many resettler households have even decided not to cultivate their agricultural plots, preferring instead to take advantage of the fisheries opportunities. At the peak in early 2009, households were able to catch around 11kg per day spent fishing. The total catch for the resettled population was estimated at around 140 tonnes for January 2010. This represented a “windfall” fish catch as many species took advantage of increased habitat and nutrient rich conditions. It has since tapered off, and is being replaced by a lower level of fish catch that should be regarded as normal and, hopefully, sustainable. In the most recent months the average household was able to catch around 3.5-5 kg of fish in one day spent fishing.¹⁷ It is important to recognize that levels of fish catch are related

not only to fish availability, but also to the level of the fishing effort at different times of the year. Traditionally, households will often do much less fishing during periods of intense agricultural activity, such as preparing fields for planting, or harvesting crops.

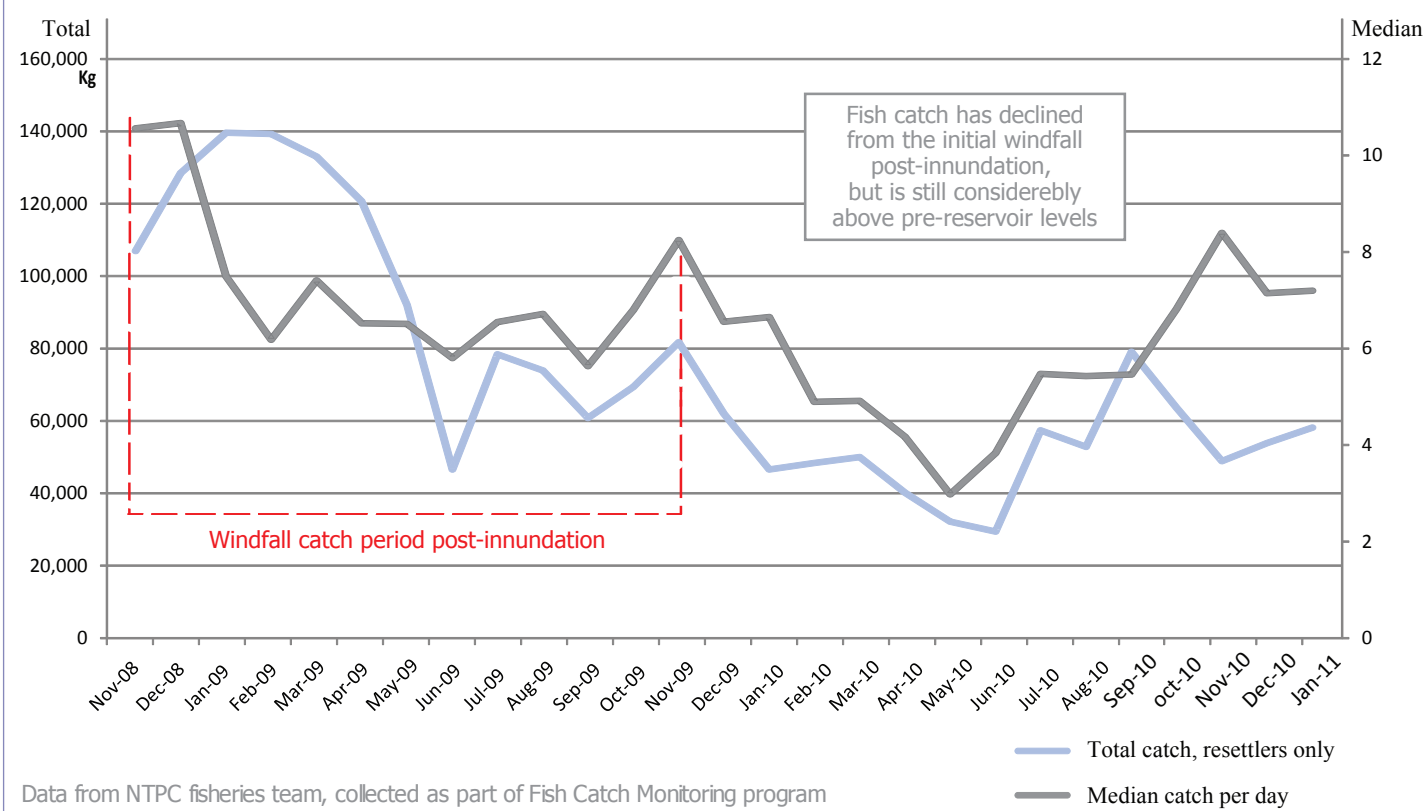
Around 72% of catch was sold in August 2010. But most households also use fishing to boost household consumption. Many households already see an opportunity for adding substantial value to the fisheries resource using the training they have received on fish processing techniques. In December 2009, 5% of the fish catch was processed, the main products being padek (fermented fish) and dried fish.

A system has been set up for the reservoir fisheries to be co-managed by a Reservoir Fisheries Association (RFA) made up of 16 Village Fishing Groups (VFG), and the Nakai District authorities. As well as establishing effective and sustainable management, the arrangements aim to empower

the local communities. The system is supported by NTPC and informally facilitated by external institutions such as the Living Aquatic Resources Research Center (LARReC) and the Mekong River Commission's (MRC) fisheries program. Consultations indicate that it has been well received by both resource users and local government staff.

Implementation of this ambitious co-management system is underway. **Functioning institutions for administration, management and day-to-day implementation have been established, consisting of elected representatives of the villages, paid staff, and district government representatives.** A jointly managed patrolling and enforcement task-force is operating. Local fishers take part in detailed monitoring of fish catch, fish processing techniques have been improved, the reservoir has been stocked with indigenous fish species, fish spawning grounds are being identified for protection, fish trading groups have been formed, and landing site operations are being developed. Although these management activities have been facilitated by NTPC

Figure 8 - Total fish catch and fish catch per day, resettled households, November 2008- January 2011¹⁸



and the RMU, they will increasingly form part of the new co-management set-up.

To date, the main management challenge has been to secure the exclusive right to commercial fisheries for the resettled people, as the rich fish resources are attracting outsiders to the reservoir. The trading of fish is being controlled by the VFGs at the landing sites (point of sale), which is also where management fees are being collected. However, rule enforcement with regard to illegal fishers (non-resettlers fishing commercially) is carried out via boat patrolling on the reservoir. The current patrolling and enforcement system must be further developed and improved in order to prevent people from outside the resettled communities from fishing in the reservoir.¹⁹

Another challenge is to manage the fish stock in the face of ecological and seasonal changes. For fisheries to withstand these changes, early warning information must be tracked and responses must be quick and effective. A particular challenge will be managing fishing during the reservoir drawdown period, when fish will accumulate in deeper pools. The ease with which these fish can be caught could lead to unsustainable production in the future if proper management measures are not implemented. It is too early to say how fish stocks will develop in the future, but the evidence strongly suggests that fisheries will continue to contribute significantly to plateau livelihoods, as long as the resource is properly managed.



New shop in a Resettlement Village. Photo: World Bank, 2010



Off-farm Income, Nakai.
Photo: World Bank, 2010

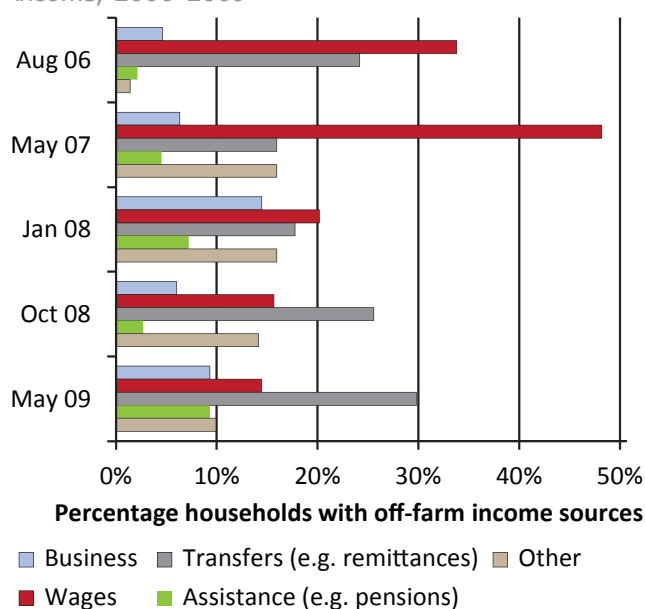
Off-farm Income:Pillar 4

Before the project, only a few households on the plateau had access to off-farm income. Since resettlement, however, new roads, facilities and regional economic development have increased local demand and given resettled households increased access to markets and employment. In response, many resettled households have initiated a range of small business activities to boost income from agriculture and fishing. There are several small family shops running in most villages, and some families have opened guesthouses and restaurants.

Other activities include employment by NTPC, its sub-contractors, or the VFA, food and fish processing, and other service businesses. Some households receive remittances from family members outside of the household, or assistance from government. Textiles, wood sculpture, and other handicrafts were originally identified as potential sources of non-farm incomes. However, only one textile handicraft group is functioning, while wood sculpture seems to have disappeared, despite training provided by VFA. Overall, data reveal that a relatively small percentage of households gain income from household business, the highest being 14% of the sample in 2008, although this does not include households who add value to their agricultural or fishing livelihoods by processing the products for sale.

A larger proportion of households work for wages. During the course of the project, NTPC has employed many villagers in project construction jobs, as well as to build their own houses or prepare agricultural land. These incomes are excluded from the income aggregate, because the income from these sources cannot be regarded as sustainable. Even excluding direct employment by NTPC, 48% of households reported incomes from wage employment from May to June 2007. Even if households do not report being employed directly by NTPC, it is likely that much of this wage work was related to project construction, with households being employed by subcontractors, or to clear agricultural or housing land. Some probably also represented employment by the VFA, which was providing wood to NTPC for house construction at this time. The availability of this work dramatically decreased as civil works reached completion in 2008. In 2009, only 14% of households reported income from non-NTPC wages. This nonetheless represents increased access to wage income

Figure 9 - Percentage of households with off-farm income, 2006-2009



Data from living Standards Measurement Survey, NTPC, 2006-2009

relative to 1998, when around 8% of households received wage income.

In addition to these earned income sources, some households receive support from outside the household. Support from NTPC has included both wages and benefits such as rice provision and free agricultural inputs, and almost all households reported receiving some support. In addition, in 2009 30% of households reported receiving remittances from family or friends outside of the household, including family members who have migrated away from the plateau, although amounts received were usually relatively small. A very few households reported receiving assistance from government, or other sources of income, including rent and pensions.

Off-farm livelihoods are currently relatively small for most households. However, resettlers are gradually improving their skills and confidence to participate in market-linked activities. In addition, the presence of the reservoir gives the resettlement area the potential to become the focus of significant tourism or sport activities. Over the long-term it

may also be possible to develop ecotourism activities in the watershed NPA. However, this development would have to be carefully planned and controlled to guard against negative effects on the environment and biodiversity, and to ensure that benefits are shared with households living in the protected area. The development of tourism-related services would provide jobs to resettled households, and indirect benefits as visitors purchase local products. Off-farm and service businesses could potentially become one of the main sources of local livelihoods, if well planned and systematically supported.

NTPC is providing technical and financial support in order to develop non-agricultural livelihoods. The joint NTPC and Lao Women's Union Community Development team helps groups to identify off-farm livelihood priorities, and provides them with skills training and seed capital to start up their businesses. As part of the training, the team has organized study visits for lead households to other parts of the country and Thailand to learn about successful business models. Planned initiatives will also provide resettlers with access to credit, allowing them to start and scale up their off-farm businesses in the longer term.



IV. PROGRESS TO DATE:

HOUSEHOLD INCOMES, CONSUMPTION AND ASSETS

In 1998, average incomes were 1.6 million kip per household, per year. This was beneath the national poverty line, and well below the international \$1.25-a-day poverty line. Furthermore, incomes on the plateau did not seem to be improving. After accounting for inflation, incomes in 1998 represented little or no increase on the average household income recorded by a previous survey in 1996.

Relative to this baseline, there has been an impressive increase in incomes since the resettlement. It is important to note that, even when incomes from NTPC employment and support are excluded, the income of the median, or “middle”, household, is around twice the 1998 average, despite the fact that the LSMS survey over-represented “vulnerable” households, bringing down the average.

Given the disruption of physical relocation and the challenges of livelihood improvement, incomes have fluctuated. On average, total income increased slightly between 2006 and 2007, before falling in the year leading to January 2008, when many villages underwent the disruption of relocation. In late 2008, household income began to rise and 2009 saw further improvements.

Along with the increase in income and consumption levels

since 1998, the composition of income has shifted significantly towards sources of income such as fishing, which do not depend on project-related employment or subsidies. Figures 11 and 12 show the composition of income in 2006 and 2009. While it has taken time for households to adopt new farming techniques, many households were quick to benefit from bumper fish stocks in the reservoir. As a result, the average income share of fishing, which was 27% in 2006, had increased to 44% in 2009, while the average income share of agriculture has remained the same, around 22%.

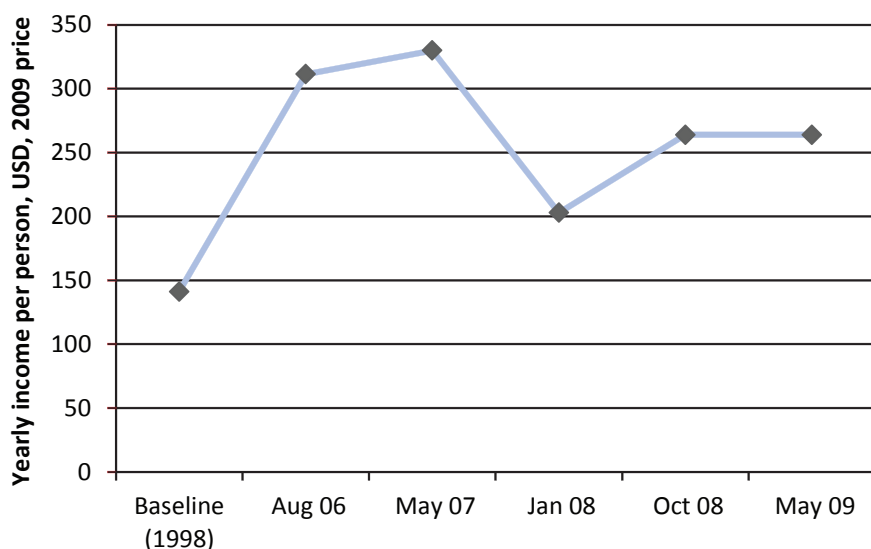
Consumption is also commonly used as a measure of “permanent income”, as it is less variable than income and easier to measure for households like those in Nakai who consume a large proportion of their own production, rather than selling it. Household consumption was not measured in 1998 but estimates based on nationwide data suggest that just before resettlement the poverty rates in all the resettled villages were worse than the national average of 35%, and may have been as high as 67%.²⁰ Preliminary estimates indicate that in 2009 only around 10% of households fell below the rural poverty line.²¹ Consumption includes some support received for free from NTPC, which means that it is difficult to judge at this point whether these

levels of consumption can be viewed as sustainable.

Monitoring also shows that individual households have invested in new physical assets, suggesting that they are beginning to feel confident in their new environment and about their futures. By 2009, almost 80% of resettled households owned a TV and around 70% had a motorbike. While investments in longer-term or productive assets by resettlers is generally good news, the phenomena will require ongoing monitoring and education to help resettlers avoid getting into unsustainable levels of debt. More broadly, living standards are improving considerably, opening up new opportunities for the resettlers.

Overall, the data suggest that most households are rapidly adapting to their

Figure 10 - Median total incomes, excluding transfers and wages from NTPC, 2009 prices



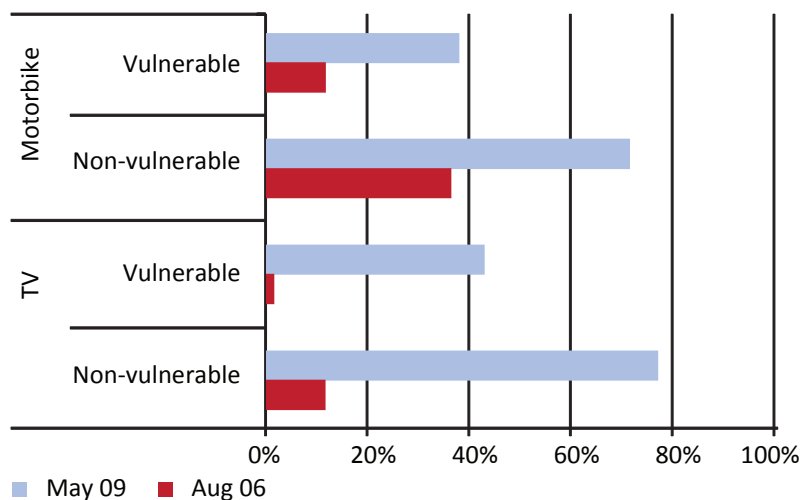
Data from living Standards Measurement Survey, NTPC, 2006-2009

new environment and taking advantage of livelihood opportunities. However, challenges remain.

1. Firstly, as noted above, there are a number of “vulnerable” households who will struggle to achieve high living standards without support, for reasons outside of the control of the NT2 project. These might include single-headed households, those without capable labor, or those with special needs. The preliminary analysis indicates that these households continue to lag behind their better-off and more dynamic peers. They will continue to require support, from NTPC during the transitional period, and then from other social safety nets, either formal or informal—such as the traditional family network.

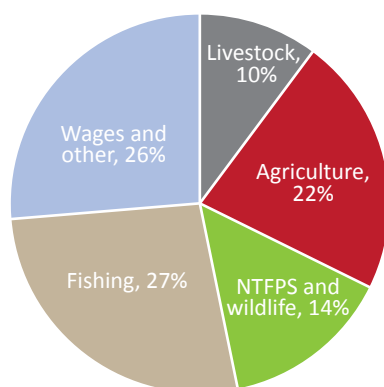
2. Secondly, it is too early to say whether any of the livelihood pillars can yet be considered sustainable. Ultimately success will depend on setting up effective natural resource management, ensuring user rights are secure, and creating local ownership of the new infrastructure and resources.

Figure 13 - Percentage of households owning a TV or motorbike, 2006-2009



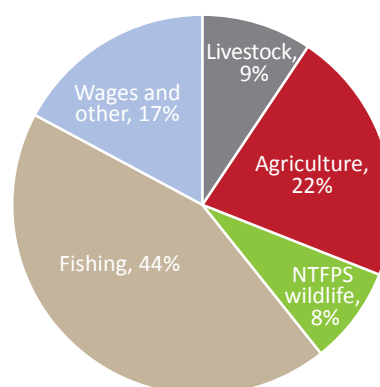
Data from living Standards Measurement Survey (LSMS), NTPC, 2006-2009

Figure 11 - Average sources of income 2006 - early in resettlement process



Living Standards Measurement Survey, NTPC, 2006-2009

Figure 12 - Average sources of income 2009 - after all relocation completed



Living Standards Measurement Survey, NTPC, 2006-2009



V. PROGRESS TO DATE: EDUCATION AND HEALTH

In addition to ensuring that resettlers are materially better-off, the project aims to improve non-monetary outcomes to mitigate risks arising from the social changes caused by resettlement. Education and health are part of a broad understanding of the concept of well-being. The education and health of the resettlers are central to the success and sustainability of the livelihood strategy. The project has invested in physical infrastructure, including schools and health centers, to improve resettlers education and health status. And the project has invested in capacity building for district government and staff, to help ensure improvements in these sectors are sustainable.

Education

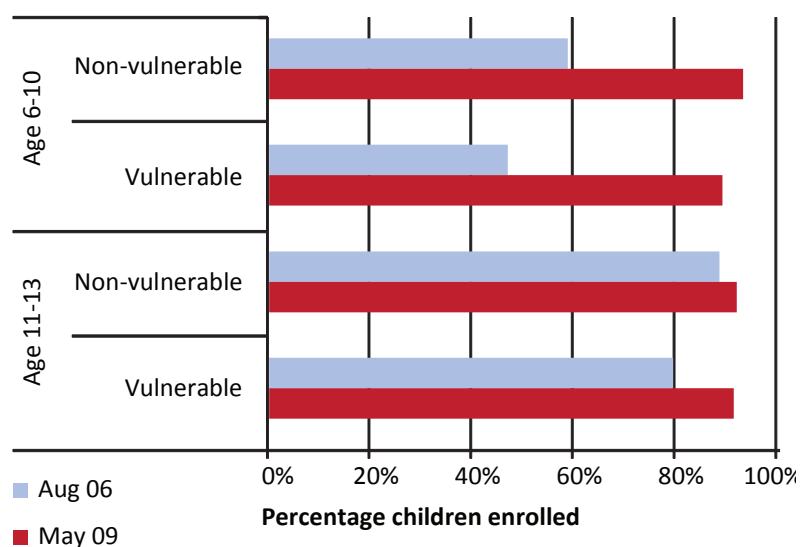
In 1998, 48% of household heads were illiterate, and only 10% had progressed beyond primary school. Literacy rates were even lower among women and the elderly. The situation did not appear to be improving: education facilities remained scarce and of poor quality. Even when children had access to school, they often stopped attending at an early age in order to help their families with farming and other economic activities. In 1998, only 31% of 5-9 year-olds, 10% of 10-14 year-olds, and 6% of 15-19 year-olds were enrolled in schools.²² Even when children were enrolled, attendance was often irregular.

The project's education program has focused both on construction of infrastructure and capacity building. Sixteen primary and sixteen nursery schools were either built or renovated. Education support is on-going, in conjunction with the District Education Office and Village Parent Student Associations. Kindergarten teachers and food support for school children also continue to be provided. Ensuring that initial investments in education are translated into sustained improvements in educational outcomes is going to be an ongoing challenge for District educational authorities.

A marked improvement in both school attendance and achievement has been witnessed both relative to the baseline and over the course of the project. Figure 14 presents enrolment data during the academic year previous to each sur-

vey, divided between children from vulnerable households and non-vulnerable households. Enrolment of children of primary school age was almost 60% for the non-vulnerable in 2006, already significantly higher than the 1998 level. For the vulnerable children, increases were slightly lower, at around 50%, but still well above baseline levels. Over the project period, enrolment has increased significantly, and the gap between the vulnerable and non-vulnerable children has almost disappeared. Enrolment of children aged 5 to 9 has risen to about 90%. **This means about 700 children, who otherwise would likely have missed out on an education altogether, are now enrolled in school.** Data from the district authorities echo this picture and show that dropout is low, especially among girls. The overwhelming majority of students successfully passed exams at the end of the year. Children from the resettled villages are also benefitting from provision of kindergarten facilities. It should be noted, however, that challenges remain, including providing access to secondary education and ensuring consistent quality of education.

Figure 14 - Enrolment in school, by age group, previous academic year, 2006-2009



Data from living Standards Measurement Survey, NTPC, 2006-2009



Clean running water, Nakai.
Photo: World Bank, 2010

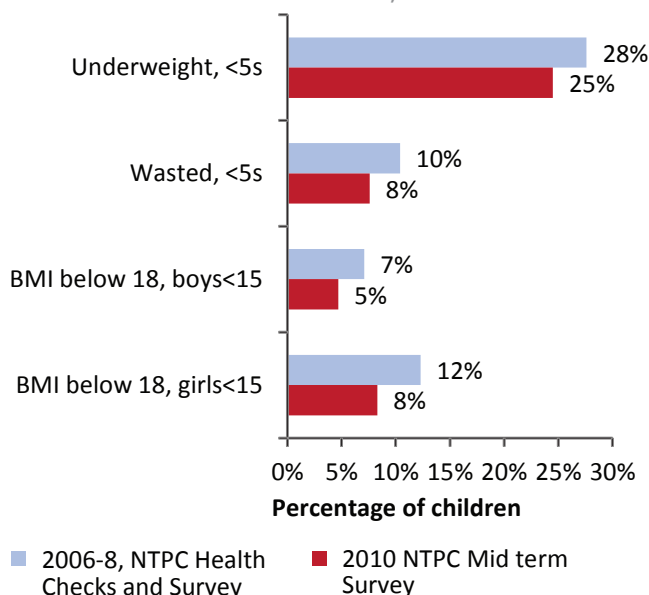
Health

Before the start of the NT2 project, the inaccessibility of the plateau made it difficult for households to receive basic health services and to see a qualified doctor or midwife. With the exception of periodic immunization campaigns, maternal and child health services were absent and women and children experienced very high levels of morbidity and mortality. Due to the absence of roads and transportation, emergency cases could not be brought in time to the district hospital. Health facilities consisted of 1 district hospital, 5 health centers and 1 small malaria unit, under the district health office. The health centers were inadequately staffed and poorly stocked with essential medicine and first aid supplies. Most villages had a designated Village Health Volunteer, but the volunteer seldom had the necessary medicine or skills.

Poor sanitation and understanding of hygiene, plus lack of access to clean water further compromised health outcomes. Water was taken mainly the river and, in some cases, natural springs. Only large villages had regular access to potable water sources throughout the year. Few households boiled water for drinking. As a result, plateau

Figure 15

Selected nutritional indicators, 2006 and 2008



Data from NTPC Health Performance and Monitoring Unit

households fared poorly on many health indicators. Child malnutrition and the prevalence of parasitic infestations were unacceptably high, even compared to other poor households in Lao PDR.

The aim of the project health program is to strengthen the existing health system by providing technical advice and financial support. It is essential that the improvements should be sustainable, so the program works in close collaboration with the government staff and uses existing government structures. The implementing agency is the government health sector at all levels: province, district, health center and Village Health Volunteers. The program works through several areas of intervention, including infrastructure development and support, capacity building and training, health education and awareness programs, and surveillance and monitoring. Focus on prevention of disease and health education for sustainable self help have been the priority.

In the resettled areas, two new health centers were built and existing health facilities were refurbished. Essential medical and office equipment as well as vehicles and ambulances were provided. Other support, including training for health staff, malaria, TB and STI control programs and health education, are ongoing. As a result of the infrastructure improvements, patients now have improved access to health services for treatment and preventive care, whether at the village or the district level. Having ambulances and better quality roads means that serious cases can be more easily referred to the provincial hospital in Thakek.

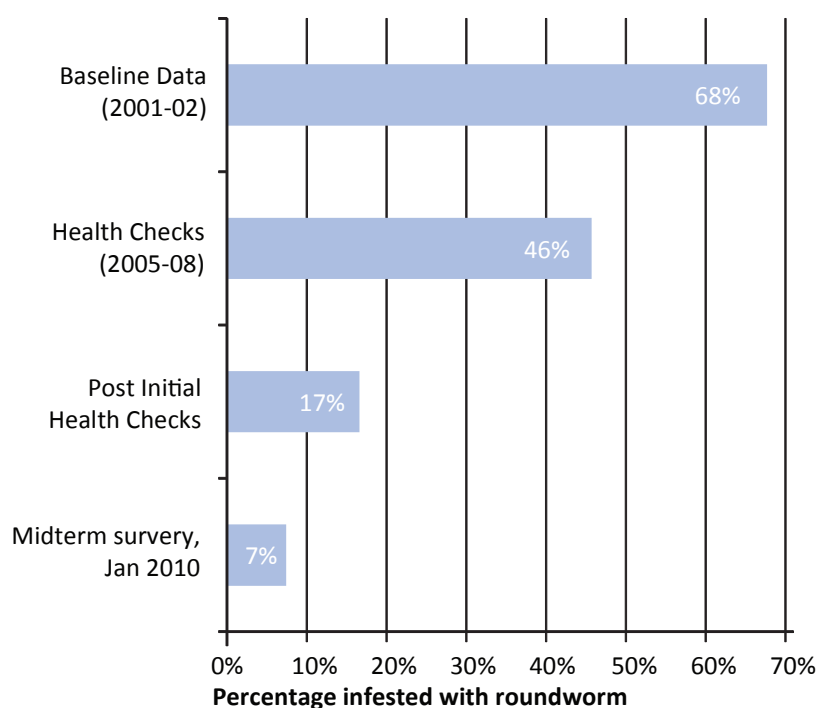
Improvements in maternal and child health services have been particularly impressive. The baseline survey indicated that child mortality rates were shockingly high: when interviewed as part of health checks carried out before resettlement, 50% of women aged between 25 and 44 reported that they had lost at least one child. Rates among older women were even higher.²³ Since 2007, monthly maternal and child health clinics have been active in all villages and other

improvements, such as the provision of safe water, have made a real impact on the health of mothers and children. It is too early for the positive effects of these changes to be fully quantifiable, but regular monitoring data collected by the project suggests that improvements are already significant. For instance, the nutritional status of children under 5 has improved considerably (Figure 15).²⁴

Data also suggests considerable decreases in prevalence of parasitic infections – an important contributor to improvements in nutrition status. Before the project started, almost 70% of individuals were suffering from parasitic infestation. This number fell to 48% after the provision of safe water supply and sanitation, and further declined to 17% after mass treatment with Mebendazole. By January 2010, the rate had fallen further to 7.4%.

The health of resettled populations is already much improved, as indicated by these initial data. But many chal-

Figure 16 - Prevalence of roundworm infestation in resettled population, 2001-2010



Data from NTPC Health Performance and Monitoring Unit, 2001-2010



Villagers on Nakai Plateau. Photo: NTPC/Stanislas Fradelizi, 2010

lenges remain. The focus of the project health team has been to ensure sustainable Primary Health Care for all the impacted populations. The success of this process depends on the approach adopted by the government health workers, officials, and planners. A sense of responsible owner-

ship and pride for the new infrastructure and services will be essential for improvements to be sustained. NTPC will continue to provide the required support to the provincial health services and the health workforce to achieve the ultimate goal of sustainability.

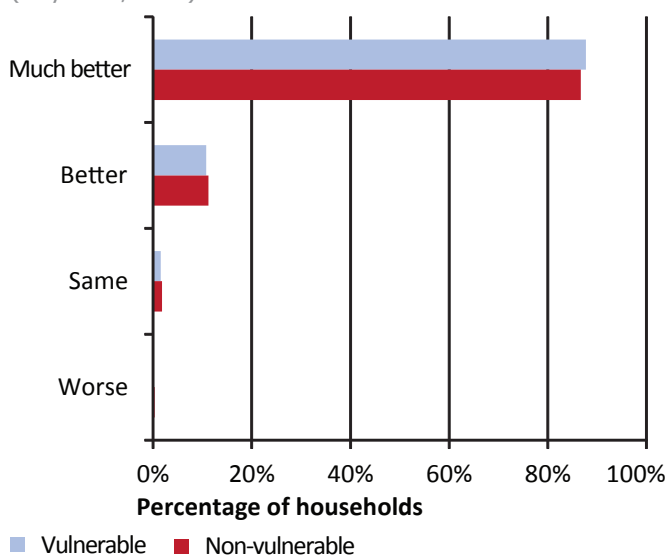
VI. PROGRESS TO DATE: COMMUNITY VIEWS

In addition to benefiting from improvements in their objective living conditions, the households surveyed appear to feel that their lives have significantly improved since resettlement. The vulnerable group tended to rate the change even more positively than their better-off neighbors, with 88% saying that life was “much better.” Households were asked to list up to two things that improved and two things that became worse on the plateau. They clearly appreciated improvements to housing (64% expressed their satisfaction), roads, community buildings and services that have come about as a result of the NT2 project.²⁵ They also value improvements to education and health facilities.

The resettlers’ reports of what has become worse capture some of the challenges facing the project, and emphasize the importance of building new types of livelihoods rather than trying to return to past ones. Many of the households are concerned about access to agricultural land and forests (33% expressed this concern). Further exploration found that resettlers are concerned not just about access to land now, but also about having sufficient land to support the next generation, underlining the importance of the PLUP process and subsequent livelihood planning. The concern about access to forests and forest resources relates largely to the collection of non-timber-forest-products (NTFPs), where about 45% of villagers reported that fewer NTFPs are available, and that they have to travel further to access them. Reduced access to land and NTFPs are a reality of

the resettlement process for many on the Nakai Plateau, but as illustrated in some of the livelihood data above, most resettlers have still been able to improve their livelihoods and overall welfare because of the range of other opportunities that the resettlement program has brought.

Figure 17 - Answer to the question:
How is life now compared to life before resettlement?
(May-June, 2009)



Data from Living Standards Measurement Survey, NTPC, 2006-2009





Resettlement Village. Photo: NTPC/Stanislas Fradelizi, 2010

CONCLUSION

Successfully resettling whole communities displaced by a hydropower project is a challenging and long-term task. The NT2 project has taken this challenge seriously from the beginning, and designed a resettlement process, including ambitious targets designed to leave everyone better off. **The livelihoods programs feature a substantial package of benefits and support to help people build new lives, and strong monitoring systems, including through external independent monitors, to ensure that these commitments are met transparently.**

The physical relocation of all households was complete by mid-2008, and livelihood targets will be measured five years after this, in 2013. If the targets are successfully met, and if the Government, with the advice of the external Panel of Experts, judges that the broader objectives of the resettlement process are substantially met, then the “resettlement implementation period” defined in the Concession Agreement will come to an end. However, several key elements of the resettlement package, such as secure land rights, privileged access to reservoir fisheries, the

community forestry concession, and improved infrastructure will last much longer.

As this publication went to press in early 2011, the project is roughly half-way through the livelihood development period. It is therefore not yet the appropriate time to measure whether the resettlement process has been a complete success. While it is apparent that the physical relocation process was completed successfully, and the overwhelming majority of resettled people currently feel that they are much better off, it will be some time before it is clear whether the current successes in building new livelihoods are sufficient and can be sustained over the longer term.

As time passes and conditions continue to change, new and unexpected challenges will arise. It is essential that the project continues to respond quickly and flexibly to these changes, using the principle of adaptive management to pursue the project’s broader resettlement objective: sustainably improved livelihoods for all those who have resettled.



Resettlement village children. Photo: NTPC/Stanislas Fradelizi, 2010

ENDNOTES

¹ According to Lao National Committee for Energy

² The household income targets provided for in the CA require all resettlers to reach the higher of either a fixed income target, or the rural poverty line. The CA provides to the targets to be measured five years after resettlement, and will be measured in 2013. Current trends suggest that the rural poverty line will be the higher of the two targets, and will therefore be used for measuring success in 2013.

³ Data in this section comes from Social Development Plan, Volume 2, Chapter 2, NTPC website. http://www.namtheun2.com/index.php?option=com_content&view=article&id=91&Itemid=102

⁴ Social Development Plan Volume 1, NTPC website, http://www.namtheun2.com/index.php?option=com_content&view=article&id=91&Itemid=102

⁵ Social Development Plan NTPC http://www.namtheun2.com/index.php?option=com_content&view=article&id=91&Itemid=102.

⁶ The Lao government sets the poverty line defined in Prime Minister's Decree No. 285 to be equivalent to the cost of 16kg rice/person/month. This means that the rice support alone could be considered sufficient to bring every household above the poverty line during the transitional period, as long as the households were able to supplement with animal foods, fruit and vegetables to ensure adequate nutrition.

⁷ As the ability of households to support their own livelihoods has improved, this transitional support has been phased out for all but the most vulnerable households, who are identified by a process including the District Government and NTPC. These vulnerable households also continue to receive monthly protein support of 8 eggs, 800g of dried meat, and 800g of fresh meat per person.

⁸ Source: Living Standards Measurement Survey (LSMS), NTPC, 2006-2009

⁹ The SDP states that baseline paddy yields were between 1.5 and 2.0 tonnes/ha but no figure was given for the overall average. The graph assumes that the average was around halfway between these two points.

¹⁰ In 1998 around 40% of households owned buffalo, and the average was 3.6 buffalo per household (see SDP, volume 2, chapter 2)

¹¹ District Agriculture and Forestry Office report, September 27th, 2010. These figures include livestock owned by non-resettler households in Oudomsouk and Phon Phan Paek, because it is the total number of livestock that will determine sustainability of the herd size

¹² District Agriculture and Forestry Office Report, September 27th, 2010. These figures exclude livestock owned by non-resettler households in Oudomsouk and Phon Phan Paek.

¹³ See "The use of non-timber-forest-products on the Nakai Plateau,

report on a short mission from 26/2 to 30/3 1997", prepared for NTEC, Thakek, Khammouane Province, by Joost Foppes, Thongphone Sayphaseuth, Khamsany Sengkeo and Seng Chantilat, available at <http://lad.nafri.org.la/fulltext/LAD010320040174.pdf>

¹⁴ Information received during PLUP discussions in Khon Kaen and Ban Done villages, Nakai Plateau, 2010

¹⁵ Information in this section from the PLUP in Khon Kaen and Done villages and from LSMS survey, NTPC, 2006-2009.

¹⁶ Source: Living Standards Measurement Survey (LSMS), NTPC 2006-2009.

¹⁷ The availability of fish varies seasonally, as does the amount of labor required for other livelihood activities. Fewer fish are available during the dry season. This is also the time when households are busy planting their 0.66ha plots and celebrating the Lao New Year. A seasonal drop in total fish catch was clearly visible in the dry season of 2009, but the drop during the first substantial draw down of the reservoir, to 22kg per household in May 2010, was larger. Fish catch subsequently rebounded, but helping households use income diversification, savings and other strategies to deal with regular seasonal fluctuations in income sources is essential.

Most fishing boats are shared between two households. An average household, using the boat 15 days in the month could collect around 50-80kg of fish in a month. In reality, households fish for fewer days, so the median household catch per month was 42kg in August 2010.

¹⁸ NTPC Fisheries Team data

¹⁹ From February to August 2010 non-entitled households from Oudomsouk and Phon Phan Paek harvested an estimated 12-18 tonnes of fish per month.

²⁰ Epprecht M, Minot N, Dewina R, Messerli P, Heinemann A, 2008. The Geography of Poverty and Inequality in the Lao PDR. Swiss National Center of Competence in Research (NCCR) North-South, University of Bern. Bern and Vientiane: Geographica Bernensia.

²¹ Source: Living Standards Measurement Survey (LSMS), NTPC.

²² Information from SDP Social Development Plan NTPC website http://www.namtheun2.com/index.php?option=com_content&view=article&id=91&Itemid=102

²³ Health Checks for Resettled Populations, December 2005-February 2008, Resettlement Health Program, NTPC

²⁴ Data on child mortality have been collected since resettlement took place in 2008. However, because the time period in question is short and the population is relatively small, these figures cannot yet be used to demonstrate the considerable improvements that have taken place, or to compare to national figures.

²⁵ Source: Living Standards Measurement Survey (LSMS), NTPC 2006-2009

Nam Theun 2 Resettlement at a Glance

NT2 required the resettlement of around 6,300 people from 15 villages on the Nakai Plateau. Resettling whole communities is a challenging and long term task. The project's commitment to these communities extends beyond compensating them for the move, and includes helping villagers develop better livelihoods and living standards than they had before the project.

The NT2 resettlement program included three broad phases: Consultation and Planning, Physical Relocation, and Livelihoods Development. Detailed consultations and community outreach helped determine resettlement sites, design of new houses, village layouts, and livelihood opportunities.

A comprehensive resettlement package provided to all resettlers included community infrastructure such as roads, schools, and water supply; household entitlements such as housing, electricity, and agricultural land, as well as a livelihood support program. Food support and other assistance helped ensure living standards did not fall during the relocation period.

The post-relocation livelihood program was designed taking into consideration the natural resources available to resettlers, their skills, traditions and previous livelihood patterns. It is based on four pillars: Agriculture and Livestock, Community Forestry, Reservoir Fisheries, and Off-farm Income. The project aims to help households achieve an acceptable level of income, through a diverse set of livelihood opportunities, and to help villagers decide for themselves which combination of livelihood opportunities to pursue over the long term.

By end 2010, NT2 was roughly half way through the livelihood development process. It is too early to judge whether the resettlement process has succeeded on all key areas. It is clear that physical relocation was completed effectively and that 87% of resettlers feel their lives are better, but more time is needed before we know if early successes in building new livelihoods can be sustained over the longer term.

The NT2 project remains closely monitored by project staff, various oversight agencies, and by the World Bank and ADB. Staff from the World Bank or ADB based in Vientiane visit the project several times a month, talking to local communities, Government officials, and NTPC staff. The World Bank and ADB are committed to helping the project proactively identify and solve problems as they arise in order to ensure that one of the NT2 project's long-term objectives is met -- leaving resettled people better off than they were before.



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