



Nam Theun 2 Power Company Ltd.

Nam Theun 2 Hydroelectric Project

Resettlement Action Plan 3

Mahaxay and Gnommalath District, Khammouane Province

LPA:

33-36

38a-d

Disposal Areas & Access Roads

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1 Introduction

1.1 Resettlement Action Plan 3

The Resettlement Action Plan (RAP) 3 focuses on LPA 33-38 of which, under the Project Lands Resettlement Plan (PLRP), land use rights were transferred to NTPC and its contractors for the construction and operation of the NT2 Project.

LPA 33-38 in Gnommalath and Mahaxai District, Khammouane Province include the construction areas of the Power Station, Regulating Pond and Dam, the Nam Theun Residence, the Downstream Channel (Northern, Mid-northern and Mid-south section), the Tunnel as well as Disposal Areas and Access Roads. Total impacted households here number 513, of which are 373 households are affected to 10 percent or more of their annual income, thus making them eligible for livelihood support.

RAP 3 addresses NT2 Project impacts on residents and identifies strategies for compensation and livelihood restorations related to the handover to the Head Contractor (HC) of Land Parcel Area 33-38a due to the construction of a Power Station (LPA 33), a Regulating Pond (LPA 34), a Regulating Dam (LPA 35), Residence Nam Theun, i.e. housing and other facilities for NTPC and HC staff (LPA 36), and the northern (LPA 38a), mid-north (LPA 38b), and mid-south (LPA 38c) section of the Downstream Channel, Downstream Tunnel (LPA 38d) as well as various Soil Disposal Areas and Access Roads.

The acquisition and either temporary or permanent use of land for construction and operation has resulted in impacts including disturbance, and temporary or permanent loss of land and assets, all of which have required compensation to those PAHs who may be owners and/or users of the impacted land and assets. Compensation includes asset purchase or cash compensation, direct replacement of land or assets in another location, or restoration of livelihoods or incomes impacted. As the exact requirement in terms of location and dimension for each Project Land has meanwhile been finalised, a series of plans, including land acquisition and compensation agreements with PAHs, has been developed for review and approval by the GOL.

1.1.1 Land Parcel Areas

LPA 33-38 is by far the most concentrated grouping of Project Lands, starting with the Power Station at the foot of Phu Ark mountain ridge, and extending through the Regulating Pond, Regulating Dam to the first, second and third section of the Downstream Channel on the Gnommalath rice plain. A summary on LPAs, name of buildings/installations and their impact (low, medium, high) on local residents is indicated in Table 1 below.

Gnommalath and Mahaxai District, LPA	Name	Impact on PAH
33	Power Station, etc.	Low
34	Regulating Pond	High
35	Regulating Dam	High
36	Residence Nam Theun	Medium
37	Road 8B	-
38a	Downstream Channel (Northern Section)	High
38a-DT1A	Spoil Disposal Area	Low
38a-DT1	Spoil Disposal Area	High
38a-DT2	Spoil Disposal Area	Medium
38a-DT3	Spoil Disposal Area	Medium
38a-DT4	Spoil Disposal Area	Low
38a-DT5	Spoil Disposal Area	Medium
38a-AR1	Access Road	Low
38a-AR2	Access Road	Low
38a-AR3	Access Road	Low

Gnommalath and Mahaxai District, LPA	Name	Impact on PAH
38b	Downstream Channel (Mid-north Section)	High
38b-DT6	Spoil Disposal Area	Low
38b-DT7	Spoil Disposal Area	Low
38b-DT8	Spoil Disposal Area	Low
38b-DT9	Spoil Disposal Area	Low
38b-DT10	Spoil Disposal Area	Low
38b-DT11	Spoil Disposal Area	Low
38b-DT12A	Spoil Disposal Area	Low
38b-DT12B	Spoil Disposal Area	Low
38b-DT12C	Spoil Disposal Area	Medium
38b-DT13	Spoil Disposal Area	Low
38b-AR2	Access Road	-
38c	Downstream Channel (Mid-south Section)	Low
38c-DT12D	Spoil Disposal Areas & Access Roads	Low
38c-DT14	Spoil Disposal Area	Low
38c-DT15	Spoil Disposal Area	Low
38c-DT16	Spoil Disposal Area	Low
38c-AR1	Access Road	Low
38d	Downstream Channel (Tunnel)	Low
38d-DT17A	Spoil Disposal Area	Low
38d-DT17B	Spoil Disposal Area	Low
38d-DT17C	Spoil Disposal Area	Low
38d-DT17D	Spoil Disposal Area	Low
38d-DT18A	Spoil Disposal Area	Low
38d-DT18B	Spoil Disposal Area	Low
38d-DT19A	Spoil Disposal Area	Low
38b-DT19B	Spoil Disposal Area	Low
38d-DT20	Spoil Disposal Area	Low
38d-AR1	Access Road	Low
38d-AR2	Access Road	Low
38d-AR3	Access Road	Low

Source: NTPC, Vientiane Office, March 2006

Table 1. LPA, area affected within the LPA and the projected level of impact

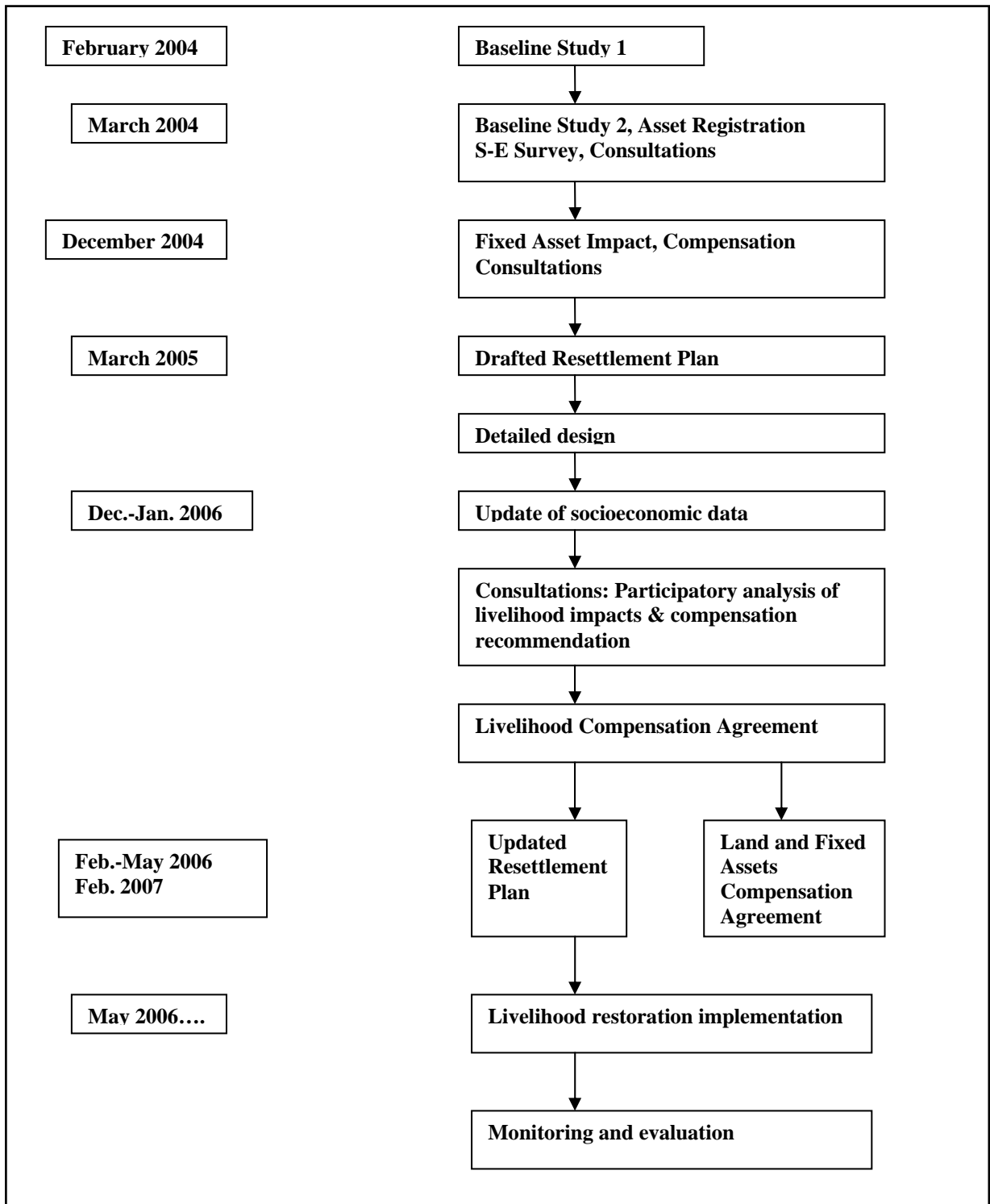
1.2 Efforts to minimize resettlement/displacements

The acquisition and either temporary or permanent use of lands for NT2 Project construction and operation has resulted in impacts including disturbance and temporary or permanent loss of land and assets, all of which required compensation to those PAHs who may be owners and/or users of the impacted land and assets. Compensation for significantly impacted PAH has focused on livelihood restoration, either by replacement of land for land or other assets, or by development of alternative livelihoods and sources of income. PAHs who are impacted less than 10 percent of their income, or who choose cash compensation and whose financial management plan is approved, will be given final cash compensation. Wherever possible, mitigation and compensation of PAH have been integrated into the development plans of the areas. For example, the development of irrigated replacement paddy land on the Gnommalath Plain will be integrated into the longer term irrigation development scenario for the area.

Efforts have been made to minimise the impact of Nam Theun 2 Project requirements. With the continuous progress of construction work it became evident that the actual area required for construction and the subsequent number of PAH was less than previously assumed. Thus, as a result of a recent survey (NTPC Gnommalath Office, April 2006), the total number of impacted households could be reduced from more than 600 to 529. It is the purpose of this RAP and other follow-up plans to

update the requirements for compensation payments and document the implementation of livelihood restoration programs.

Figure 1: Development and implementation of updated RAP for LPA 33-38



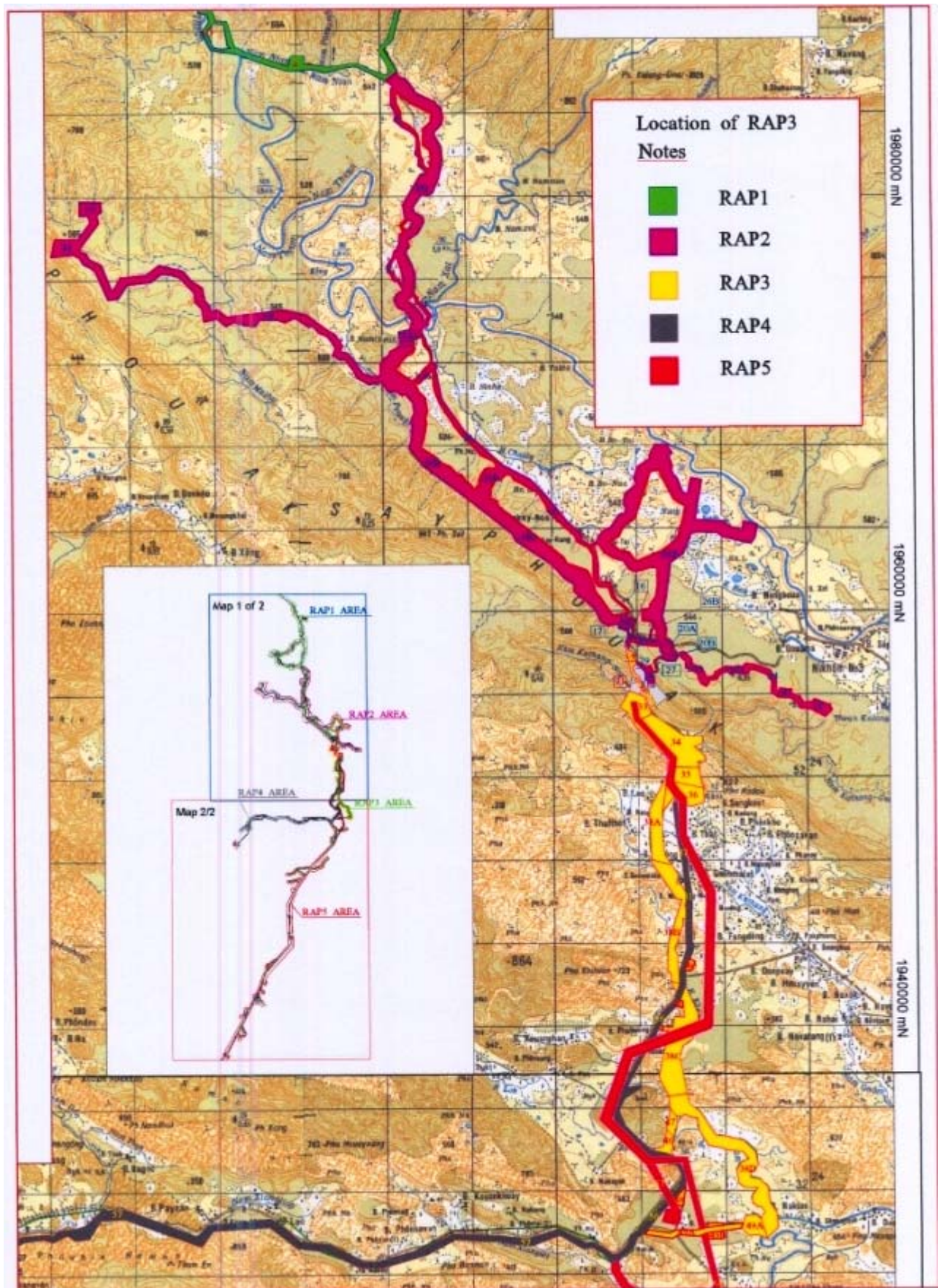


Figure 1. RAP 3 area coverage

2 Compensation policy and Scheme

Entitlements depend on particular aspects that classify households or the community as eligible for compensation. Once consultation has been conducted as described in RAP volume 1, compensation then falls into 4 main classifications:

a. Project Affected Households (PAH)

PAHs are divided into two main classes:

i. PAH impact of less than 10%:

Household income is not significantly affected. Productive (cash and imputed income generating) land assets are impacted at a value less than 10% of total income.

ii. PAH impact of more than 10%:

PAHs whose income and assets are significantly affected by the activities of NT2. Productive (cash and imputed income generating) land assets are impacted at a value more than 10% of the total income.

Within these classes are special groups such as those classified as vulnerable from the baseline survey. Both spouses are required to sign the compensation forms to ensure transparency and disclosure.

b. Infrastructure replacement and improvement

Infrastructure replacement is applied for community structures such as schools and water points where NTPC replaces the affected structure.

Infrastructure improvement such as bore holes with hand pumps provision for health and sanitation purposes is provided at a community level.

c. Community Resources

Resources that are not assigned to or owned by a PAH but are utilized by a number of individuals from a village are classified as a community resource. For example, fishing areas in waterways are considered as a community resource and compensation must be provided to the impacted group. A village fund is allocated for each affected community and the utilization of these funds is determined by the village in consultation with NTPC and the District.

d. Allowances and transitional measures

As stipulated in the CA, allowances and transitional assistance will be provided on a case to case basis as the need arises. For example, interim compensation could be provided to PAHs who have not been severely impacted, or those who are considered affected less than 10% if final cash compensation has not been provided at the time of land acquisition. In situations such as these allowances and transitional measures can apply.

2.1 PAH impacted less than 10%

In cases where less than 10% of a PAH’s productive (cash and imputed income generating) land assets are impacted, cash compensation is applicable. The amount payable will be based on:

1. the market value of that lost land, as assessed at the actual time of land acquisition; or
2. the cash equivalent of seven (7) years gross production from the lost land; or
3. the actual replacement cost of the land as assessed at the actual time of payment of compensation.

Compensation is provided under the following categories:

1. Interim compensation
It has been decided that due to delays in the availability of baseline data and asset appraisal values in RAP 3, PAHs will receive interim compensation until final compensation is provided for.
2. Final cash compensation
Final cash compensation is the one-time payment for loss of fixed assets, such as land or common property resources.

The flowchart (fig 2) depicts the process involved and the outcomes of each step as explained in each section below.

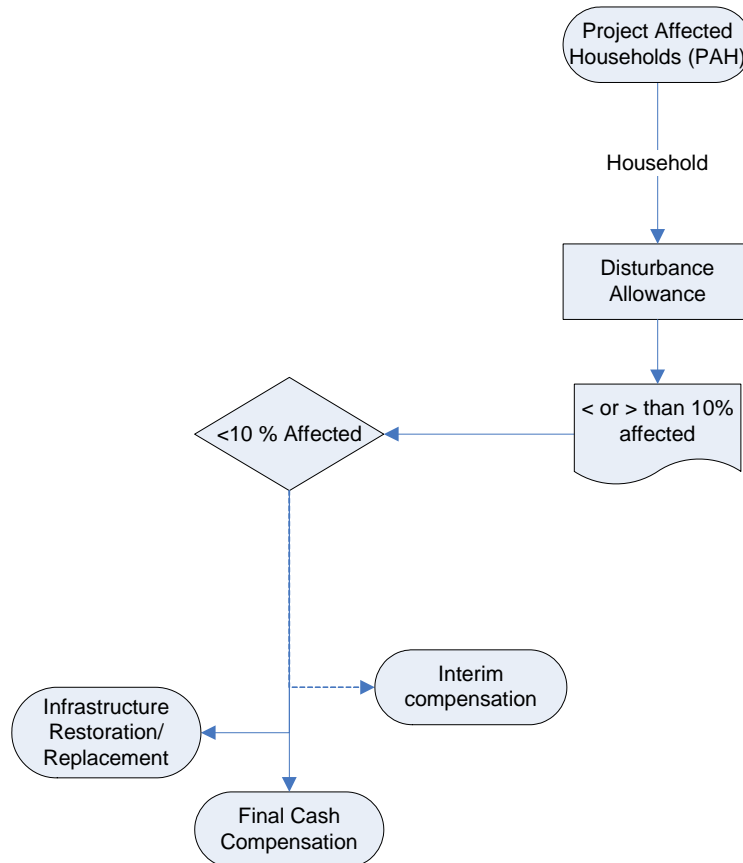


Figure 2. Compensation flowchart for PAHs affected <10%

2.2 PAH impacted More than 10%

In cases where more than 10% of a PAH's productive (cash and imputed income generating) land assets are impacted, the PAHs are eligible for a multitude of compensation types to restore pre-project level income and assets where available. It is anticipated that despite the availability of numerous livelihood restoration measures offered to the PAHs, there will be some who will request cash compensation.

PAHs who wish to obtain final cash compensation as opposed to livelihood restoration measures, will be assisted in developing business plans for the cash compensations that they opt to receive. The Project Land office, together with RMU and DWG will provide expert assistance so that the cash compensation received will be used for appropriate productive enterprises.

If the PAH cannot prove that to DWG's satisfaction that they will utilize the cash for livelihood, then they will be required to continue with livelihood restoration measures to restore pre-project level income.

During the initial implementation stage of the Project Land Program PAHs are provided with the opportunity to be involved in livelihood restoration measures as endorsers and pioneers. This will encourage other PAHs to be involved as examples of success will be available.

The flowchart (fig 3) depicts the process involved and the outcomes of each step as explained in each section below.

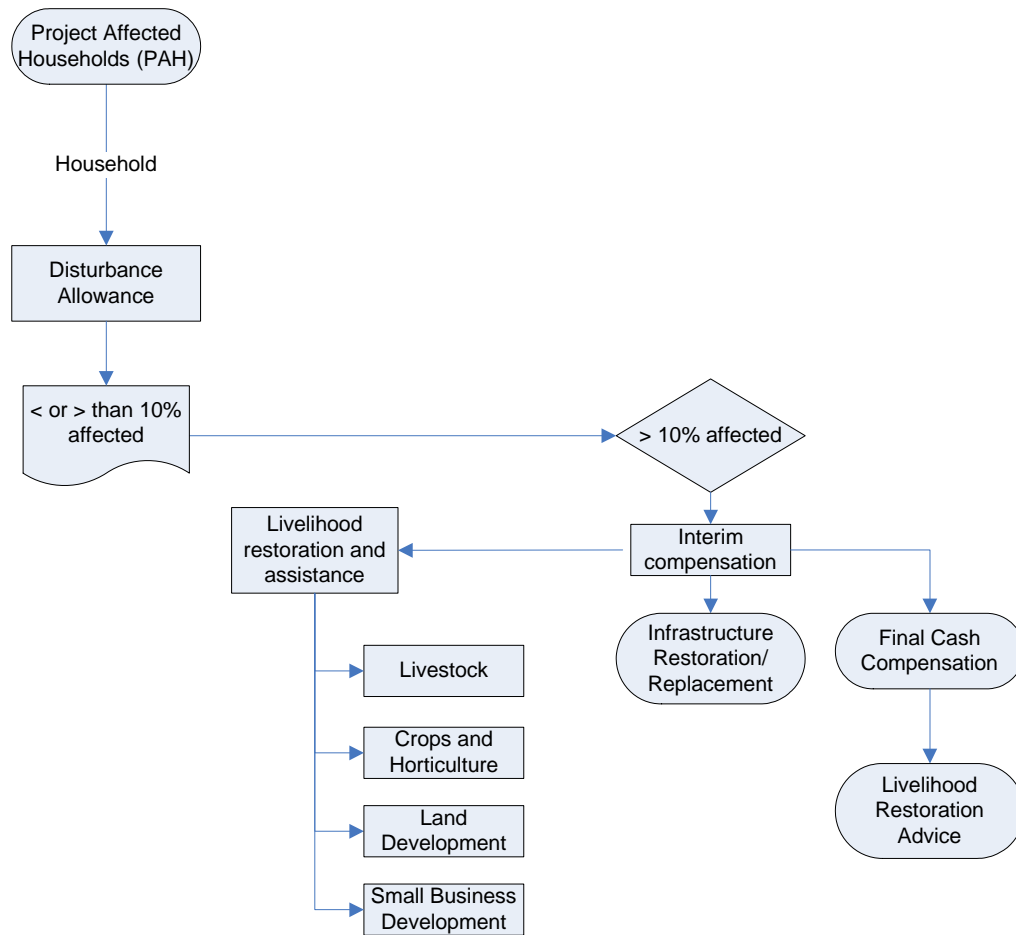


Figure 3. Compensation flowchart for PAHs affected >10% of their income

2.2.1 Interim and final compensation

Compensation is provided under the following categories:

1. Interim compensation

Interim compensation is based on production losses and is paid on an annual basis until household income has reached pre-Project level. Production losses are based on an approved estimate submitted by the villagers and verified by the Village Head and the District Working Group.

2. Final compensation

Final compensation is the one-time payment for loss of fixed assets, such as land or the equivalent of 7 years gross production of the land.

2.2.2 Land

Significantly affected farmers are in principle entitled to replacement land; of the same type, with productivity equal or greater than that of the lost land.

Though it would provide optimum benefits for the project and the PAHs if the ‘Land for Land’ scheme were implemented for the relevant PAHs, PAHs in Project Land who have lost part, or all of their land cannot be guaranteed to receive new land because of the shortage of suitable land in the Gnommalath area.

To address the loss of land, and in turn livelihood, two approaches are being utilized:

1. New land development

Unproductive land is identified and negotiation occurs between NTPC and the land owner. In exchange for land clearing and UXO clearance of the entire plot, NTPC receives 50% of the total land area to redistribute to PAHs. It is anticipated that such land will be provided to PAHs who reside within a close proximity to the newly developed land.

As this new land is not suitable for rice cultivation, alternative livelihood activities are identified. These land parcels are developed into highly productive perennial gardens.

PAHs will be provided with infrastructural improvements and agricultural development assistance to develop the land. Livelihood assistance is provided to the PAH under the crops and horticulture livelihood strategy of the project.

2. Reclamation of land

Areas of land were acquired by NTPC for use as sources of material (borrow pits) or soil disposal areas to support construction of the NT2 facility. These lands are classified as Category 1 land (for exclusive use of NTPC) and were acquired in a similar way as the land on which NT2 facilities are to be built (e.g. channel, transmission line, etc.). NTPC is entitled to use these areas for the entire concession period.

As per the construction contract, the HC has been granted the exclusive use of these areas until construction is complete at the end of 2009.

Initial assessments have identified potential uses for around 85 Ha of the area in Gnommalath for livelihood restoration activities. Borrow pits have potential as fish ponds whereas spoil areas can be converted into upland gardens. A detailed assessment will be carried out once the HC has completed the work in the area. NTPC will negotiate with the HC regarding the earlier return of land to be utilized for livelihood activities.

Compensations for other fixed structures, such as rice huts, storage room, pigpens, etc. are determined on a case by case basis as this is dependent on size, roofing, wall, and flooring materials previously used.

2.2.3 Crops, trees, fish ponds and other productive assets

Compensation is provided for crops not yet harvested at the time of relocation based on gross harvest income. Standing crops are compensated at full replacement cost regardless of maturity of crops. Compensations for trees are based on the type, age and productivity and the cost of production and rearing of trees. With respect to fish ponds, a lump sum cash payment will be made equivalent to 7 years lost productivity of the fish pond as part of the final payment.

2.2.4 Project Land Livelihood Restoration Strategy

2.2.4.1 Introduction

The impacts of construction activities on the livelihood of the local population have to be seen in different perspectives and time frames.

PAHs who live on the Nakai Plateau (outside of the Nakai Reservoir inundation area) as well as people in Gnommalath, Mahaxai, Xe Bang Fai, Xaibouly, and Kaysone Phomvihian Districts who are significantly affected by construction activities, including road and transmission line construction are considered as PAHs of Project Land.

The Project Land Livelihood Restoration Strategy is mainly concerned with PAHs whose livelihoods are severely impacted by construction activities. Within numerous Project Land areas, basic sources of food supply and income have been irreversibly damaged by construction activities.

In general, primary income of local people in the affected areas is derived from land-based agriculture, NTFPs, livestock and fishery yet rice production still plays a key role with regard to food security. It is anticipated that the affected population will now be increasingly exposed to market logic and rules, and do not have the skills and knowledge to take advantage of better income opportunities. NTPC will provide guidance and training to ensure that PAHs are well equipped to take advantage of the new opportunities.

It is important to have intensive training and supervision programs for the various options that the project provides to the PAHs. It is logical that a change of land use and production systems from low value commodities to higher value commodities like fruits, vegetables or ornamentals requires a proportional input in training and supervision as well as new skills in management and organization.

2.2.4.2 Development of irrigation – a misconception

The development of irrigation in the Gnommalath Plain through the use of water from the future Downstream Channel described in the SDP as a key element for agricultural development and livelihood restoration has essentially become an obsolete option due to the following:

- 1) The Downstream channel as currently designed is not a multi-purpose channel and is not suitable for irrigation due to its hydraulic properties.
- 2) Water in the Downstream Channel will only be available after COD in December 2009. The water in the Downstream Channel will most likely be unsuitable for domestic or agricultural use for several years after 2009.

Additionally, development of irrigation for the sole purpose of rice production during the dry season on sandy soils with medium fertility is unlikely to provide yield levels which could provide a substantial income improvement for the local population.

2.2.4.3 Farmers' preferences

In order to create a successful livelihood strategy, a participatory approach was utilized. Involving the farmers in deciding on the types of viable livelihood options encourages program ownership which in turns promotes success.

Initial consultations were conducted with the full list of PAHs according to the baseline survey. When asked about their priorities for livelihood restoration measures, a total of 412 households of significantly impacted PAH from 16 villages in Gnommalath and Mahaxai District, representing 93 percent of the total number of affected households in Project Land, gave highest priority to rice paddies and the raising of large animals, in particular, cattle. Data shows that they also showed preference for vegetable gardens, small livestock (pigs, goats, poultry), fish farming and mushroom growing as shown in the table below.

Livelihood options chosen		
1 st choice	2 nd choice	3 rd choice
Rice paddy	Large livestock	Vegetable garden

Table 2. PAH priorities for supplemental livelihood options (Gnommalath and Mahaxai District)

There are considerable variations among PAHs with respect to their preferred options, details are available in RAP 3. In addition, the request by the research team to identify at least three most favored choices provided some valuable insight into farmer preferences.

2.2.4.4 Integrated strategy for livelihood restoration

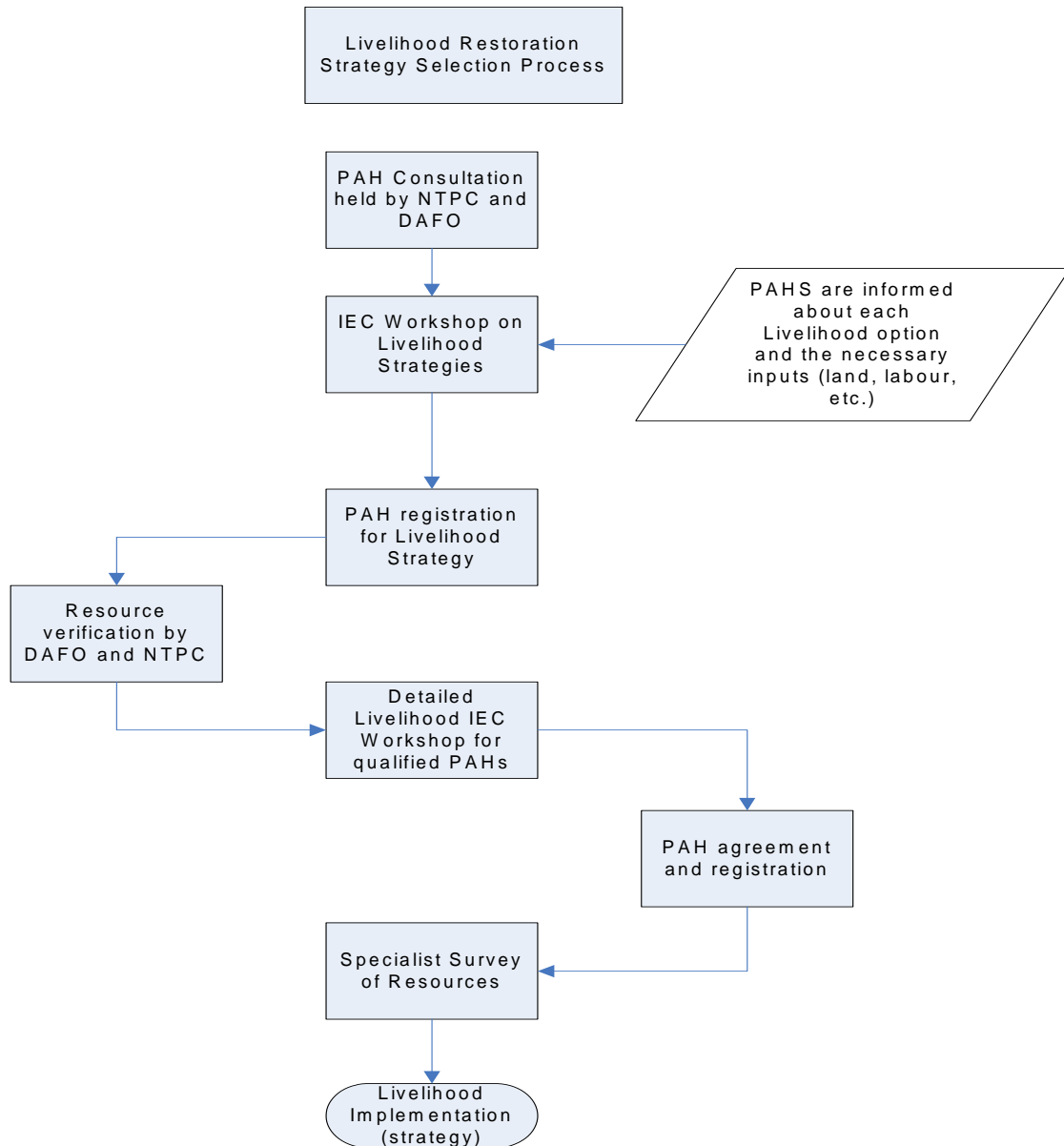
Livelihood restoration activities are mainly aimed at assisting PAHs to restore secure living conditions that are comparable or better than pre-project conditions. Compensation payments in cash for lost assets and production may offset the losses, but livelihood restoration activities provide new opportunities enabling the PAH to increase income and living standards.

The expected loss of productive land and income on Project Land Areas due to construction activities require an immediate response regarding livelihood restoration. Out of the group of severely impacted PAHs around 30 % have lost more than 90 % of their income. They are considered to constitute a priority group for livelihood restoration measures.

Irrigation development, as discussed earlier, will not provide new or better income opportunities for those PAHs who have lost more then 90 % of their land and other income sources. At present, the implementation strategy is to apply an integrated approach for livelihood restoration and general agricultural development.

PAH selection criteria for livelihood activities

The flowchart for selection criteria for livelihood activities is as follows:



This process

allows for the identification of labour needs and capacity of the PAH to implement the livelihood restoration activity chosen. As each option requires certain inputs, variable land allocation and labour force, the PAHs are provided with a variety of activities and decide based on the requirements for each activity and their level of interest in the activity.

The selection criteria are utilized for all livelihood activities though PAHs are provided the opportunity to choose more than one activity to be involved in should they have the capacity to do so.

2.2.4.5 Rice production improvement (wet season)

The importance of rice production for the local population is evident and well documented. Improvements through a range of interventions for PAHs who lost substantial parts of their rice land in order to recover their lost production to a maximum degree have been included in the livelihood

replacement strategy. During the dry season the soil in the Gnommalath Plain is well suited for field crops, vegetables and forage crops. The residual effect of nutrients in the topsoil will be beneficial for the following wet season production of rice.

Goals for the rice improvement strategy are closely related to other livelihood restoration activities, and can be summarized as follows:

- a) overall improvement of food security for all households and communities;
- b) promotion of crop diversification during the dry season;
- c) promotion of land use for forage production in the dry season; and,
- d) Livestock improvement.

Rice improvement is achieved by providing the following:

- i. Improved rice varieties
Improved rice varieties are provided to the PAHs for planting. These varieties perform better than local varieties.
- ii. New planting techniques
Information on better planting techniques is provided to the PAHs to increase yields.
- iii. Fertilizer
The PAHs are provided with chemical and organic fertilizer
- iv. Pest control
Pests have been identified as a serious problem for wet season rice production and NTPC provides training and materials to protect and reduce the incidence of losses. The main cause of losses is gall midge, an insect that can destroy crops on a large scale. Chemical means of pest control will be avoided and focus will be placed on natural means.
- v. Training
Training will be provided for all PAHs involved in rice production to increase their yield for their rice paddies for all the above items.

Improvement of the present rice production system is a key element for further changes in the land-based production system. Rice production has to be increased mainly during the wet season by improvements of varieties, cultivation methods and post-harvest operations.

Rice production during the dry season is mainly practiced due to the lack of other opportunities, lack of knowledge on alternatives and/or the need to grow rice to substitute crop damages during the wet season. An increase in wet season rice production allows for other options to be considered as alternative crops during the dry season.

Improvements in rice production are not considered as the main means of livelihood restoration and improvement, but as a key element in providing opportunity and confidence building by improving food security.



Rice fields in the Gnommalath Plain (Photo: H.-D.B)

2.2.4.6 Cash Crops and Horticulture

Seasonal and Perennial Horticulture production has been identified as one strategy to replace lost production areas along river banks and other locations permanently used for project infrastructure.

Two types of cash crops and horticulture production methods are to be implemented:

- a. The cultivation of perennial gardens with a variety of fruit trees combined with annual vegetables under non-irrigated conditions or partially irrigated conditions, and
- b. The cultivation of seasonal gardens during the dry season in former rice fields using existing irrigation facilities and promoting the use of more efficient irrigation methodologies. This production can play a bigger role in providing more income for PAHs which lost a substantial portion of their productive land.

The production of bigger volumes and better quality fruit and vegetables will require additional efforts for market development beyond the present local market structure.

The following are the strategies that are provided for the cash crop and horticulture livelihood restoration.

Mushroom production

The mushroom species, *Pleurotus ostreatus* and *P. sajor-caju* are naturally growing species of mushroom in the Mekong region. It is an edible, fast growing fungus that is resilient and has high market value. These species of mushroom are usually harvested from the forest for personal consumption. The potential of growing and selling mushrooms has been identified and is one of the livelihood strategies implemented by the project.

NTPC, together with the DWG and DAFO assist the PAHs in producing mushrooms. This strategy will be carried out as follows:

The PAHs are provided with a mushroom house, inputs and training by NTPC. Continuous technical knowledge and marketing training will be provided for the PAHs to promote sustainable livelihood as after one cycle of implementation PAHs are required to provide their own inputs from profits.

This strategy provides an opportunity for other PAHs to gain an understanding of how to cultivate mushrooms in a controlled setting and the mechanisms involved in the process, from inception to sale. It also provides information to all PAHs involved on the costs and required labour input and effort required to maintain this activity.

PAHs will also be trained in each step in the life cycle of mushrooms as the initial stages of producing spores is a necessary step in ensuring local availability of inputs.

Vegetable production

PAHs who decide to produce vegetables will be provided with assistance from NTPC, DWG and DAFO. This assistance will be based on the recommended crops from the horticultural market survey. This strategy will be carried out as follows:

The PAHs are provided with fencing material, inputs and training by NTPC. Vegetable gardens are prepared for cultivation either in upland gardens or in rice paddies during the dry season. Seeds and fertilizer are provided to the PAH to plant within the garden.

Continuous technical and marketing training will be provided for the PAHs to promote sustainable livelihood as after one cycle of implementation PAHs will be required to provide their own inputs from profits.

This strategy provides an opportunity for other PAHs to gain an understanding of how to cultivate vegetable crops and the mechanisms involved in the process, from planting to sale.

Cash Crops

NTPC, together with the DWG and DAFO provide assistance and inputs to PAHs that opt to produce cash crops such as cassava, maize and peanuts during the dry season. This will be carried out as follows:

The PAHs are provided with fencing material, inputs and training by NTPC. Continuous technical knowledge and marketing training will be provided for the PAHs to promote

sustainable livelihood as after one cycle of implementation PAHs will be required to provide their own inputs from profits.

Assistance with setting up upland gardens and dry season rice paddy cultivation is given to the PAH. Seedlings, fencing and fertilizer are provided and PAHs are given training from the onset of the activity to ensure program follow through from production to sale.

Non timber forest product restoration

The various construction activities at the Power House, Switch Yard, Regulating Pond, Regulating Dam, Downstream Channel and Transmission Line have resulted in destruction of forest areas and natural resources, which were previously used by the local population for activities related to timber and non-timber forest products (NTFPs). As NTFPs play an important role in these communities as a food and income source, the destruction of forest areas has had a direct impact on the livelihood situation of the local communities. A major source of food and a substantial share of family income is derived from NTFPs, which are still harvested in a traditional way, and which are limited to a specific range of products.

Perennial crops for which there is an existing market, such as *Jatropha curcas* (known in Laos as ‘Mak Nhiau’) will be introduced. This perennial crop will be well-suited for the re-vegetation of spoil areas, channel embankments and upland gardens. *Jatropha* is also well known for the oil extracted from its seeds that can be used for making biodiesel fuel.

The farmers will be encouraged to maintain a mixed plantation of *Jatropha*, a mixture of Eagle wood/fruit trees, pigeon pea for wax (strick lack), pineapple, rice and other vegetables in the low lying areas and rattan, berberlin, eagle wood and other natural trees on higher land under natural forest.

The NTFP strategy is implemented as follows:

NTPC will provide fencing, and inputs, such as *Jatropha* seedlings and fruit tree seedlings, for PAHs and provide assistance in preparing the soil for cultivation, at least for the first year, providing the PAH with capital for the succeeding year.

Continuous technical training will be provided for the PAHs to promote sustainable livelihood and follow through marketing techniques. This strategy provides an opportunity for other PAHs to gain an understanding of how to grow mixed crops and its benefits.

2.2.4.7 Livestock production improvement

Livestock plays an important role in the household economy in the form of cattle, small livestock and fish. Traditionally, livestock is perceived as an asset. Raising livestock is not labour intensive and local species are resilient to disease. Crops have set seasons and harvest periods whereas livestock can be kept for longer periods of time and can be sold at times of need and emergency. Therefore, enhancing the present system is the key strategy in livestock production improvement which will require a substantial learning process, especially with regards to care of livestock. Successful livestock production and

income generation is closely related to the conditions under which livestock is raised with regards to shelter, feeding and veterinary services.

Assistance for the increase of the production of small livestock and fish is an important substitute for natural resources lost or damaged due to the NT2 Project, as well as a way to provide additional food security and cash income. For PAHs who have lost a major share of their land, an expansion of small livestock production under improved conditions can substantially compensate for lost income.

Livestock

Sale of livestock account for more than 50 percent of cash income in many upland areas and over 95 percent of livestock is produced by smallholders, with only a small number of commercial pig and poultry enterprises near major cities. The survey on PAH priorities for livelihood alternative shows PAHs primary interest rests with large animals.

The potential for expansion is related to the availability of sufficient grassland and grazing areas, which will be difficult to identify or to develop in the area. Non-land dependent livestock like pigs are encouraged due to the unavailability of land. For all types of animals raised, emphasis will be focused on improvements in raising conditions, feeding, hygiene, veterinary service and market conditions.

The raising of small livestock like pigs, and the improvement of feeding conditions can be combined with the enhancement of upland gardens by including cassava, corn and sweet potatoes into the cropping pattern. The best economic benefits with this kind of livestock can only be obtained if farmers are able to produce their own feed material. With diminishing grazing lands for large animals, alternative ways of feeding, such as the cut and carry system, are promoted as a means to produce fodder crops in gardens close to the animal pen.

As raising small livestock is the responsibility of women, who already have to carry a substantial workload, attention should be given to the gender aspects of related activities. Given the recent spread of the bird-flu epidemic, traditional methods of chicken raising must change. The combined raising of ducks and chicken must be stopped, as ducks are the main transmitters of H5N1.

The livestock raising strategy is implemented as follows:

The PAHs are provided with cattle pens, inputs for forage material and training by NTPC. For PAHs who raise cows and other types of larger livestock, pens are constructed. For pig raising, PAHs are provided with piglets and grass roofing for existing pens.

Forage type plant seed material (i.e. stylos grass, sorghum) is provided to the PAH for planting. PAHs are also provided with rice bran and feed for pigs.

Continuous technical and marketing training will be provided for the PAHs to promote sustainable livelihood as after one cycle of implementation PAHs will be required to provide their own inputs from profits.

This strategy provides an opportunity for other PAHs to gain an understanding of how to cultivate forage material and maintain livestock.

The cut and carry system will also promote livestock to be confined to the PAH's home plot as they are fed within the pens and do not have the need to graze far from home.

Frog raising

In the past frogs have been caught in the wild at the beginning of the rainy season for personal consumption. From studies, market analyses and community perception, it appears that there is a market for frogs (Ranidae). The project has focused on the potential market for frog raising and will provide the opportunity for interested PAHs to raise frogs for sale and consumption.

The frog raising strategy is implemented as follows:

NTPC provides frog tanks, juvenile frogs and feed. NTPC supports the PAH through training and advice of a frog consultant until the frogs are sold. A limited number of PAHs are trained by the consultant for worm raising. Breeding training to produce tadpoles is provided to a limited number of PAHs complete the production cycle at the local level to ensure local availability of juvenile frogs.

The first cycle of juvenile frogs will be raised by the selected PAHs and bought by NTPC to distribute to involved PAHs to begin the market cycle.

Continuous technical knowledge and marketing training will be provided for the PAHs to promote sustainable livelihood as after one year of implementation PAHs are required to provide their own inputs from profits.

This strategy provides an opportunity for other PAHs to gain an understanding of how to maintain frog pens and raise frogs for consumption and sale.

Aquaculture

Aquatic resources are an integral component of most upland Lao people's livelihoods providing food, employment and income, and thus play a dominant role in many poverty reduction programs. The wild fish population is under serious threat due to over-fishing, and the flow regime change in the Xe Bang Fai River after COD together with the subsequent change of water quality will have an additional impact on the fishery. The demand for raised fish will increase substantially over the next few years. This provides a good opportunity for PAHs to be involved in aquaculture and take advantage of the market demand.

NT2 Project affected farmers are supported in the establishment of fish ponds as well as raising fish in rice fields.

Initially existing ponds will be improved by:

1. Emptying existing ponds and extracting all fish to ensure that predatory species have been removed,
2. Disinfecting the ponds by liming; and,
3. Providing fencing material to protect the pond from predators.

The project will also support PAHs involved in the aquaculture strategy to dig new ponds. All PAHs involved will be provided with training, fingerlings and food.

The aquaculture strategy is implemented as follows:

Five different types of fish will be introduced. *Clarias gariepinus* (African catfish), *Hypophthalmichthys molitrix* (Silver carp), *Aristichthys nobilis* (Bighead carp), *Ctenopharyngodon idellus* (Grass carp) and Tilapia. Also two additional systems of production (Breeding and fingerling raising) will be carried out. Breeding aims to supply fingerlings to farmers for raising and the latter raises fingerlings for fish meat.

NTPC will provide fingerlings and inputs for PAHs until they sell fish, at least for the first cycle, providing the PAH with capital for the succeeding cycle.

Continuous technical and marketing training will be provided for the PAHs to promote sustainable livelihood and disease free fish stock.

2.2.4.8 Non-agriculture based skills and small scale business

Due to the limited land availability, non-agricultural livelihood restoration options are explored and developed.

Construction of Nam Theun 2 hydroelectric facilities will require a substantial number of skilled and unskilled labourers. This demand for labour will diminish prior to COD as major civil works are completed, with very little demand for labour during the operational phase. During the construction phase it is important for local people in general and PAHs in particular to prepare for the post-construction period by seeking means to maintain their non-agricultural income through other employment or investment in small scale businesses.

Non-formal training in non-agricultural based trades provides necessary skills and knowledge to help in this process, and additional support mechanisms for the initial start-up of household businesses can be implemented. The actual conditions in affected communities are faced with additional challenges related to ethnicity and educational background. Around 75% of the PAHs are of the Makong ethnic group. The literacy rate, especially among the female Makong population is low and presents a serious constraint to their access to formal or education. The operation of small-scale businesses is traditionally the domain of the female members of a household.

Non-agricultural based options

In line with PAH priorities, non-agricultural livelihood options will focus on training for:

1. small-scale business and trade,
2. handicraft (weaving, basket making, etc.) and,
3. trade skills development (construction, plumber, electrician, carpenter, mechanic, beautician, etc.).

The Khammouane Vocational Centre in Thakhek is a well equipped and staffed training center for craft skills where PAHs could obtain skills training such as sewing, hairdressing, basket weaving and food preparation among others.

NTPC will provide repeated training and the necessary equipment for starting new businesses. This activity is focused more on women or disadvantaged PAHs unable to work in the fields or take up the other options that have been provided by the general livelihood strategy.

2.2.4.9 Social support measures

The CA stipulates that special attention be given to vulnerable groups within the PAHs such as those severely affected by the project or those identified as PAHs below the poverty line during the baseline survey prior to implementation.

The creation of employment opportunities and consequently income for poor and marginalized people is closely related to their access to education and training and can not be done as a short-term intervention measure by the Project.

Livelihood restoration measures that focuses on women and vulnerable groups

For adjusting existing or establishing new livelihood alternatives, there is a need to ensure that these activities are suitable for rural women and sensitive to the division of labour. Rural women in Laos as elsewhere in South East Asia are the backbone of agricultural production, processing and marketing, of domestic work and household economy. They are responsible for health, nutrition and feeding of their families. With more and younger men migrating to town and city centres seeking more profitable employment opportunities, women become increasingly involved in work which was traditionally men's work, such as land preparation, irrigation, planting and harvesting.

Separate meetings with female PAHs revealed that major interests regarding livelihood alternatives rests with rice production, small livestock raising (poultry), mushroom growing, vegetable production, weaving and collection of NTFP.



Farmer meeting at Oudomxai (Photo: SDP)

2.3 Infrastructure Replacement and improvement

2.3.1 Houses and other fixed structures

PAHs that lose their house plots are entitled to receive a new house or to rebuild their existing houses on a new plot with the support of NTPC. PAHs that lose fixed structures will also receive a new structure or be compensated in cash for the loss. Cost for material, labour, transportation and other directly related cost for either the new house or the dismantling and rebuilding of the existing houses and other structures is paid for by NTPC. The minimum housing area has been set at not less than the current house area or 14m² of housing area per person.

Impacted houses and fixed structures that have electricity connections, electricity supply and electricity fittings will have the same fittings restored as well as domestic water supply to at least the standard of current water supply.

2.3.2 Water supply

Wells that are affected by the NT2 Project-related construction work are to be replaced and restored to at least pre-project levels.

Due to unquantifiable potential impacts within RAP 3, improvements in water supply will be carried out to ensure availability of water for PAHs and other community members.

2.4 Common Resources

Common resources utilized by communities that have been affected by the NT2 construction project activities are to be replaced or restored. The flowchart below presents the process involved in compensation:

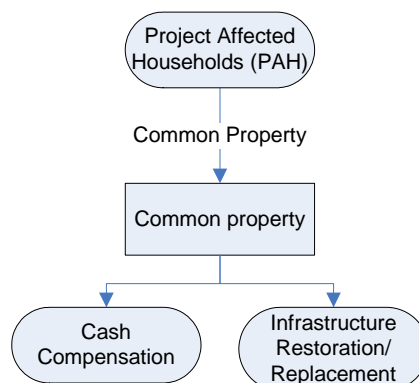


Figure 4. Compensation flowchart for impacted common property**2.4.1 Common property structures**

Irrigation structures, electricity lines, roads, tracks and bridges, government buildings (schools, health centres, temples) that are affected by NT2 Project-related construction work are to be fully restored or replaced to at least pre-project levels.

2.4.2 Common property resources

In case where villages have lost more than 10 percent of their NTFP gathering area, a lump sum cash payment equivalent to 7 years of the value of impacted (lost) NTFPs is deposited into the village development fund. Domestication of some NTFPs can be found within the framework of the livelihood restoration program.

2.5 Allowances and Transitional Measures

All impacted PAHs receive a one-time paid Disturbance Allowance of Kip 150,000 per household, including those living along the road.

RAPs 1, 2, 3 and 5 allocate 150,000 Kip per person within the project affected household whereas in RAP 4, disturbance allowance provided is 150,000 Kip per Project Affected Household.

3 Project Affected households

3.1 Baseline Information

LPA 33-38 have been grouped together as they are located in geographical neighborhood. With the exception of LPA 37 (cf. RAP 4), there will be impacts for PAH land and assets, ranging from low to high levels. The embankment of the Downstream Channel will provide an access road for future traffic. According to the CARE Laos data from June 2006, a total of 515 households will be impacted. 412 households will be affected in excess of 10 percent of their annual income, including 190 households with an impact over 50 percent. Based on a similar figure for significantly affected households, CARE Laos has estimated their average annual income to be approximately US\$ 691 with an expected loss of income resulting from construction work averaging US\$ 250 (CARE Laos, May 2006).

A reassessment of the data by NTPC in 2007 has resulted in a reduction in the number of >10% affected PAHs to 377.

District	>10%	<10%	Total
Gnommalath	377	142	519
Mahaxay	0	10	10
TOTAL	377	142	529

Figure 2. Number of project affected households (PAHs)

Source: NTPC, Gnommalath Office, May 2007

3.2 Socioeconomic and ethnicity data of the area LPA 33-38

The socioeconomic and ethnological studies carried out within the framework of the NT2 Project (cf. SDP Vol. 4, Chapter 3 and 4 and) in 2003 – 2005 have been linked closely with the census and inventory of assets to provide comprehensive information on household economic resources, including common property resources. With the census and inventory of assets the basic social unit of production or economic organization, which is the household that functions as a single economic unit, has been identified. This unit may consist of a nuclear family, an extended family, or a unit including non-related members. In addition to the census and the inventory of assets, additional studies quantified the net returns from income streams and established replacement values for land and other assets. This information has been used by resettlement planners to enhance their understanding of household income and of how the income can be restored after resettlement is complete. It also provides a baseline for the identification of monitoring and evaluation indicators that will help to assess the success of livelihood restoration and other sustainable development programs. During the first half of 2006, survey teams from the NTPC office in Gnommalath, supported by a team from CARE Laos, have been confirmed and adjusted, where necessary, previous data collections

3.2.1 Ethnic minorities

CARE Laos (June 2006) estimates the ethnic distribution of significantly impacted households in all Project Lands (of which 93% fall into LPA 33-38) as follows:

Makong:	77.2%
Lao Loum:	22.3%
Hmong:	0.5%

The table indicates the ethnicity of significantly affected households in Gnommalath and Mahaxai District.

Gnommalath District	
Village Name	Ethnicity
Sangkeo	Makong
Lao	Makong
Phone Latkhuay	Makong
Gnommalath Tai	Lao Loum
Gnommalath Nua	Lao Loum
Thathod	Makong
Nafaimai	Makong
That	Makong
Boungbao	Lao Loum
Nongphing	Lao Loum
Phathung	Lao Loum, Makong
Donepuay	Lao Loum, Makong
Khoksavang	Lao Loum, Makong
Mahaxai District	
Somsanouk	Makong
Khengsavang	Lao Loum
Nakyo	Lao Loum, Makong

Table 2. Ethnicity of significantly impacted villages in Gnommalath and Mahaxai District

Source: CARE Laos, Vientiane, June 2006

3.3 PAHs

3.3.1 Farmers' preferences

When asked about their priorities for livelihood restoration measures, a total of 412¹ households of significantly impacted PAH (≥ 10 percent of their income) from 16 villages in Gnommalath and Mahaxai District, representing 93 percent of the total number of affected households in Project Lands, give highest priority to rice paddy and the raising of large animals, in particular cattle. When asked about their second and third choice, apart from large livestock also vegetable gardens, small livestock (pigs, goats, poultry), fish farming and mushroom growing rank highest.

Livelihood options chosen			
	1 st choice	2 nd choice	3 rd choice
1	Rice paddy (187)	Large livestock (108)	Vegetable garden (152)
2	Large livestock (89)	Small livestock (76)	Mushroom growing (38)
3	Upland garden (41)	Fish farming (51)	Fish farming (27)
4	Small livestock (22)	Vegetable garden (38)	Small livestock (26)
5	Fruit tree growing (13)	Fruit tree growing (25)	Weaving (25)
6	Fish farming (12)	Weaving(23)	Large livestock (25)
7	Non-agricultural employ. (12)	Upland garden (22)	Upland garden (17)
8	Industrial tree plantation (10)	Mushroom growing (16)	Fruit tree growing (16)
9	Mushroom growing (5)	Non-agricultural employ. (14)	Non-agricultural employ. (12)
10	Weaving (4)	Rice paddy (8)	Industrial tree growing (11)
11	-	Industrial tree plantation (5)	-

Table 3. PAH priorities for alternative livelihood options (Gnommalath and Mahaxai District, 412 Households interviewed)

There are considerable variations among PAHs with respect to their preferred options. In addition, the request by the research team to identify at least three most favored choices provided some valuable insight into farmer preferences. Tables 2 and 3 list first, second and third choices from the three most impacted villages in Gnommalath District, which are Sangkeo, Lao and Phone Latkhuay village.

Livelihood options chosen			
	1 st choice	2 nd choice	3 rd choice
1	Rice paddy (37)	Small livestock (35)	Vegetable garden (57)
2	Large livestock (26)	Large livestock (24)	Weaving (9)
3	Upland garden (23)	Fish farming (14)	Small livestock (8)
4	Fruit tree growing (12)	Vegetable garden (12)	Fish farming (8)
5	Small livestock (9)	Weaving (11)	Mushroom growing (8)
6	Vegetable growing (7)	Upland garden (9)	Fruit tree growing (7)

¹ 412 Households were interviewed as this was the number of PAHs identified at the time of the survey as severely impacted, whereas at present, due to changes in finally utilized LPAs and other construction design changes, only 377 PAHs have been identified as severely impacted.

7	Fish farming (5)	Fruit tree growing (8)	Industr. tree plantation (4)
8	Weaving (2)	Non-agric. employment (2)	Large livestock (4)
9	Non-agric. employment (1)	Industr. tree plantation (1)	Upland garden (4)
10		Mushroom growing (1)	Non-agric. employment (1)

Table 4. PAH priorities for alternative livelihood options in Sangkeo Village (122 households interviewed)

Livelihood options chosen			
	1st choice	2nd choice	3rd choice
1	Large livestock (30)	Small livestock (38)	Vegetable garden (51)
2	Rice paddy (26)	Fruit tree growing (16)	Weaving (10)
3	Upland garden (13)	Large livestock (12)	Mushroom growing (8)
4	Small livestock (11)	Weaving (7)	Small livestock (7)
5	Non-agric. employment (5)	Vegetable garden (6)	Fish farming (6)
6	Industrial tree plantation (3)	Fish farming (5)	Fruit tree growing (3)
7	Weaving (2)	Industrial tree growing (1)	Non-agricultural employ. (2)
8	Fish farming (1)	Mushroom growing (1)	Industrial tree growing (1)
9	Fruit tree growing (1)		Upland garden (1)
10			

Table 5. PAH priorities for alternative livelihood options in Lao Village (94 households interviewed)

Livelihood options chosen			
	1st choice	2nd choice	3rd choice
1	Rice paddy (34)	Large livestock (16)	Vegetable garden (12)
2	Large livestock (10)	Vegetable garden (10)	Non-agric. employment (7)
3	Fish farming (3)	Non-agric. employment (7)	Mushroom growing (7)
4	Non-agric. employment (3)	Rice paddy (5)	Upland garden (5)
5	Mushroom growing (1)	Weaving (3)	Large livestock (5)
6		Mushroom growing (3)	Weaving (4)
7		Upland garden (2)	Fish farming (3)
8		Small livestock (2)	Small livestock (2)
9		Fish farming (2)	
10		Fruit tree growing (1)	

Table 6. PAH priorities for alternative livelihood options in Phone Latkhouay Village (54 households interviewed)



Figure 3. Study tour vegetable demonstration, Thailand (K.I.)



Figure 4. The Khammouane Vocational Centre (H.D.B.)

3.4 Impacts and Mitigation Measures

Impacted assets includes individually owned agricultural assets, such as paddy fields, upland rice and other crop fields, often used on a rotational basis (swidden), vegetable gardens (often riverbank gardens), grass land, non-timber forest products, and fishponds.

Annex A to this report contains a complete list of all significantly affected households, listing their affected assets, its location in LPAs,

In addition to land and other assets registered to PAHs, a total of 340 ha of land (in LPA 33-36 only) was not registered to any particular household or PAH, but nevertheless claimed by the community, and has been classified as community land. This area encompasses 220 ha of disturbed forest and 67 ha of little disturbed forest. LPA 34 comprises the largest proportion (65%) of community land areas. This land is primarily used by villagers from Keovilay, Lao-Ngarm, Nongseng, Phone Lathkhouay, That and Korbong village. Community land boundaries for each of these villages are shown on Map 1-03 (see above). The main resources derived from community land include: (i.) Non-Timber Forest Products (NTFPs), including wild vegetables and fruits, *damar* resin, rattan roots, cardamom and others, (ii.) timber Forest Products (TFPs), e.g. timber, bamboo, firewood, and (iii.) wildlife, e.g. hunted small animals and fish. More detailed information on community land resources can be taken from the SDP (March 2005), Vol. 4, Chapter 3, Annex 3, for example on

- Inventory of size and productivity of impacted land (Annex 3-9 to Annex 3-12, and Annex 3-22 to Annex 24)
- Rice production and rice sufficiency per household (Annex 3-13 for LPA 33-36)
- Income from private agricultural land, from community land and other sources have been calculated (Annex 3-14 for LPA 33-36),
- Livestock raised and NTFP sourced per household (Annex 3-15 for LPA 33-36, and Annex 3-29 to Annex 3-32 for LPA 38a, 38b, 38c and 38d)
- goods and chattels affected (Annex 3-16 for LPA 33-36)
- Land holdings and production data (Annex 3-25 to Annex 3-28 for LPA 38a, 38b, 38c and 38d)
- Annual income from salary, retail profit, servicing, sale of products and other sources (Annex 3-33 to Annex 36 for LPA 38a, 38b, 38c and 38d)



Figure 5. Construction site Downstream Channel (Nam Phit) (H.D.B)

Table 3: Land Parcel Area, constructions, description, location, disturbance, social impact and mitigation measures

Land Parcel Area	Name	Description	Location	Disturbance	Social impact	Social mitigation measures
33	Power Station, etc.	Construction of Power Station and associated substations, the Tailrace Channel, the beginning of the 500kV and 115kV transmission lines, and a portion of Route 8B crossing the Tailrace Channel. Facilities will be provided for approximately 200 construction personnel based at this site	At the foot of the Phu Ark ridge (at the Bottom of the Nakai Plateau) beside Road 8b, Gnommalath District	Complete loss of land, crops and vegetation due to creation of a construction platform (from spoils) and other construction required for the establishment of a platform for construction works and installations	<ul style="list-style-type: none"> • Permanent loss of productive land • Loss of fisheries and river amenity • Loss of NTFPs • Increased noise and dust due to operation of heavy equipment • Possible social tensions arising from establishment of Work Camps and influx of construction workers 	<ul style="list-style-type: none"> • Compensation through short and long term livelihood restoration measures for loss of land, fisheries and NTFPs • Heavy equipment fitted with silencers • dust suppression; • Where possible, source labour locally
34	Regulating Pond	Three sub-areas: (a) Work and storage area platforms created by spoil deposition; (b) The first portion of the 115kV and 500kV transmission lines - on the right bank of the regulating pond; (c) the relocated section of Route 8B; (d) during the Operating Phase, the lower/middle of the area will be occupied by the Regulating Pond.	At the foot of Phu Ark ridge, between LPA 33 and LPA 35. Gnommalath District	Complete loss of land, crops and vegetation due to creation of platforms, the road, and the inundation of the pond	<ul style="list-style-type: none"> • Permanent loss of productive land • Loss of fisheries and river amenity • Loss of NTFPs • Disrupted access along Route 8B and increased noise and dust due to operation of heavy equipment • Potential social tensions arising from establishment of Work Camps and influx of construction workers 	<ul style="list-style-type: none"> • Compensation through short and long term livelihood restoration measures for loss of land, fisheries and NTFPs • Heavy equipment fitted with silencers • dust suppression • Monitor river amenity • Traffic safety and awareness program for both truck drivers and villages
35	Regulating Dam	Permanent work areas including Regulating Dam (crest length 360 m, crest elevation 180 m), section of relocated Route 8B, and section of the 115kV and 500kV transmission lines; portion of this area will also be used for spoil deposition	Gnommalath District	Extensive disturbance - complete loss of vegetation and assets	<ul style="list-style-type: none"> • Permanent loss of productive land • Loss of fisheries and river amenity • Loss of NTFPs • Disrupted access along Route 8B and increased noise and dust due to operation of heavy equipment • Potential social tensions 	<ul style="list-style-type: none"> • Compensation through short and long term livelihood restoration measures for loss of land, fisheries and NTFPs; • Heavy equipment fitted with silencers • dust suppression; • Monitor river amenity

Land Parcel Area	Name	Description	Location	Disturbance	Social impact	Social mitigation measures
					<ul style="list-style-type: none"> arising from establishment of Work Camps and influx of construction workers 	<ul style="list-style-type: none"> Traffic safety and awareness program for both truck drivers and villages
36	Residence Nam Theun	The “Residence Nam Theun” (operator’s village) will comprise housing and other facilities and will initially house both NTPC and HC staff, and eventually the permanent NTPC staff managing the power station operation, etc.	Next to Ban Keovilay, and approximately 4 km north of Gnommalath District centre	Extensive disturbance – nearly complete loss of vegetation	<ul style="list-style-type: none"> Loss of land and assets Loss of community forest 	Compensation for loss of land, assets, fuel wood and NTFPs through short and long term livelihood restoration measures
38a	Down-stream Channel (Northern Section)	Traverses the Gnommalath rice plain from the Regulating Dam to the centre line of the Nam Gnom and adjacent to the village of Ban Gnommalath	Approximately 6 km of the Downstream Channel including the Nam Gnom Siphon; Channel is 70 m wide at surface, with normal water level just above natural ground; area may include spoil deposit sites	<ul style="list-style-type: none"> Extensive disturbance - complete loss of land and vegetation Disturbance will include establishment of 1.8 m high security fence. 	<ul style="list-style-type: none"> Disrupted east-west access Permanent loss of land and assets (houses, farm buildings, other buildings irrigated canals, irrigated rice fields, fishponds, gardens and rain-fed rice fields) 	<ul style="list-style-type: none"> Road diversion and upgrade, building of bridges across channel Compensation for loss of land and assets through short and long term livelihood measures Maintaining water flows in surrounding irrigation canals
38a-DT1A, DT1-5 38a-AR1-3	Spoil Disposal Areas & Access Roads					

Land Parcel Area	Name	Description	Location	Disturbance	Social impact	Social mitigation measures
38b	Down-stream Channel (Mid-north Section)	Encompasses approximately 5 km of the Downstream Channel including an Aeration Weir, from Nam Gnom to the crossing with (under) Road 12; area may include spoil deposit sites	Section “b” of the Downstream Channel extends south from the Nam Gnom near the village of Gnommalath to Route 12 adjacent to the Route 8B junction	Extensive disturbance (i.e. complete loss of land and vegetation) resulting from excavation of the Channel, siphon and the construction of levee banks and spoil areas; disturbance will include establishment of 1.8 m high security fence	<ul style="list-style-type: none"> • Disrupted east-west access • Disrupted use of irrigation system • Loss of fisheries in wetlands and creek • Permanent loss of land and assets • Possible localised flooding 	<ul style="list-style-type: none"> • Compensation for loss of land and assets • Maintain water flows in surrounding irrigation canals • Restore east-west access • Compensate for loss of fisheries • Short and long term livelihood restoration measures
38b-AR1 AR2	Access Roads					
38b-DT6-11 38b-DT12A&B	Spoil Disposal Areas					
38c	Down-stream Channel (Mid-south Section)	Encompasses approximately 5 km of the Downstream Channel (width 100 m) and potential spoil deposits areas; includes an emergency spillway with a capacity greater than 100 m ³ /second immediately upstream of the Downstream Tunnel	Section “c” of the Downstream Channel extends south from Route 12 to the Downstream Channel Tunnel	Complete loss of land and vegetation resulting from excavation of the Channel, Tunnel and the construction of levee banks and spoil areas; will include establishment of a security fence	<ul style="list-style-type: none"> • Disrupted east-west access • Loss of amenity/ usefulness of the Nam Phit • Permanent loss of land and assets • Potential social tensions arising from establishment of temporary Work Camp and influx of construction workers 	<ul style="list-style-type: none"> • Compensation for loss of land and assets • Compensation program for loss of fisheries (part of the downstream compensation) • Short and long term livelihoods rehabilitation measures

Source: NTPC and CARE Laos, Gnommalath Office, May 2006

