

Full Length Research Paper

Resettlement implementation management caused by hydropower development: A case study of Nam Ngum2 hydropower project in Laos

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This paper seeks to contribute to the local context and experiences on the resettlement policy and implementation management of the hydropower development projects based on documentary and policy review. The paper shows that, since the science of resettlement and rehabilitation is a new marginal science. There is no fixed mode in solving the problem of compensation, resettlement and rehabilitation and each nation, according to its own practical situation. Laos is naturally wealthy of rivers and water resources suitable for hydropower development for promoting economic growth and alleviating poverty. Nowadays, about 22 hydropower projects with totally installed capacity of 3,205 megawatts have been operated in the whole country. Recently, Nam Ngum 2 (NN2) Hydropower Project is the second biggest station with installed capacity of 615 MW. The NN2 project affected 16 rural villages, 1,099 households, 6,234 persons, 4 temples, 13 schools, 2 hospitals and also had environmental, social, cultural, economical, livelihood and resettlement impacts. For overcoming those issues, the preferable decree No. 192 on Compensation and Resettlement of Development Project, its technical guideline, and related policies is applied through infrastructure and housing reconstruction, community development, rehabilitation of livelihood, occupation and income generation and farmland and cash compensation.

Key words: Hydropower, resettlement, policy, implementation, management, Laos.

INTRODUCTION

Many experts emphasized that science of resettlement and rehabilitation is a new marginal science. With the continuous development of large scale water conservancy and hydropower construction, water resource workers realize more and more clearly that it is extremely important to plan resettlement rationally, compensation and rehabilitation, implement successfully the plans and manage well the implementation. In the

world today, there is no fixed mode in solving the problem of compensation, resettlement and rehabilitation. Each nation, according to its own practical situation, has found out its own way to have successful resettlement and rehabilitation and has accumulated valuable experience (National Research Centre for Resettlement, 1995). If the hydropower projects continue to develop at a rapid pace under existing regulatory conditions, the developments

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Table 1. Number of hydropower projects in Laos by 2013.

Item / progress	Number of project	Installed capacity (MW)
Operational	22	3,205
Under construction	28	4,973
Construction before 2015	12	1,799
Construction after 2020, under feasibility study and under negotiation for concession	74	11,929
Total	136	21,906

Source: Phonekeo (2013).

may cause adverse and irreversible damage on the environment and local people's livelihood. Therefore, there is a pressing need to improve environmental and social standards as well as improve the skills and capacity of the hydropower sectors as a whole (Kate, 2013).

Lao People's Democratic Republic (Lao PDR) is commonly referred to as "Laos" abroad, and is a land-linked country in the heart of Southeast Asia. The country encompasses 236,800 km² and borders with China to the north, Cambodia to the south, Vietnam to the east, Myanmar to the northwest, and Thailand to the west. For centuries it has been known by outsiders as the land of a million elephants (Lan Xang or Lao Kingdom of Million Elephants). Around 70% of Laos' terrain is mountainous, reaching a maximum elevation of 2,820 m in Xieng Khuang province (Ministry of Planning and Investment, 2014). Laos has a total population of 6,492,400 persons with a growth rate of 1.45. The population density was 27 persons per square kilometer in 2015. Major people or 67% lived in rural areas while minor people or 33% lived in urban areas (Lao Statistics Bureau, 2015). The Lao population consists of 49 different ethnic groups who speak four main languages including Lao (55%), Khmou (11%), Hmong (8%) and others (26%). The leading religion sects are Theravada Buddhism (67%), Christianity (1.5%), Islam and Bahai (less than 1%); and there are more than 30 percent of believers of animism and others (Lao Statistics Bureau, 2005). The official language of the Lao PDR is Lao. French is also spoken, but English is emerging as the readily used language in business.

The Lao People's Revolutionary Party (LPRP) and the Government of Lao PDR (GoL) together with all sectors aim to eradicate mass poverty by 5 percent in the year 2015 and to leave the group of the least developed countries by 2020. At present the multi-ethnic Lao people are now trying to overcome these issues and making efforts to develop Laos in order to lead the country toward progress and prosperity. Especially, the seventh Five-Year Socio-Economic Development Plan (2011-2015) stressed that "To encourage Lao people to be better and richer in terms of well-being, long life, healthy

living and quality of life. In addition, Lao people will live in a democratic, progressive and a just life condition" (Alounmai, 2011).

In the late 1980s, the government identified the country's hydropower potential as a major natural resource that could help generate the revenue and energy needed to kick-start Laos's economic development. Furthermore, Laos has huge potential for hydropower development and is able to provide further electric energy to other ASEAN members such as Thailand and Vietnam. Laos has planned to transform itself to become the "Battery of ASEAN" and so rid itself of the status of least developed country by 2020. According to a government estimate it would be selling 7,000 megawatts of hydroelectric power to Thailand by 2015 and 5,000 megawatts to Vietnam by 2020. The purpose of the production and sale of such a high volume of electricity is to earn millions of US dollars and put them into the coffers of the country (Department of Energy Business, 2014).

Since 2006, Lao PDR has seen an influx of private investors and developers in the hydropower sector. According to the information recorded by the Ministry of Energy and Mining (MEM) by 2013, about 136 hydropower projects with the expectation of installed capacity of 21,906 MW signed their contracts for hydropower development projects through national wide. 74 projects under memorandum of understanding (MOU) for feasibility study and starting construction after 2020, 12 signed project development agreement (PDA) and starting construction before 2015, 28 signed concession agreement (CA) and more than 22 hydropower projects signed concession operational delivery (COD) with totally installed capacity of 3,205 megawatts have been operated in the country (Table1). The government of Lao PDR expects an additional 40 to 50 projects to be operational by 2015..

These are larger hydropower projects including Nam Theun2 (2005-2010), Nam Ngum2 (2005-1012), Nam Theun Hinboun (phase 1: 1994-1998 and phase 2: 2008-2012), Nam Xekhaman3 (2008-2010), Nam Ngum1 (1968-1971) and so forth (Table 2). The Nam (in Lao word) in refers to water or stream. Nam or Menam also

Table 2. Top Rank of Largest Hydropower Projects in Laos by 2013.

No	Name/ Station	Capacity (MW)	Number of resettlement		Project Cost (US\$)	Resettlement cost (US\$)
			People	Households		
1	Nam Theun2	1,070	6,200	1,300	1,3 billion	NA
2	Nam Ngum2	615	6,234	1,099	963 million	25,4 million
3	Nam Theun Hinboun	500	4,367	800	1,33 billion	40,3 million
4	Nam Xekhaman3	250	NA	NA	NA	NA
5	Nam Ngum1	155	3,242	570	97 million	NA

Source: Calculated by Author

represents the river (mother of river) such as Me Nam Kong (Mekong), Me Nam Ngum, Me Nam Xe, so on, but Lao people always call Nam Ngum, Nam Kong, etc. Those major projects have brought both positive and negative impacts to the project developers, government sectors, resettlers and stakeholders. For the positive impacts, the projects provide better infrastructural facilities and the largest clean and renewable energy source and they have played essential role in the local, national, and regional energy mix. However, those larger hydropower projects have created negative impacts such as environmental, social, psychological, economical and resettlement issues. Nowadays, there is no formally statistical record on total number of resettlers who were resettled by hydropower projects in Laos. In 2013, the author found that about 101 villages, 5,699 households/families and 31, 579 people relocated from hydropower projects in the whole country. In fact, Lao PDR initiatively experienced the first resettlement work caused by Nam Ngum1 (NN1) Hydropower Project at the end of the 1960s to early 1970s. The NN1 resettled more than 23 villages, 570 households, and 3,242 project affected persons (PAPs).

Based on available papers, there are very few studies and papers on resettlement and compensation caused by hydropower projects in Laos. However, the authors could not find any paper that has been carried out on the resettlement implementation management caused by hydropower development of Nam Ngum2 Hydropower Project. Thus, this particular study needs to be conducted and disseminated for supporting and contributing to the new work of the resettlement science and management.

MATERIALS AND METHODS

The paper aims to describe and analyze the resettlement policy and implementation management caused by hydropower development projects by selecting the Nam Ngum2 (NN2) Hydropower Project in Laos as a case. Specifically, the objectives of the paper are to review the Lao national policy framework on resettlement; to identify the characteristic impacts of 16 affected rural villages in NN2 reservoir area; and to find out the rehabilitation activities at the new Phonsavath Resettlement Town in Feung District (Muang), Vientiane Province.

The methodology of study is descriptive research based on the

documentary and policy review, which was used for summarizing and describing the resettlement policy and implementation management caused by NN2 hydropower project in Laos. The materials of this study used only secondary data by collecting from different sources such as both published and unpublished materials, websites, and other sources. In particular, the authors summarized, synthesized and reflected the related policies on resettlement and both reports and plans of the Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Environmental Management Plan (EMP), Social Development Plan (SDP), Ethnic Minority Development Plan (EMDP) and also Resettlement Action Plan (RAP) of the hydropower resettlement caused by NN2 project. Finally, the paper summarizes and also presents the data or sub-themes according to the objectives of this paper by using qualitative explanation.

RESULTS AND DISCUSSION

Lao National Policy Framework on Resettlement

There are some related articles of excited policies and laws that project developers have to apply for resettlement and compensation implementation caused by hydropower projects in Laos. These included the Water and Water Resource Law (1996), Environmental Protection Law (1999), Constitution of Lao PDR (2003), Land Law (2003), Handing Petition Law (2005), Forestry Law (2007), policies and other related guidelines. Moreover, the most preferable policies and guidelines that project developers must apply are as follows.

The Decree on Compensation and Resettlement of Development Projects or popularly known as decree No. 192/PM was approved on 7 July, 2005. The article 6 on "Compensation Principles" stated that, project owners shall compensate project affected people for their lost rights to use land and for their lost assets (structures, crops, trees and other fixed assets) affected in full or in part, at replacement cost. Also, article 7 on "Assistance during Relocation and Transition Period" said that project affected persons (PAPs) displaced and/or affected due to the loss of income and livelihood shall be provided with the following assistance until their income levels and living conditions can be stabilized 1) transport allowance or assistance in kind to transfer to the resettlement site or their choice of relocation; 2) Food allowance, in cash or in

kind to compensate for income lost, during the transition period; and 3) Suitable development assistance after displacement during the transition period until they are able to restore their incomes and living standards with targeted level of household incomes on a sustainable basis. In addition, the article 8 “Economic Rehabilitation” provided four principles of rehabilitation namely 1) All APs severely affected by the project due to loss of 20% or more of productive income generating assets (loss of agricultural, industrial or commercial land), means of livelihood, employment or business and access to community resources shall be entitled to sustainable income restoration measures in addition to their entitlement for compensation and other allowances enabling them to attain a minimum pre-project livelihood levels. 2) For displaced persons whose land-based livelihoods are affected due to the project, preference shall be given to land-based resettlement strategies, or where land is not available, options built around opportunities for employment or self-employment. 3) For displaced persons whose businesses are affected due to the project, in addition to compensation for lost land, structures, and income, assistance shall be given to finding replacement sites for business as appropriate. 4) These rehabilitation measures shall specifically focus on vulnerable groups. Adequate assistance, in addition to compensation for affected assets and other allowances, shall be provided to enable such APs to achieve household income targets set above the national poverty line. Article 9 on “Restoration and Repair” revealed that project owners shall restore or repair community facilities and infrastructure that are damaged due to the project, at no cost to the community. Any impact or restriction on access to resources managed by affected community as a common property shall be mitigated by arrangements ensuring access to improved or at least equivalent resources on a continuing basis. Attention shall also be paid directly to APs if their benefits are affected due to loss of access to common property resources.

Furthermore, article 10 on “Resettlement Site Development” stated that, all persons relocating to group resettlement sites shall be provided with suitable housing or developed housing lots, shop lots if businesses are affected, agricultural sites of equivalent size, with productive potential and locational advantages better or at least equivalent to the old site. Replacement land, house/business plot shall be as close as possible to the land that was lost and/or acceptable to the PAPs. The resettlement site development should be implemented four tasks: 1) Group resettlement sites shall be developed with water supply, sanitation, drainage, with internal and access roads, and access to electricity. When it is necessary they may be provided other form of assistance from project owners such as public health and education. 2) All replacement land for agriculture, residential and businesses shall be provided with secured land titles and certificates and without any additional cost, sales taxes,

fee, and surcharge to the APs at the time of transfer. Construction lands shall be allocated in accordance to regulations and standard procedures in urban planning. 3) Project owners shall take responsibility to develop resettlement sites in order to avoid or mitigate adverse social and environmental impacts to the surrounding areas. 4) Where relocation to a group resettlement site is considered necessary, project owners shall mitigate the adverse impacts on host community and shall provide appropriate compensation (to damaged assets) and assistance to host community similar to the project affected persons (Prime Minister’s Office, 2005).

The National Policy on Environmental and Social Sustainability of the Hydropower Sector in Lao PDR (No. 561/ CPI) was developed by Ministry of Energy and Mining in 2007. This important policy pointed that project affected persons (PAPs) will be recognized as chosen whose assets, resource use and livelihoods, and/or social or cultural structures are involuntary altered by the project, and will be identified on the basis of social, economic, health and cultural studies and impact assessments. Assets and resource use will be recognized on the basis of legally established and/or customary use rights. All involuntary resettlement issues will be handled in accordance with the Resettlement Decree, which will be enacted by the government, shortly. The right of all project affected people to sustainable livelihood options and services at least at the level previously enjoyed will be recognized, and achieved through a resettlement social development plan. The plan will consider distributional effects of development activities and the participation of vulnerable groups including women and ethnic minorities, and will commit to targets for replacement or compensation for loss of assets, livelihoods restoration, and services and community development over the entire life-span of the project, with provision for monitoring and evaluation, participatory planning and adaptive management. In cases where ethnic groups are in the project area a specific plan to meet their aspiration would be prepared in consultation with these communities (Ministry of Energy and Mining, 2007).

Another Technical Guideline on Resettlement and Compensation of Development Projects was provided by Water Resources and Environment Agency (WREA) in 2010. The specific objectives of these guideline aim to provide detailed guidance to the project owners, private and public sector, as well as all concerned in addressing social issues in development projects specifically in planning and implementation of resettlement plans, ethnic minority development plans, where necessary. The guideline also provides guidance for conducting social assessment in projects with indirect impacts on population within or beyond the project boundaries. In addition, the technical guideline is prepared and issued in accordance with the provisions of the Decree and Implementing Regulations covering objectives and

principles of resettlement, entitlements to compensation, allowances and economic rehabilitation, monitoring and evaluation, and implementation arrangements. These are major steps in project process cycle - All development projects go through a well-defined project process cycle beginning from inception to implementation and passing through various phases that include: project identification, pre-feasibility study, feasibility study or preliminary designs, detailed technical design, and implementation. General description of these activities is summarized next.

Project identification

The first step in planning of a project involves project identification. At this stage only preliminary information on the location and scope of projects is generally available. Very rarely the project owners are in a position to describe specific location or physical boundaries of projects at this stage. At this stage, project owners are required to collect some basic information regarding potential social issues and impacts and make a preliminary assessment of potential environmental and social benefits and impacts of the projects. The following main activities are generally carried out during the project – identification such as, a) Identifying likely social impacts and issues relevant to the project; b) Reviewing and screening of existing data; c) Determining level and amount of information required for subsequent phase in the project; and d) Establishing the purpose of data collection for resettlement planning, monitoring and evaluation and preparing terms of references (TORs).

Pre-feasibility

This is a step forward from project identification and its main purpose is to refine the project objectives, conduct specific technical studies and economic analyses and preparation of preliminary designs. The pre-feasibility gives an account of the scope of the project and resources needed for its implementation. More specific information on the scope of the project and its likely impact areas are generally available during the pre-feasibility stage of projects, although information on precise project boundaries may not be available at this stage.

Based on the available information, the pre-feasibility will also determine whether the potential resettlement impacts of the proposed project are likely to be significant. Identification of key stakeholders including project affected persons and groups and beneficiaries is made and a more specific information on the scale and degree of potential social impacts and socio-economic characteristics of project affected persons and groups is collected through field investigations, surveys and interviews with selected population within and adjoining the project areas. Since the information collection and analysis on social impacts is carried out in parallel to

preparation of preliminary design of projects, the exercise also includes assessment of various design options for avoiding or minimizing adverse impact and selection of suitable design option.

Feasibility and detailed design

In a project, pre-feasibility and feasibility studies are carried out as a continuous activity refining technical aspects in a project. The project owners or assigned agency conduct detail studies incorporating all the components and aspects of the project. During the feasibility study stage project boundaries are finalized, although these may be further modified after the feasibility studies are completed, if necessary, during the detail technical design stage. Technical aspects in the projects are finalized and preparations for detailed technical designs are made. In parallel to the feasibility studies and preparation of technical designs, social assessment study, where necessary, is completed. To address resettlement and other social issues during the feasibility stage of project preparation, detailed census and socioeconomic surveys are completed and inventory of affected assets prepared as an essential element of resettlement preparation. Where necessary, additional information on ethnic minorities groups is collected. Consultation with stakeholders is carried out throughout the resettlement preparation stage. Based on detailed surveys and field investigations, necessary documents such as the resettlement plans, ethnic minority development plans, social assessment reports are prepared and finalized. Normally government approval for projects is obtained upon completion of the feasibility studies following the preparation of detailed engineering designs and bidding documents.

Implementation

The final stage of the project cycle is the implementation of the project. However, implementation of resettlement activities is given higher priority during the implementation phase of the project. Land acquisition, compensation payment and relocation activities of displaced affected persons are completed prior to startup of civil works in a project, except in some linear projects where civil works on some sections of the project may begin even when resettlement implementation in other sections is still ongoing. Successful implementation depends upon timely disbursement of resources, efficient institutions and human resources, adequate consultation with and participation of PAPs in the project process and timely delivery of entitlements plus adequate monitoring of activities.

In addition, the guideline is also provided “resettlement in the project process” that resettlement planning and implementation activities are an integral part of a development project and they run parallel to project

Resettlement Preparation and Implementation Activities in Project Cycle

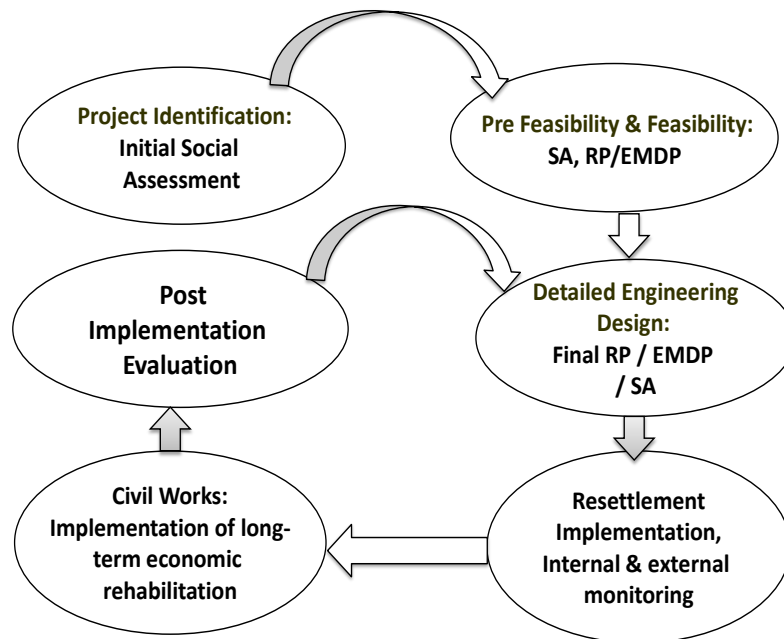


Figure 1. Project process cycle and resettlement activities. Source: WREA (2010).

planning and implementation activities in the project process cycle. a typical example of stages of project process and resettlement activities/outputs is shown in figure 1 and summarized in the following sections:

Initial social assessment (ISA): involving identification of potential social issues and impacts and key stakeholders is undertaken during the project identification stage. The exercise also includes screening of available information for assessment of the types, scale and degree of impacts (including land acquisition impacts) and to determine the need for various documents that may be necessary for project process. Based on the results of the screening exercise, decision is taken on the level of surveys and the types of information required for various documents and necessary tors for subsequent studies are prepared.

Social assessment: based on the recommendations of the screening exercise and where the projects may result in indirect social impacts on population within the project or adjoining areas a detailed social assessment study (SA) may be necessary. The SA study is conducted during the pre-feasibility phase of the project preparation. Detailed investigations carried out for SA studies include identification of the types and scale of social impacts, stakeholder analysis and institutional analysis. the studies help in the formulation of appropriate mitigation measures and instruments necessary to address social issues in the project. SA generally covers macro level social issues and provides a framework for more detailed

investigation and for planning and implementation of mitigation measures to address specific issues.

Land acquisition and compensation report (LACRs) / resettlement plans (RPs): depending on the case, it may be prepared during the feasibility study stage of project preparation. These documents are prepared based on field surveys covering census of affected people and detailed inventory of affected assets within the project boundaries. Where sufficient information on physical boundaries is not finalized at FS stage, preparation of these documents is still necessary as part of project preparation and for decision on resource allocation. Normally very few changes in design criteria are made between the FS and detailed design. However, in case of any major change in design parameters effecting project boundaries, corresponding changes in resettlement planning may be necessary and the information provided in these documents is further updated after the detailed designs are ready or during the implementation stage.

Ethnic minority development plans (EMDPs): in case the ISA identifies major impacts on some ethnic minority groups, and further confirmed during the SA studies, warranting the preparation of standalone EMDP, necessary surveys and investigations would be prepared during the feasibility study phase of project preparation. EMDP preparation activities are carried out in parallel to the resettlement planning activities and EMDP are

Table 3. Project process and resettlement outputs.

No	Stages in a typical project	Resettlement activities/outputs
1	Project identification	Conduct Initial Social Assessment, Prepare TOR for RP/ EMDP/ SA as necessary.
2	Pre-feasibility	Conduct field surveys (inventories, socio-economic status); Prepare RP/EMDP/SA as necessary.
3	Feasibility	
4	Project approval	
5	Detailed technical design	Adjustment of RP and other documents following detailed design with specific project boundaries, if necessary.
6	Implementation	Implementation arrangements for RP/SA/EMDP ; Monitoring and supervision.

Source: WREA (2010).

prepared as an integral part of project preparation.

Project Process and Resettlement Outputs: Specific resettlement activities and outputs required at various stages of project process cycle are shown in Table 3 (Water Resources and Environment Agency, 2010).

Profile of NN2 Hydropower Project

NN2 Hydropower Project is located in Saysomboon District, Vientiane Province (it replaced Saysomboon Province in 2014), Lao PDR; it lies roughly at 90 km north of the Vientiane Capital, approximately 35 km upstream of the existing Nam Ngum1 (NN1) Dam. It is located on the Nam Ngum River, which is one of the major tributaries to the Mekong River. The project is with an installed capacity of 615 MW being built to produce energy for the Thai electricity grid and all the output will be sold to the Electricity Generating Authority of Thailand (EGAT). The project comprised cofferdams, two river diversion tunnels, a concrete faced rock fill dam (CFRD) of 185 m height, a gated spillway with chute and flip bucket and a power waterway system consisting of a headrace tunnel, manifold and three inclined pressure shafts which are steel lined and an above-ground powerhouse with 3 x 205 MW units and is to produce ~2'220 GWh of energy per year. The reservoir volume is approximately 4'200 million m³ (Pöyry Energy Ltd, 2013).

The NN2 Hydropower Project is owned by CH. Karnchang of Thailand (28.5%), EDL of Laos (25%), Rathchabury of Thailand (25%), Bangkok Express of Thailand (12.5%), Shalapak Group of USA (4%), PT Construction of Laos (4%), and the Team of Thailand (1%). In addition, the Pöyry Energy Ltd of Switzerland and NN2 Power Company Ltd served as independent engineers during the project implementation. While PT Development Co; Ltd of Laos was selected as the company responsible for the resettlement and

compensation implementation.

Characteristic impacts of NN2 hydropower project

Impacts of the socio-economical, cultural and livelihood activities of 16 rural villages in NN2 reservoir area

Impact on the rural communities/villages: Actually, the reasons behind the construction of NN2 Project were not only for renewable and energy supply, but also included to eradicate insecurity and poor living conditions among rural people, who still lived under poverty line, according to the National Standard on Development and Poverty in 2009. According to the ESIA reports of NN2 project, almost all the villagers are engaged in agricultural activities for planting lowland and upland rice fields, feeding animals, hunting, fishing, collecting non-timbre forest products and so forth (TEAM, 2006). These agricultural activities could be more appropriately termed as 'agrarian system' based on natural resources for food sources and income making. An 'agrarian' system is a mode of livelihood. In contrast to 'market oriented' activities, an agrarian system does not optimize production or even produce for exchange. Farmers in this system produce just enough to support their food and non-food needed (Ministry of Planning and Investment & UNDP, 2009). On the other hand, NN2 Project had environmental, social, economical, and cultural impacts on rural communities at a large scale. It affected 16 villages, 1,099 and 6,234 project affected persons and they were Khmou (68%), Lao (30%) and Hmong (2%). These also included 4 temples, 13 schools and 2 hospitals (Figure 2).

After getting the crash compensation from the project developers, more than 46 households and 462 PAPs decided to move away to other new places in other provinces. Only 1,053 households and 5,772 PAPs resettled in the new "Phonsavath" big village or town in Feuang District (Muang), Vientiane Province.

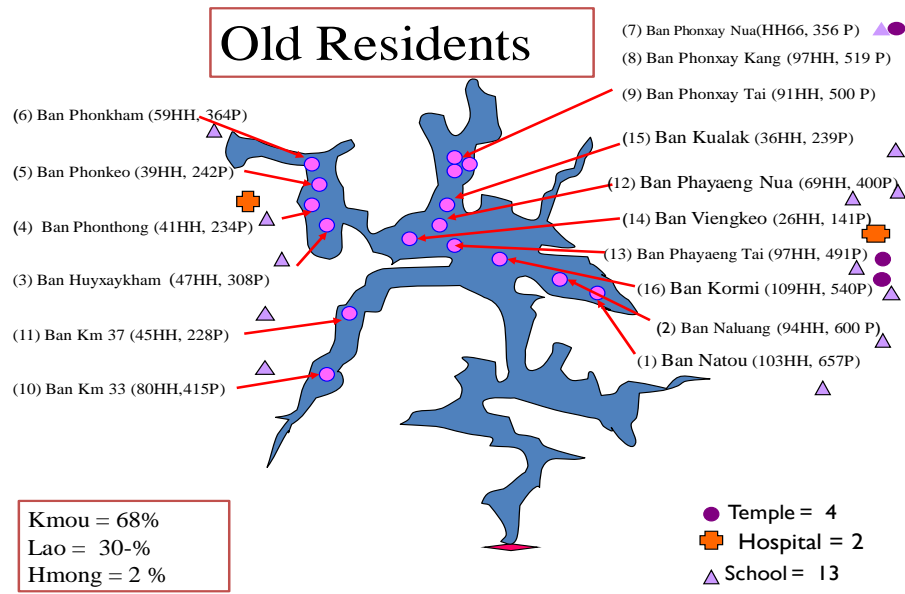


Figure 2. Map of old 16 initial villages in NN2 reservoir. Source: PT Development Co; Ltd (2014).

Loss of land and associated infrastructure: The reservoir inundated some 500 ha of paddy fields with about 4 km of irrigation works, some 300 ha of mainly fruit tree plantation and a minimum of 80 ha of individually managed pasture land. Additionally vegetable gardens, community forest and community pasture, fishponds were lost. The SIA report revealed by TEAM, in 2006 that total 71 rice mills, 75 shops, 9 restaurants, 16 blacksmiths, one furniture makers wood sawing and weaving were affected. In addition, the proposed NN2 reservoir inundated about 57.5 km of National Road5 (NR5) that considerably hindered the access possibility to major areas of the Saysomboun District and cut the present main connection between Vientiane and Xiengkhouang provinces. This main access route relocated via the northern route to restore the link. NN2 reservoir flooded public infrastructures including 23 schools, 2 of which are secondary schools and one district hospital and 14 government offices including five in the district capital, Pha Yaeng Tai. It also affected 8 Theravada Buddhist temples.

Loss of income and livelihood: The agrarian livelihoods system of the rural communities were for substance and partly for cash income which included paddy or upland rice production cultivation of fruit trees and vegetables, livestock raising, fishing, collection of non- timber forest products, hunting, handicraft trade and government employment. It was generally not possible to find a new resettlement area with similar environmental conditions, so that the PAPs livelihood and income sources needed to be adapted or even changed to have at least comparable prospects for development. As approximated,

before the resettlement, the lowest annual family income of PAPs earned US\$ 59 and the higher annual family income per household was US\$ 109. On average, the GDP per capita of PAPs was about US\$ 10 - 19 per year.

Loss of community resources and cultural sites: The main community resources that were affected include forest wood supply, hunting, collection of non-timber forest product; grazing land for their livestock; fishing ground; water resources for agriculture and households; and spiritual and cultural places. Thus, the selecting new resettlement site needed to consider the availability of the above community resources and cultural sites to the maximum extent possible.

Impacts on migration and future economic growth

Settlement and migration history of PAPs: The affected rural communities or villages have had a turbulent history in recent times with large scale movements and changes in the settlement structure. The most affected rural communities had already been settled earlier and were abandoned due to the war. Consequently, the majority of affected population were emigrants from other parts of the country; some of them have actually moved than once. The survey showed that the movement of population in the area has somewhat slowed down in the last 7 years since 1997. Still, with a total of 222 families migrating to the area and 183 families leaving, nearly 20% of the population living in the study area 7 years ago has been exchanged in this period.

Future economic development in NN2 project area: At least two major projects were active in the project areas: the construction of NN2 project and the operation of Phu Bia Gold Mining Project. The construction of NN2 project required more than 3,000 workforces in the construction activities. These work forces were distributed into three main areas such as construction land (dam site and associate structures), resettlement areas and construction support areas (access road, boat landing, etc). The operation of Phu Bia Gold Mining Project required more than 1,000 workforces for their operation. The project was located on the eastern side of the proposed NN2 reservoir. Thus, two major projects with conflict of interest issues included competing recruitment of workforces, logistics and services support and so forth. The construction of two major projects generated significant economic growth in the construction related areas, to Vientiane province and to the country as a whole.

Impact on vulnerable population

Those vulnerable populations in the NN2 project included those ethnic minority groups, women, displaced population, youths and aged group. Issues relating to their impacts are as follows.

Social integration and ethnic minority issues: There were three main ethnic among PAPs such as Lao, Khmou and Hmong who were well integrated into each village among them. They have had population movements and changes in settlement structure and they were not ethnic minority group of the country.

Gender, youths and aged group issues: Lao PDR has specific organizations that promote gender equality and activities among youths and aged group such as Lao Woman Union for Woman; Lao Youth Revolutionary Union for youths and Lao Front for National Construction for aged group. These three organizations were presented in each village and actively participated in all communal activities according to their voluntary functions. Thus, relocation of affected communities to other area shall consider these organizations to be re-established in the new resettlement villages.

Impact on development and poverty alleviation

The development of NN2 project was a significant support to government of Lao PDR in implementing poverty alleviation programs. Certain development benefit and strategies presented are as follows:

Livelihood and income restoration program for PAPs: The NN2 project is supported for the implementation of Millennium Development Goals (MDGs) such as to eradicate extreme poverty and hunger through income

generation plan and full assistance to PAPs; to achieve universal primary education by provision of educational facilities and trainings; to promote gender equality and empower woman through supporting of Lao Women Union (LWU), Lao Youths Revolutionary Union (LYRU), and Lao Front for National Construction (LFNC) and Lao Trade Union (LTU) through training program and institutional strengthening program; to reduce child mortality by provision of adequate health services and facilities; to combat HIV/ AIDS, malaria and other diseases by provision of adequate health service and facilities; and to ensure environmental sustainability through implementation of environment management plan (EMP).

Provision of adequate public and private infrastructures: Adequate public and private infrastructure fully provided a new resettlement communities or villages so that APs will be able to resume their normal life and improve their economic condition status thus reducing poverty (TEAM, 2006).

Resettlement management processes of NN2 Project

Based on the management functions, the NN2 project implemented through three phases or steps for engineering work and resettlement management namely 1) *planning phase* - the feasibility study was carried out in 1994-1995, the environmental and social impact assessment (ESIA) was done in 1998-1999 and it was updated design in 2004. As of year 2004, the ESIA were gotten approval certificates by the government of Lao PDR and later on, the GoL was setup institutional arrangements that included the National Committees for Resettlement and Environment Management (NCREM), Supervision Committees (SC), Provincial Resettlement and Environment Committee (PREC), District Resettlement Committee (DRC), Village Resettlement Committee (VRC) and Resettlement - Environment Management and Monitoring Unit (REMMU). Other plans like EMP, RAP, SDP and EMDP were completed during 2005-2006. 2) *Implementing phase* - the NN2 dam construction was started in 2005 and it was official opening for providing the electricity in 2012 while the infrastructural development of new Phonsavath resettlement town was started in 2007 and it was completed in 2009. From then on, the compensation and handing petition were done during 2009-2011. The relocation of PAPs, transportation of properties and animals were completed within 30 days (from January 10 to February 8, 2010). Likely, basic social services were provided to PAPs during the transition period 2010-2011 and so forth. 3) *Monitoring phase* - the reconstruction and adaptation among resettlers at new Phonsavath resettlement town was implemented from 2012-2015 and the livelihood rehabilitation have implemented from 2011 to 2018.



Figure 3. Map of Phonsavath Resettlement Town in Fuang District.
Source: PT Development Co; Ltd (2014).

Rehabilitation activities at the new town

Profile of new “Phonsavath” resettlement town

All the 16 rural villages affected by NN2 Hydropower Projects were put together at the new Phonsavath Resettlement big village (*Ban Yai in Lao word*) or town. The new Phonsavath resettlement town (PRT) was established on 20th February, 2010 and it is located about 7 kilometers from the northern of Feuang District (*Muang*), Vientiane Province. According to Lao word, “*Phon*” refers to a raised area of small land, while “*Savath*” means the light or colourful place. It also represents colourful and comfortable place where people can see everywhere and get everything. In fact, there were many reasons that local authorities and PAPs liked to name the village “*Phonsavath*”; for instance, six (6) former villages (out of 16 old initial villages) were named “*Phon*”, while many Lao villagers also like to call “*Phon*” as the name of their villages because it is very meaningful word according to Lao traditional beliefs and practices (Figure 3).

PRT shares borders with eight host-communities: Ban (*Village*) Konleang, Ban Sammouan, Ban Muangfuang, Ban Phosy, Ban Navan, Ban Nathua, Ban Tha and Ban Napheung. The PRT encompasses 1,031.29 hectares that cover about 122,94 hectares of residential land; 908,35 hectares of agricultural land, forestland, protected areas and surrounded by gold cliffs (PT Development Co; Ltd, 2014). By the year 2015, the number of villagers at PRT has increased to 1,442 households, 1,122 families and more than 6,479 people (3,151 females). These 122 people (67 females) are Hmong; 4,425 (2,176 females) of them are Khmou and more than 1,905 people (908 females) are Lao (Phonsavath Resettlement Town Head, 2014).

Resettlement and compensation implementation

Compensation implementation management: inventory of assets was made following processes that initiated the committee meeting on entitlement guidelines; establishment of compensation rate and replacement items; consultation with project affected persons (PAPs) on the compensation rate and replacement items; acceptance of compensation rate, replacement items and payment schedule and other related activities.

As part of the project developers of NN2 project, the PT Development Co; Ltd in cooperation with local resettlement committees (PREC, DRC, VRC) remained about 0.5 ha of farmland to all 1,053 resettled families caused by resettlement of NN2 Hydropower Project. They also provided 1,053 wooden houses by different sizes (40, 50, 60, 70, 80 m²) with 600 m² of residential land for each resettled family. For those affected families who lost lowland rice field in NN2 reservoir, they also remained by farmland-for-cash amount 42 million Lao kip (US\$ 1 was equal to 8,056 kip on December 20, 2010) per hectare while some resettled families enjoyed with farmland-for-farmland compensation. Moreover, for those resettled families who lost their productions and trees in NN2 reservoir, they also received the disturbance fees for 6 years. At the new Phonsavath resettlement town, the project developers provided PAPs better electric connection, water supply and other public facilities. During the transitional period, all resettled families were enjoyed free of charge rice, water, electricity and other necessities in one year (2010-2011).

Resettlement implementation management: Concerned committees were required to organize a number of focus group meeting and site visit with PAPs to discuss and finalize the resettlement site and development

plan. This was to ensure that the final resettlement sites selection and resettlement development plan met the needs of PAPs. The following topics were incorporated into discussion during the focus group meetings: (1) the location and layout of new resettlement village; (2) the infrastructure and supporting facilities of the community development programs in new land resettlements such as housing, public health, community institution, education and cultural programs; the relocation to new land resettlements included reception facilities, initial assistance, dismantling and transportation assistance; (3) the livelihood restoration programs in new land resettlements included cropping, livestock, fisheries, forestry and non-agriculture occupation. Furthermore, (4) the training needed for PAPs in new land resettlements; for example community development training, occupational training, capacity building program and so forth (TEAM 2006). The detail community development programs provided by project developers can be summarized as follows.

Administrative authority re-establishment: The PD Development Co Ltd built a town's office, three offices for three sections (Khum) by providing all necessary equipments. In addition, the town administrative committees (town heads) and town development committees for delivery resettlement and compensation were also set up. Moreover, the project developers have enhanced the leadership skills for those town heads and social organization heads such as the LYRU, LWU, LTU, and the LFNC. They are also encouraged the social harmony and gender equality among PAPs.

Education and culture: Five compulsory schools built in the PRT include a secondary school, three primary schools and a pre-school. The project developers also provided budget for upgrading teachers and students; and supported textbooks, tables, chairs and other necessary equipment in the schools. The sports and arts competition, traditional and cultural diversities among different ethnic groups are promoted and supported by the project developers.

Public health: The project developers built small hospital or clinic (*Souksala*); they provided medical doctors, all medical equipments and a van. Moreover, they supported medical doctors and other necessary tools. Inside the local clinic, it consisted of the treatment room, sick room, medical store, and nurse's office.

Environment promotion: The project developers built a hectare of landfill and they treated the waste management system among the villagers; they also promoted project affected person and make them aware of environment protection by making the clean, organized and beautiful town and schools. In addition, they supported trees plantation and protection and conducted

study visits to other better resettlement sites. They advertised environmental protection through the town's speaker (*Tho La Khong in Lao word*).

Other public facilities: The PT Development Co Ltd other project developers in cooperation with local authorities of PRT and Fuang authority district, Vientiane province already rebuilt road, town offices, hospital, schools, market, bus stop, Buddhist temple, meeting hall and other public facilities. In addition, they provided each family water, electric connection, registration book and certificates of residential land entitlement.

Livelihood rehabilitation

Social services during the transitional period: During the first year (2010) of resettlement implementation program, PT Development Co; Ltd provided social services to all resettled families including 24 kilograms of sticky rice, and 200 liters of clean water supply per person in a month and each resettled family received free of charge 22 KW of electricity. In the second year (2011) of resettlement implementation program, the project developers implemented food-for-work plans program, free of charge 12 KW of electricity, and they promoted daily food programs to each resettled family by feeding catfishes, frogs, chicken, ducks, picks and making of garden.

Occupation and income: In rehabilitation of occupation and permanent income among PAPs, by 2011, the PT Development Co; Ltd started providing the village development fund (VDF) on occupational implementation to those PAPs through on-farm, off-farm and other activities. On-farm activities included feeding picks, catfishes (*Padok*), frogs, quails; fishing fishes and planting rubber, mushroom, vegetables, and so forth. Those off-farm activities were handicraft making, Lao skirt weaving (*Tam Xin*), sawing, blacksmithing, small trading and other shop services.

Economic and livelihood evaluation: the PT Development Co Ltd in partnership with two heads and other local authority officers were conducted progress censuses on the income and expenditure of PAPs. According to the Progress Report of PRT, by 2013, totally annual income of Phonsavath resettlement town was reached 18,157,000,000 kip (US\$ 1 was equal to 7,960 Lao kip in 2013) or US\$ 2,281,030. The annual resettled family income was 19,193,877 kip (US\$ 2,412) and the GDP per capita was 3,056,802 kip (US\$ 384). As seen, after post-resettlement, both annual family income and GDP per capita were higher than former income and GDP per capita in NN2 reservoir. Furthermore, the census report also revealed that, about 615 resettled families were well-off families while 136 families stayed at

the middle status, and 279 families continued to live satisfied conditions. However, more than 45 resettled families still lived under the poverty line according to the National Standard on Development and Poverty 2010-2015 (Syvongdao, 2013).

Monitoring and evaluation approach

Two levels of monitoring, internal and external monitoring are implemented for the hydropower resettlement caused by NN2 project. The first is done by the internal monitoring that was evaluated by PREC, DRC, VRC and REMMU together with PT Development Co; Ltd and resettled families. It focused on the process and physical progress of resettlement implementation against the proposed schedule. The second is conducted by the external monitoring and post implementation evaluation study. It was carried out by independent monitoring agency (Asia Consulting Group), which focused on the outcome of resettlement implementation such as changes of the livelihood, social and economic conditions among those resettlers (Team, 2006).

FINAL CONSIDERATIONS

In general speaking, the resettlement implementation management caused by hydropower development of NN2 Hydropower Project in Laos satisfied implementation among those PAPs and local resettlement committees. However, the strengths, weakness, challenges and recommendation are discussed as follows:

Strengths

The Resettlement and Environment Management Committees and government sectors at different levels have provided more advices and recommendations on resettlement management functions (planning, implementing and monitoring). In addition, the bigger and better public facilities were reconstructed by PT Development Co; Ltd based on the strict policies of decree No. 192 (2005) and other specific agreements of NN2 project. As seen, good road, clinic, electric supply, bus station, Theravada Buddhist temple, schools, market, communication, and so forth were in place at the new Phonsavath town. Likely, the financial and technical supports to enhance the capacity of those PAPS were also provided by PT Development Co; Ltd and other project developers. Furthermore, this resettlement implementation management from villages to town caused by hydropower resettlement of NN2 project has become further alternative approach for establishing a new town and transforming agrarian livelihood system to market livelihood system among rural villagers based on

related policies of rural development, collection from small villages to town and three building directives in Laotian context.

Weakness and challenges

Some difficulties in dealing with resettlement and compensation program at new PRT are still faced; for instance, there is the limitation of farmland or agricultural land; the suitable stream and water for building water irrigation for on-farm activities are not enough. On the other hand, many resettled families are not accessed to clean water supply through each household or family directly. There are not enough financial and technical (agricultural specialists) supports for occupation and income rehabilitation. Moreover, many resettled facilities are still maintained to follow the agrarian livelihoods system rather than market livelihood system. Another challenge is that the leadership skills on big village or town management are still limited among the town heads, social organization heads, and local administration leaders as well.

Recommendations

According to the agreement between the project developers and the PERC pointed that after the livelihood development and well - being conditions of PAPs at PRT could be able to reach the normal condition and they get better life, then PT Development Co; Ltd together with related sectors planned to transfer the local administration of PRT toward the normal administration of Fuang authority district, Vientiane Province by the end of 2015. However, the livelihood rehabilitation activities for both on-farm and off-farm, and job creation are still challenged. Thus, it may be hard for resettlers to stay with the state of sustainable development town. In dealing with these issues, the training on job, income generation and formal education for them should be continued. On the other hand, since the village development fund is limited financial collection and it should be raised fund from benefit-sharing, other developmental projects and financial institutions.

Furthermore, the promotion from village to village resettlement mode may be better ways for future resettlement policy and practice.

In summary, Laos is rich with rivers and water resources that may be suitable for hydropower development to promote economic growth and alleviate poverty. On the other hand, with the continuous development of large scale water conservancy and hydropower construction may cause environmental, social, cultural, economical, livelihood and resettlement impacts in large scale. There are variously related policies and guidelines that project developers must

apply for resettlement and compensation implementation caused by hydropower projects in Laos. These two preferable regulations include Decree No. 192 on Compensation and Resettlement of Development Project and its Resettlement Technical Guideline. For those projects are funded by the World Bank and Asian Development Bank, the borrowers/ developers have to follow the environmental, social and involuntary resettlement policies of two major banks.

NN2 project affected social, cultural, economical and environmental impacts that include the geographical impact on residential villages; the impact on the socio-economical, cultural and livelihood activities of rural villages in reservoir area (such as loss of land and associated infrastructure, loss of income and livelihood, loss of community resources, and loss of cultural sites); impacts on migration and future economic growth; impact on vulnerable population; impact on development and reducing poverty; and impact on other stakeholders.

In maintaining the resettlement, compensation, and rehabilitation activities at the new Phonsavath resettlement town, the PT Development Co; Ltd together with other project developers and concerned sectors provided several community development programs such as town administrative re-establishment, bigger and better public facilities, education and culture, public health, environment promotion and others. Moreover, they also rehabilitated livelihood activities through delivery social services during the transitional period and promoted the occupation and income making activities though on-farm and off-farm activities. Likely, the compensations were given to PAPs by remaining about 0.5 hectare of farmland, construction land and a wooden house for each resettled family in different sizes. Based on average family income and GDP per capita, major of PAPs are well-off families and they satisfied with new housing, construction land, and better public facilities. However, the livelihood rehabilitation activities such as job and income creation are still limited and challenged.

The resettlement implementation management caused hydropower development of NN2 Hydropower Project implemented in full compliance with the specific policies and technical guidelines of the GoL that included the decree on compensation and resettlement of developmental project (Decree No. 192/MP, 2005), its resettlement technical guideline, and specific agreements of provincial resettlement and environment committees.

Conflict of Interests

The authors have not declared any conflict of interests.

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