

Integrating Environmental and Social Impact Assessment into Resettlement Management: Example from NN2 Hydropower Project in Laos

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Abstract--Population displacement resettlement is complex system engineering, especially in dealing with big development projects. Successful resettlement should be based on scientific planning, implementing and monitoring. This paper aimed to examine the ESIA instructions, social impacts, mitigations and integrating ESIA into resettlement management of NN2 hydropower project in Laos. The paper shows that, SIA is a process for estimating, identifying, consulting, mitigating and planning those environmental and social impacts into resettlement management of any development project. SIA is still new practice in Laos, which is merged in a same document and instruction of EIA. Both EIA and SIA are required for appraisal documents of development projects. Since NN2 project had environment, social, cultural, economic and agrarian livelihood impacts among PAPs at a large scale. Therefore, the ESIA, reports and plans were conducted by outside companies, which covered executive summary, introduction, project description, profile of PAPs, environmental and social assessment, mitigation measures, environmental and social management plans. The social assessment was more important part, which highlighted the characteristic impacts, stakeholder analysis, institution analysis, public participation and consultation. The social mitigation measures were corresponded through resettlement of social relationship, provision of community resources and cultural site, provision of income and livelihood restoration assistance, provision of public and infrastructures, provision of appropriate training, institutional strengthening and capacity building program, implementing of monitoring and evaluation program. Social action plans and development activities for compensation and resettlement programs were integrated into resettlement management by planning, implementing and monitoring from affected villages to a new town.

Index Terms— ESIA, Resettlement Management, NN2 Hydropower Project, Laos

I. INTRODUCTION

Social scientists in many countries struggle today to understand, search, analyze and correct the countless failures and lingering adverse effects of development-induced population displacement [1]. In recently, social impact assessment both as a field of applied social research and practice has gained immense popularity, and there is a growing interest in this approach to improved development performance. Therefore, both environmental impact assessment (EIA) and social impact assessment (SIA) have become major concerns and tasks in development project cycles over few decades. The SIA has emerged largely in response to farmer protests against development projects that

often leave them worse off than before. Now, this apprehension together with their more serious concern over the plight of people displaced for the sake of development project has forced the planners to consider all possible social consequences of a project in advance before it is initiated, so that they may be in a position to plan mitigation of those impacts that are identified as social disruptive. This is context in which SIA has been recently gained recognition in many countries [2]. SIA originated in the USA in 1969, the year the National Environmental Policy Act was enacted, which required that social issues be considered as a part of the EIA. However, there was then little comprehension about what considering social issues really meant and how SIA could actually be carried out. It was not until 1972 that social issues really came to the fore. This concern then led to the establishment of strong interests in social impact as an issue, and specific methodology and theoretical basis to the field gradually emerged [3].

Therefore, the SIA needs to be more strongly asserted in development project planning. This reinforces the belief that failure to integrate SIA into the planning process diminishes the significance of rational planning and weakens the quality of its decisions [4]. Furthermore, international development agencies, especially the World Bank (WB), International Finance Corporation (IFC) and Asian Development Bank (ADB), have been at the forefront in incorporating SIA in their resettlement planning processes. Where there are adverse indirect social or economic impacts, it is good practice for the borrower to undertake a social assessment and implement measures to minimize and mitigate adverse economic and social impacts, particularly upon poor and vulnerable groups. Other environmental, social and economic impacts that do not result from land taking may be identified and addressed through environmental assessments and other project reports and instruments [5]. The borrower/ project developer will conduct socioeconomic survey(s) and a census, with appropriate socioeconomic baseline data to identify all persons who will be displaced by the project and to assess the project's socioeconomic impacts on them. For this purpose, normally a cut-off date will be established by the host government procedures. In the absence of such procedures, the borrower will establish a cut-off date for eligibility. Information regarding the cutoff date will be documented and disseminated throughout the project area [6]. Consequently, 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 of social mitigation and development plan. In the world today, there is

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no fixed mode in solving the social problem of compensation, resettlement and rehabilitation caused by development projects. Each nation, according to its own practical situation, has found out its own way to have successful resettlement management and has accumulated valuable experience [7]. If the hydropower projects continue to develop at a rapid pace under existing regulatory conditions, the developments 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 hydropower sectors as a whole [8].

In Laos, where has wealthy of natural resources (*Thammaxath*), which is encompassed 236,800 square kilometers and criss-crossed with a myriad of rivers and streams such as Nam¹ Kong (Mekong), Nam Ngum, Nam Xe and other rivers. These rivers and streams provide great potential for hydropower development with 51% of the power potential in the lower Mekong basin contained within the country. 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 [9]. As recorded by Lao Statistics Bureau (LSB) in 2005, the Lao population consisted 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% of believers of animism and others. Inventively, the original concept of hydropower projects was launched to support Lao economic growth, by enhancing foreign exchange earnings through export of electricity. 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. As of the year 2009, Laos has planned to transform itself to become the "Battery of ASEAN" by 2020 and so rid itself of the status of least developed country [10]. By the year 2013, about 136 hydropower projects with the expectation of installed capacity of 21,906 MW signed their contracts for hydropower development projects through nationwide and the government expected an additional 40 to 50 projects to be operational by 2015 [11]. Although, those hydropower projects have provided the largest clean and renewable energy source and they have played essential role in the local, national, and regional energy mix. The results of projects have also provided the better physical and infrastructural reconstructions like housing and public facilities to resettled communities and project affected persons (PAPs) as well. However, those larger projects were made potential risks and negative impacts such as the environmental, social, psychological, economic, resettlement and livelihood impacts. Moreover, the most have demonstrated limited commitment to implement the best environmental and social practices. On the other hand, more than one hydropower project is developed on the same river,

coupled with mining and irrigation schemes vying for the same water, resulting in cumulative impacts on the river basins. Nam Ngum2 (NN2) hydropower project was a third case of hydropower project-induced involuntary resettlement in Laos. The project had environmental, social, cultural and agrarian² livelihood impacts at a large scale. In this case, resettlement management was transformed from 16 affected villages in NN2 reservoir to a new Phonsavath town at Fuang district, Vientiane province.

Recently, the environmental and social impact assessments (ESIA) in Laos are formal requirements that must be conducted by development projects. Especially for those larger development projects have potential to cause adverse socio-economic impacts, project owners have the responsibility to carry out initial environmental examination (IEE)/EIA, ISA/SIA. Officially, initial social assessment (ISA) at project identification stage determines likely social issues and the types of detailed surveys and field investigation, as well as documentation such as resettlement plan (RP) and ethnic minorities development plan (EMDP) required in accordance with the resettlement policy and the decree [12]. However, the ESIA are still new practices in Laos, probably 17 years old of practice and both ESIA steps are still merged in a same document and instruction. The SIA was also included a part of the EIA study. Although the final reports on EIA and SIA were prepared by project surveyors/developers separately. Additionally, the SIA steps and its application into resettlement management are also unclear and complicated procedures, which need to be carried out specifically. Therefore, good lessons and clear SIA steps should be reviewed and learned from other successful specialists and experiences.

II. METHODOLOGY

This paper aimed to examine integrating social impact assessment into resettlement management of NN2 hydropower project in Laos, which focuses on (a) the ESIA background and instructions, (b) social impacts, mitigations and integrating ESIA into resettlement planning programs, and (c) synthesize the PIM processes of resettlement management. This study used descriptive method based on management and documentary studies by following the qualitative approach. The study was followed techniques for primary data gathering through in-depth interview, focused group discussion, observation and also used secondary data from different sources. The documentary study was reviewed of books, documents, policies, plans and reports, such as the SIA, SDP, RP, EMDP of NN2 hydropower project and other reports. On the other hand, this was based on the management processes (planning, implementing and monitoring or PIM) by integrating SIA into resettlement management NN2 hydropower project. The data were analyzed, presented and interpreted through the qualitative procedures.

III. RESULTS

ESIA background and instructions

Social assessment in Laos merged as a part of environmental assessment and the SIA was also included a part of the EIA

¹ Nam (in Lao word) - refers to water and/ or stream. Nam or Menam also represents to the river (mother of river), for example, Me Nam Kong, Me Nam Ngum, etc, but in short way, Lao people always call Nam Ngum, Nam Kong, etc.

² Agrarian system is a mode of livelihood based on natural resources for food sources and income making. In contrast to market oriented activities

study. It originated in Laos in 1999, the year the Environmental Protection Law (EPL) was enacted, which stated that “environmental assessment is the process of estimating the impact on the environment of development projects and operations. It also identifies methods and measures for mitigating and reducing such anticipated impact on the social and natural environments.” The Lao term is the more general “environmental assessment” rather than “environmental impact assessment”. Regulations clarify that environmental assessment includes several stages namely environmental screening, initial environmental examination and environmental impact assessment [13]. Later on, the Government of Lao PDR (GoL) approved the Degree of Compensation and Resettlement of Development Projects (No.192/PM) and its technical guidelines in 2005, which emphasized that when development projects have potential to cause adverse socio-economic impacts, project owners have the responsibility as follows (a) in collaboration with the concerned local governmental authorities and concerned organizations, carry out necessary surveys and field investigations, identify affected communities, prepare inventory of impacts by types and degree, determine entitlement to mitigation measures including compensation for affected assets. Project owners must provide appropriate funding to assist, support, relocate PAPs and to implement income rehabilitation measures and to prepare necessary plans in an efficient and timely manner and approved by the concerned agencies to ensure the improvement of their socio-economic situation; (b) make every attempt so that displacement and other direct adverse impacts on peoples’ assets and income are avoided or, if unavoidable, minimized by examining all design options available to the project; (c) be responsible for the timely provision of adequate budget for all aspects of planning, implementing, monitoring and evaluating all resettlement and compensation activities; (d) pay particular attention to the needs of the poorest affected people, and vulnerable groups that may be at high risk of impoverishment. Appropriate assistance must be provided to help them improve their socio-economic status; and (e) ensure that the resettlement process is carried out through a meaningful involvement of project-affected communities, and their existing social and cultural institutions are supported to the greatest extent feasible [14]. Later on, the Decree on Environmental Impact Assessment (No.112/PM) was approved in 2010. Therefore, this regulation provided more detail in the environment and social impact assessment (ESIA) procedures. The decree No.112/PM was also included initial environmental examination (IEE), which means initial study, survey and analysis of data to predict impact on environment and society including impact on health derived from investment projects together with provision of environmental and social impact prevention and mitigation measures environmental impact assessment (EIA), which means the process of study, survey, analysis and prediction of positive and negative impacts may cause on environment and society including both short and long term impacts on health from investment projects together with determination of appropriate alternatives, provision of environmental management and monitoring plan (EMMP), social management and monitoring plan (SMMP) to protect and mitigate the impact may be caused from investment projects in construction and operation [15]. As required, initial social assessment (ISA) at project identification stage determines

likely social issues and the types of detailed surveys and field investigation, as well as documentation such as RP and EMDP required in accordance with the resettlement policy and the decree. However, where an ISA during project preparation indicates complex array of social issues including indirect socio-economic impacts on population within or in the vicinity of project areas and differential impacts on ethnic minority groups that are likely to be covered inadequately by decree No. 192, an independent and detailed social assessment is recommended during project preparation [16].

As the year 2013, the Ministry of Natural Resources and Environment (MoNRE) provided the Ministerial Instruction on the Process of Environmental and Social Impact Assessment of the Investment Projects and Activities (No. 8030), which aims to ensure the uniformity the conductance of the ESIA by every investment projects and activities of a public and private both domestic and foreign enterprise operating in Laos that causes or is likely to cause environmental and social impacts. Those investment project and activities shall conduct the efficient ESIA, contribute in the sustainable socio-economic development of the country and shall mitigate as well as enhance the global warming adaptation. The instruction emphasized that; the project owner shall be fully responsible for the conductance of the ESIA process of the investment projects and activities. The project owner shall obtain the environmental compliance certificate (ECC) approving the ESIA report from the MoNRE to conducting construction of such proposed investment projects and activities. The project owner shall conduct the ESIA process strictly in compliance with every provision of the ministerial instruction, including the relevant technical guidelines and other related laws and regulations. There are 4 processes in dealing with ESIA namely (i) scanning of the investment projects and activities, (ii) list of investment projects and activities, (iii) determining the scope of the study and term of references and (iv) review of the scoping report and term of references. Also, the instruction emphasized that, the project owner shall strictly comply with the following conditions: (i) prepare the ESIA report in strict compliance with the process and conditions, the relevant technical guidelines, laws and regulations (ii) ensure that ESMMP are attached as one component in the ESIA report, (iii) provide that such environmental and social management and monitoring plan (ESMMP) shall be prepared in compliance with the conditions and (iv) prepare the ESIA report in Lao language otherwise it will not be considered for the issuance of the ECC. Officially, the ESIA reports cover (i) executive summary, (ii) introduction, (iii) project description and options, (iv) review of related laws and regulations, (v) technical aspects, (vi) environmental and social conditions inside and outside project areas, (vii) ESIA information, (viii) mitigation and management plan, (ix) budget and timetable, and (x) conclusion [17]. Another new regulation is the Decree on Compensation and Resettlement of Development Projects, which just amended in 2016, which provided more clear procedures in dealing with social and resettlement issues caused by development projects [18]. At the same time, the ESIA were also introduced in Laos by the WB, ADB and other development partners during the resettlement planning, implementing and monitoring of NT2 hydropower project construction. In short, the ESIA are still new practices in Laos, probably 17 years old of practice and both ESIA steps are still merged in a same document and instruction. Although

the final reports on EIA and SIA were prepared by project surveyors/ developers separately. However, many planners, implementers and monitors were focused more on EIA part rather than SIA aspect.

NN2 project profiles and background

Nam Ngum2 (NN2) hydropower project was a third case of hydropower development project-induced involuntary resettlement during 2010-2015 but it was a first case of resettlement transformation from villages to town in Laos. The NN2 project is located in Xaysomboon province, roughly 90 km north of the Vientiane capital, approximately 35 km upstream of the existing 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, which has sold to the Electricity Generating Authority of Thailand (EGAT). Actually, the reasons behind the construction of NN2 project were not only for renewable and energy supply, but these 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. There were also for providing better public facilities, development opportunities and making as a new town of administrative, economic, social and civilization centers. The facility study of NN2 project was completed in 1995; the ESIA studies were conducted during 1998-1999 and updated during 2004-2005. Later on, the Environmental Management Plan (EMP), Social Development Plan (SDP), Resettlement Plan (RP), Resettlement Action Plan (RAP), Ethnic Minorities Development Plan (EMDP) and the consultation processes were carried out during 2005-2006 [19]. The dam started construction 2005 and it was official opening in 2012. The NN2 project has 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 Development Co; Ltd of Lao PDR (4%) and Team of Thailand (1%). In addition, the Pöyry Energy Ltd of Switzerland and NN2 Power Company, Ltd were served as independent engineers during the project construction. While PT Development Company Co; Ltd of Lao PDR was selected as a responsible company for compensation and resettlement managements including planning, implementing and monitoring processes.

ESIA reports of NN2 Hydropower Project

The EIA of NN2 project was covered (i) executive summary, (ii) introduction, (iii) project description, (iv) EIA information, (v) environmental mitigation, (vi) environmental management plan, and (vii) conclusion. It was similar to EIA, the SIA report/ plan of NN2 project was also included (i) executive summary, (ii) introduction, (iii) profiles of PAPs, (iv) social assessment, (v) proposed mitigation measures, (vi) social action plan. In the social assessment part was covered sub-topics, such as (i) characteristic impacts, (ii) stakeholder analysis, (iii) institution analysis, and (iv) public participation and consultation. Those characteristic impacts were socio-economic, cultural and livelihood activities, migration, vulnerable population and other risks. Particularly, this paper highlighted more on the social impacts that could be summarized into four categories based on the most proper resettlement elements are as follows.

Impact on socio-cultural and local administrations

Demographical and administrative impacts - It affected 16 villages, 1,099 and 6,234 project affected persons and they were Khmou (68%), Lao (30%) and Hmong (2%). The detail of number of PAPs in each village showed in the table1 below:

Table1. Number of affected village, household and person by NN2 project

S. No	Name of villages (Ban in Lao word)	No. of household	No. of PAPs
1	Ban Natou	103	657
2	Ban Naluang	94	600
3	Ban Huyxaykham	47	308
4	Ban Phonthong	41	234
5	Ban Phonkeo	39	242
6	Ban Phonkham	59	364
7	Ban Phonxay Nua	66	356
8	Ban Phonxay Kang	97	519
9	Ban Phonxay Tai	91	500
10	Ban Km 33	80	415
11	Ban Km 37	45	228
12	Nan Phayaeng Nua	69	400
13	Ban Phayaeng Tai	97	491
14	Ban Viengkeo	26	141
15	Ban Kualak	36	239
16	Ban Kormi	109	540
Total (16 villages)		1,099	6,234

Source: TEAM (2006)

These also included 4 temples, 13 schools and 2 hospitals and so forth. At the same time, it affected on the local administration and social organizations, since many heads and deputy heads of village and social organizations in every village were lost their power interests and administrative positions.

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 of affected rural communities had already been settled earlier and were abandoned due to the war. As the consequence, the majority of affected population were emigrates 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.

Social integration and ethnic minority impacts - There were three main ethnic among PAPs that were Lao, Khmou and Hmong who were well integrated in 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, youth and aged group impacts - Lao PDR has specific organizations that promote the gender equality and promote activities among youth and aged group such as Lao Woman Union (LWU) for Woman; Lao Youth's Revolutionary Union (LYRU) for youth, Lao Trade Union (LTU) for Workers and Lao Front for National Construction (LFNC) for aged group. Therefore, the NN2 project was affected to the local administration system among four social organizations that were represented in each village and actively participate in all communal activities based on their voluntary functions.

Impact on housing and construction land

The reservoir inundated many hectares of construction land, some 500 hectares of paddy fields with about 4 kilometers of

irrigation works, some 300 hectares of mainly fruit tree plantation and a minimum of 80 hectares of individually managed pasture land. Additionally vegetable gardens, community forest and community pasture, fishponds were lost. The NN2 hydropower project was flooded 16 initial villages and more than 1,099 households. In traditional agriculture-oriented societies in NN2 reservoir, the Lao traditional house of each ethnic group was influenced by different belief, behavior, and style. For Hmong (highland Lao) ethnic group who usually preferred to live in the ground house that made of wood resources while Khmou (upland Lao) ethnic group who enjoyed living in one-storey cottage, elevated floor, weaving bamboo wall and the roof was made by grass. On the other hand, for Lao (lowland Lao) ethnic group liked to live in one-storey house of wooden resources. According to Lao traditional houses, many houses contained several large rooms with specialized functions and several very small rooms for other various reasons. These included a living or eating area, a sleeping area, and separate or combined kitchen or cooking rooms.

Impact on public facilities

Road access - The NN2 reservoir inundated 57.7 km of national road that considerably hindered the access possibility to major areas of the Xaysomboun district and cut the present main connection between Vientiane and Xiengkhouang. This main access route relocated via the northern route to restore the link.

Public infrastructures - Based on the initiative report of SIA, the NN2 reservoir flooded public infrastructures including 23 schools, 2 of which were 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

Religious building and sites - Eight temples existed in the areas like in Pha Yaeng Tai was the largest one with a compound of approximately 2,400 sq.m. The other seven were much smaller; the one at Komi was about 25 sq.m and more one above 100 sq.m condition of the temples were average, one have been restored recently.

Loss of community resources and cultural sites - The main community resources that were affected include forest wood supply, hunting, collecting of non-timber forest product; grazing land for their livestock; fishing ground; water resources for agriculture and households; and spiritual and cultural places. As resulted, only four Theravada Buddhist temples, thirteen schools and two hospitals were relocated to new resettlement places.

Provision of adequate public and private infrastructures - Adequate public and private infrastructure fully provided new resettlement communities or villages so that PAPs will be able to resume their normal life, improve their economic condition status and reduce their poverty.

Impact on livelihood activities

Loss of economic and associated infrastructure - Total 71 rice mills, 75 shops, 9 restaurants, 16 blacksmiths, one furniture makers wood sawing and weaving were affected.

Loss of income and livelihood - The livelihood system of rural communities were for substance and partly for cash income which included paddy or upland rice production cultivation of fruit trees and vegetables, livestock rising, fishing, collection of non-timber forest products, hunting, handicraft trade and employment by government. 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/ relocation, the lowest family income earned US\$ 59 and the higher family income in a year was US\$ 109. An average, the annual GDP per capita of PAP was rough US\$ 10 - 19.

Future economic development in the project area - At least two major projects were active in the project areas, that were the construction of NN2 project and the operation of Phu Bia Gold Mining Project. The construction of NN2 project required more than 3,000 work forces in the construction activities. These work forces were distributed into three main areas such as in construction land (dam site and associate structures), in resettlement areas and in construction support areas (access road, boat landing, etc). In addition, the operation of Phu Bia Gold Mining Project required more than 1,000 work forces for their operation. The project located on the eastern side of the proposed NN2 reservoir. Thus, two major projects were 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.

Livelihood and income restoration program for PAPs - The NN2 helped 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. It promoted gender equality and empower woman through supporting of social organizations through training program and institutional strengthening program. The NN2 reduced child mortality by provision of adequate health services and facilities. It combated HIV/ AIDS, malaria and other diseases by provision of adequate health service and facilities and it ensured environmental sustainability through implementation of environment management plan [20].

Regarding livelihood system among PAPs in NN2 reservoir, almost villagers were engaged in agricultural activities for planting lowland and upland rice fields, feeding animals, hunting, fishing, collecting non-timber forest products and so forth. 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.

Social mitigation measurement of NN2 project

The social mitigation measures were corresponded to all main issues identified in the social assessment that are described in the following sub-sections: (i) resettlement of social relationship, (ii) provision of community resources and cultural site, (iii) provision of income and livelihood restoration assistance, (iv) provision of public infrastructure, (v) provision of private infrastructure, (vi) provision of appropriate training, institutional strengthening and capacity building program, (vii) implementing of monitoring and evaluation program. The details are summarized as follows:

Resettlement by social relationship – Since PAPs were socially well integrated among ethnics in each village. Therefore, in order to maintain the existing social relationship it proposed that the resettlement of PAPs communities be implemented in the following framework: (a) relocation of PAPs community should be made as the whole village to settle together in the new resettlement village; (b) those of same ethnic group community should be placed close together in the new resettlement communities; and (c) communities and households from the same neighborhood should be placed next to each other to the maximum extent.

Provision of community resources and cultural sites - The loss of community resources can partly be avoided by selecting resettlement areas with similar availability of resources. Losses which cannot be replaced have to be compensated or replaced by a comparable or better resource. The relocation or replacement of spiritual and cultural sites can include the transfer of infrastructure or goods, but sometimes even exclusively requires financial compensation for relocation related worshipping, sacrifices and rituals.

Provision of income and livelihood restoration assistance – A new prospective livelihood system shall be improved and diversified cash income opportunities and marketing strategies. These were to be developed together with the PAPs. The establishment of interest and comparative groups will be necessary for: (a) resource management: water, wood and electricity generation, (b) production: sharing of tools, common acquisition of production inputs and (c) marketing: establishment of a regular regional market, organization of common transportation of people and commodities to more distant markets, evaluation of most profitable products. Besides the rehabilitation of the livelihood system, lost products and any lost cash income opportunities during transition stage have to be compensated. In order to re-establish or improve the livelihood, it was proposed to establish covered market places in the new resettlement sites.

Provision of public infrastructure – The NN2 reservoir flooded public infrastructures including schools, hospitals and government offices. These community facilities were provided by the government and therefore have to be re-established and upgraded in accordance to the needs identified by the relevant authorities. The number, type and size of those facilities were identified according to the final selection of resettlement sites and the corresponding number of resettlers. The reconstruction of new public facilities shall be agreed by the government and relevant sectors.

Provision of private infrastructure – Those private facilities included (a) replacement of private structure should include provision wooden houses with sanitary facilities attached to each of them. However, differences in the value of houses have to be considered. The final type and layout of houses shall be defined during the detailed planning with due consideration of the affected villagers expectations; (b) agricultural buildings such as rice barns, stables, field huts and other inputs have to be identified, valued and compensated accordingly; and (c) all structures to be reconstructed in connection with the resettlement planning should be built by the villagers under the guidance of specialists. Materials and equipment shall be provided by the project and salaries be paid for the labors as a compensation for the lost income during the transition period. At least one person per household shall be employed, so that expenditures

for food and other necessities of each family were covered by the income.

Provision of training, institutional strengthening and capacity building program – The success and sustainability of resettlement programs for NN2 project depended primarily among other things, on the capacity of management bodies and PAPs themselves. It was thus proposed that comprehensive program, for training, institutional strengthening and capacity building program be conducted for various groups of stakeholder that were directly concerned with the implementation and management of RAP for NN2 project. The program can be proposed in accordance with each concerned group as following: (a) program for resettlement committees, which included those Provincial Resettlement and Environment Committee (PREC), District Resettlement Committee (DRC) and Village Resettlement Committee (VRC), (b) program for resettlement administrative staff including those co-operatives, and (c) program for PAPs.

Implementing of monitoring and evaluation program – Monitoring is an important process of resettlement management and it determined whether the resettlement programs undertaken by project component and government were achieving their objective. Primary objectives of monitoring and evaluation are to provide feedback on implementation, and to identify problems and success as early as possible to facilitate timely adjustment of implementation arrangement. At least, the information being monitored and evaluated should be covered the following: (a) whether the resettlement activities that is one critical path of the project will cause any delay to project implement schedule, (b) whether the PAPs are father affected and cause serve hardships, and (c) whether the resettlement program management are alerted to delays and problems and react properly [20].

Social action plan of NN project

Social action plan of NN2 project was made according to the social mitigation measures and those activities presented in RAP. These programs are summarized as followings: (a) census to establish cut-of-date and eligibility for entitlement, (b) public participation and consultation: establishment of information and news responsibilities, consultation during compensation and resettlement program implementation, grievance procedures and mechanism established to redress grievance, (c) community development: housing, public health, community institution, education and culture, (d) livelihood rehabilitation program: crop cultivation, livestock raising, fisheries, forest production and other vocational development, (e) training, institutional strengthening and capacity building program through workshop, study tour, short course, training and others, (f) monitoring and evaluation program: internal and external monitoring and post study implementation evaluation study and (g) implementation arrangement: responsible agencies, implementation areas and period of implementation.

Resettlement strategies and programs

Resettlement strategies - Reassembling lost production systems for affected farming communities was a complex and difficult task that required specialists from a diverse set of backgrounds and in order to work the full participation of resettlers themselves are not only in implementing schemes

but in planning them as well. For resettlers whom were caused from a reservoir area in NN2 hydropower project, the option of irrigated rice paddy could not appear to be in the new resettlement place. Additionally, the natural resources such as agricultural area, forest and streams were limited and not enough for more than thousands of resettled families. Thus, the technical skills training in relatively new job and income generating have still become more important activities. In overcoming the socio-economic development, livelihood rehabilitation and environmental issues, the PT Development Co; Ltd in cooperation with other local resettlement committees were established six resettlement/ development strategies (S):

S1: Town administrative development strategy: It was included supporting and strengthening the capacity and leadership skill among heads, establishing the village development fund and micro credit, advocating awareness on the safety and community development programs.

S2: Educational promotion strategy for all: It was included reconstructing schools and providing qualified teachers for both primary and secondary educations, supporting some finances for teachers and students, developing human resource for future generation and promoting informal education through their family and village development activities.

S3: Healthcare promotion strategy for all: It was included reconstruction small hospital and providing medical doctors and all necessary tools, promoting healthcare for mother and children, implementing normal treatment and developing human resource on scientific healthcare for future treatment.

S4: Socio-cultural development and conservation strategy: It was included reconstructing temple, church and cultural hall, promoting cultural diversities and social relationships among three ethnic groups such as Lao, Khmou and Hmong through storytelling, drama, art, song, sport and other activities.

S5: Environmental conservation strategy: It was included the conservation of protected areas in upstream, promoting environmental awareness for children and young generation, saving the natural resources and planting tree for natural rehabilitation.

S6: Livelihood rehabilitation strategy: It was focused more on-farm and off-farm activities and other capacity training programs for job and income generating of resettlers [21].

Compensation programs - After inventory of assets have been made following processes initiated: (a) committee meeting on entitlement guidelines, (b) establishment of compensation rate and replacement items, (c) consultation with affected families and PAPs on the compensation rate and replacement items, (d) acceptance of compensation rate, replacement items and payment schedule and (e) other related activities.

Resettlement programs - 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 resettlement plan. This was to ensure that the final resettlement sites selection and resettlement planning met the needs of PAPs. The following topics incorporated in discussion during the focus group meetings: (a) location and layout of new resettlement village, (b) infrastructure and supporting facilities, (c) community development programs in new land resettlements such as housing, public health,

community institution, education and cultural programs, (d) relocation to new land resettlements included reception facilities, initial assistance, dismantling and transportation assistance, (e) livelihood rehabilitation programs in new land resettlements included cropping, livestock, fisheries, forestry and non-agriculture occupation, and (f) training need for PAPs in new land resettlements, for example community development training, occupational training, capacity building program and so forth.

Monitoring and evaluation program - Two level of monitoring, internal and external monitoring and post implementation evaluation study were required during resettlement implementation for PAPs of NN2 project. These were embraced (a) the internal monitoring by PREC, which focused on the process and physical progress of resettlement implementation against the proposed schedule and (b) the external monitoring and post implementation evaluation study by independent monitoring agency, which focused more on the outcome of resettlement implementation such as changes of the socio-economic and livelihood conditions among those resettlers [22].

Resettlement management processes of NN2 project

The resettlement of NN2 project could be synthesized into three management processes including planning (P), implementing (I) and monitoring (M) or PIM for the whole engineering and resettlement works. The planning process, covered (1) the feasibility study was carried out in 1994-1995; (2) the ESIA were conducted in 1998-1999; (3) the ESIA reports were updated in 2004-2005 and later on; (4) ESIA reports got approval ECC by the government of Lao PDR (GoL) in 2004. (5) Those institutional arrangements for resettlement and environment managements were also established in 2005, they included the National Committee for Resettlement and Environment Management (SCREM), Supervision Committee (SC), Provincial Resettlement and Environment Committee (PREC), District Resettlement Committee (DRC), Village Resettlement Committee (VRC), and the Resettlement and Environment Management and Monitoring Unit (REMMU); (6) major consultation processes and other plans like EMP, SDP, RP, RAP and EMDP were finalized during 2005-2006; and (7) the final concession agreement was signed between the GoL and Southeast Asia Engineering Ltd on March 14th, 2006. Through implementing process, comprised (8) the NN2 dam construction was started in 2005 and it was official opening for providing electricity in 2012; (9) the infrastructural reconstructions at new resettlement site (Phonsavath town) were started in 2007 and major facilities were completed in 2010; (10) the compensation and handing petition were carried out during 2009-2011; (11) the relocation of PAPs together with transportation of properties and animals were completed within 30 days (from January 10 to February 8, 2010); Likely, (12) basic social services were provided to those resettlers during transitional period from 2010-2011; (13) the reconstructions of agricultural areas developed during 2010-2012; and (14) the livelihood conditions among resettlers were rehabilitated through on-farm & off-farm activities at the new Phonsavath town from 2011-2015. The final is monitoring process, which (15) monitored by internal monitoring and (16) evaluated by external monitoring and post evaluation study. The detail of resettlement management of NN2 project could be summarized in the table2 below:

Table2. Resettlement management processes of NN2 project

Source: Synthesized by authors (2016)

According to the progress report noted that, after some of PAPs got the cash compensation and handing petition from project developers of NN2 project, more than 46 households and about 462 PAPs were self-managed and/ or voluntary

No.	Activities	Year	Responsible in charge
1	Planning (P)		
	Feasibility study	1994-1995	Pöyry Energy Ltd
	Conducting ESIA	1998-1999	Pöyry Energy Ltd & TEAM Consulting Co; Ltd
	Project designed and updated ESIA	2004-2005	Pöyry Energy Ltd & NN2 Power Co; Ltd
	Getting approval ECC	29/10/2004	GoL & STEA
	Institutional arrangements (NCREM, SC, PREC, DRC, VRC, REMMU)	21/11/2005	GoL & concerned sectors
	Providing EMP, SDP, RP, RAP, EMDP & consultation processes	2004-2006	TEAM Consulting Engineering Co; Ltd
2	Implementing (I)		
	Dam construction/ Engineer work	2005-2012	NN2 Power Co; Ltd
	Infrastructural reconstructions at new resettlement site (town)	2007-2009	PT Co; Ltd, PREC, DRC, VRC & REMMU
	Compensation and handing petitions	2009-2011	PREC, DRC, VRC, REMMU & PT Co; Ltd
	Relocation PAPs from NN2 reservoir to new Phonsavath town in Fuang district	10/1-8/2 2010 (30 days)	PREC, DRC, VRC, REMMU & PT Co; Ltd, PAPs
	Providing social services to resettlers during transition period	2010-2011	PT Co; Ltd, VRC, resettlers & REMMU
	Reconstruction of agricultural areas	2010-2012	PT Co; Ltd, VRC, families
3	Monitoring (M)		
	Rehabilitation and adaptation of livelihood conditions through on-farm & off-farm activities at the new Phonsavath town	2011-2015	PT Co; Ltd, VRC, families, resettlers
	Dam operational delivery	2012	NN2 Power Co; Ltd
	Internal monitoring (short-term outcomes)	2011-2015	PT Co; Ltd, PREC, DRC, VRC, REMMU, families
	External monitoring and post evaluation study (long-term impacts)	2011-2018	NCREM, SC & independent agencies

moving away to other new places in another province. As resulted, only 16 villages, 1,053 families/ households and 5,772 PAPs were resettled to a new town, which has called new Phonsavath town at Fuang district (*Muang*), Vientiane province [23]. Additionally, there were behind reasons for making as a new resettled town because the GoL, relevant ministries, resettlement committees and project developers have expected to make as a new town of social, cultural, administrative, economic, educational and civilized centers.

IV. DISCUSSION

This reflects on resettlement management based on the management science perspective, which developed clear management functions/ processes on the planning, implementing (organizing and leading) and monitoring/controlling [24]. The management processes emphasized that, *planning* (P) should be involved clear setting goals, establishing strategies for achieving those goals and developing plans to integrate and coordinate activities. As found from this resettlement case, the original planning of resettlement of NN2 project was planned by the project developers and planners for all necessary resettlement elements such as town administration, housing and construction land, public facilities and livelihood rehabilitation activities at the new town. However, the planning was not set up clear goals towards sustainable town for those resettlers in the long run, except there were only set

up the income targets. Although project developers together with relevant sectors were already established resettlement strategies, including town administrative development strategy, educational promotion strategy for all, healthcare promotion strategy for all, socio-cultural development and conservation strategies, environmental conservation strategy and livelihood rehabilitation strategy. At the same time, several resettlement plans and development activities were also planned by project developers, resettlement committees and other relevant sectors. However, almost SIA, SDP, RP, RAP, EMDP and other specific plans for resettlement were done by outside companies/ experts and project developers as well. These are still lacked of the coordination, participation and decision-making among PAPs and local planners according to the planning for their own needs. Therefore, the effective plans should be crafted to fit the particular project context, it should be elicit positive response from the effected population, the resettlement plans should be conceived as development opportunities, the resettlement plans should do not be conceived as blueprints [25]. The 'blueprint' approach for resettlement planning is a rigid process ignoring the need for community participation and the dynamic factors involved. Its focus was on resettlement site development, infrastructure reconstruction, and physical relocation rather than livelihood development. A development approach for resettlement requires resettlement planning to be open, consultative, inclusive and adaptive [26]. Another consideration is that the good plan is to ensure that livelihoods and standards of living of displaced persons are improved, or at least restored to pre-project (physical and/or economic) levels and that the standards of living of the displaced poor and other vulnerable groups are improved, not merely restored, by providing adequate housing, security of land tenure and steady income and livelihood sources [27].

Through *implementing* (I) of resettlement plan, the management science emphasized that, implementing should be involved arranging, structuring and working for or/ and with people to accomplish resettlement goals, strategies and plans. As existed from the resettlement management of NN2 project, the GoL was initiatively assigned the institutional arrangements for resettlement and environment managements. These were included the National Committees for Resettlement and Environment Management (NREM) and also structured sub-committees under the NCREM, which consisted of Supervision Committee (SC), Provincial Resettlement and Environment Committee (PREC), District Resettlement Committee (DRC), Village Resettlement Committee (VRC), and Resettlement-Environment Management and Monitoring Unit (REMMU). Those resettlement committees were responsible working closely with project owners/ developers of NN2 project. Later on, the PT Development Co; Ltd of Laos was assigned as a responsible company for management of resettlement, compensation and livelihood rehabilitation programs of NN2 project. Those SDP, RP, RAP, EMDP, other plans and activities were updated and implemented by PT Development Co; Ltd based on the comments, suggestions and advises of resettlement committees, resettlers and stakeholders by following the strict requirements of decree No. 192, specific agreement on compensation and livelihood rehabilitation standard for PAPs and other regulations were fully applied during the implementation step. As promised, the PT

Development Co; Ltd together with resettlement committees, town heads and resettled families were carefully planned and reconstructed the town administration, housing and construction land, necessary public facilities and also rehabilitated new livelihood activities among resettlers at the new town.

In the final process of management science, which also highlighted that, *monitoring* (M) should be involved checking, comparing and correcting work performance. As found, two levels of monitoring were carried out, including internal monitoring and external monitoring, and post evaluation study during resettlement implementation. However, as a shareholder of project developers of NN2 project, the PT Development Co; Ltd was almost served in whole resettlement PIM processes, plans and other activities but this is still lacked of qualified independent agencies (third parties) and resettlement specialists. These are also key requirements of the WB, ADB and GoL as well. For making better and further monitoring of livelihood activities, the project developers and relevant sectors should increase independent monitors and resettlement specialists whom have experienced in engineering, environmental, agricultural, social, economic, resettlement management, and other multiple fields. As required by Public Involvement Guideline on Environmental and Social Assessment of Investment Project, those PAPs, relevant sectors and stakeholders must involve in 1) the participation in data collection and making report, 2) the participation in project construction and implementation, and 3) the participation in the monitoring and evaluation period. In addition, the public, communities, stakeholders and PAPs should participate in information disclosing, consultation and participation in decision making, and problem solving or conflict managing [28]. In whole, almost PIM of resettlement management from villages to town of NN2 hydropower project were done by PT Development Co; Ltd while those resettlement committees, relevant sectors, resettlers and stakeholders were just involved and participated in some resettlement management processes.

V. CONCLUSION

ESIA are still new practice in Laos, probably 17 years old of practice. SIA is a part and merged in a same document and instruction of EIA. Although, the final reports on EIA and SIA have to prepare by project surveyors/ developers separately. Like EIA, there are 4 processes in dealing with SIA in Laos, such as (i) scanning of the investment projects and activities, (ii) list of investment projects and activities, (iii) determining the scope of the study and term of references and (iv) review of the scoping report and term of references. As required, the project owner shall strictly comply with the following conditions: (i) prepare the ESIA report in strict compliance with the process and conditions, the relevant technical guidelines, laws and regulations (ii) ensure that ESMMP are attached as one component in the ESIA report, (iii) provide that such ESMMP shall be prepared in compliance with the conditions and (iv) prepare the ESIA report in Lao language otherwise it will not be considered for the issuance of the ECC.

In the case of NN2 project, the EIA of NN2 project was covered (i) executive summary, (ii) introduction, (iii) project description, (iv) EIA information, (v) environmental

mitigation, (vi) environmental management plan, and (vii) conclusion. It was similar to EIA, the SIA report/ plan of NN2 project was also included (i) executive summary, (ii) introduction, (iii) profiles of PAPs, (iv) social assessment, (v) proposed mitigation measures, (vi) social action plan. Inside the social assessment part was covered sub-topics, such as (i) characteristic impacts, (ii) stakeholder analysis, (iii) institution analysis, and (iv) public participation and consultation. Those characteristic impacts were socio-economic, cultural and livelihood activities, migration, vulnerable population and other risks. The social mitigation measures were corresponded through (i) resettlement of social relationship, (ii) provision of community resources and cultural site, (iii) provision of income and livelihood restoration assistance, (iv) provision of public infrastructure, (v) provision of private infrastructure, (vi) provision of appropriate training, institutional strengthening and capacity building program, (vii) implementing of monitoring and evaluation program. Since NN2 project was a first case of resettlement management from villages to town caused by hydropower development project in Laotian context. From this study, some good set of lessons have learnt in a variety of areas are as follows (i) approval appraisals and processes of SIA, SDP, RP, RAP by relevant ministers and resettlement committees, (ii) good institutional arrangements for resettlement management (NCREM, SC, PREC, DRC, VRC, and REMMU in different levels), (iii) good practice of national and local PIM approaches, (iv) strict applying both national and local regulations on compensation and resettlement of development projects, (v) an initiative practice from agrarian livelihood system to market transition, and (vi) becoming a first resettled town caused by development project in the country context. However, future resettlement planning requires developers and practitioners to be integrated ESIA reports into resettlement management and steadfastly make resettlement as development in the holistic approach.

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