

## ABSTRACT

*Forced resettlement is one of the major social consequences in large development projects. In the implementation of the Theun–Hinboun Expansion Project (THXP), a hydropower development project in Lao PDR, twelve villages in Khamkeut District, Borikhamxay Province were resettled with the construction of the Ng dam and establishment of a reservoir. Generally focusing on the institutional mechanisms for resettlement, the study aimed to discuss the resettlers' knowledge on resettlement, assess the resettlement process as implemented by the THXP, and determine the outcomes of resettlement on the household capitals. Data gathering methods were household survey, focus group discussion, key informant interviews, and review of secondary data. Eighty-four randomly chosen household heads served as respondents of the study. Descriptive and inferential statistics using t-test were employed in the data analysis. Results revealed that the households are very satisfied in the resettlement area for having access to school facilities, water, electricity, and roads. However, they were dissatisfied with the availability of job opportunities in the resettlement sites. The communities have knowledge on agricultural production, food security or poverty reduction, and livelihood changes. The THXP's resettlement strategies considered gender equality, community participation, and culture. Results of the t-test show that resettlement has significant effects on the households' capital assets. It has improved their physical capital but decreased primarily their natural, human, and social capitals. Thus, to address the negative outcomes of resettlement, THXP should ensure that the livelihoods of the affected households are restored, cultural concerns are addressed, and support activities are provided such as profiling of beneficiaries, rigorous IEC, institutionalized feedback mechanism, as well as participatory monitoring and evaluation.*

**Keywords:** household capitals, institutional mechanisms, policy provision, resettlement, sustainable livelihood

7,000 MW of electric power supply was agreed up to 2020 (Viravong 2008; Phomsoupha 2009).

With reference to the Lao National Growth and Poverty Eradication Strategy (NGPES 2006), the power sector is identified as one of the potential drivers of growth. The power sector in Lao PDR serves two important national priorities: 1) promotion of economic and social advancement by providing a reliable and affordable domestic power supply, and 2) foreign exchange earnings from electricity exports. The GoLs plans for the power sector involve rapid and simultaneous development with a view to expand the generation, transmission, distribution, and off-grid development to increase the electrification ratio for the country from the current level of about 60% to a target of above 90% by 2020. The government also aims to increase revenues from independent power plant

# Institutional Mechanisms and Outcomes of Resettlement: The Case of Theun–Hinboun Dam Expansion Project in Khamkeut District, Borikhamxay Province, Lao PDR

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## INTRODUCTION

Hydropower development is soaring in Southeast Asia due to rising power demand as well as an increasing source of national revenue from exporting countries such as Laos, Cambodia, Myanmar, and Vietnam. In 2011, 47 dams were reported in the planning phase across Laos, Vietnam, and Myanmar (Bui & Schreinemacher 2011).

Electricity from hydropower plants was not produced in Laos until the late 1960s (DEPD 2008). Some small hydro–electric plants ranging from 5 to 50 kilowatts serving small isolated local grids in different parts of country were commissioned at that time (NGPES 2006). At present, the electricity or energy sector is the third largest export earner in the country. It has been estimated that the country has the potential to generate about 26,000 megawatt (MW) through the application of hydropower. The current generating capacity constitutes only 3% of this potential (Phomsoupha 2009). In 1993, the Government of Laos (GoL) signed the first Memorandum of Understanding (MOU) on a power exchange program with the government of Thailand to support the development of power projects in the Lao PDR through the supply of up to 1,500 MW of electricity to Thailand (Maunsell Limited 2004; Viravong 2008). The original MOU has been extended to accommodate the increase in demand for electricity in Thailand under which

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export investments and honor power export commitments with Thailand and Vietnam by promoting private sector-led development. In addition, it plans to promote 500 KV grid developments with the Greater Mekong Sub-Region (GMS) to integrate the power systems of Lao PDR and its neighbors.

The Theun–Hinboun Expansion Project (THXP) is an addition to the existing Theun–Hinboun Power Project (THPP) located at the border of Borikhamxay and Khammouane provinces. It involves construction of the Ng dam and establishment of a reservoir on the Nam Gnouangat Thasala village, Khamkeut district, Borikhamxay province. The project's reservoir has an area of about 100 km upstream from the dam and covers an area of about 103 km<sup>2</sup>. An integral component of the project is the establishment of a resettlement area to accommodate the displaced 841 households with approximately 4,367 persons from 12 villages.

Forced resettlement is one of the major social consequences in large development projects. Relocation of people poses changes in their social and economic condition (Survival International 2010). Case studies revealed that forced relocation or involuntary resettlement under many development projects, if unmitigated, can pose major socio-economic risks to displaced populations (Cernea 1995; Downing 2002).

In some resettlement projects, the lives of re-settlers have not been improved. Poorly-designed resettlement programs resulted to impoverishment of the affected people due to landlessness, homelessness, joblessness, high mortality and morbidity, food insecurity, lack of access to common property, and public service, and disruption of the existing social organization. International, regional, and national experiences with resettlement generated knowledge on the planning and implementation of involuntary resettlement. These experiences, if applied, can ensure that the adverse impacts on affected people are fully addressed in terms of established policy objectives (Asian Development Bank 1998).

The THXP 2012 report described that the affected households' primary sources of income include livestock raising, paddy rice farming, shifting cultivation, and collection of forest products. Since the THXP was constructed, the dam at Nam Nguang affected the people since they had to move to a newly designed area with changes on their resource access and livelihood structures. Over time, many supports such as better health care services, nutritional assistance, village infrastructure, and issuance of land titles were provided to all affected households as part of the relocation package. However, the relocatees still experience difficulties in livelihoods.

The relocatees have been learning how to restructure, develop, and adapt their livelihood strategies according to available resources and infrastructure facilities (Chareun & Associates 2008). There were 12 villages (Somboun, Phabang, Xot, Ka an, Chalet, Boung, Pon, Sopkhom, Phonkeo, Sensi, Thambing, and Sopchat) that used to live near the dam site before its construction. It is likely that their livelihood pathway would be more or less similarly developed if they were not moved. The relocated villages have access to road, market, education and health care facilities, communication, and other transport services. However, the non-relocated villages have easy access to natural resources such as the forest. Contrary to the TXPC Social and Environmental Division Report (2011, 2012), these relocated villages have been developing their livelihood differently and experiencing hardships.

## Objectives of the study

The study aimed to analyze the institutional mechanisms for resettlement of affected communities with the establishment of the Theun–Hinboun Expansion Project in Khamkeut District, Borikhamxay Province, Lao PDR. Specifically, the study aimed to:

- 1) describe the institutional mechanisms for resettlement;
- 2) determine the resettlers' knowledge of the resettlement project;
- 3) analyze the THXP resettlement strategies; and
- 4) assess the outcomes of resettlement on the household capitals.

## METHODOLOGY

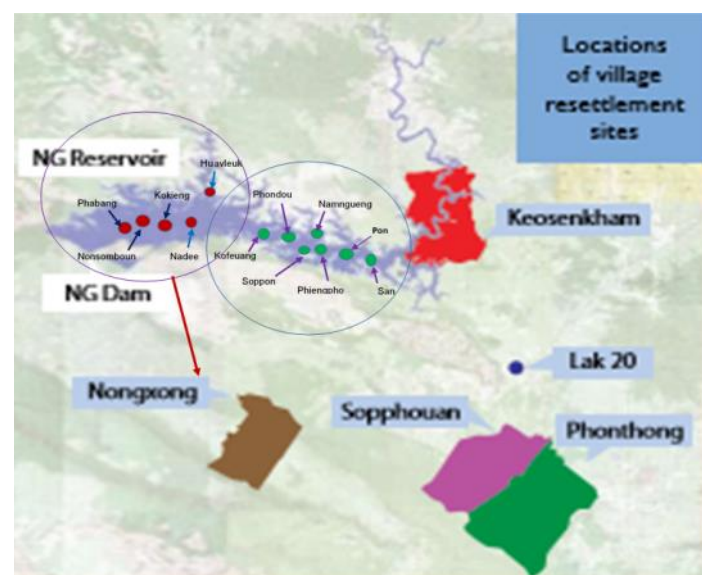
### Location of the study

The study was conducted in the villages of Sopphouan and Nongxong in Khamkeut District, Borikhamxay Province, Lao PDR. Sopphouan and Nongxong are the host villages where the affected residents near the dam were relocated (**Figure 1**). The residents in the villages of Pon, San, Phiangpho, Namngueng, Soppon, Phondou, and Kofueng were relocated to Sopphouan. Meanwhile, those from the villages of Huayleuk, Nadee, Kokieng, Nonsomboun, and Phabang were relocated to Nongxong.

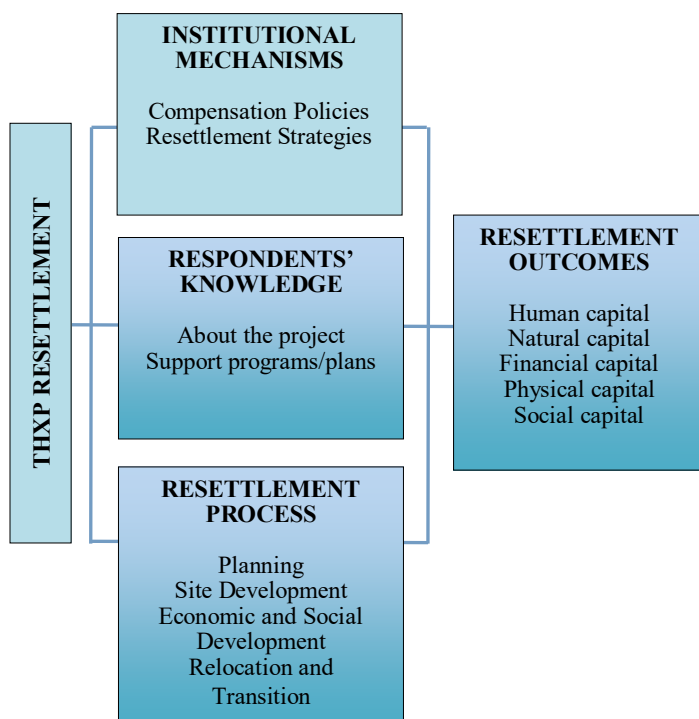
### Conceptual framework of the study

The framework (**Figure 2**) consists of several components and illustrates the interrelationship of the variables, namely: institutional mechanisms of resettlement that include policies, strategies, and processes; the resettlers' knowledge about the resettlement project and THXP's support plans and programs; the resettlement process as implemented by THXP; and the resettlement outcomes.

The TXHP's resettlement process is composed of four steps, namely, planning, site development, economic and social development, as well as relocation and transition period. The resettlement process in turn brings about positive or negative outcomes in terms of the community capitals, namely: human, natural, financial, physical, and social.



**Figure 1.** Map showing the location of the relocation villages and the villages where the relocatees came from.



**Figure 2.** Conceptual framework showing the relationship of the variables.

Human capital is central to advancing recovery efforts. Human capital enables individuals and communities to address the physiological needs, safety, belongingness, esteem, and self-actualization (Ritchie & Gill 2010). Human capital includes education, literacy levels, household size, and ages of household head and members (Webb, Richardson & von Braun 1993 as cited by Majda Bne Saad 1999). It also represents the skills, knowledge, ability to labor, good health, and physical capability as important for successful pursuit of different livelihood strategies (DFID 2001).

Natural capital is vital to human survival and fundamental to society. Natural capital represents basic necessities that support human life, ranging from uncontaminated air to potable water to renewable resources (Ritchie & Gill 2010). Natural resources include rainfall levels, stability, soil quality, water availability, forest resource access, as well as fish and seafood (Webb, Richardson & von Braun 1993 as cited by Majda Bne Saad 1999).

Financial capital can be easily converted to other forms of capital (Ritchie & Gill 2010). It can be derived from two main sources: available stocks (earned income, savings, cash, bank deposits or liquid assets such as livestock and jewelry) and regular inflows of money (DFID 2001).

The physical capital includes livestock, infrastructure, farm implement, and other physical assets (Webb, Richardson & von Braun 1993 as cited by Majda Bne Saad 1999). It comprises the basic infrastructure and producer goods that support livelihood such as affordable transport, secure shelter and buildings, adequate water supply and sanitation, clean and affordable energy, and access to information and communication systems (DFID 2001).

Social capital for Putnam (2000 as cited by Pintor 2013) refers to connections among individuals which imply a system of social networks and the norms of reciprocity and trustworthiness arising from interactions. Social capital generally enhances a community's ability to work toward collective goals by enhancing sense of belonging and by strengthening bonds between individuals and groups. It also facilitates access to other forms of capital such as human, financial, political, and cultural (Ritchie & Gill 2010).

### Data collection methods

Primary data gathering was done through a household survey among the respondents using a pre-tested structured questionnaire. The household interview was supplemented by key informant interviews (KIIs) and focus group discussion (FGD). The key informants were the village heads in the resettlement communities, key officials of the District of Agriculture and Forestry Extension Office, head and representative of the provincial resettlement committees of Borikhamxay province, head of resettlement team of the THXP in Khamkeut district, THXP staff, representative of the District Agriculture and Forestry Office (DAFO), and Head of District Resettlement Committee. These people were chosen because they were knowledgeable about the THXP.

The FGD participants were composed of the village authority, Head of the District Resettlement Committee, Head of the THXP Social Division, Head and Deputy of the Provincial Resettlement Unit, and the District Governor of Khamkeut. Similarly, these people were chosen since they were knowledgeable about the THXP and their respective offices were concerned with resettlement.

Secondary data were collected from the District Agriculture and Forestry Extension Office, District Administration Office, Provincial Resettlement Office, THXP, NT2, and NGOs.

### Sampling Scheme

The sample respondents were randomly drawn from the list of 528 households in the two villages (378 households in Sopphouan and 150 in Nongxong). The sample size was determined using the following formula (Sevilla *et al.* 2000) at 10% margin of error.

$$n = \frac{N}{1 + Ne^2}$$

Where:

**n** = Sample size

**N** = Total households in the village (528 HHs)

**e** = desired margin of error set at 0.1 or 90 % confidence level

Using proportional allocation, the household sample of 84 from the two villages was computed.

### Data Analysis

Results were analyzed using descriptive statistics such as frequency (F), percentage (%), mean, and range. A rating scale was used to determine the level of satisfaction on the resettlement policies, i.e. 5=very satisfied, 4=satisfied, 3=not satisfied, 2=unsatisfied, 1=very unsatisfied. On the other hand, for strategies/approaches of THXP, the ratings included 5=strongly agree, 4=agree, 3=not sure, 2=disagree, and 1=strongly disagree. To determine the significance of the outcomes on the households' capitals before and after resettlement, the t-test was conducted.

## RESULTS AND DISCUSSION

### Institutional mechanisms for resettlement

#### Major policies on land acquisition and compensation

In Laos, the Land Law (No. 01/97) is the most critical as it provides for the issuance of a land title, which attests the provisional ownership rights to use agricultural as well as forestland. Land titling is being done in a number of towns, but has not reached yet the rural areas. More commonly held are Land Use Rights Certificates (often known as Form 01), with declarations of land use for tax purposes and are considered as evidence of land use although it does not confer any land rights. In case of acquisition, those with land title and Form 01 holders receive compensation under the law.

People without any proof of ownership and/or certificates are considered unregistered users. The Land Law provides mechanisms by which the individuals can apply for certification. While the Land Law ensures compensation for legal owners of properties under acquisition, it does not guarantee either replacement value of the acquired properties or restoration of income, or provide for compensation to non-legal (but not illegal) users.

Based on this national policy, the THXP resettlement policies were crafted and implemented during the resettlement process. The policies on land acquisition and compensation provide for: 1) sufficient area of land allocated for dwelling, livelihood, and livestock raising, 2) accessibility to school facilities, 3) peace, order and security, 4) health services, 5) access to physical services such water supply, electricity, and roads, 6) job opportunities, 7) sufficient income, 8) network and solidarity in the neighborhood, and 9) clean environment.

The THXP's policies on resettlement process were presented to the respondents to determine their perceived satisfactions on the different provisions (**Table 1**). The respondents' level of satisfaction on the resettlement policy of THXP has an overall weighted mean of 3.64, which implies that they were satisfied. The respondents were very satisfied with the accessibility of the relocation site to high school (54%) and elementary school (64%). They were also very satisfied with the availability of clean and safe water supply (83%), affordable electric supply (68%), and all-weather roads in the village (88%).

Meanwhile, they were satisfied with the availability of manpower to maintain peace, order, and security (85%); system for conflict resolution (93%); presence of laws and policies to ensure peace and order (85%); accessibility to health services (54%); availability of medical and other services (67%); affordability of medical services (63%); sufficiency of electric supply (79%); sufficient income (52%); sufficient network and solidarity with the neighbor (99%); and clean environment (100%). They were, however, not sure on the sufficiency of land area allocated for dwelling, livelihood, and livestock raising (55%).

In general, majority of respondents (93%) were very unsatisfied with job opportunities for men, women, elderly, and out-of-school youth. This shows that respondents have apprehensions on availability of job opportunities or income generating activities in the resettlement site.

**Table 1.** Respondents' level of satisfaction on the resettlement policy of THXP.

| PARTICULARS                                                                       | LEVEL OF SATISFACTION* |    |    |     |    |             |    |    |    |    |
|-----------------------------------------------------------------------------------|------------------------|----|----|-----|----|-------------|----|----|----|----|
|                                                                                   | VS                     |    | S  |     | NS |             | U  |    | VU |    |
|                                                                                   | F                      | %  | F  | %   | F  | %           | F  | %  | F  | %  |
| <b>Roads</b>                                                                      |                        |    |    |     |    |             |    |    |    |    |
| • Road that reaches the village                                                   | 74                     | 88 | 10 | 12  | 0  | 0           | 0  | 0  | 0  | 0  |
| • All-weather roads                                                               | 73                     | 87 | 11 | 13  | 0  | 0           | 0  | 0  | 0  | 0  |
| <b>Water supply</b>                                                               |                        |    |    |     |    |             |    |    |    |    |
| • Clean and safe water                                                            | 70                     | 83 | 14 | 17  | 0  | 0           | 0  | 0  | 0  | 0  |
| • Availability at home at all times                                               | 14                     | 17 | 25 | 30  | 23 | 27          | 22 | 26 | 0  | 0  |
| <b>Electric supply</b>                                                            |                        |    |    |     |    |             |    |    |    |    |
| • Affordability                                                                   | 57                     | 68 | 27 | 32  | 0  | 0           | 0  | 0  | 0  | 0  |
| • Sufficiency of supply                                                           | 18                     | 21 | 66 | 79  | 0  | 0           | 0  | 0  | 0  | 0  |
| <b>Accessibility to school</b>                                                    |                        |    |    |     |    |             |    |    |    |    |
| • Elementary                                                                      | 54                     | 65 | 30 | 36  | 0  | 0           | 0  | 0  | 0  | 0  |
| • High school                                                                     | 45                     | 54 | 39 | 46  | 0  | 0           | 0  | 0  | 0  | 0  |
| <b>Health services</b>                                                            |                        |    |    |     |    |             |    |    |    |    |
| • Accessibility to health services                                                | 36                     | 43 | 45 | 54  | 3  | 4           | 0  | 0  | 0  | 0  |
| • Availability of medical and other services needed                               | 25                     | 30 | 56 | 67  | 3  | 4           | 0  | 0  | 0  | 0  |
| • Affordability of medical services                                               | 25                     | 30 | 53 | 63  | 6  | 7           | 0  | 0  | 0  | 0  |
| <b>Peace, order, and security</b>                                                 |                        |    |    |     |    |             |    |    |    |    |
| • Laws and policies to ensure peace and order                                     | 10                     | 12 | 71 | 85  | 2  | 2           | 0  | 0  | 1  | 1  |
| • System for conflict resolution                                                  | 5                      | 6  | 78 | 93  | 1  | 1           | 0  | 0  | 0  | 0  |
| • Manpower to maintain peace, order, and security                                 | 5                      | 6  | 71 | 85  | 7  | 8           | 1  | 1  | 0  | 0  |
| Sufficient area of land allocated for dwelling, livelihood, and livestock raising | 4                      | 5  | 22 | 26  | 46 | 55          | 10 | 12 | 2  | 2  |
| Sufficient network and solidarity with the neighbor                               | 1                      | 1  | 83 | 99  | 0  | 0           | 0  | 0  | 0  | 0  |
| <b>Job opportunities</b>                                                          |                        |    |    |     |    |             |    |    |    |    |
| • For men                                                                         | 0                      | 0  | 0  | 0   | 6  | 7           | 0  | 0  | 78 | 93 |
| • For women                                                                       | 0                      | 0  | 0  | 0   | 6  | 7           | 0  | 0  | 78 | 93 |
| • For the elderly                                                                 | 0                      | 0  | 0  | 0   | 6  | 7           | 0  | 0  | 78 | 93 |
| • For the out-of-school youth                                                     | 0                      | 0  | 0  | 0   | 6  | 7           | 0  | 0  | 78 | 93 |
| Clean environment for living                                                      | 0                      | 0  | 84 | 100 | 0  | 0           | 0  | 0  | 0  | 0  |
| Sufficient income                                                                 | 0                      | 0  | 44 | 52  | 30 | 36          | 10 | 12 | 0  | 0  |
| <b>Overall Weighted Mean</b>                                                      |                        |    |    |     |    | <b>3.64</b> |    |    |    |    |

\*VS- Very Satisfied (5), S- Satisfied (4), NS- Not Sure (3), U- Unsatisfied (2), VS- Very Unsatisfied

### Compensation for livelihood restoration

In resettlement, compensation is paid for reclaimed land and property losses (ADB 1998). The philosophy behind is that if the fundamental material assets of the displaced people were provided in cash (or in kind), then efforts to restore the livelihood of the affected people will be possible. In the THXP resettlement project, the affected households were compensated for the cost of building a new house, and for the cost of land (Table 2).

**Table 2.** Amount received by respondents from THXP for relocation (in USD).

| AMOUNT          | SOPPHOUAN (n = 60) |            | NONGXONG (n = 24) |            | TOTAL (n = 84)    |            |
|-----------------|--------------------|------------|-------------------|------------|-------------------|------------|
|                 | F                  | %          | F                 | %          | F                 | %          |
| ≤5,000          | 51                 | 85         | 18                | 75         | 69                | 82         |
| 5,001 – 10,000  | 5                  | 8          | 5                 | 21         | 10                | 12         |
| 10,001 – 15,000 | 3                  | 5          | 0                 | 0          | 3                 | 4          |
| 15,001 – 20,000 | 1                  | 2          | 1                 | 4          | 2                 | 2          |
| <b>Total</b>    | <b>60</b>          | <b>100</b> | <b>24</b>         | <b>100</b> | <b>84</b>         | <b>100</b> |
| <b>Mean</b>     | <b>3,298</b>       |            | <b>4,645</b>      |            | <b>3,683</b>      |            |
| <b>Range</b>    | <b>200–18,750</b>  |            | <b>300–17,000</b> |            | <b>200–18,750</b> |            |

The respondents in Sopphouan and Nongxong received from THXP an average amount of USD 3,683 for relocation. Majority (82%) received USD 5,000 and below while the minority (12%) received USD 5,001–10,000. The difference in the amount of

compensation depends on what has to be compensated per household, according to the THXP policy.

Half of the respondents (50%) both strongly agreed and agreed that they were provided cash to rebuild their houses and the amount was acceptable (69%). On the other hand, about two-thirds (67%) each stated that they were paid in full amount for the total productive land they used to own and for the demolished houses. An equal percentage of respondents (51%) stated that they were given cash to restore their land to its former state and as replacement cost of land at current market value, while less than half (49%) cited that they were given cash for lost income, damaged assets, and market value of crops and trees that they raised in their original place of residence.

Majority agreed they were given cash or in kind equivalent to three months supply of rice per person at current market value (67%), transition subsistence allowance for transfer to the relocation site (67%), cash to rebuild their house (50%), and cash for the excavation, movement, and reburial of their relatives' graves (77%). The respondents agreed they were given cash compensation to replace their private well (85%), for the damaged and abandoned crops (62%), for the non-bearing fruit trees (45%), for the three-year harvest of fruit bearing trees (62%), and for the timber (62%). Further, the respondents (63%) agreed that special assistance was provided to vulnerable households. From these data, it can be surmised that in general, the respondents agreed with how the compensation schemes were implemented, although some respondents (44%) claimed that they were not sure whether the household head was paid fully for the loss of income from their work (Table 3).

**Table 3.** Respondents' assessment of the compensation schemes from THXP.

| STATEMENTS                                                                                                                                                                          | ASSESSMENT LEVEL* |    |    |    |    |    |   |   |    |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----|----|----|----|----|---|---|----|---|
|                                                                                                                                                                                     | SA                |    | A  |    | NS |    | D |   | SD |   |
|                                                                                                                                                                                     | F                 | %  | F  | %  | F  | %  | F | % | F  | % |
| I was provided cash to rebuild our house.                                                                                                                                           | 42                | 50 | 42 | 50 | 0  | 0  | 0 | 0 | 0  | 0 |
| I was given cash compensation for loss of income, damaged assets, crops and trees at market value.                                                                                  | 39                | 46 | 41 | 49 | 2  | 2  | 2 | 2 | 0  | 0 |
| I was given cash to restore my land to former state.                                                                                                                                | 39                | 46 | 43 | 51 | 0  | 0  | 2 | 2 | 0  | 0 |
| For my homestead, I was given 100% cash compensation for the affected land at current market value.                                                                                 | 39                | 46 | 43 | 51 | 0  | 0  | 2 | 2 | 0  | 0 |
| All my damaged and abandoned crops were paid at current market price.                                                                                                               | 32                | 38 | 52 | 62 | 0  | 0  | 0 | 0 | 0  | 0 |
| I was given cash compensation at current market value equivalent to three years production of fruit bearing trees.                                                                  | 32                | 38 | 52 | 62 | 0  | 0  | 0 | 0 | 0  | 0 |
| I was given a lump sum amount for non-bearing fruit trees to cover cost of maintenance and inputs.                                                                                  | 30                | 36 | 38 | 45 | 6  | 7  | 6 | 7 | 4  | 4 |
| The compensation for my lost house was acceptable to me.                                                                                                                            | 28                | 33 | 56 | 67 | 0  | 0  | 0 | 0 | 0  | 0 |
| For transport allowance or assistance to transfer to the new site, I was given cash or kind equivalent to three months supply of rice per person at current market value.           | 28                | 33 | 56 | 67 | 0  | 0  | 0 | 0 | 0  | 0 |
| I was given transition subsistence allowance for my household's transfer to the relocation site.                                                                                    | 28                | 33 | 56 | 67 | 0  | 0  | 0 | 0 | 0  | 0 |
| The payment given to me was acceptable.                                                                                                                                             | 25                | 30 | 57 | 68 | 0  | 0  | 2 | 2 | 0  | 0 |
| In my village, special assistance was provided to households belonging to vulnerable groups such as the very poor, or households headed by women, the elderly, or disabled persons. | 24                | 29 | 53 | 63 | 6  | 7  | 1 | 1 | 0  | 0 |
| For our relatives' graves, cash compensation for cost of excavation, movement and reburial was paid in full.                                                                        | 19                | 23 | 65 | 77 | 0  | 0  | 0 | 0 | 0  | 0 |
| I was paid in full for the total productive land area I lost in the process of relocation.                                                                                          | 19                | 23 | 56 | 67 | 1  | 1  | 3 | 4 | 5  | 6 |
| The head of my household was paid in full for the loss of income from work.                                                                                                         | 19                | 23 | 25 | 30 | 37 | 44 | 0 | 0 | 3  | 4 |
| For my source of water (private well), I was given cash compensation after I requested.                                                                                             | 12                | 14 | 71 | 85 | 0  | 0  | 0 | 0 | 1  | 1 |
| <b>Overall Weighted Mean</b>                                                                                                                                                        | <b>4.22</b>       |    |    |    |    |    |   |   |    |   |

### Knowledge on the resettlement project

Majority (93%) indicated that they knew Nam Nguang Dam (Table 4). However, about half (47%) of the respondents did not state any opinion about the dam.

Almost all respondents (96%) said they had no idea about the resettlement process (95% in Sopphouan and 100% in Nongxong). Hence, only about one-third (35%) were willing to be resettled, while a few (14%) expressed resistance against resettlement. This is quite surprising since information dissemination is part of the participatory planning, where consultation is done prior to finalization of the resettlement design. The stakeholders are encouraged to participate in the process specially in the census and socio-economic surveys. Further, the social and resettlement surveys are coupled with continuous dialogue with affected communities (SED-THXP 2012). The lack of knowledge about the relocation process could be due to the inability of the respondents to participate in the consultation process.

Table 5 presents the respondents' awareness on support programs/plans which were based on pre-coded responses, namely, agricultural production, food security or poverty reduction, and livelihood changes. All the respondents were aware of the agricultural production while an equal proportion at 88 % each were aware of the food security or poverty elimination and livelihood changes.

### Analysis of the THXP resettlement strategies

The respondents assessed the resettlement strategies particularly on gender equality, community participation, and cultural consideration.

#### Gender Equality

The World Bank (2003) emphasized that development policies and actions that fail to consider gender equality and disparities between males and females will have limited effectiveness. Thus, THXP applied gender equality in the resettlement process specifically during the consultation. Majority (75%) of the respondents agreed that the men and women were given equal opportunity in the consultation process (Table 6).

#### Community Participation

Honadel (1980) as cited by Ounthala (2012) sees participation as a necessary condition for any meaningful development effort. In the development process, participation implies motivating the individuals to take the initiative, mobilizing people to work for the overall societal goals, allocation of resources to achieve goals, and voluntary execution of resulting programs and projects.

Majority (81%) of the respondents strongly agreed that they participated in planning and designing the resettlement site.

**Table 4.** Respondents' knowledge about Nam Nguang Dam resettlement project.

| PARTICULARS                                                              | SOP-PHOUAN |            | NONGXO NG |            | TOTAL     |            |
|--------------------------------------------------------------------------|------------|------------|-----------|------------|-----------|------------|
|                                                                          | F          | %          | F         | %          | F         | %          |
| Know Nam Nguang Dam?                                                     |            |            |           |            |           |            |
| Yes                                                                      | 58         | 97         | 20        | 83         | 78        | 93         |
| No                                                                       | 2          | 3          | 4         | 17         | 6         | 7          |
| <b>Total</b>                                                             | <b>60</b>  | <b>100</b> | <b>24</b> | <b>100</b> | <b>84</b> | <b>100</b> |
| If yes, what can you say about it?                                       |            |            |           |            |           |            |
| Our village will move to a new area                                      | 19         | 33         | 8         | 40         | 27        | 35         |
| I/We don't want to move to new area/site                                 | 3          | 5          | 8         | 40         | 11        | 14         |
| I/We have no idea                                                        | 0          | 0          | 3         | 15         | 3         | 4          |
| No answer                                                                | 36         | 62         | 1         | 5          | 37        | 47         |
| <b>Total</b>                                                             | <b>58</b>  | <b>100</b> | <b>20</b> | <b>100</b> | <b>78</b> | <b>100</b> |
| Source of information*                                                   |            |            |           |            |           |            |
| THXP staff                                                               | 58         | 97         | 10        | 42         | 68        | 81         |
| District team                                                            | 42         | 70         | 0         | 0          | 42        | 49         |
| Provincial staff officer (Mr. Khamsing)                                  | 6          | 10         | 11        | 46         | 17        | 20         |
| Provincial staff officer (Mr. Bounmy)                                    | 0          | 0          | 2         | 8          | 2         | 2          |
| Ms. Kavang                                                               | 0          | 0          | 2         | 8          | 2         | 2          |
| Mr. Konglee                                                              | 0          | 0          | 1         | 4          | 2         | 1          |
| With idea about resettlement process?                                    |            |            |           |            |           |            |
| No                                                                       | 57         | 95         | 24        | 100        | 81        | 96         |
| Yes                                                                      | 3          | 5          | 0         | 0          | 3         | 4          |
| <b>Total</b>                                                             | <b>60</b>  | <b>100</b> | <b>24</b> | <b>100</b> | <b>84</b> | <b>100</b> |
| If yes, what is it?                                                      |            |            |           |            |           |            |
| If we will relocate to the area, it should be better than the old place. | 2          | 67         | 0         | 0          | 2         | 67         |
| I feel my family will benefit from the good policy of the THXP project.  | 1          | 33         | 0         | 0          | 1         | 33         |
| <b>Total</b>                                                             | <b>3</b>   | <b>100</b> | <b>0</b>  | <b>0</b>   | <b>3</b>  | <b>100</b> |

\*Multiple responses

**Table 5.** Respondents' awareness on support programs/plans.

| SUPPORT PROGRAMS/ PLANS              | SOPPHOUAN (n = 60) |     |    |    | NONGXONG (n = 24) |     |    |   | TOTAL (n = 84) |     |    |    |
|--------------------------------------|--------------------|-----|----|----|-------------------|-----|----|---|----------------|-----|----|----|
|                                      | Yes                |     | No |    | Yes               |     | No |   | Yes            |     | No |    |
|                                      | F                  | %   | F  | %  | F                 | %   | F  | % | F              | %   | F  | %  |
| Agricultural production              | 60                 | 100 | 0  | 0  | 24                | 100 | 0  | 0 | 84             | 100 | 0  | 0  |
| Food security or poverty elimination | 50                 | 83  | 10 | 17 | 24                | 100 | 0  | 0 | 74             | 88  | 10 | 12 |
| Livelihood changes                   | 50                 | 83  | 10 | 17 | 24                | 100 | 0  | 0 | 74             | 88  | 10 | 12 |

**Table 6.** Respondents' satisfaction on the strategies/approaches done by THXP.

| PARTICULARS                                                                                                                                                                                                                           | LEVEL OF ASSESSMENT |       |    |    |    |    |   |   |    |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------|----|----|----|----|---|---|----|---|
|                                                                                                                                                                                                                                       | SA                  |       | A  |    | NS |    | D |   | SD |   |
|                                                                                                                                                                                                                                       | F                   | %     | F  | %  | F  | %  | F | % | F  | % |
| Existing cultural and religious practices were respected.                                                                                                                                                                             | 71                  | 85    | 7  | 8  | 4  | 5  | 0 | 0 | 2  | 2 |
| We took part in the planning and design of resettlement sites and new houses, and other concerns.                                                                                                                                     | 68                  | 81    | 15 | 18 | 1  | 1  | 0 | 0 | 0  | 0 |
| Men and women were given equal opportunity in the consultation process.                                                                                                                                                               | 63                  | 75    | 19 | 23 | 2  | 2  | 0 | 0 | 0  | 0 |
| The affected people we active partners of the livelihood restoration plan.                                                                                                                                                            | 61                  | 72.62 | 22 | 26 | 1  | 1  | 0 | 0 | 0  | 0 |
| Measures were incorporated to protect socially and economically vulnerable groups such as indigenous peoples, families headed by women, children and elderly people without support structures, and people living in extreme poverty. | 53                  | 63    | 7  | 8  | 22 | 26 | 0 | 0 | 2  | 2 |
| Implementation was with the consent and agreement of the men and women.                                                                                                                                                               | 47                  | 56    | 35 | 42 | 0  | 0  | 0 | 0 | 2  | 2 |
| THXP ensured that the compensation procedures were well understood by the affected people.                                                                                                                                            | 41                  | 49    | 43 | 51 | 0  | 0  | 0 | 0 | 0  | 0 |
| <b>Overall Weighted Mean</b>                                                                                                                                                                                                          | <b>4.61</b>         |       |    |    |    |    |   |   |    |   |

SA - Strongly Agree (5), A – Agree (4), NS - Not Sure (4), D – Disagree (2), SD - Strongly Disagree (1)

Further, the respondents (73%) strongly agreed that the affected people were active partners in the development of the livelihood restoration plan. More than half of the respondents (51%) agreed that the compensation procedures were well understood by the affected people.

#### **Respect for Culture**

Majority of the respondents (85%) strongly agreed that the existing cultural and religious practices were respected during the resettlement process. This is because displaced communities' beliefs and traditions are strictly tied to nature and the surrounding environment. Respecting the culture of the people means protecting their sacred forests, ancestor graveyards, or cultural commodities for their ritual celebration. If not, then resettlement would lead to long-term erosion of social cohesion and cultural values of the people.

The respondents (63%) also strongly agreed that measures were incorporated to protect the socially and economically vulnerable groups such as indigenous peoples, women-headed households, children, and elderly people without support structures, and people living in extreme poverty. More than half of the respondents (56%) strongly agreed that the resettlement project was implemented with consent and agreement among the men and women relocatees.

#### **Resettlement outcomes on household capitals**

Statements were presented to the respondents to determine the perceived outcomes of resettlement on household capitals. They were requested to respond to the statements by considering their situation before and after resettlement. Afterwards, the paired samples t-test was used to compare the mean scores of the household condition before and after resettlement. The outcomes of resettlement on the respondent households' capitals (human, natural, financial, physical, and social) and the corresponding results of the statistical analysis are shown in **Table 7**.

#### **Human capital**

Before resettlement, respondents (58%) strongly agreed that they felt fulfilled as persons and about half (49%) said that they were physically healthy to earn a living. On the other hand, majority of the respondents agreed that their existing knowledge is related to their livelihood (89%); they felt a sense of belonging in their community (88%); they felt safe in their place of residence (87%); and their existing skills were related to their livelihood (74%). These responses reflect that the relocatees have a fairly good human capital even before resettlement.

After resettlement, a very big percentage of the respondents agreed that their existing skills were related to their livelihood (92%); they felt safe in their place of residence (92%); they felt a sense of belonging in the community they lived (92%); and felt fulfilled as a person (91%). The overall weighted mean of the human capital indicators before resettlement (4.26) is higher than the mean after resettlement (4.08). This was so because about one-third of the participants were not sure whether their existing knowledge is related to their livelihood in their new place of residence. Their uncertainty could be attributed to the fact that some resettlers have to change their income generating activities due to a different biophysical condition in the new settlement.

Thus, in terms of human capital, the respondents believed that their skills related to livelihood ( $p = 0.000$ ); place of residence is safe ( $p = 0.045$ ), and self-fulfillment ( $p = 0.000$ ) were lessened after resettlement.

#### **Natural Capital**

Before resettlement, all the respondents strongly agreed that the quality of soil in the place where they live is good; the quantity of crop yields other than rice is enough (99%); fish and other sea foods are available (81%); and they have access to forest resources (50%). Further, the respondents agreed that firewood is available in the original place where they lived (87%); rainfall level is enough (86%); the quality of air is good (51%); and they have access to forest resources (50%). However, many respondents (35%) were not sure with the quality of drinking

**Table 7.** Results of paired samples t-test analysis on resettlement outcomes on households' capital assets.

| CAPITAL ASSETS                                                                           | t       | df | p    | SIGNIFICANCE    |
|------------------------------------------------------------------------------------------|---------|----|------|-----------------|
| <b>Human Capital</b>                                                                     |         |    |      |                 |
| My existing knowledge is related to my livelihood.                                       | 0.748   | 83 | .000 | Significant     |
| My existing skills are related to my livelihood.                                         | 6.095   | 83 | .000 | Significant     |
| I am physically healthy to earn a living.                                                | 2.388   | 83 | .000 | Significant     |
| I feel safe in my place of residence.                                                    | 2.037   | 83 | .000 | Significant     |
| I feel a sense of belonging in the community I live in.                                  | 1.753   | 83 | .000 | Significant     |
| I feel fulfilled as a person.                                                            | 8.896   | 83 | .000 | Significant     |
| <b>Natural Capital</b>                                                                   |         |    |      |                 |
| The quality of air in the place where I live is good.                                    | 7.513   | 83 | .000 | Significant     |
| The quality of drinking water in the place where I live is good.                         | -16.810 | 83 | .000 | Significant     |
| The rainfall level in the place where I live is enough.                                  | 3.349   | 83 | .000 | Significant     |
| The quality of soil in the place where I live is good.                                   | 52.131  | 83 | .000 | Significant     |
| The quantity of rice yields in the place where I live is enough.                         | 69.250  | 83 | .000 | Significant     |
| The quantity of crop yields crops (other than rice) in the place where I live is enough. | 103.487 | 83 | .000 | Significant     |
| There is access to forest resources in the place where I live.                           | 33.314  | 83 | .000 | Significant     |
| Firewood is available in the place where I live.                                         | 5.708   | 83 | .000 | Significant     |
| Fish and other sea foods are available in the place where I live.                        | 26.399  | 83 | .000 | Significant     |
| <b>Financial Capital</b>                                                                 |         |    |      |                 |
| My income is enough for my household.                                                    | 16.386  | 83 | .000 | Significant     |
| I have regular source of income.                                                         | 17.855  | 83 | .000 | Significant     |
| My income is sufficient to buy the basic necessities of my household.                    | 21.221  | 38 | .000 | Significant     |
| I have savings.                                                                          | 12.064  | 83 | .000 | Significant     |
| I deposit my savings.                                                                    | 14.937  | 83 | .000 | Significant     |
| Our Village Development Fund is available.                                               | -17.893 | 83 | .000 | Significant     |
| I raise enough livestock.                                                                | 33.636  | 83 | .000 | Significant     |
| <b>Physical Capital</b>                                                                  |         |    |      |                 |
| There is road access in the place where I live.                                          | -10.475 | 83 | .000 | Significant     |
| Transportation is regular.                                                               | -50.521 | 83 | .000 | Significant     |
| There is regular access to electricity in the place where I live.                        | -65.709 | 83 | .000 | Significant     |
| I have security of tenure with the land that I am using.                                 | 6.530   | 83 | .000 | Significant     |
| The size of the land that I am using is sufficient.                                      | 43.653  | 83 | .000 | Significant     |
| There is access to communication systems in the place where I live.                      | -17.791 | 83 | .000 | Significant     |
| There is school in the place where I live.                                               | -13.352 | 83 | .000 | Significant     |
| There is hospital in the place where I live.                                             | -27.920 | 83 | .000 | Significant     |
| There is market in the place where I live.                                               | -26.445 | 83 | .000 | Significant     |
| <b>Social Capital</b>                                                                    |         |    |      |                 |
| I belong to an organization and I have a position in it.                                 | 2.023   | 83 | .046 | Significant     |
| The organization where I belong helps my community in the resettlement process.          | 2.168   | 83 | .033 | Significant     |
| I live near my family and relatives.                                                     | 5.093   | 83 | .000 | Significant     |
| My community has strengths.                                                              | .783    | 83 | .436 | Not Significant |
| My community has weaknesses.                                                             | -.630   | 83 | .530 | Not Significant |

water that they have. In fact, some respondents (23% and 35%) disagreed and strongly disagreed, respectively, that the quality of water is good in their original place of residence.

About half of the respondents (51% and 49%) strongly agreed and agreed, respectively, that they have good quality drinking water in the resettlement site. Majority agreed that the rainfall level is enough (98%), the air quality is good (92%), and firewood is available (82%). However, majority of the respondents (81%) were not sure if they can have access to forest resources in the resettlement area. According to the KII and the FGD participants, this was a valid feeling because there is no forest in the resettlement area.

The respondents disagreed that crop yield (other than rice) in the resettlement area is enough (94%). In addition, more than half of the respondents (58%) disagreed and about a quarter (23%) strongly disagreed that fish is available in the resettlement area. Unlike in their original village where there is a river from which they can catch fish, there is none in the resettlement site. Because of these changes in the natural capital before and after resettlement, the weighted mean of natural capital decreased from 4.37 to 2.96.

The statistical test revealed that the natural capital including air ( $p = 0.000$ ) and soil quality ( $p = 0.000$ ), quantity of rice ( $p = 0.000$ ) and crop yield ( $p = 0.000$ ), access to forest resources ( $p = 0.000$ ), quantity of firewood ( $p = 0.000$ ), fish, and other sea foods ( $p = 0.000$ ) also decreased, while quality of drinking water ( $p = 0.000$ ) greatly improved after resettlement.

#### Financial Capital

Before resettlement, majority of the respondents agreed that they deposited their savings (88%) in the bank; income was sufficient to buy the basic necessities of their households (80%); income was enough for their households (73%); have savings (73%); and have regular source of income (60%). However, the respondents (67%) disagreed that the Village Development Fund (VDF) is available.

After resettlement, almost all of the respondent (99%) agreed that the VDF is available. However, majority were not sure that: they have regular source of income (84%); income is enough for their household needs (83%); they have savings (80%); they raise enough livestock (64%); and their income is sufficient to buy the household's basic necessities (62%). These data imply that the respondents' financial capital decreased further with resettlement due to changes in their economic activities. Data show that the farmers' household income earned from rice farming, vegetable farming, cash crop farming, and livestock raising decreased after resettlement.

The test revealed a statistically reliable difference between mean income before and after resettlement from rice ( $p = .000$ ), vegetable ( $p = .014$ ), tree crops ( $p = .009$ ), and cash crops ( $p = .000$ ); fishing ( $p = .002$ ); livestock production ( $p = .000$ ), hunting ( $p = .000$ ), and wage/skilled labor ( $p = .024$ ) (Table 8). Income generated from these sources decreased after resettlement, except for income from wage/ skilled labor where a few were fortunate to be employed after resettlement. On the other hand, no significant difference between income before and after resettlement was found on sources of income like firewood gathering and selling, business, and gathering of NTFPs.

In terms of total income, there was a significant difference between income before ( $M = 14,530,238.10$ ,  $s = 7,242,143.22$ )

**Table 8.** Results of paired samples t-test analysis between various sources of income before and after resettlement.

| Sources of Income                    | t      | df | p    | Significance    |
|--------------------------------------|--------|----|------|-----------------|
| Rice                                 | 12.576 | 82 | .000 | Significant     |
| Vegetable                            | 2.524  | 65 | .014 | Significant     |
| Tree crops                           | 3.262  | 10 | .009 | Significant     |
| Cash crops                           | 6.347  | 79 | .000 | Significant     |
| Fishing                              | 3.944  | 12 | .002 | Significant     |
| Livestock                            | 6.878  | 72 | .000 | Significant     |
| Hunting                              | 6.810  | 12 | .000 | Significant     |
| Wage/Skilled Labor                   | -2.778 | 8  | .024 | Significant     |
| Firewood gathering/ selling Business | -2.011 | 7  | .084 | Not Significant |
| Gathering of NTFP                    | 0.297  | 2  | .794 | Not Significant |
|                                      | 4.000  | 1  | .156 | Not Significant |

and after resettlement ( $M = 3,791,369.05$ ,  $s = 3,649,773.004$ ),  $t(83) = 13.62$ ,  $p = 0.000$ ). The result indicates that aggregate income of the respondents drastically decreased after resettlement, which was affirmed by the KII and FGD participants.

Corollary to the analysis on the aggregate income, there was also a significant difference between the respondents' economic status before and after resettlement,  $t(83) = -17.00$ ,  $p = 0.000$ . The analysis suggests that the respondents who considered themselves rich before resettlement based on total income perceived that they became poor after resettlement.

There was a statistically significant difference between sufficiency of household income before and after resettlement to support basic needs of the family such as food ( $p = 0.000$ ), clothing ( $p = 0.001$ ), medicine ( $p = 0.000$ ), shelter ( $p = 0.000$ ), and education ( $p = 0.000$ ) (Table 9). The results indicate that household income was more than enough for food and clothing prior to resettlement but became just enough after resettlement. On the other hand, income was enough for medicine and education but turned out to be more than enough after resettlement.

**Table 9.** Results of paired samples t-test analysis between sufficiency of household income to support basic family needs before and after resettlement.

| Basic Needs | t       | df | p    | Significance |
|-------------|---------|----|------|--------------|
| Food        | -19.828 | 83 | .000 | Significant  |
| Clothing    | -3.516  | 83 | .001 | Significant  |
| Medicine    | 9.867   | 83 | .000 | Significant  |
| Shelter     | 32.210  | 83 | .000 | Significant  |
| Education   | 22.899  | 83 | .000 | Significant  |

In terms of livestock production, a statistically significant difference was found between mean number of livestock raised including cow ( $p = .000$ ), buffaloes ( $p = .000$ ), pigs ( $p = .000$ ), goats ( $p = .000$ ), chicken ( $p = .000$ ), and ducks ( $p = .000$ ) raised before and after resettlement (Table 10). The key informants and the FGD participants confirmed that the settlers could not raise

**Table 10.** Results of paired samples t-test analysis between livestock raised before and after resettlement.

| Livestock raised | t     | df | p    | Significance |
|------------------|-------|----|------|--------------|
| Cows             | 5.574 | 41 | .000 | Significant  |
| Buffaloes        | 5.293 | 15 | .000 | Significant  |
| Pigs             | 9.555 | 69 | .000 | Significant  |
| Goats            | 8.251 | 16 | .000 | Significant  |
| Chickens         | 7.639 | 80 | .000 | Significant  |
| Ducks            | 5.442 | 43 | .000 | Significant  |

livestock in the resettlement area because of the limited space allotted to each family. This does not conform with the THXP's resettlement policies.

The financial capital of households diminished since the respondents became unsure already of the sufficiency of their income ( $p = 0.000$ ) to support household needs and basic necessities ( $p = 0.000$ ). They were also not sure whether they could have regular ( $p = 0.000$ ) and other sources of income such as raising enough livestock ( $p = 0.000$ ) to acquire savings ( $p = 0.001$ ) and be deposited in financial institutions for future needs ( $p = 0.000$ ). On the other hand, the respondents agreed that the VDF became available ( $p = 0.000$ ) after resettlement.

According to the KII and the FGD participants, the general decrease in the household income was brought about by the small land allotted to each family, thereby limiting their ability to plant agricultural crops and raise livestock.

#### Physical Capital

Before resettlement, the respondents strongly agreed that the size of land they used is sufficient (99%); and they have security of tenure over their land (80%). However, only about half of the respondents (52%) agreed that there is a school in the place where they lived. Further, the respondents disagreed that: transportation is regular (75%), access to electricity is regular (70%), and there is access to communication systems (55%). In addition, the respondents strongly disagreed that there is road access (58%) and there is a market in their original place of residence (58%). Moreover, majority of the respondents (92%) cited that they had no toilet facility before resettlement.

After resettlement, the respondents agreed that they have security of tenure with the land that they were using (98%). However, the respondents disagreed (57%) that the size of the land that they are using is sufficient. All the respondents strongly agreed that transportation became available and there is regular access to

electricity. Majority added that there is road access (80%) and there is a school (80%). A few mentioned that there is access to communication systems (48%). In addition, the respondents cited that there is market in the resettlement area (65%). Further, all the respondents mentioned that they have a toilet facility. It can be surmised therefore that with resettlement, there were improvements in the physical infrastructure (Figure 2) made available to the people as indicated by a high weighted mean score of 4.32.

Resettlement has brought significant outcomes on road ( $p = 0.000$ ), transportation ( $p = 0.000$ ), electricity ( $p = 0.000$ ), communication system ( $p = 0.000$ ), schools, ( $p = 0.000$ ) hospital ( $p = 0.000$ ), and market ( $p = 0.000$ ). According to the key informants and the FGD participants, these facilities and infrastructures were not available before but became available and accessible after resettlement. Nonetheless, the size of land being used for farming ( $p = 0.000$ ) and security of its tenure ( $p = 0.000$ ) lessened after resettlement. The key informants and the FGD participants affirmed this claim of the respondents.

There was a significant difference between mean land allocation for fixed riceland ( $p = .000$ ), shifting land ( $p = .000$ ), and vegetable garden ( $p = .000$ ) before and after resettlement (Table 11). For fixed rice land, there was an increase in land allocation or to most of the respondents, land for fixed rice farming became available after resettlement.

**Table 11.** Results of paired samples t-test analysis between land allocation before and after resettlement.

| Land use         | t       | df | p    | Significance |
|------------------|---------|----|------|--------------|
| Fixed rice land  | -43.012 | 83 | .000 | Significant  |
| Shifting land    | 17.230  | 82 | .000 | Significant  |
| Vegetable garden | 6.622   | 82 | .000 | Significant  |

This was contrary to what the key informants and the FGD participants mentioned that the land allotted for rice was smaller than what the settlers have before. Likewise, the land for vegetable garden became smaller, which was attributed to the proximity of the houses to one another. On the other hand, land for shifting cultivation became inaccessible due to the geographical location of the resettlement area. Unlike in their original place of residence where there is a natural forest, what they have in the resettlement site is a common area planted with trees.



**Figure 2.** Some of the infrastructures in the resettlement site: resettlement houses and road (A); a close-up of one of the houses (B); health center (C); and temple (D).

### Social Capital

Before resettlement, the respondents agreed that the organization where they belonged helped their community in the resettlement process and offered assistance (92%), their organization helped their community in their livelihood (92%), and they lived near their families/relatives (65%).

After resettlement, the respondents agreed that the organization where they belonged helped their community in the resettlement process (99%) and in their livelihood (92%). However, more respondents (89%) said that they were living near their families/relatives in the resettlement area. This was so because in the resettlement process, the implementers ensured that relatives were relocated near each other. Fukofuka (2011) cited that the community dynamics as influenced by culture should be a primary consideration in planning the physical infrastructure of the relocation site. Hence, according to the author in one relocation site, the implementers split the relocation area into four different sections to house the victims from four different barangays in order that they live amongst relatives and people they know.

Social capital relates to the resources available within communities in networks of mutual support, reciprocity, and trust. The social capital of a society includes the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development (Grootaert & Bastelaer 2002). The organization where the respondents belong and the project implementers of THXP have been supportive by providing assistance during the resettlement process. Hence, the mutual support and reciprocity is evident in the resettlement area.

It can be noted, however, that there is a decrease in the mean score for social capital from 3.83 to 3.77 after resettlement. The respondents believed that participation ( $p = 0.046$ ) and assistance provided by organizations ( $p = 0.033$ ) where they belong decreased after resettlement.

In summary, there is a difference in the human, financial, and social capitals before and after resettlement. In terms of natural capital, there was a decrease attributed to the absence of forest in the resettlement site, hence, the communities can no longer practice swidden farming. However, there is an increase in the physical capital because the amenities in the community like road, housing, electricity, school facilities, among others, were provided through the resettlement project.

The overall (all capitals) weighted mean score generally decreased from 3.82 before resettlement to 3.61 after resettlement due to the decrease in the human, natural, and social capitals. Meanwhile, the physical capital and financial capital (due to wage labor) of the resettled families improved with resettlement (Table 12).

In general, the statistical values imply that resettlement has significant effects on the households' capital assets. It has decreased primarily their natural assets. Human and social capital likewise decreased though at a lower degree. On the other hand, it has increased their physical capital at the most (Table 13).

There is a significant reduction in the income of the communities after the resettlement due to the loss of income from swidden farming. The decrease in income significantly changed the economic status of the households. De Wet (2006) indicated that in resettlement, people are left socio-economically worse-off

**Table 12.** Overall assessment of the resettlement outcomes on the households' capital assets.

| Capital Assets | MEAN SCORE          |                    |
|----------------|---------------------|--------------------|
|                | Before Resettlement | After Resettlement |
| Human          | 4.26                | 4.08               |
| Natural        | 4.37                | 2.96               |
| Financial      | 2.69                | 2.94               |
| Social         | 3.83                | 3.77               |
| Physical       | 3.97                | 4.32               |
| <b>Overall</b> | <b>3.82</b>         | <b>3.61</b>        |

**Table 13.** Summary of results on paired samples t-test analysis on impact of resettlement on households' capital assets.

| Capital Assets | t       | df | p    | Significance |
|----------------|---------|----|------|--------------|
| Human          | 7.765   | 83 | .000 | Significant  |
| Natural        | 49.915  | 83 | .000 | Significant  |
| Financial      | 19.255  | 83 | .000 | Significant  |
| Physical       | -25.388 | 83 | .000 | Significant  |
| Social         | 4.132   | 83 | .000 | Significant  |

than before. The scenario stressed by De Wet is in congruence with some of the findings in the study where the respondent-beneficiaries in the resettlement area experienced a reduction in income in general. Case studies revealed that forced relocation or involuntary resettlement under many development projects, if unmitigated, can pose major socio-economic risks to displaced populations (Survival International 2010; Cernea 1995; Downing 2002).

### CONCLUSIONS

1. The communities were well compensated by the THXP in terms of the value of their residential and productive land. The compensation package given to the communities is more than enough to start a new life in the resettlement area. However, the compensation package will not last long, maintaining or increasing their income is what matters most. Thus, the communities were unsatisfied with the limited availability of job opportunities in the area. There were a few, however, who were not satisfied with the compensation.
2. The houses were grouped according to tribes taking into consideration the ethnic differences. The existing condition in the resettlement communities is quite different from their previous place of residence. The physical capitals of the resettled communities are much improved. The houses in the resettlement area highly improved because they are made of concrete materials in contrast before which were made of local light materials that are not safe whenever there is a strong typhoon.

The basic needs of the communities are present in the area. This implies that the THXP has been good in providing for the resettlement areas. It is socially and economically acceptable to the communities thus, their level of satisfaction is generally high.

3. The t-test values implied that resettlement negatively affected the income and livelihood of the households. Particularly, the results suggest that household income from rice, vegetable, tree, and cash crop farming; fishing; livestock production; and hunting decreased after resettlement. Nonetheless, resettlement provided wage income for some households. Consequently, aggregate income considerably decreased, hence, the respondents believed that they became poor after resettlement. Income turned out to be from more than enough to be just enough for food and clothing after resettlement. On the other hand, resettlement made income of households from sufficient to more than enough for medicine and education. Resettlement also provided permanent shelter for households. In terms of land allocation, resettlement made land for rice farming available to respondents while land for vegetable garden and shifting cultivation decreased and became inaccessible, respectively. Likewise, the number of livestock raised declined after resettlement.

The households' capital assets which include human, natural, financial, and social generally decreased specifically on skills related to livelihood; safety in place of residence, self-fulfillment, air and soil quality, quantity of rice and crop yield, access to forest resources, quantity of firewood, fish, and other sea foods; sufficiency of income, regular and other source of income, savings; size of land being used for farming, security of land tenure; participation and assistance provided by organizations where they belong, were lessened after resettlement. On the other hand, the quality of drinking water greatly improved and the VDF, road, transportation, electricity, communication system, school, hospital, and market became available and accessible after resettlement.

## RECOMMENDATIONS

In the light of the results, the following are recommended for a more successful resettlement program:

1. The three tribes in the community should maintain their culture despite transfer of location. Further, the respondents should continue to exert effort in sending their children to school despite their low income. The respondents should aim completion of college education of their children to improve their knowledge and skills related to livelihood. This will lead to good employment, thereby tremendously augmenting their household income.
2. There is a need to provide assistance to the resettlement community to increase income. To achieve this, the THXP should provide livelihood trainings for the community to have additional sources of income. The THXP should also coordinate with concerned institutions on how they can assist the resettled communities.
3. The THXP should initiate the formation of a cooperative that can help increase the community's social capital. Both THXP and government institutions should work together in organizing a people's organization (an association or a multi-purpose cooperative) in the area so the community can put up activities to bind them together, increase trust among each other, and develop linkages with other institutions internally and externally. The THXP and government institutions

should continue assisting the resettlement community particularly in creating networks/linkages for sustainability of livelihood to uplift their living conditions.

4. The TXHP should initiate community-based efforts to maintain the road condition in the communities to easily transport agricultural products. Good roads can highly increase marketing linkages. Concrete roads in the community could decrease the number of hours for travelling and can enhance marketing of agricultural products. Maintenance of the road network can be achieved through the people's organization, which will take charge of implementing road maintenance activities.
5. The THXP should consider the location of future resettlement sites. General assessment of the area should be done in order not to reduce the income of the community. The sustainable livelihood framework should be considered in designing a resettlement plan particularly in restoring the livelihood of the affected communities.
6. To ensure the effectiveness of future resettlement projects, the following elements should be made component parts of the process:
  - a. Socio-economic profiling of affected households to identify their needs and demands;
  - b. Vigorous IEC activities to properly inform the settlers of their rights and options;
  - c. Institutionalized feedback mechanism to record complaints and backlogs; and
  - d. Appropriate monitoring and evaluation to determine progress and effectiveness of the resettlement project.

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