Dam-Induced displacement and resettlement in Vietnam

The risk of impoverishment and applied adaptation strategies

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ABSTRACT

This research focuses on the risks that resettled and displaced communities are vulnerable to and the adaptation strategies they apply. Based on the Impoverishment Risk and Reconstruction model by Cernea (2000), 6 risks are identified that could lead to impoverishment. In addition, this research emphasizes the role of people as active participants on their livelihood outcomes, through the adaptation strategies they apply. To measure this exposure, this research was conducted in Bo Hon village in Thua Thien Hue province. This community was resettled in 2006, after the construction of Binh Dien hydropower dam. Through surveys and interviews, data on the situation before and after resettlement was collected. In addition, a comparative analysis between Bo Hon and Kon Tôm village is provided in order to broaden the understanding of risks and adaptation of resettled communities. The results of this research revealed that both inhabitants of Bo Hon and Kon Tôm were exposed to risks that caused impoverishment. However, the severity of their situation varied strongly. Households in Bo Hon applied several adaptation strategies, which decreased the impact of resettlement. The extent to which the community could access livelihood capital led to the differentiation in the application of adaptation strategies. This enabled residents of Bo Hon to better cope with the transition from pre- to post-resettlement. Nevertheless, the living standards before resettlement were not attained.

Keywords: *Resettlement, displacement, dams, hydropower, risks, impoverishment, adaptation strategies, livelihood, Vietnam*

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
CID	Conflict-Induced Displacement
CORENARM	Consultative and Research Center on Natural Resource Management
CPV	Communist Party of Vietnam
CSRD	Centre for Social Research and Development
DIDR	Development-Induced Displacement and Resettlement
EIA	Environmental Impact Assessment
FPIC	Free Prior and Informed Consent
GDP	Gross Domestic Product
Ha	Hectare
KwH	Kilowatt hours
IRR	Impoverishment Risk and Reconstruction
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
NGO	Non Governmental Organization
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goals
MIT	Ministry of Industry and Trade
MNRE	Ministry of Natural Resources and Environment
MW	Mega Watt
PC	People's Committee
PDR	People's Democratic Republic
SEDS	Socio-Economic Strategy
SLA	Sustainable Livelihood Framework
USD	United States Dollar
VND	Vietnamese Dong
WB	World Bank
WB3	World Bank 3
WCD	World Commission on Dams

1. INTRODUCTION

The 20th century saw an accelerating growth of the construction of large dams. The number of dams increased from 5000 in 1949 to over 45000 dams in over 140 countries by the end of the 20th century. This growth is especially noticeable in developing countries, since dams are promoted as instruments for development. These countries are faced with ongoing trends such population growth, economic growth and urbanization which are putting pressure on water, food and energy needs (Bartle, 2002; Bui, Schreinemachers, & Berger, 2011; WCD, 2000). Dams have the ability to support development, by meeting those needs through irrigation or hydropower development (WCD, 2000, ICOLD, 2013).

Although dams have the ability to contribute to economic development and meet in the world's energy supply in a sustainable way, there has been a public debate about the costs and benefits that accompany these projects (Bartle, 2002). Significant concerns have been raised regarding the social impact they can cause. Dam development in many cases has led to the involuntary displacement and resettlement of an estimated 40 to 80 million people across the world (Robinson, 2003; Bui, et al., 2011; WCD, 2000). The forced displacement for the purposes of economic progress through development projects refers to a broader concept of Development-Induced Displacement and Resettlement (DIDR).

Several studies (Bui, et al., 2011; Cernea, 1997; Cernea, 2003) point out that DIDR leads to negative impact on the living standards and livelihood outcomes of displaced communities. DIDR often affects the most vulnerable in society and can lead to their impoverishment (Cernea, 2003). Forced displacement is more than just the physical relocation of people; it has the potential to destroy people's lives economically, physically, culturally and socially, leading to the impoverishment of current and future generations (Maldonado, 2012). According to Robinson (2003, p. 6) "Impoverishment and disempowerment have rather been the rule than the exception with resettled people due to development projects".

Hydropower in Vietnam

Vietnam is an exemplary case of a developing country whose economic growth surpasses the capacity to supply in growing energy needs. Between 1990 and 2010 Vietnam has achieved rapid growth averaging an annual 7,3% (World Bank, 2011). In order to maintain and stabilize their economic position, the country is focusing on becoming a modern and industrialized society by 2020. To meet their rising energy demand, Vietnam is increasingly involved in hydropower projects. By 2015, the government has planned to supply two thirds of the country's energy need through hydropower. In 2007, hydropower already accounted for an estimated 40% of the total electricity production (Dao, 2010). However, the construction of large dams has resulted in the involuntary resettlement of local communities. One of the largest dams in Vietnam, Hoa Binh, has flooded up to 20,000 hectares[1] (ha) of land and displaced 58,000 people and the Yali Falls dam displaced more than 6,000 people (Dao, 2010). According to a recent article by Bui & Schreinemachers (2011) over 200,000 people in Vietnam have been displaced and resettled due to the construction of dam projects.

[1] 1 hectare = 10.000 sqaure metre

In line with national guidelines on industrialization and modernization, Thua Thien Hue province in Central Vietnam, has set out annual economic growth grates in order to be developed by 2020. Following the national trend, several hydropower dams have already been constructed and the province is committed to constructing additional dams in the future (McLinden-Nuijen, 2011). As a result of the construction of Binh Dien hydropower dam, the community of Bo Hon village has been resettled in August 2006.

1.1 RESEARCH OBJECTIVES

This research is an explorative and comparative research, which aims to gain more in-depth knowledge on the vulnerability to risks due to dam-induced displacement and the associated adaptation strategies to overcome these risks. The overall objective is to increase the academic knowledge on adaptation strategies of dam-induced displaced communities. For practitioners, the aim is to create awareness amongst policymakers to improve the guidelines on future resettlement planning and better facilitate the resettlement process. In addition, this research aspires to make a contribution to the PhD research of Pham Huu Ty on resettlement and displacement due to hydropower development in Vietnam. To be able to reach the aims described above, the main question guiding this research is:

To what extent are involuntarily resettled communities vulnerable to risk and if present, which adaptation strategies do they use to cope with experienced risks due to dam construction in Thua Thien Hue province?

This research focuses on the resettled community of Bo Hon village. In addition, a comparative analysis of Bo Hon and Kon Tôm is provided in order to contribute to further understanding of risks and adaptation strategies of resettled communities. Both communities have been resettled due to hydropower development and are located in Thua Thien Hue province. The collection of data in both villages has been done in collaboration with Daniel Koster (Master student Sustainable Development). This joint effort resulted in a comparative analysis, which is presented in both this thesis and the research conducted by Daniel Koster (2013).

1.2 RESEARCH NEEDS

Several scholars point out that there is extensive literature on the experiences of resettlement by DIDR (Cernea, 2003; McDonaldsen-Wilmsen & Webber, 2010; Stanley, 2004). However, little research has been conducted on the responses of resettled communities and their mechanism of cooping and adapting to external changes. The processes of adaptation and resilience of communities is broadly discussed in studies pertaining to refugees and environmental change. Despite its importance, DIDR literature has neglected this aspect of the resettlement process. Therefore, the adaptation strategies of resettled communities are a central part of this research. This will provide additional insight for further conceptualization of people as active participants of the outcomes of dam-induced displacement.

1.3 Research structure

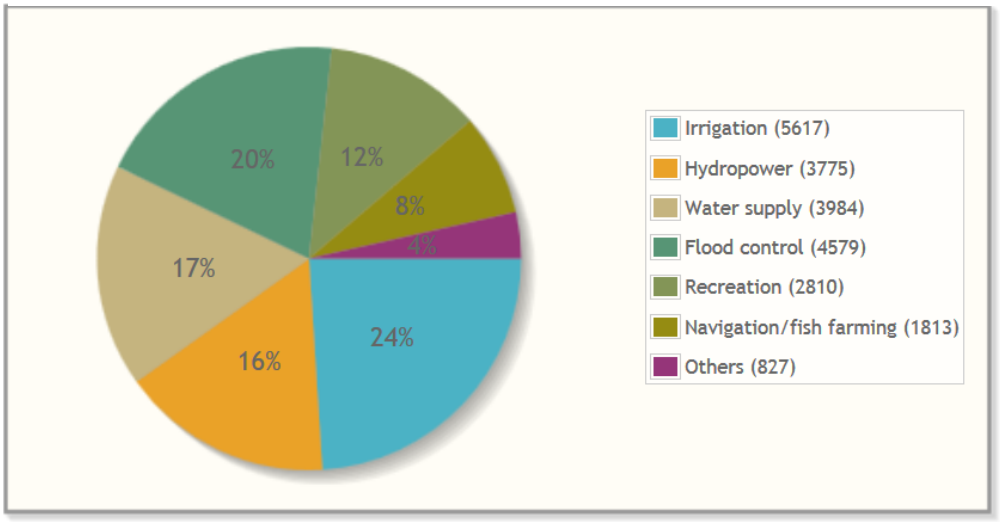
This thesis starts with a theoretical framework which will provide insight into the general concepts and theories used to guide this research. This framework is followed by a chapter on the national and local context in which this research takes place. Thereafter, the methodology discusses the methods for data collection and conceptualization of measurements variables. Subsequently, the findings and analyses of the conducted fieldwork are presented. First, the resettlement process of Bo Hon is outlined, followed by a risk analysis for the entire community and analysis of inter-community differentiation. Then, the applied adaptation strategies are elucidated. A comparative chapter is added to provide additional insight into the risks and adaptation strategies. Finally, the conclusion will attempt to answer the research question and the discussion will address what implications the outcome will have for theorists and practitioners.

2. Theoretical Framework

2.1 Dams: Costs and benefits

Between 1930 and 1970, the development of large dams was perceived by many as the equivalent to progress and economic advancement. It was portrayed as an image of modernization, which accelerated the construction of large dams during the 20th century. In this period, the construction of dams increased from 5000 in 1949 to over 45000 dams in over 140 countries. The first growth was noticeably in Europe and North-America after the Second World War. After the 1970's a decline was apparent, as technically attractive sites were already developed. However, over the last two decades there has been an increase in investments of dams in developing countries. In these nations dams are being promoted as a mean for reaching development due to the numerous benefits that they can deliver (WCD, 2000). Especially irrigation and hydro energy are believed to play a vital role in poverty reduction and the economic development of societies. In 2000, dams were responsible for 19% of the world's generated electricity and irrigated 30% of all irrigated agricultural land (Dufalo & Pande, 2005).

Figure 1: Distribution of purposes of multipurpose dams worldwide



Source: ICOLD, 2013a

The International Commission on Large Dams (ICOLD), a non-governmental organization (NGO) founded in 1928, perceives dams as necessary in order to control increased demands for water resources for the entire world population. In particular, developing countries have to be ensured of this resource to raise their standard of living, since they are less able to cope with rising water demand compared to wealthier nations. Especially multipurpose dams are preferred while they are able to deliver multiple benefits to developing countries (figure 1) (ICOLD, 2013b). These benefits include (ICOLD, 2013b):

Flood control: The storage of water in reservoirs can manage river levels and the occurrence of downstream flooding. Especially a water management plan of a dam can control the storage and release of water, which can decrease the chance of floods. Flood control remains to be one of the main purposes of large existing dams and those currently under construction.
Water supply for domestic and industrial use: Water is essential to all people worldwide, but supply remains insecure to 80% of all people. Through storage of water in reservoirs, dams are able to provide a consistent supply of water in times of shortage. In order to operate, industrial facilities need large amounts of water per day, which can be provided to them through the existence of large dams.

Irrigation: With a rising world population, irrigation is necessary in order to increase food production. By 2025, approximately 80% of food production will originate from irrigated land. For this reason, the construction of reservoirs will be necessary in the near future.

Hydropower: Plants which generate hydroelectric power can supply millions of people with electricity. Annually, all hydropower plants worldwide produce over 2.3 trillion kilowatt hours (Kwh) of electricity. In addition, hydro electricity generated by dams is the largest renewable energy resource. It can respond to large demands of energy, which is particularly essential in countries that have rising energy demands as a result of urbanization, population and economic growth.

In addition, the World Commission on Dams (WCD) (2000) has published a report on dams and development. This commission was established in 1997 by the World Bank (WB) and the World Conservation Union (IUCN) for the purpose of research on the global impacts of large dams. The commission is comprised of 12 members, which all represent different views on the impact of dams. The report identified benefits which include:

Employment and Services: dams are able to create employment opportunities for the local population during the construction phase. There also is a possibility that access to education, the market and health facilities for communities increases.

Navigation: Dams and reservoirs can create conditions which are favourable to inland transport. The natural conditions of rivers can change over time (e.g. erosion and sedimentation), which hinders inland navigation.

Although there are numerous potential benefits that accompany dam construction, this can mask the potential cost (Dufalo & Pande, 2005). The WCD report (2000) also recognized the costs of large dam construction. Provided below is an overview of both the environmental and social impacts.

Environmental impacts

According to the WCD (2000), large dams have multiple impacts, which can lead to disruption of an ecosystem. First, dams change the physical and the geomorphical flow of a river. As a result, there can be a change in fauna (e.g. fish). River alteration can also lead to less biological productivity of an ecosystem. For example, less plankton is available or certain plant-life diminishes. As a consequence fauna can also change, since less food might be available to them. In addition, the flooding of land due to a reservoir can result in loss of habitat for flora and fauna and degradation of land (e.g. sedimentation, soil fertility). Another impact is the emission of green house gases, like methane and carbon dioxide, through the disruption of the downstream flow of organic carbon. Unfortunately, efforts to reduce the impacts of dams on ecosystems have been limited over time.

Social impacts

The construction of dams can have impact on "people's livelihood, health, socials systems and cultures" according to WCD (2000). Alteration of a river system has impacted the lives of those depending on the river for economic purposes and as part of their culture. For example, fishing is not only an activity to generate income, but also is a way of living. Dams can reduce or even diminish the amount of fish in a river, which can lead to severe livelihood changes for people. In turn, less food or water can result in health issues for river-depended communities. Another potential cost of constructing dams is the displacement that they can cause (Dufalo & Pande, 2005). Although there remains to be uncertainty of the actual amount of displaced people by dam construction, an estimated 40 to 80 million have been involuntary displaced worldwide (WCD, 2000). Their displacement can result in their impoverishment, which will be elaborated on in the following section.

2.2 DEVELOPMENT-INDUCED DISPLACEMENT AND RESETTLEMENT

Projects aimed at bringing development have the ability to improve the lives of many people and contribute to local and national economic welfare. The concept of development is defined by Oliver-Smith (2001, p.12) as the process through which the productive forces of economies and supporting infrastructures are improved through public and private investments. Nevertheless, physical development projects can result in the displacement of, often poor, communities (Cernea, 1997; Stanley, 2004). The involuntary displacement of people for the goal of economic development through development projects defines the concept of development-induced displacement and resettlement (DIDR) in this research (Dao, 2010, p.234). Although displacement and resettlement are often used interchangeably, there is a clear distinction between both concepts. Displacement is the actual movement of people, whereas resettlement entails more than only the movement of a community to another location. It is a complicated process, which involves policies, planning and participation of organizations on multiple levels to relocate people (Dao, 2010).

DIDR is a worldwide issue that already displaced millions of people. Between 1990 and 2000 the WB estimated that around 10 million were displaced due to infrastructural development projects (Cernea, 1997). There are several types of infrastructural development projects which can lead to displacement and resettlement. However, the construction of dams contributes to the largest share of the number of displaced people. Annually, a reported 40% of development-induced displacements are a result of dam projects (Stanley, 2004). Although displacement was accepted as a necessary evil to develop, the paradigm has been shifting more towards resistance to DIDR due to the recognized

effects of displacement on people's lives (Oliver-Smith, 2001). Displacement due to development projects can expose people to risks and lead to their impoverishment (Cernea, 1997, Cernea, 2003). According to Stanley (2004) there are only a few examples of displacement and resettlement which had positive outcomes for the communities involved.

2.2 RISKS & DEVELOPMENT-INDUCED DISPLACEMENT AND RESETTLEMENT

To draw further upon DIDR, the Impoverishment Risks and Reconstruction (IRR) model by Cernea (2000) presents the major risks to which displaced and resettled people are vulnerable to. This research is guided by this model, which attempts to identify the different impoverishment risks that are intrinsic to displacement (Stanley, 2004). Michael Cernea, a sociologist working for the WB, has done several studies for over 20 years on development-induced displacement. He identified 8 different impoverishment risks, which are:

1. Landlessness

Land functions as essential basis for the livelihood of people, their productive system and for economic purposes. The loss of land due to displacement has the ability to affect all these facets of people's life (Cernea, 2000).

2. Joblessness

Following displacement is an increasing risk of joblessness for people in the primary, secondary and tertiary sector. Especially in urban areas there is a high risk of people who may lose their job in the secondary or tertiary sector. In rural areas there is a higher risk of unemployment in agriculture. Landless farmer may lose their job on leased or sharecropped land. There are those who are self-employed and risks losing their business due to displacement, for example the loss of customers. After the relocation of a community, there is a visible long duration of joblessness. In the first phase after relocation the matter of joblessness is less visible due to employment of temporary nature in the project which caused the relocation. However, this type of employment is often of short duration and will end after a certain period of time (Cernea, 2000).

3. Homelessness

Diminishing housing standards or homelessness can be caused by displacement and resettlement. These effects can eventually lead to deprivation of status for a household. They experience a loss of their cultural space and their home. The reason for the diminishing standard of a house can be a cause of devaluation a house. Compensation is based on the market value rather than on the replacement value. Thus, adequate housing may not be affordable after resettlement; therefore displaced people are forced to live in temporary shelters. These shelters are often of low quality and can be compared to shelters in refugee camps. Several cases have shown that the temporality of inadequate shelter is often extended to a longer period of time (Cernea, 2000).

4. Marginalization

Marginalization can occur in the situation where people lose their economic power and have to cope with downward mobility. Human capital, acquired before resettlement, may not be applicable in their new location. Obtained skills are therefore no longer useful and can lead to economic deprivation and marginalization. Besides economic marginalization, also psychological and social marginalization can occur after resettlement. This is a possibility when people are deprived of their

social status. People experience a feeling of injustice, vulnerability or lose confidence in themselves or society. These experiences can have a negative impact on people's self-image due their victimization and the coerciveness of displacement. Another possibility is the lack of social coherence between the host community and the resettled community. The resettled community may feel perceived as socially degraded by the host community. They can feel like strangers and be denied access to entitlements (Cernea, 2000).

5. Food Insecurity

In the new area their maybe less food crop availability, which affects food security of a resettled community. Undernourishment can be an affect of resettlement if there is a decline in income or less food crop production. Rebuilding the capacity of the food crop production can take several years. During this period, the risks of undernourishment increases. In order to reduce this risk, joblessness and landlessness need to be dealt with (Cernea, 2000).

6. Increased Mortality and Morbidity

Displacement can negatively impact the level of health within a community. Resettlement can cause health issues due to stress, psychological trauma, relocation-related illnesses, improvised sewage systems and unsafe water supply. Especially, elderly and children are vulnerable to illness and deprivation of their health. The risks of 'homelessness' can also be a part of declining health level of a community (Cernea, 2000).

7. Loss of Access to Common Property

Income levels can be negatively impacted due to displacement if there is a loss of common property assets (including water bodies, quarries, burial grounds, pastures, forests etc.). Households that are depended on common property resources to generate income are the most vulnerable to this risk. If there is no protection of people's access to common property, it can stimulate the use of resources of the host community (which can stimulate conflict) or protected areas (Cernea, 2000).

8. Social Disintegration

Social constructs of communities can be heavily impacted by displacement. It can alter social patterns and relationships between households. It can negatively influences production systems, such as consumer-producer relationships, local labour markets, local voluntary associations, self-organized mutual services and reciprocal help. Therefore, involuntary resettlement and displacement can increase poverty, dependency and vulnerability of a community. Several studies have shown that rebuilding social networks is however a difficult task. In turn, displacement can diminish the cultural identity of a group due to their change of spatial context and the symbolic value of this space to the community (Cernea, 2000; Courtland Robinson 2003).

Exposure and intensity of risks differs for each context and subgroup. Some groups like women or children are more vulnerable to the above mentioned risks (Cernea, 2000).

The IRR model has been used in numerous studies to analyze the risks of internal displacement. Although this model makes numerous contributions to studies on DIDR, it has to be mentioned that the model is not all-inclusive and various researchers have indicated shortcoming or needed improvements to this model. According to Robinson (2003) there are several additional risks that

displaced people are vulnerable to. In his paper he borrows from Robert Muggah (2000) and Theodore Downing, who elaborate the following risks that are central to displacement:

Loss of access to community services
Community services comprise of a range of public services, varying from access to medical care or schooling. Robinson (2003) especially points out that loss of access to education is a short term and long term loss, which is a serious risk for the future of children.

Violation of human rights
The forced moving from one's physical living space and the loss of property, without being compensated in the right manner is a human right. Moreover, forced displacement and resettlement is disrupting the economic and social base. In this process civil rights and political rights might also be violated (Robinsons, 2003).

2.3 ADAPTATION

Besides identified risks of DIDR, this research focuses on the concept of adaptation to these risks. The concept of adaptation can be found in several academic fields, ranging from natural to social sciences. Originally, the term adaptation was used in relation to evolutionary biology in the natural sciences. In this field, the most broadly taken definition refers to the evolution of genetic or behavioural characteristics of organisms, which conditions them to cope with changes in their environment in order to reproduce and survive. Anthropologist initially applied the concept of adaptation in relation to culture. Culture was able to survive external changes due to 'cultural adaptation'. In this research the concept of adaptation it borrowed from recent academic work in the field of social sciences. In this field it refers to the ability to adjust in a system's behaviour and characteristics that enhance the ability to reduce vulnerability to external stresses and risks (Barnet, 2008; Smith & Wandel, 2006; Smith & Pilifosa, 2003). Adaptation is the processes or action of a system (group, community or country) in order for that system to better adjust to changing conditions in their environment (Smith & Wandel, 2006). In order to analyze the degree of adaptation of a system, Smith & Wandel (2006) point out that the concepts of adaptation, vulnerability, adaptive capacity, resilience, exposure and sensitivity must all be taken into account due to their interconnectedness. All these concepts will be shortly elaborated on in the following sections.

2.3.1 VULNERABILITY

In general, vulnerability refers to the degree to which a system is sensitive to change and the ability (or capacity or resilience) to cope with external changes. It is a dynamic concept, as it changes over time and space and is subject to various factors which influence it (Adger, 2006; McLeman & Smith, 2006). In addition, the institutional environments in which the adaptations occur also play a role. The vulnerability of a system also depends on sensitivity and exposure levels of a system. The sensitivity and exposure of the system to a risk, represents the likelihood that the system will experience the risk. Vulnerability rises when sensitivity and exposure levels increase. These two concepts are almost inseparable variables, which are part of a system. Thus, sensitivity and exposure significantly influence the vulnerability of a system (Smith & Wandel, 2006).

2.3.2 ADAPTIVE CAPACITY

Adaptive capacity refers to the ability of the system to cope with the external conditions, to which it is exposed, and evolve (Adger, 2006; McLeman & Smith, 2006). Adaptation can be seen as manifestations of adaptive capacity by the system in order to decrease vulnerability (McLeman & Smith, 2006; Smith & Wandel, 2006). According to Smith and Pilifosova (2003) vulnerability has a positive relation to exposure to risks and stresses, while adaptive capacity has a negative effect on vulnerability. Thus, the vulnerability of a system depends on its ability to adapt (Brook et al., 2005). Therefore, enhancing adaptive capacities can reduce vulnerability of a system. Furthermore, it has close relations to other concepts such as flexibility, coping ability and resilience (Smith & Wandel, 2006). According to Adger, Huq, Brown, Conway, & Hulme (2003) all societies in their origin are adaptive and are able to cope with external changes. Similar to vulnerability, adaptive capacity is determined by context specific factors, varying from community to community and are flexible and dynamic over time. Local adaptive capacity mirrors broader circumstances of the community. Factors such as access to financial resources and infrastructure can influence the degree of adaptive capacity on a local level. External factors can also increase or decrease the adaptive capacity of a community over time (Smith & Wandel, 2006).

2.3.3. RESILIENCE

Emerging as a concept in the 1960's, the ecologist C.S. Holling first defined the concept of resilience as the capacity within a system to endure certain changes it is faced with (Janssen & Ostrom 2006; Folke, 2006). In the 1980's the application of the concept was more often used in academic fields outside ecology. It became more influential in fields such as anthropology, human geography and environmental psychology. According to Folke (2006) in today's literature resilience can be defined as the capacity of a system to absorb the disruption of a system and re-organize itself while undergoing change while still maintaining its original identity or structure. The adaptive capacity of a system is translated by resilience into actual adaptation. Essentially, resilience is the ability to take advantage of given resources in order to transform and respond to change. Thus, resilience of a system is high when it is able to use adaptive capacity and resources on a pre-emptive and proactive manner (Maguire & Cartwright, 2008).

2.3.4 ADAPTATION STRATEGIES

Resulting from vulnerability, adaptive capacity and resilience are actual strategies (or actions) which an individual, community or country can apply. In line with the previous concepts, adaptation strategies are not a static concept, but are able to change over time and space (Smith & Wandel, 2006). In the situation were households experience a lack of adaptive capacity and remain vulnerable to external shocks, they may be compelled to implement their own adaptive strategies (Bui et al, 2012; McLeman & Smith, 2006). Involuntary resettlement can be viewed as one such type of external shock (Bui et al, 2012).

In two specific studies of Bui & Schreinemacher (2011) and Bui et al., (2012) on the impacts of the Son LA hydropower project on livelihoods in Vietnam, they found two adaptation strategies which resettled communities applied. Although these strategies are context specific, they are worth mentioning to illustrate sudden change in their environment due to involuntary resettlement.

Land use intensification: The resettled household in the study of Bui & Schreinemacher (2011) and Bui et al., (2012) lost substantial income due to resettlement. According to their data, changes in quality of land have a strong relationship with change in income. The absence of arable land in the resettled community reduced crop output and therefore reduced their income. An adaptation strategy applied was the intensification of their land through increased use of fertilizer and increased cropping of rice, in order to increase their crop output.

Change in income generating activities: Another strategy identified by Bui & Schreinemacher (2011) and Bui et al., (2012) is a change of income generating activities. Collected data from two villages showed that before resettlement household were depended on fishery for income. After resettlement there was no access to the river, however access to the forest allowed household to extract more resources from the forest. This shift in access to natural resources replaced the income generated from fishery by income from forest related products.

Extensive literature on adaptation strategies in relation to involuntary resettlement due to dam construction remains little. However, academic literature on adaptation strategies following after displacement due to environmental change is more extensive. According to McDonaldsen-Wilmsen & Webber (2010) theories and approaches from broader forced migration studies, such environmental-induced displacement, can be complementary to DIDR. Hence, this research draws upon approaches on adaptation strategies from the academic field of environmental migration. One of the main strategies written about in forced displacement due to environmental change is migration.

Migration: In the situation were a household experiences changes in their environment which they are unable the cope with, they are vulnerable and can turn to their own adaptive strategy. Migration for the entire household or some members of the household can be an applied strategy to cope with vulnerability (McLeman & Smith, 2006). Also livelihood studies by Serrat (2008), Kollmair & Gamper (2002) and Scoones (2009) have identified migration as a strategy which can result in livelihood outcomes, such as an increase in income (through remittances), food security and a reduction of vulnerability.

Analyses on community level revealed that conditions that shape exposures, sensitivities, adaptive capacity, and thus create needs and opportunities for adaptation, are community specific (Smith & Wandel, 2006).

2.5 LIVELIHOOD CAPITALS

As mentioned before, vulnerability is influenced by external factors as well as access to sources. Access to these resources can decrease vulnerability of an individual or community. Therefore, this research elaborates on the sustainable livelihood approach (SLA) which provides a framework in understanding access to capitals in relation to strategies and livelihood outcomes (figure 2). The concepts of the SLA was designed by Robert Chambers in the 1980's and used to improve development outcomes for development organizations. In this approach Chamber defines a sustainable livelihood: *'A livelihood comprises the capabilities, assets (including both material and social resources) and activities for a means of living. A livelihood is sustainable when it can cope with*

and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base'.

Internal factors

The framework identifies the main influences on people's livelihood. According to the framework a livelihood operates is the context of vulnerability. As stated in the above, vulnerability is influenced by external factors, which are identified in this framework as shocks and stresses which the livelihood is unable to control. In turn, a livelihood has access to capitals which can have a positive livelihood outcome (Kollmair & Gamper, 2002).

Human capital: This capital can have represents several explanations, such as skills, knowledge, the ability to labor and health. All together they facilitate the application of various livelihood strategies (Kollmair & Gamper, 2002).

Natural capital: Natural resources such as land and water are favorable for the outcomes for livelihood strategies and outcomes. This capital is closely related to the context of vulnerability as external shock (natural disaster) often affects natural capital (Kollmair & Gamper, 2002).

Social capital: This capital comprises of social resources of a livelihood, such as a social network or membership of a formalized group (Kollmair & Gamper, 2002).

Physical capital: Infrastructure has a supportive function for a livelihood, such as transport that is affordable, water supply and sanitation and access to energy. Often the poor are lacking in access to affordable infrastructure. Thus, not only the physical existence of infrastructure is important, but also the prices of the use of infrastructure (Kollmair & Gamper, 2002).

Financial capital: This capital comprises of the financial resources in order to aplly various livelihood strategies and strives for their desired livelihood outcomes. Financial resources can comprise of available stock or regular inflow of money. Although not often available for the poor, this form of capital can be transformed into other capitals and has the most variable use. For example, financial capital can be used to be food in order to decrease a livelihoods food security (Kollmair & Gamper, 2002).

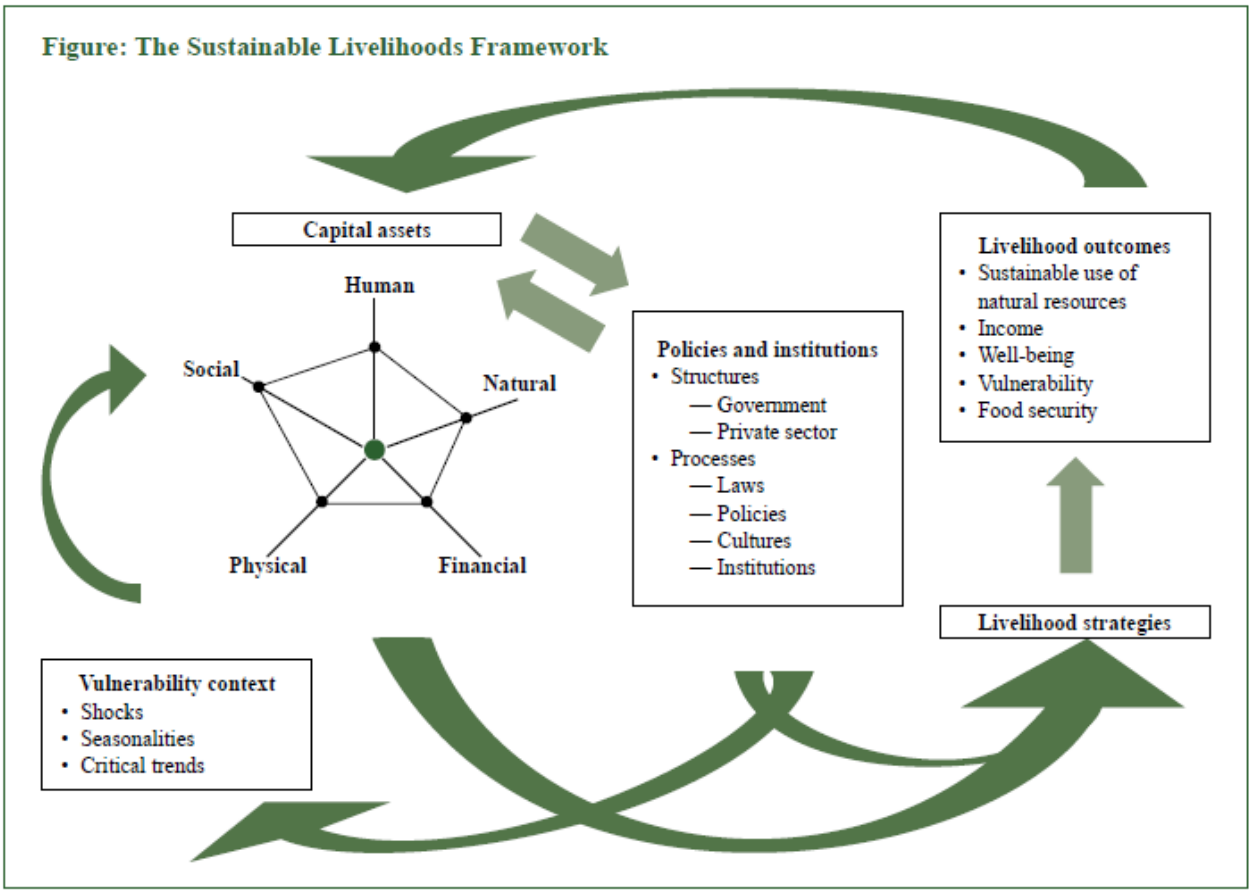
People need access to a variety of these assets in order to lead to a desired livelihood outcome. In order to achieve these livelihood outcomes, livelihood strategies are applied. They are the activities or action that people undertake in order to achieve desired outcomes. The change in the collection of assets can hinder or enable strategies (Kollmair & Gamper, 2002).

External factors

The access to livelihood capitals is also influenced by external stresses and shocks. In turn these shocks create the context of vulnerability and determine the access to capitals in order to create strategies and livelihood outcomes (Kollmair & Gamper, 2002). Dam-induced displacement can be seen as such an external factor that causes vulnerability. In order to decrease vulnerability due to dam displacement, several scholars (Cernea, 2003; Robinson, 2003; Maldonado, 2012; Stanley, 2004)

argue that the consequences of resettlement depend on how resettlement is negotiated, planned and executed.

Figure 2: The sustainable livelihood framework



Source: Kollmair & Gamper, 2002

For a long time there were no guidelines on involuntary resettlement for the funders of dam projects. These funders (governments, international donors or private developers) merely concerned themselves with the legal process of resettlement and compensation, but not with policies or guidelines that could avoid impoverishment (Stanley, 2004). The WB took the first initiative 20 years ago to make resettlement an integral part of planning and implementation of development projects (Robinson, 2003). In 2000 the WCD report concluded that the constructions of dams worldwide are leading to negative outcomes for displaced communities. In order to reduce these outcomes the WCD set up a list of seven strategic recommendations that were initially welcomed by countries, but were neglected in policy and practice. Thus far, the outcomes of dam-induced displacement have not improved, while impoverishment is still an outcome (McDonaldsen-Wilmsen & Webber, 2010).

According to Cernea (2003) one particular shortcoming of policies, regarding resettlement is the focus on financial funds to compensate with the losses that resettled community's experience. Initially Cernea acknowledges that compensation is necessary and a mechanism that can have a positive purpose that needs to remain a part of resettlement policies. However, financial funds alone cannot be the only compensation mechanism, for it is unable to cover both the economic and social losses. There are various underlying causes for this, including the undercounting of assets that should

be compensated, low valuation of assets, compensating for non-physical losses and compensation delays (Cernea, 2003). In order to support communities after resettlement and restore their livelihood, there should be development assistance besides compensation. Robinson (2003) emphasizes assistance such as access to land, credit, and training or job opportunities. Compensation should not be bound to financial funds alone.

The recognition of the social impacts has often been left out in the planning of dam projects. In order to understand the social and economic losses resettled community's experience, they have to be an inclusive part of the planning and implementation process. The participation of civil society in the decision-making process has the ability to reduce negative outcomes of resettlement as it includes their view on experienced losses (Robinson, 2003; WCD, 2000). Cernea (1997) suggests that in order to reverse impoverishment and rebuild affected livelihoods there needs to be a dialogue between the actors causing displacement and the displaced. Reconstruction of the resettled community can be achieved through an all-actor strategy that involves re-settlers, local authorities, NGO's and other actors involved. An additional requirement in the communication between all parties is a high degree of transparency in the exchange of information.

Although resettlement policies can be of existence on a national level, there are obstacles which hinder the implementation and thus the effectiveness of policies. One of the major obstacles mentioned by several articles (Maldonado, 2012; WCD, 2000; Robinson, 2003) is corruption. Corruption can take several forms, such as taking bribes to favour particular contractors or a reduction in compensation for re-settlers. The WCD report (2000) acknowledges all forms of corruption as negative for the outcomes of the resettlement and should be tackled.

2.6 Free, Prior and Informed Consent

As mentioned before, several scholars (Cernea, 2003; Robinson, 2003; Maldonado, 2003; Stanley, 2004) argue that the consequences of resettlement depend on how resettlement is negotiated, planned and executed. In order to avoid impoverishment the WCD (2000) reports that public acceptance is central in the development of large dams. In order to create a sustainable outcome of the building of large dams public acceptance of decisions is necessary. Cariño (2005) defines acceptance as the recognition of rights and risks of all involved actors of dam constructions. In addition acceptance means to ensure their entitlements.

"A fair, informed, and transparent decision-making process, based on the acknowledgement and protection of existing rights and entitlements, will give all stakeholders the opportunity to fully and actively participate in the decision-making process." (Cariño, 2005)

Besides that, participation of all involved actors can increase the beneficial outcomes for all actors, even those who are resettled. In this context we address the concept participation as the notion of Free, Prior and Informed Consent (FPIC). The process of FPIC provides information for communities who may be affected by a development project. The information provided to them should cover all the potential benefits, as well as the risks that communities may be exposed to. This process ensures that they have information on their rights in order to negotiate about the conditions of the project

(Goodland, 2004). The construction of dams is a large scale and complex projects which affects various groups of people and creates risks for the actors involved. The ones who are often the most affected and vulnerable are indigenous people and women. Cariño (2005) argues that gender and equity have often been neglected in the planning process of large dams. Due to the exclusion of their voice they are exposed to increased vulnerability to risks. In order to ensure positive outcomes of development projects, their needs be a high level of participation of all involved groups. A transparent planning and decision-making process, which acknowledges actors rights, risks and entitlements, provides an opening for them to be active participants in this process. However, negotiation between actors is often asymmetrical and therefore an independent agent or facilitator is necessary to balance negotiation (Goodland, 2004).

FPIC has four main characteristics, which are (1) Freely – given; (2) Fully informed; (3) Obtained prior to a given accordance to the continuation of a project and (4) in agreement.

1. Accordance to a project must be entirely voluntary and not a forced consent.
2. Communities which have the potential to be harmed by a development project have the right to information regarding their rights and the elements of the planned project. Eventually all parties involved should be equally informed and therefore have an equal position of negotiation.
3. Consent concerning a development project should be obtained prior to the continuation of the project. This should be obtained before financing of a project is sought.
4. The actual agreement for the proceeding of a project should be entirely voluntary. Accordance should be given to all the elements of the project, its continuation and the different terms surrounding impacted community.

(Goodland, 2004).

Consultation of a community that could be harmed through a development project was a rare phenomenon before the 1980's. Since the 1990's the principle of Free Prior and Informed Consent (FPIC) became a key tool in international law which acknowledges the rights and the voice of indigenous in the development projects. Based on the information provided to potentially displaced communities, FPIC desires accordance to the development project. Ultimately the resettlement conditions should be appealing enough to create acceptance within the community leading to a voluntary decision to resettle. Consent can be accomplished by assuring the benefits of a development project through legal documents (Goodland, 2004).

To sum up, FPIC can be described as a process which is meant to improve the distribution of potential benefits between all involved actors in development projects, especially focused on indigenous communities (Goodland, 2004).

3. RESEARCH CONTEXT

3.1 NATIONAL CONTEXT

Vietnam is located in South-East of Asia, bordering the countries China, Laos People's Democratic Republic (PDR) and Cambodia (Figure 3). The country has a long and stretched shape with a total surface of 331,210 square kilometres. The narrowest point of Vietnam is only 50 kilometres. Due to the long and stretched shape, the country is home to a tropical climate in the south and monsoon and dry seasons in the North. The long coastline is 3,444 kilometres long, which strongly influences the terrain of the country. Low, flat delta can be found from north to south along the coastal line, whilst more central there are the highlands with hills and mountains reaching into the far north and northwest (CIA World Factbook, 2013).

Figure 3: Location of Vietnam in South-East Asia

Source: CIA World Factbook, 2013

Vietnam has a total population of 91.5 million (2012). Although the number of people living in urban areas is increasing, currently 70% of the Vietnamese reside in rural areas. The largest city of Vietnam is Ho Chi Min City, in the south, with 5.9 million residents. Other large cities are the capital Hanoi with 2.6 million residents and Haiphong with 1.9 million residents. The official spoken language is Vietnamese, also some French and Chinese is spoken. English is however increasingly being favoured as a second language (CIA World Factbook, 2013).

3.1.1 ECONOMY

A quarter of a century ago Vietnam was one of the poorest developing countries in the world. The country had faced several challenges during this period, such as war, loss of financial support from the old Soviet Bloc and the economic containment of a centrally planned economy (CIA World Factbook, 2013). Despite these challenges, Vietnam has shown steady economic growth over the last 25 years. Between 1990 and 2010 the country has achieved rapid growth averaging an annual 7,3%.

This growth rate is largely made possible due to the reforms from a centrally planned country to a more market oriented economy (World Bank, 2011). In 1986, at the National Congress, Vietnam's Communist Party moved away from central planning and shifted towards a 'market –oriented socialist economy under state guidance'. After this so called *Doi Moi (*Renovation), the state and society underwent their transformation (Bresford, 2008). Within 25 years Vietnam went to one the poorest countries in the world to a lower middle income country (World Bank, 2013). This growth has been accompanied by a significant reduction in poverty numbers, from 58% in 1993 to 14,5% in 2008.

In order to maintain and stabilize their economic position, Vietnam is focusing on becoming a modern and industrialized society in 2020. To achieve this goal the country is focusing on developing more social and economic reforms. For example, the Socio-Economic Strategy (SEDS) 2011-2012 focuses on social equality, environmental sustainability and issues of macroeconomic stability. The SEDS defines three main areas of interest:

1. Promoting human resources/ skills development, in particular in the modern innovation industry.
2. Remodelling and bettering market institutions.
3. Infrastructural development.

Recently, Vietnam has made steps toward economic reforms by restructuring public investments, the banking sector and state-owned enterprises. These three areas were identified by the Communist Party Plenum in October 2011 as core reform areas for the upcoming five years (World Bank, 2013). Despite these aims, Vietnam's economy still remains to be dominated by state-owned enterprises, which account for 40% of the Gross Domestic Product (GDP) (CIA World Factbook, 2013).

3.1.2 POLITICAL STRUCTURE

Vietnam is a single-party state in which the most primary decisions and policy issues are determined by the Communist Part of Vietnam (CPV). Leading the country are the CPV general secretary, state president and the prime minister. The president of Vietnam is head of the state; the prime minister is head of the government in a system led by the CPV. The executive power lies with the government and the president. The National Assembly is the legislative body of Vietnam, which over the last 25 years has developed itself to be a powerful body that can carry out the role of checking the government (World Bank, 2013). On paper, they have control over state budget, but they remain subordinate to the CPV. Thus, the national assembly is not fully operating as a democratic legislature that it should be (FCO, 2013).

In this current system, elections only occur for the National Assembly and local People's Councils, were candidates are selected by the CPV. The people of Vietnam do not have free elections or have a voice in the selection of the governing body. However, there are not many who contest this process, since legal opposition to the CPV is not accepted in Vietnam (FCO, 2013). However, changes are occurring within the CPV itself. Every five years the CPV holds a National Congress were decisions are made about the political and economic strategies. The 11th National Congress of the Communist Party was held in January 2011 and has led to some developments in the reorganization of the CPV. The Party recognizes that most members are senior bureaucrats and that a younger generation

needs to be attracted. Almost 60% of the country is below the age of 35 and Vietnamese society consists of a well-informed middle class living in urban areas. In reaction to these facts, one key development of the CPV is to move towards participation and pluralism. However, the CPV abolished the alteration of the current one-party system to become a multi-party democracy (APCO, 2013).

3.1.3 ETHNIC MINORITIES

Over the last 20 years Vietnam has shown a gradual decline of poverty reduction. The poverty rates have fallen from 58% in 1993 to 14.5% in 2008. Moreover, the reduction of poverty has been accompanied by the improved establishment of basic services, education, electricity and supply of clean water. In addition, Vietnam has been able to reach five of the 10 Millennium Development Goal (MDG) targets, which are the reduction of poverty and hunger, gender equality in school enrolment, reduction of maternal mortality and malaria control (World Bank, 2011).

Although these facts are reflecting the economic and social development of the country, they mask the unequal distribution of wealth. There is a growing gap between regions and especially between urban and rural household. Rural households often experience poverty, due to their lack of access to basic services and financial resources. This inequality is leading to an increased number of rural-urban migrations. In turn, this migration is leading to new vulnerabilities in peri-urban zones, such as less access to jobs and insufficient housing. In addition, the population that remains poor are often ethnic minorities. The World Bank (2011) pointed out that nearly half of the ethnic minorities in Vietnam are living below the poverty line and that these facts are challenges the country needs to face.

Vietnamese society has 54 officially recognized ethnic groups. The Kinh (or Viet) form the majority with 85,7% of the population. The other 14,3% comprise of 53 ethnic groups. Between the Kinh and the other ethnic groups remain large gaps in social and economic situation. The Kinh have higher liver standards and educational level than ethnic minority households. In turn, ethnic minorities face challenges, such as lower access to public services, they lack land as a factor of production and human capital (education). This is partially determined by their geographical positioning. The Kinh often live in the accessible lowlands and coastal areas, while ethnic minorities live in the isolated highlands (Dao, 2010). Another challenge is the discrimination they face when they apply for a job. Often Kinh are preferred above other ethnic groups for reasons such as education (Baulch, Haughton, Haughton, & Chuyen, 2002). According to Baulch, et al. (2002) this creates tension between various groups within the Vietnamese society. However, since 1993 there have been policies designed by the Vietnamese government to tackle the problem that ethnic minorities face. These policies are directed at improving infrastructure, providing land, livestock and education.

3.1.4 HYDROPOWER VIETNAM

As stated before, Vietnam aims to be an industrialized and modern country by 2020. Reaching this objective, together with their annual economic growth, has led to an increasing need for energy. Additionally, the country is faced with growing electricity consumption and experiencing power shortages in all sectors of society. In order to meet these demands for power, hydro energy is used as part of the country's energy generating strategies (World Bank, 2012). With already more than 8000 Mega Watt (MW) planned in over 20 plants, the country has an even greater potential for generating hydropower (figure 4). Vietnam has 10 large rivers and numerous smaller rivers, which can be lend to

develop hydro energy. The government is making use of this potential as it has been increasingly involved in the planning of large and small dams for hydro energy (Bartle, 2002). By 2015, the government has planned to supply two thirds of the country's energy need through hydropower. In 2007, hydropower was estimated to account for 40% of the total electricity production (Dao, 2010). Aside from hydropower development, Vietnam is increasingly involved in the construction of large (multipurpose) dam for two other reasons, which are:

1. With scarce amounts of land, there is a need for intensification of the agricultural land. Irrigation is necessary in order to achieve this goal and dams can assist in irrigated agriculture.
2. The long coastal line of Vietnam makes the country vulnerable to floods. With a continued risk due to the effects of climate change, dams can provide flood control in order to safeguard the country.

Figure 4: Potential for hydropower development in Vietnam

	River basin	Number of hydropower plants	Installed capacity (MW)	Annual electricity production (109 kWh)
1	*Đà*	7	6800	27.2
2	*Lô-Gâm-Chảy*	9	1500	6.0
3	*Mã-Chu*	7	760	2.7
4	*Cả*	3	470	1.8
5	*Vu Gia-Thu Bồn*	8	1250	4.5
6	*Trà Khúc-Hương*	2	480	2.1
7	*Sê San*	8	2000	9.1
8	*Ba*	6	650	2.7
9	*Sêrêpok*	5	730	3.3
10	*Đồng Nai*	15	2900	11.5
	Total from plants with a generating capacity >30 MW/plant	70	17,540	70.9
	Total small hydropower plants with a generating capacity <30 MW		7000	30.0
	Total		24,000-25,000	100.0-110.0

Source: Dao, 2010

3.1.5 POLICY ENVIRONMENT

The policy environment on resettlement in Vietnam can be divided in two periods, one period before 1993 and a period after 1993. This year marked a change in guidelines on resettlement and changed legal aspect of land and resettlement (Dao, 2010; Yen, 2003).

Before 1993

Land is legally owned by the state and they have the power to decide for which purposes land is used. The process of resettlement was perceived as a simple process which entailed the moving of people to new places by Agricultural Cooperatives or communes' People Committees. This process did not consider reconstruction of people's livelihood and seldom included compensation. Policies and guidelines on the matter were few (Dao, 2010; Yen, 2003).

After 1993

In 1986, Vietnam moved away from central planning and shifted towards a more market oriented economy. The Doi Moi policies set in place were accompanied by increased investments and development. Involuntary resettlement became more frequent as development projects started to increase and in turn more attention was awarded to this problem. Guidelines and policy documents were developed linked to resettlement (Yen, 2003). Additionally, there were two laws that improved resettlement policies and the planning of development projects. The first law is the Law on Land, which was renewed from 1987 and came into force in 1993. This law defines matters of administration, rights and obligations of land users and land tenure. The land in Vietnam belongs to all Vietnamese and is under administrative power of the State. The State is responsible for the allocation of land and protects the legal rights of the land users. If the state allocates land to a household of individual, they have the right to exchange, transfer or rent this land. However, the State does have the power to regain land for public interest or security reasons. In a case were the State retrieves land, the land user is entitled to financial compensation (Yen, 2003). The second law was the Environmental Protection law (1995) that required an assessment of environmental impact before the start of development projects (Dao, 2010).

During the following years Vietnam saw an increase of policies on the planning and implementation of the resettlement process. Investors who funded projects which led to resettlement were accountable for the resettlement process of a community. With the involvement of the IMF (International Monetary Fund), ADB (Asian Development Bank), JICA (Japan International Cooperation Agency) and the WB as donors for funding development projects, the policy environment changed. Especially the WB pressured the implementation of a national resettlement policy. In 1997, an agreement was reached between the WB and the Vietnamese government that could be enforced in national development projects (Dao, 2010).

In 1998 more attention was given to the component of compensation in resettlement policies. Those who are resettled have the right to receive compensation for losses of land and other associated assets. In 2003, local authorities were accountable for policy implementation on resettlement instead of project funders. These authorities are perceived as able to understand local needs and therefore create better conditions for the resettlement process. In 2000 the WCD wrote a report with recommendations and guidelines to improve the conditions of the resettlement process due to dam constructions. The Vietnamese version of the report was developed and was diffused through the Ministry of Agriculture and Rural Development (MARD) to central and local water stakeholders (Dao, 2010).

As a reaction to the high number of planned hydropower project in Vietnam, several NGO's started to advocate the recommendations of the WCD. Initiatives from NGO's are increasing and spreading

the knowledge on resettlement in order to improve future outcomes for resettled communities. Although the awareness on resettlement from organizations such as NGO's remains necessary, the countries commitment to increase the policy environment on resettlement has increased. The policy environment on resettlement policies in Vietnam changed during the last 20 years and has developed to policies which are in agreement with international standards. Thus, the reinforcement of several laws on land and resettlement show a commitment of Vietnam to improve resettlement policies (Dao, 2010).

3.2 LOCAL CONTEXT

3.2.1 THUA THIEN HUE PROVINCE

The province of Thua Thien Hue is located in the Central Region of Vietnam, bordering in the north to Quang Tri province, in the South to Da nang City and to the west with the PDR of Laos (figure 5). Due to its position and being part of the East-West economic corridor that connects Myanmar-Northeast with Thailand, Laos PDR and central Vietnam, Thua Thien Hue province is a key economic zone (Thua Thien Hue, 2013). Mountains in the west and sea in the east make up the main topography of the province. Forest, mountains, rivers, paddy fields all characterize the varied geography of Thua Thien Hue. The four rivers in the province are O Lau, Bo, Huong and Truoi. The province constitutes of a total area of 5053 square kilomteres and is divided into nine administrative divisions and seven districts. Around 1.15 million people inhabit the province of Thua Thien Hue and 300.000 live in and around the capital city of Hue (Tran & Shaw, 2007).

In line with national guidelines on industrialization and modernization, the province has set out annual economic growth grates in order to be developed by 2020. In order to meet their growing energy needs, Thua Thien hue is following the national trend in establishing hydropower plants. It already constructed several dams and is planning the construction of several more in the future (McLinden-Nuijen, 2011).

Figure 5: Location of Thua Thien Hue Province in Vietnam

Source: Vo Van et al., 2004

3.2.2 BINH DIEN HYDROPOWER DAM

One of the dams constructed in Thua Thien Hue province is Binh Dien hydropower dam. In 2005 the construction of this medium-sized hydropower plant started in Huong Tra district and finished in 2009 (figure 6). Director of CSRD and coordinator of Vietnam River Network, Miss Suu (interview, 2013) explains that this plant is only one of the in total 24 hydropower plants planned in Thua Thien Hue province. Besides being built for the purpose of generating electricity, it is designed to prevent flooding and facilitate irrigation in the surrounding area. The costs for this multipurpose dam were approximately 1.1 trillion Vietnamese Dong (VND), which is around 5.3 million USD[2]. Construction of the dam was financed by Binh Dien Hydropower Joint stock, Ltd. This consortium is comprised of multi-private companies and additionally they are in control of the sale of the generated electricity to the government (Artati, 2011).

The Binh Dien hydropower plant started to operate in 2009 and generates 44 MW of electricity and provides 181 million KWh of electric power to the National Grid. This energy supply system provides in the rising demand for energy in Thua Thien Hue province. Furthermore, the reserve capacity of 423 million m3 of water has the potential to irrigating agricultural land in times of water shortage. In addition, this water reserve can decrease the shortage in available drinking water during the dry season. When operation of the hydropower plant started in 2009, there has been a decrease in the number of flooding instances. This reduction has lessened the adverse circumstances following the annual experience of floods. There is less damage to the fishery and agricultural production and disruption of local business in Hue (Artati, 2011).

However, the development of the hydropower plant and the creation of a water reservoir have led to the flooding of land in Binh Dien and Binh Thanh commune. This land was comprised of production and protected forest and agricultural land. Moreover, the water reservoir has flooded the original settlements of Bo Hon village (Artati, 2011).

Figure 6: Binh Dien hydropower dam

Source: Dantri, 2013

[2] 1 USD= 21.293,20 VND

4. METHODOLOGY

This chapter will explain the methods used for data collection and analysis, therefore providing more insight into the way this research was conducted. First, the research questions are presented which structure this thesis. Then, the conceptual model provides insight in the relations of theoretical elements and concepts of this study. This is followed by information on the research sites and the operationalization variables. Thereafter, the main research instrument and methods for analysis are elaborated on. Finally, the limitations are presented that were encountered during data collection.

4.1 RESEARCH QUESTIONS

In order to gain more knowledge on the risks that re-settlers are exposed to and which adaptation strategies they apply, the main question of this research is:

To what extent are involuntarily resettled communities vulnerable to risk and if present, which adaptation strategies do they use to cope with experienced risks due to dam construction in Thua Thien Hue province?

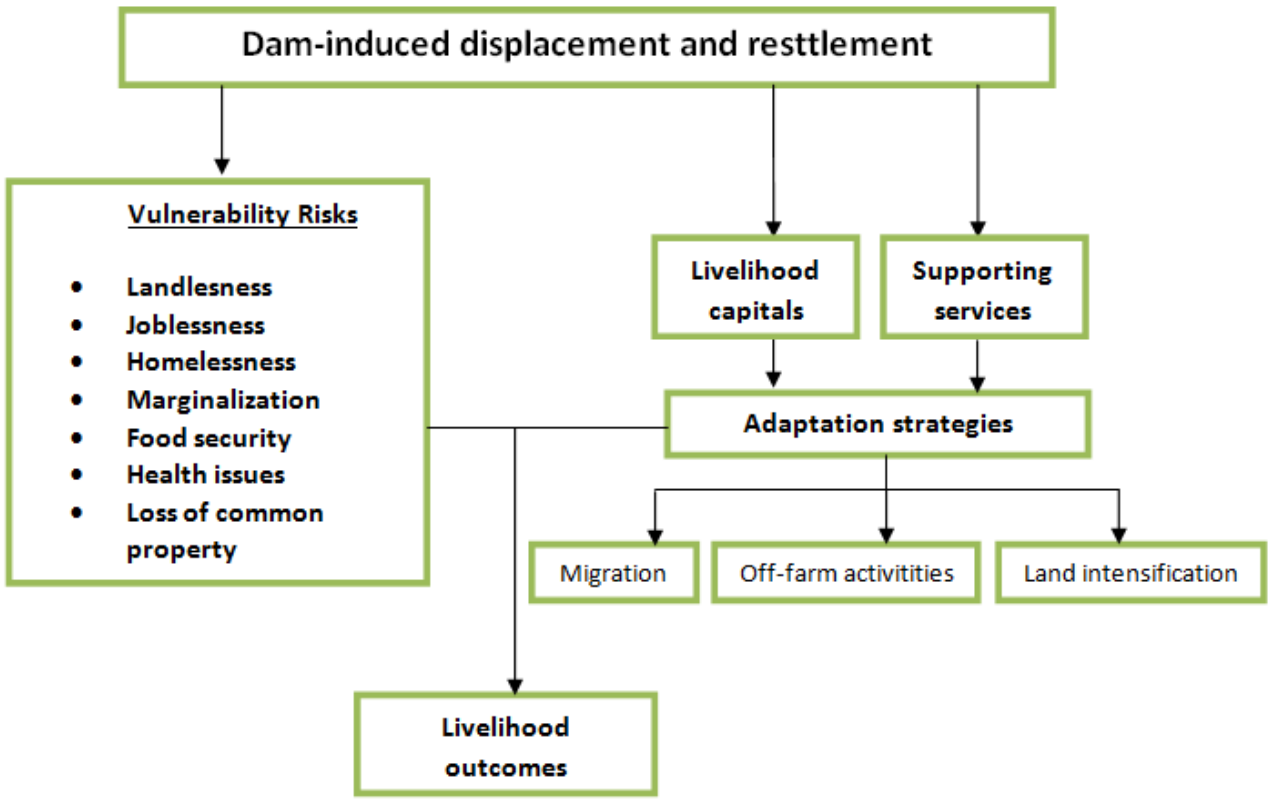
The following sub questions were developed in order to explore different elements of the resettlement process, the risks and adaptations of resettled communities. These questions can lead to the gaining the knowledge needed to answer the main question of this thesis. These sub questions are:

1. How can the process of resettlement in Bo Hon village be understood and described?
1a. To what extent have free, prior and informed consent (FPIC) provisions been complied with?
1b. How has the community been compensated?
1c. To what extent did actual FPIC and compensation differ from the FPIC and compensation as described by the resettlement programme?
2. To what risks are involuntarily displaced village Bo Hon and Kon Tôm vulnerable to?
    2a. To what extent does vulnerability and exposure to risk vary within the community?
3. Which factors within the community influence the adaptive capacity of the inhabitants?
4. Which factors external to the community influence the adaptive capacity of the inhabitants?
5. If present, which adaptation strategies have been applied by the resettled communities?
    5a. To what extent have these adaptation strategies overcome risks?
    5b. To what extent were both communities impoverished after resettlement?

4.2 CONCEPTUAL MODEL

The conceptual model (figure 7) presented below reflects the relationships between various theoretical elements of this research's theoretical foundation. It explains the most important influences of different factors on each other and clarifies the scale of this research. First, the concept of DIDR can increase vulnerability to the risks identified by Cernea (2000). DIDR also influence the livelihood capitals and supporting services that people can use. Both these internal and external factors have the ability to influence the adaptive capacity of people and the application of adaptation strategies. Vulnerability to risk as well as adaptation strategies (including migration, off-farm activities and land intensification) leads to certain livelihood outcomes.

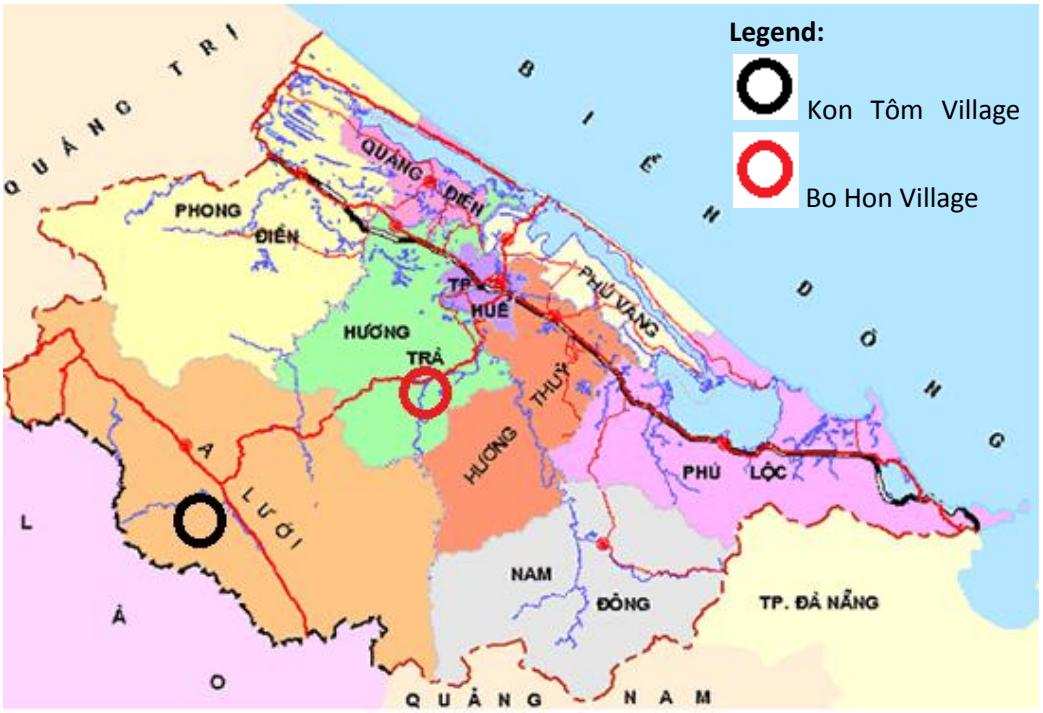
Figure 7: Conceptual framework



4.3 Research site(s)

This research has both an explorative and a comparative nature and focuses on gaining more in-depth knowledge on vulnerability to risk due to dam-induced displacement and the adaptation strategies that displaced communities apply in Thua Thien Hue province. In order to obtain this knowledge two research sites were selected in this province, namely Bo Hon and Kon Tôm village (figure 8). These villages were mainly selected because they were both directly affected by the construction of a hydropower dam. Bo Hon was resettled due to the construction of Binh Dien hydropower dam in Huong Tra district and Kon Tôm was resettled after the A Luoi hydropower plant started to operate in A Luoi district. Aside from these similarities, these sites were selected on the two other criteria, which include time of resettlement and location of the resettlement site. The village of Bo Hon is located was resettled in 2006, whereas Kon Tôm was resettled in 2011. Because the resettlement of both villages occurred in a different time period, it enables the comparison of the implementation of different national resettlement policies. It also allows for analyzing time as a factor of influence in the application of adaptation strategies. The second argument is their location after resettlement. Bo Hon is located 30 kilometres Hue city, the capital of Thua Thien Hue province, whereas Kon Tôm is located 60 km from Hue city. In comparison to Bo Hon, Kon Tôm is more isolated from economic activity, which is a situational factor which can influence the outcomes of resettlement. A side from factors such as location and period of resettlement, these sites have been selected in consultation with Pham huu Ty. Because this research was conducted as part of the PhD research, the research sites were selected in order to contribute to his research.

Figure 8: The location of Bo Hon and Kon Tôm village



Source: Thua Thien Hue Portal, 2013

4.4 Operationalization

Based on the theoretical framework, different factors have been identified in order to answer the research questions (table 1).

Table 1: Factors influencing the livelihood outcome of displacement and resettlement

Community characteristics	Displacement and resettlement process	Risks	Additional risks	Adaptation strategies
Individual characteristics (incl. asset base)	Resettlement planning	Landlessness	Loss of access to sanitation	Migration
Household characteristics (incl. asset base)	Implementation of the resettlement scheme	Joblessness	Loss of access to education	Land use intensification
	Degree of compensation	Food security	Loss of access to energy	Off-farm activities
	Information processes surrounding resettlement	Health issues	Loss of access to medical services	
		Loss of common property		

Risks

The vulnerability to risks is measured through the concepts of risks identified by IRR model by Cernea (2003). All concepts are turned into measurable variables, which are measured after resettlement. Due to time limitations only a selection of all 8 IRR risks are measured in this research. In total 5 impoverishment risks and 1 additional risk, loss of access to public services, were most suitable for measuring in the 10 week period of fieldwork. The selection of these risks was done in consultation with dr. Guus van Westen.

Adaptation strategies

The concept of adaptation strategies are defined as the actions which people undertake to react to the experienced vulnerability to risks. During fieldwork, households were questioned regarding these actions.

4.5 RESEARCH INSTRUMENTS

In order to obtain the required data for this research, the use of mixed methods is applied during field work in Bo Hon and Kon Tôm. Both qualitative and quantitative methods are applicable in this research, as it enables for the collection of data which can provide the most inclusive answer to the research question. Both methods have strengths and weaknesses. These weaknesses are however reduced by combining both methods which allows for a complementary approach. Methods applied during research were household surveys, in-depth interviews, a transect walk, secondary research and observation. In addition, notes and photographs were taken during fieldwork. In both sites data was collected in collaboration with Daniël Koster.

Transect walk

Before collecting data in both Bo Hon and Kon Tôm, transect walks through the villages were undertaken in order to envisage their location, positioning and lay-out. The walk also provided the opportunity to create a map of both villages. This method was useful for drawing a map of Kon Tôm, since there were no maps available. The map created of Bo Hon is not used in this thesis, while an an employee of Huong Tra district provided a detailed map of Bo Hon. This map is included in this thesis (figure 10).

Household surveys

As mentioned before, this research consists of a comparative study between two resettled villages. As a quantitative method, household surveys were suitable as it provided standardized question in order to compare the data collected (appendix I). The survey was also able to reach a high amount of participants within a limited time frame. In addition, the survey has been used to identify households that applied adaptation strategies.

In total of 100 respondents were questioned through a similar household survey in both Bo Hon and Kon Tôm. In Bo Hon, 40 households (72,7% of the displaced households) were questioned and in Kon Tôm, 60 households (56,6% of the displaced households) were questioned. The number of questioned households was determined under the approval of Pham Huu Ty. The aim was to question more than half of the displaced households in each village in order make a proper risk analysis. The selection of respondents was based on availability.

The questionnaire focused on the conditions of the households before and after resettlement in order to make a proper analyses of the risks that the households are exposed to when resettled. The questions in the survey focused on community characteristics, the displacement and resettlement process, 5 of the 8 risks that have been identified by Cernea (2000) and one additional risks (table 1). The survey was made in collaboration with Daniel Koster and was translated (from English to Vietnamese) during questioning of a household. This was both a request of the supervisor as from the translators.

In-depth interviews

Interviewing is one of the most appropriate methods to obtain a wide range of information, regarding insight, ideas and thoughts of people. To gain more insight in the experience of resettlement and applied adaptation strategies, in-depth interviews in both villages were conducted.

In Bo Hon 6 households were interviewed regarding their adaptation strategies and 4 households in Kon Tôm were interviewed. Based on the household surveys, interviewees were selected to give more insight on their applied adaptation strategies. If adaptation strategies were indentified during household surveys, participants were asked if they wanted to collaborate further by doing an interview. This information was noted and therefore created a small database for possible interviewees on adaptation strategies. Selection was based on availability and on gaining information on various adaptation strategies. These semi-structured interviews mainly focused on the type of adaptation strategy and the motivation for applying this type of strategy (figure 9). Due to the semi-structured nature of the interviews, respondents were able to bring up own insight and additional information regarding this topic.

Figure 9: Topic list for adaptation strategies of households

1. **Description of households situation before and after resettlement**

2. **What do you do to cope with the changing circumstances due to the resettlement process?**
   -Which activities do you undertake?
   -Why do you undertake these new activities?
   -Why did you choose these activities?
   -How did you acquire the skill(s) to undertake these activities? (including government, community or project support)
   -To what extent do these activities reduce the risks of the resettlement process?

3. **Situation improved, worsened or remained the same after the resettlement process?**
   -When applying these strategies, did your situation improved, worsened or stayed the same?

In addition, interviews were conducted with the directors of local NGO's in Hue, which are CORENARM, CSRD and Tropenbos Institute. Both CORENARM and CSRD are involved in projects related to resettlement and displacement in Thua Thien Hue province. They were able to provide information on the challenges surrounding resettlement and the current policy environment. Furthermore, they provided insight into their current projects regarding resettlement. Tropenbos Institute could provide more information on the environmental impacts concerning hydropower development in the province.

Finally, interviews were held with government officials from the village, the commune, the district and the provincial level. These interviews focused specifically on the content and the implementation of the resettlement program. Moreover, they provided more insight into the actual resettlement process of Bo Hon and Kon Tôm and the challenges that were encountered during this process.

Secondary research

Throughout the research, secondary sources (including statistics, papers and reports etc.) have been used as complementary method to gain further insight into the main concepts guiding this research. Especially earlier research done in Bo Hon by Artati (2011) and McLinden Nuijen (2011) have contributed to providing additional background knowledge on resettlement and displacement in Bo Hon. During fieldwork in Vietnam, Hue University of Agriculture and Forestry organized a workshop with different academic experts. This workshop provided a platform for different researchers to display their current findings regarding displacement and resettlement issues in Vietnam. Some of their findings have been included in this research.

4.5 Analysis

All the quantitative data collected through the household surveys were categorized and analyzed by using Excel 2007. The data was turned into graphs and tables in order to support the analysis of the collected data. In order to properly present distribution of income and land (figure 22, figure 23 & figure 24), this research used SPSS instead of Excel 2007. SPSS was able to visually represent the data and support the analysis. The qualitative data collected from interviews with households, NGO's and government officials was all carefully written down in Word 2007. The data from in-depth interviews on adaptations strategies were analyzed following the theoretical framework on adaptation.

4.6 Limitations

Several challenges were encountered during the course of this research, which led to this research's limitations. First, the amount of time for collecting data in the field (10 weeks) limited the amount of collected data. On account of time constraint, it was determined that 5 of the 8 risks (table 1) from the IRR model from Cernea (2000) would be measured during fieldwork. The selection of these risks was based on measurability within the available time frame. The three risks that have been left out (e.g. homelessness, marginalization and social disintegration) are difficult to turn into variables that can be measured properly within the given time for data collection in the field.

Second, this research collected data before and after resettlement, using a recall method for determining the situation before resettlement. This method relied on the memory of participants to describe their former living conditions. The use of this method could have led to low data quality, since there is a time interval between the situation before resettlement and the moment of data

collection. Besides, the process of resettlement could have been experienced as negative, which might have driven participants to romanticize the situation prior to resettlement. The negative experience could also have led to enlarging negative aspects of the circumstances after resettlement. Another form of data bias was encountered during interviews with government officials. These actors could have given biased answers to paint a positive picture of the resettlement process. Unfortunately, documents on the resettlement program or a social-economic profile of Bo Hon were not accessible, and therefore it was not possible to fully cross-check the collected data. However, data from government officials has been compared to answers of other actors (including government officials, households and NGO's) in order to present an objective conclusion.

Language was another challenge encountered during data collection in Bo Hon and Kon Tôm village, since respondents only spoke Vietnamese or a dialect. Communication with respondents was made possible by two translators who could translate data from Vietnamese (or dialect) to English and from English to Vietnamese. The surveys were made in English and were translated in Vietnamese during the household surveys. This was both a request of the supervisor as from the translators. Although well-informed and guided during fieldwork, there is a possibility that the use of different translators could have led to various interpretations of the questions and answers given by households in the survey or interviews.

5. RESETTLEMENT OF BO HON VILLAGE

This chapter will describe resettlement process of Bo Hon village to give insight into the planning and implementation of the resettlement program. First, a short introduction of the original Bo Hon village is given, where after the focus will shift towards the current characteristics of Bo Hon and its inhabitants. Thereafter a description of the official resettlement program will follow, including an identification of all involved actors. The part of this chapter will focus on the content of the resettlement program regarding the elements of FPIC and to what extent the community has been compensated. This will be put into contrast with the actual process of resettlement, experienced by the inhabitants of Bo Hon, in order to understand to what extend planning of the resettlement program and the actual implementation differ from one another.

5. 1 DESCRIPTION OF THE OLD BO HON VILLAGE

The majority of the village consists of the ethnic group called Ka Tu (90%), while the rest of the village belongs to Kinh ethnicity. Originally, the Ka Tu are from Lac village, which is located in Huong Nguyen commune in A Luoi district. In 1995 the entire community migrated on voluntary basis Huong Nguyen commune to Binh Thanh commune in Huong Tra district. The rationale for this movement was the quality of their land. Due to numerous flooding the soil degraded and was not arable enough to produce their main food crops anymore. These main crops included cassava, wet and dry paddy (Artati, 2011).

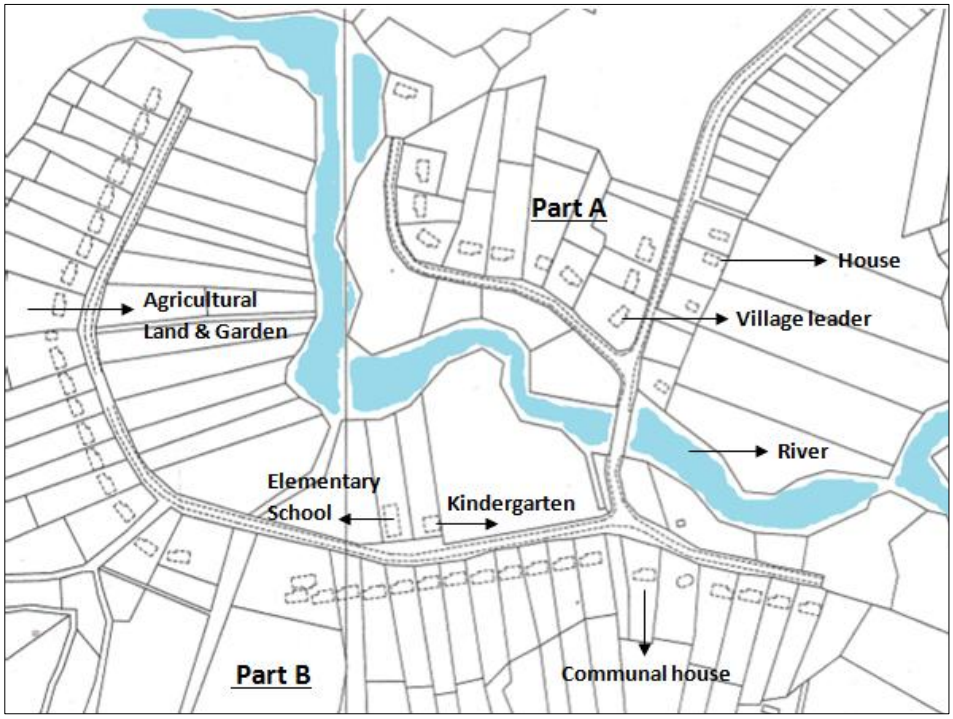
The new area where the community settled was given the name Bo Hon, which is the name of a tree which grows along the Huu Trach River. This river, a branch of the Huong River, runs through the valley where Bo Hon village was settled. The area that the village settled had no formal purposes and Binh Thanh commune administration gave their consent to the settlement of the community. However, the households in Bo Hon never received any formal registration of their land (Artati, 2011).

They used their land for several types of production, such as agriculture, forest and garden lands. In addition, common property was close to the village. Households had access to the river and the forest. The latter was for cutting trees to generate an income or retrieve bamboo to sell. The river was mainly used for fishing, which provided households with fish, rats and frogs to use for their own consumption (Village leader of Bo Hon, 2013). After the settlement of Bo Hon village, a group of Kinh people joined the community. A natural disaster in the area in which their old village was located, made this area inhabitable. The two groups lived in Bo Hon village for 11 years, whereupon they were both relocated due to the construction of Binh Dien hydropower plant (Artati, 2011).

Bo Hon village was resettled one year after the construction of the Binh Dien hydropower dam started in 2005. Due to the dam, the village would be partially flooded which made resettlement of the village a necessity. The site where the community of Bo Hon was resettled to is located 10 kilometres from where they settled their original village in 1995 (Village leader of Bo Hon, 2013). Bo Hon lies on a 30 kilometre distance south from Hue city, accessible through proper roads. After passing the Binh Thanh commune office, a small road of 3 kilometres will lead to the village. The village is divided into two parts (A & B), separated by a stream named Rang (Figure 10). A small bridge connects both sides, giving part A access to the elementary school, kindergarten and

communal house. Bo Ho is comprised out of 55 households (15% women headed), accommodated in 51 houses, with a total number of 274 inhabitants. The village leader (interview, 2013) explains that during the past 6 years some children got married, formed their own households, but remain to live in their parents' house.

Figure 10: Map of Bo Hon Village



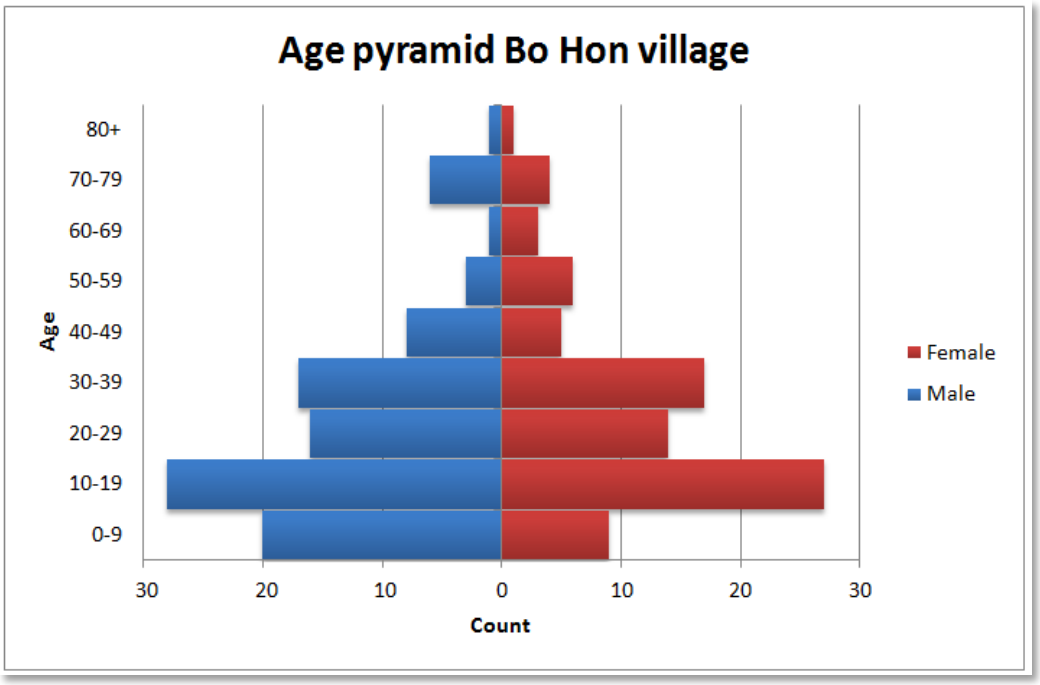
Source: Binh Dien district, 2013

5.2 Characteristics of Bo Hon

The main characteristics of the population of Bo Hon are derived from the 40 respondents who agreed to collaborate on this research. From these respondents 90% is from Ka Tu ethnicity and 10% are Kinh people. All the Kinh households live together, next to the communal house in part B of the village (Figure 10). While the Kinh people only are a small minority in Bo Hon, both ethnicities are perceived as one population in order to give an overview of the main characteristics of the population of Bo Hon.

The 40 households questioned during fieldwork, of which 6 households were women-headed, 2 are male-headed and the other 32 households consist both out of a husband and wife. On average, each households consist out of 4,7 members. Overall, the household's composition ranged from a single-headed household to households consisting of 9 members. Figure 11 illustrates the distribution of age of 187 household members. The community has a young population, when taking all household members into account. There is particular concentration of population between the ages 10-19 and there is a decrease of respondents after the ages 30-39. The age pyramid also shows that Bo Hon has slightly more male than female inhabitants. There are 54% male inhabitants and 46% is female.

Figure 11: Age distribution of the respondents in Bo Hon village



Source: Fieldwork Bo Hon, 2013

Of the male population, older than 21 years old, 56,3% did not have any education at all. Only 25 % has primary education and 18,8 % has secondary education. A small percentage (3,1%) finished high school and none have a university degree. When looking at the female population above 21 the numbers are even worse. Only 39,5% has had primary education, while 60,5% did not have any education at all. However, the educational level of the population under 21 seems more encouraging. Only a small percentage (10,8%) did not have any form of education. Children under the age of 4, who are too young for school, are left out of this group. 42,2 % has had primary education and 37,3% had secondary education. A small percentage even attended high school (5,9%) and are currently enrolled at the university (2,9%). The divergence of educational level between the population above and under 21 years old can be explained by the presence of educational facilities before and after resettlement. In the old village of Bo Hon there was only a small elementary school, were only primary education was given from grade 1 to 6. However, currently there is primary and secondary education present in the village.

5.3 THE RESETTLEMENT PROGRAMME

In order to provide further understanding of the resettlement of Bo Hon it is important to first identify all the actors involved in the resettlement process with regard to planning and implementation. This process has different phases in which different actors carry different responsibilities. The following sections will focus on the general development of a resettlement program in Vietnam and to what extend FPIC and compensation were planned and implemented in the case of Bo Hon. Despite several attempts there were no official documents available on the resettlement programme of Bo Hon. Therefore this process will be described according to oral sources of the district, the commune, the village leader and will be contrasted against the experience of the respondents in Bo Hon in order to understand to how their resettlement program was developed and implemented.

5.3.1 THE ACTORS

The initiative to construct hydropower plants in Vietnam is often part of the country's national planning. According to these plans, the national government plans the amount of dams in each province. A hydropower company can look into these plans of the province and make a feasibility plan which two departments at national level, the ministry of natural resources and environment (MNRE) and the ministry of industry and trade (MIT), have to approve. However, the province is also able to put in a request at the national level for the construction of a hydropower plant in their province. In both cases the MNRE and the MIT have to approve a feasibility plan in order to construct a hydropower dam. Besides a feasibility plan, the MNRE undertakes an environmental impact assessment (EIA) which should be approved by the national government. If the national government approves these plans, the province cannot refuse the construction of the hydropower plant. In turn, the province informs the district and the commune about the construction of the dam, which are unable to refuse as well. Thereafter, the village that is going to be resettled is informed by the commune (A Luoi district, 2013).

When construction of a dam leads to resettlement, a committee is set up to establish a compensation and resettlement plan. This committee is comprised out of the district, the hydropower company and the commune. The amount of compensation is determined by the district with the use of a property assessment, which measures the land in the old village and the amount of trees on the land. According to resettlement policies, the village receives land for land and money for trees. According to the district, the hydropower company pays the amount of compensation that the district determines after measurements. The commune is responsible for determining the ownership of land of each villager. The district is also responsible for the selection of the new resettlement area. After this selection both the commune and the village are informed about this decision. The district, commune and hydropower company organize a meeting in which the new location is announced to the village. If the village does not accept the new location, the district and commune representatives will carefully explain the advantages and disadvantages of moving to the new area. If this does not persuade them to move, it means that another location should be selected. The same goes for compensation which is announced to the village by a large document near the commune building. This document lists all family names and the amount of compensation for each family. Based on this given information, a family is able to disagree with the level of compensation. According to the Huong Tra district, were Bo Hon is located, this resettlement process should be identical in each province, district and commune (Huong Tra district, 2013).

5.3.2 INFORMATION, PARTICIPATION AND CONSENT

According to a representative of the Huong Tra district (interview, 2013), the province indorsed the construction of Binh Dien hydropower dam upon the district. From then on, this district informed Binh Thanh commune in September 2002 about the construction of Binh Dien hydropower dam and the resettlement of Bo Hon village. Both district and commune are unable to contest the planning of this dam, due to the hierarchical identity of Vietnamese planning. It is important to acknowledge that none of the involved actors have the ability to contest the continuation of the construction of a development project. Once a decision for a development project is made by the national government, all parties have to collaborate.

When the actual date of construction of the Binh Dien hydropower dam (2005) was determined by the province, the Natural Resource Department of the Huong Tra district was in charge of the planning and implementation of the resettlement program. In collaboration with the Binh Than commune and the involved hydropower company the resettlement program was constructed. The program mainly consists of a part dedicated to the selection of a new location and the amount of compensation that will awarded to the inhabitants of Bo Hon. According to the district (interview, 2013), they carefully measured the land in the old village and counted trees and other plants in order to make a property assessment. Based on this property assessment of the old village, the district calculated the amount of land and financial compensation that will be given to the affected people. The new location was chosen by the Binh Thanh commune, although the district is accountable for this task. According to a representative of Binh Thanh commune (Interview, 2013), the commune chose four different locations for Bo Hon village. This selection was based on the living conditions in the old village, in order to recreate the conditions in the new village. They also took Ka Tu customs into account when selecting the new area. Ka Tu people prefer to live near the river and the mountain. According to Binh Thanh commune (interview, 2013), ten people from the village saw the first selection site and agreed on this location.

According to the Huong Tra district (interview, 2013) the new location and level of compensation was presented to the inhabitants of Bo Hon in a meeting. Representatives of the district, commune and hydropower company were present. During this meeting the inhabitants had the ability to disagree to their resettlement, the new location and the level of compensation presented to them. If the village would not have accepted the resettlement, the government representatives would carefully explain the advantages and disadvantages of moving to the new area. However, according to the Huong Tra district (interview, 2013) nobody disagreed to any of the proposed plans. There was also a paper with the family names, which held details regarding the amount of land and financial compensation for each family. All households had access to this information, while this document was presented at the commune building, only 3 kilometres from Bo Hon. All household had 15 days to decide whether they agreed to the announced compensation for their land and trees. According to the Binh Thanh commune (interview, 2013), none of the residents of Bo Hon objected to the listed levels of compensation.

In contrast to the information provided by government representatives, the residents of Bo Hon experienced a different resettlement process. In 2005 the inhabitants of Bo Hon were informed about their resettlement, the new location and the level of compensation. However, acording to 39 of the 40 respondents in Bo Hon, the primary source of information through which they were informed about the resettlement was the People's Committee (PC) and not an organized meeting. The PC came by the houses of the villagers to inform them that they would have to move due to the construction of a dam. In these conversations often land and money was promised to the villagers if they would move. However, none of the respondents mentioned a meeting where financial compensation in money or land was presented to them. All respondents point out that no official documents were handed out regarding the level of compensation. Only oral information on these matters was provided to them. The majority of the respondents claim that they were informed by the PC at their front door and did not have the possibility to disagree with their resettlement or the level of compensation. No information on specific amounts was shared with them during these conversations. Unlike claimed by a representative of Binh Thanh commune, none of the respondents

were aware of the location of the resettlement area or were involved in the decision-making process. Therefore, the option to disagree or agree with the resettlement site was entirely absent. According to some respondents the PC also emphasized that the new village would provide them with a better life due to the presence of electricity, education and health care. However, the respondents were not fully informed about the potential harm that the construction of Binh Dien hydropower dam could cause.

Besides information that was withheld from the villager regarding the potential disadvantages of the construction of Binh Dien hydropower dam, location and compensation, there was also a lack of participation in the planning of resettlement program. According to the representative of the Huong Tra district (interview, 2013), the residents of Bo Hon had the ability to participate. They can forward their opinion regarding the new location and compensation in the organized meeting. However, besides the absence of an organized meeting, the only purpose of this type of participation was to get informed. According to the respondents, they did not have the ability to influence the selection of the new location or the level of compensation that was awarded to them. As stated earlier, the hydropower company, the district and commune set up a committee for establishing a compensation and resettlement plan. In this process there is no involvement or collaboration established with the people of Bo Hon or their village leader regarding their resettlement. All elements of the program are predetermined before informing the village.

In August 2006, when resettlement of Bo Hon started, the entire village gave their consent to resettlement, the new location and the amount of compensation. All interviewed government representatives, as well as the respondents support this information. The village leader of Bo Hon (interview, 2013) explains that the level of trust and believe in the government by ethnic minorities in Vietnam is the reason for their consent. Without asking any question, they moved to the new location when the commune told them they had to move. Mister Tran huu Nghi from Tropenbos institute (interview, 2013) agrees with this opinion and states that people trust the local government in Vietnam and therefore give their consent to resettlement. Thus, although the villagers gave their consent to resettlement, it remains questionable to identify this as a case of voluntary resettlement.

5.2.3 COMPENSATION

Resettled communities have the right to be compensated for the loss of their physical assets according to national resettlement policies. The loss of their physical assets will be compensated for in land or money. Support on recovery from resettlement due to development projects, such as hydropower development, is stated in Vietnamese law. Various decrees have been issued in the past decade to provide detailed instructions on the planning and implementation of these resettlement policies. Issued in 2004, Decree No. 197/2004/ND-CP states that people whose land has been taken by a development project have the right to receive compensation, even if they do not have a legal title on land. Compensation should be awarded to the whole are ho has been affected by the development project, include all assets connected to their property, all investments made in their property, additional support mechanism to create secure and durable living conditions and training in order to shift toward other income generating activities. In 2009, Decree no. 69 was issued, which focuses in particular on adapting resettlement programs to the customs of resettled communities. Programs are arranged to be suitable for the needs and capacities of affected people. In 2003, a revised Land Law identified local governments as the responsible party for the implementation of

resettlement policies. They are perceived to have a better understanding of the local context of resettled communities than project investors (Dao, 2010).

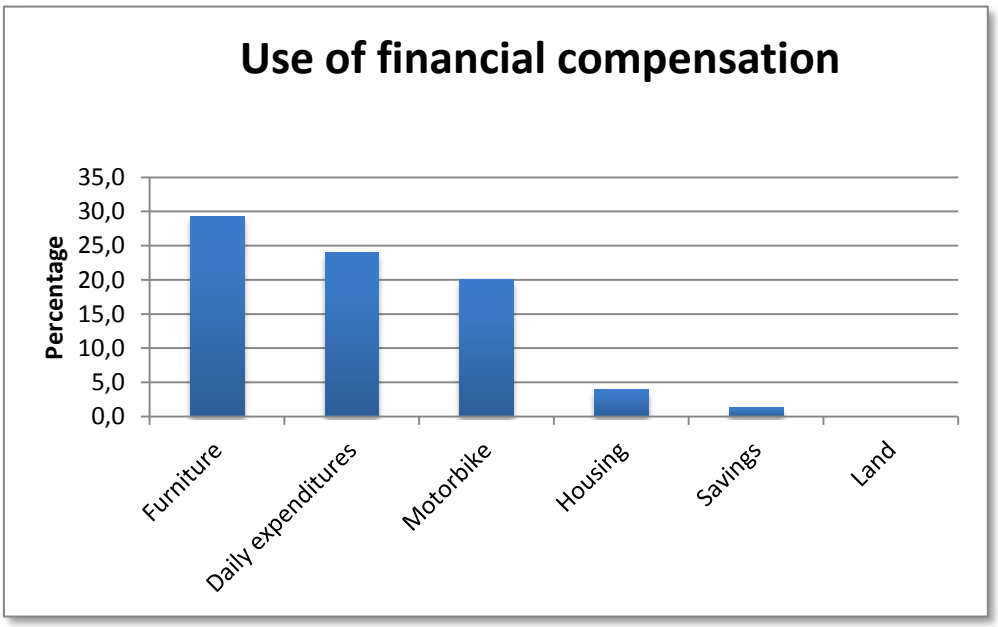
In the case of Bo Hon the amount of compensation was determined by the the Natural Resource Department of the Huong Tra district. The district they made a property assessment based on the amount of trees, plants and land of the inhabitants in the old village. Depending on this assessment, a price was made for the land and the trees and is converted to financial compensation. After the property assessment, the district decided how much compensation will be awarded to the village. The financial compensation given for property is based on the value stated by law. Eventually, the hydropower company was responsible for paying the costs of the compensation for the village (Huong Tra district, 2013).

After resettlement the people of Bo Hon received financial compensation, land, housing, training and food supplies. The majority (92,5%) of the respondents received financial compensation after resettlement. On average, a household received 44.5 million VND, ranging from families who received only 4 million VND, while others received 190 million VND. There were 3 households who did not receive any financial compensation from the hydropower company. These were al Kinh households, who form a minority in this village. A small group of households (10,3%) received financial compensation of 100 million VND or more. Two households that were given a large amount of cash payments were the current and former village leader. The other two households owned large pieces of land, respectively 50 hectares and 14 hectares of land, in the former village. Overall, the received financial compensation was mainly spend on consumption goods, such as furniture (29,3%) and motorbikes (20%)(figure 12). Also daily expenditures (24%) were one of the main uses of the compensation. Other expenditures included, medication, education for children or to pay off a debt. Little money was used to make productive investments. Only 4% of compensation money was used to invest in housing, while only one household put their put their financial compensation into a savings account. Besides receiving farming training of certain crops, no support mechanisms were given in relation to the use of financial compensation. Many households in Bo Hon never had this amount of money before and therefore are unaware of the productive investments they could have made.

The land that the respondents received after resettlement was only 0,2 ha, which is 97,6% less land than they had before resettlement. In the old village, households had an average of 8,6 hectares of land. Due to unregistered land in Bo Hon, the ‘land for land’ policy could not be applied, according to a representative of the Binh Thanh commune (interview, 2013). Legal documents on land ownership were absent, because the commune never formally assigned land to Bo Hon upon their arrival in the area in 1995. However, decree 197 states that people whose land has been taken by a development project have the right to receive compensation, even if they do not have a legal title on land. This decree was not rightfully implemented in the case of Bo Hon.

The financial compensation given does not cover the large loss of production land. Compensation is therefore not equal for their loss of land, which means that their income levels and food security can be severely affected.

Figure 12: The type of expenditure of financial compensation



Source: Fieldwork Bo Hon, 2013

Besides land and financial compensation, 39 families received a house in the resettlement area. Only one family, the old village leader, received a large amount of compensation in order to build a house. The other houses have the same measurements and are constructed from concrete and a zinc roof (Bo Hon village leader, 2013). None of the respondents had any complaints regarding the quality of the house. After resettlement of Bo Hon had taken place, the province visited the resettlement site in order to determine whether resettlement planning and implementation was sufficient. In the end, the Natural Resource Department of the district is accountable for the entire resettlement process. According to the Huong Tra district representative (interview 2013), the resettlement program was planned and implemented according to the guidelines of national resettlement policies. The province, after visiting Bo Hon, agreed with this opinion.

6. RISK ANALYSIS

This chapter focuses on 5 risks identified by IRR model by Cernea (2000) to which the households of Bo Hon could be vulnerable to due to their displacement and resettlement in 2006. In addition, the risk of loss of public services will also be elaborated on in order to identify the all possible risks which can lead to impoverishment.

6.1 LANDLESSNESS

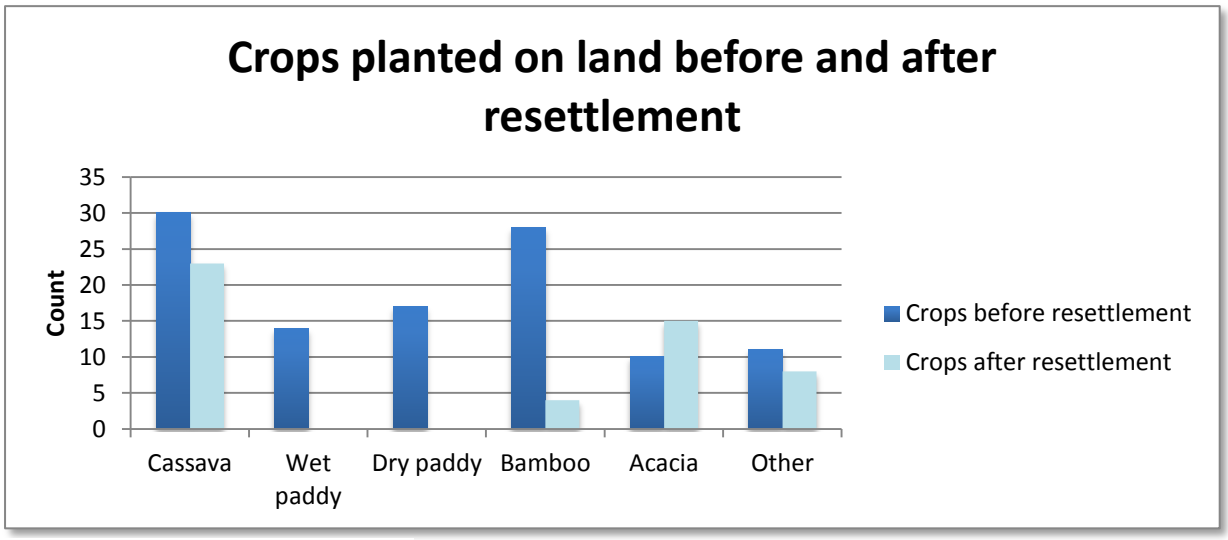
When settling in Binh Thanh commune in 1995, the inhabitants of Bo Hon never received legal entitlements over land. The village had access to unregistered forest land where they practiced shifting cultivation (Binh Thanh commune, 2013). The ability the open new land as they desired led to an average land size of 8,6 hectares per household. On this land they planted a range of crops, such as cassava, wet paddy, dry paddy, bamboo, acacia, fruit, corn and other vegetables. To this community farmland is an essential part of their livelihood, while it functions as a source of food and income. However, after resettlement the residents in Bo Hon were only compensated with an average of 0,2 hectare of land. Because the land before resettlement was illegally owned land, the amount of land before resettlement could not be compensated for in the new village. After resettlement all residents received a legal title on their land (Binh Than commune, 2013).

As figure 13 illustrates, the reduction of land has led to a loss of cultivated crops. Only cassava, bamboo and acacia are the main crops which are planted in the village, whereas the diversity of crops planted was higher before resettlement. The cultivation of wet and dry paddy even disappeared in the new resettlement area. According to respondents, there is less land to cultivate all the crops they cultivated before. Especially the cultivation of bamboo has decreased drastically. Before resettlement 28 households grew bamboo on their land, while after resettlement only 4 households grow this crop. Households that stopped growing bamboo explain that bamboo is a crop which needs a lot of land to grow and a lot of nutrition from the soil. However, 0,2 hectares of land is not enough to grow this particular crop anymore. The cultivation of acacia has increased slightly after resettlement (Figure 13). According to Binh Thanh commune (interview, 2013) a part of the old village in Bo Hon is not flooded and this forest land is accessible to the former ‘owners’. On account of a World Bank project (WB3) to stimulate forest cover and re-greening, they are supporting families to get a loan at the bank (low interest rate) in order to invest in acacia plantations on this piece of forest land. This land is still illegal land; however the Binh Thanh commune is trying to make this land legal for the villagers.

The small amount of land is however not the only factor which contributes to a declining variety of cultivated crops. Besides a decrease in land for cultivation, the respondents struggle with the poor soil quality of the land. Before resettlement the respondents were positive about the quality of the land (Figure 14). Their opinion regarding the quality of land was good to very good. However, after resettlement this positive opinion shifted towards a more negative opinion about the soil. The majority (74,4%) of the respondents have expressed that the quality of their land is bad. Some households (17,9%) even qualify the land as very bad. Various arguments are used by respondents to ground their opinion on the current soil quality. First of all, they compare the current land conditions to the former and identify that crops such as bamboo, wet and dry paddy are unable to grow on the

land. In order to grow these crops, the soil needs to be fertile enough. The quality of the soil is to low to be able to grow these crops in the new area.

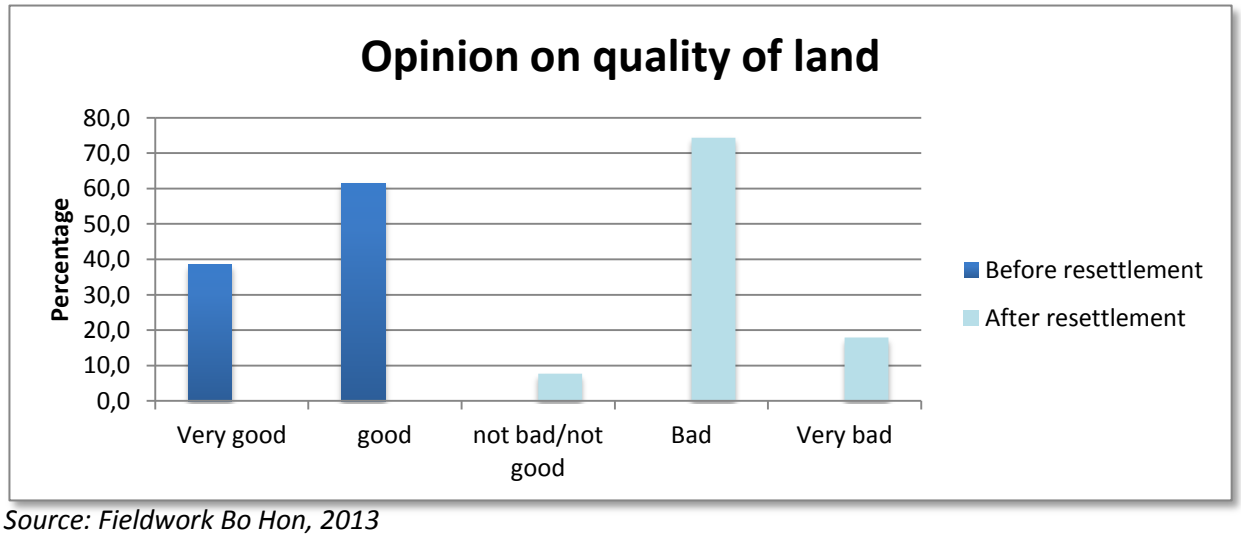
Figure 13: Crops planted on land before and after resettlement per household



Source: Fieldwork Bo Hon, 2013

Secondly, they are unable to continue with their traditional cultivation of cassava. In the old village cassava was grown in the traditional way, without any use of fertilizer. In order to still grow cassava they need to use chemical fertilizer on their land to grow this crop. According to both the respondents and the village leader no fertilizers were needed before resettlement to cultivate the land. However, the poor soil quality has forced respondents to use additional inputs on their land in order to grow crops. Currently, 60% of the respondents use chemical fertilizer on their land, while only 2,5% of the households used chemical fertilizer before resettlement.

Figure 14: Opinion on the quality of land before and after resettlement



Source: Fieldwork Bo Hon, 2013

6.2 JOBLESSNESS

Bo Hon is a rural community which mainly depends on agriculture as their main income source. Before resettlement the people of Bo Hon engaged in slash and burn activities, shifting cultivation and were free to open new land for cultivation. They planted food crops and trees on their land and hunted animals, gathered plants and firewood in the surrounding forest. Closely tied to land and forest, all respondents in Bo Hon consider themselves farmers. Resettlement of this community has therefore strongly impacted their sources of income, since the amount of land has reduced after relocation.

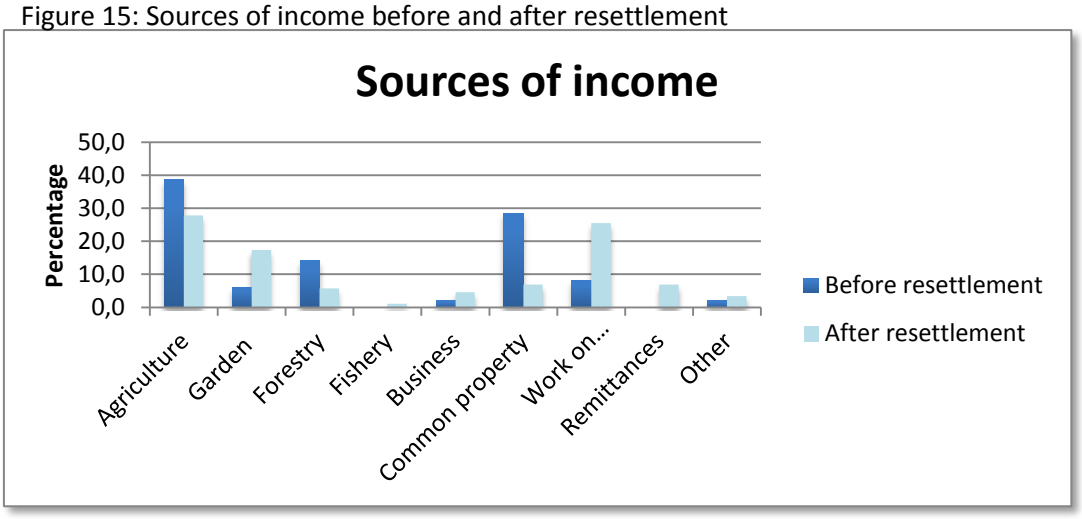
Table 2: Decrease of average amount of monthly income

	Before	After	Decrease in %
Bo Hon	4.285.526 VND	1.972.059 VND	54,0

Source: Fieldwork Bo Hon, 2013

Table 2 illustrates a noticeable decrease of 54% in average monthly income per household. This significant decrease in income can be explained by the shift in income generating activities of the respondents in Bo Hon. Figure 15 illustrates that, agriculture as main source of income only decreased slightly. However, the income derived from agriculture has decreased with a staggering 87,6%. The average income from agricultural was 5.961.765 VND, while after resettlement households only derived 737.500 VND from these activities. There is less land for household to cultivate crops, which leads to less harvest and less yields. Especially the cash crop bamboo cannot be cultivated anymore, due to the small amount of land and insufficient soil quality. In addition, common property as income source has decreased from 28,6% to only 7%. Bamboo and rattan were cut in the forest surrounding the old village of Bo Hon and sold on the market. Before resettlement 26 households derived an average income of 1.963.846 VND from common property. Relocation limited the access to common property, since the forest is only accessibly by boat. This led to a decrease of households which derive income from common property. Only 4 households are able to access the forest and generate income from this source. Per month these four households only make 862.500 VND from the products they collect in the forest, which is substantially lower than before their relocation.

Figure 15: Sources of income before and after resettlement



Source: Fieldwork Bo Hon, 2013

The absence of land and forest, after relocation, has made it difficult for the Ka Tu and Kinh people in the new area to continue their traditional farming activities. After resettlement there is a change from dependency on agriculture, to more diversification in livelihood sources of income. Besides engaging in agriculture activities, more people are undertaken activities in their garden, fishing or small scale business in order to provide their families with income.

In particular, the reduction of farmland has led to more informal work on plantations. However, this shift increases vulnerability to joblessness, while this work is informal; low paid and does not provide a stable income. Before resettlement only 8,2% of the respondents worked on plantations in order to provide an income, which increased to 25,6% after resettlement. As mentioned earlier, there is an ongoing WB3 project in the Thua Thien Hue province, which focuses on re-greening the area. Families receive loans in order to start up and maintain acacia plantations. These families need people to work on the land, cut the acacia and sell it on the market. Some people in Bo Hon are hired to work for these families. According to village leader of Bo Hon (interview, 2013), the owners of these plantations are not people from Bo Hon, but wealthy plantation owners. The respondents work on these plantations, while their yield from their own land does not provide a sufficient amount of income to meet daily needs. However, the amount of income generated trough this source not able to replace the amount of income they used to derive from agriculture and common property. Therefore, the amount of average monthly income is still less than before resettlement. In addition, none of the farmers who work on these plantations are employed by a formal contract. They are hired when there is work available, which does not give them security of income for the future.

6.3 FOOD INSECURITY

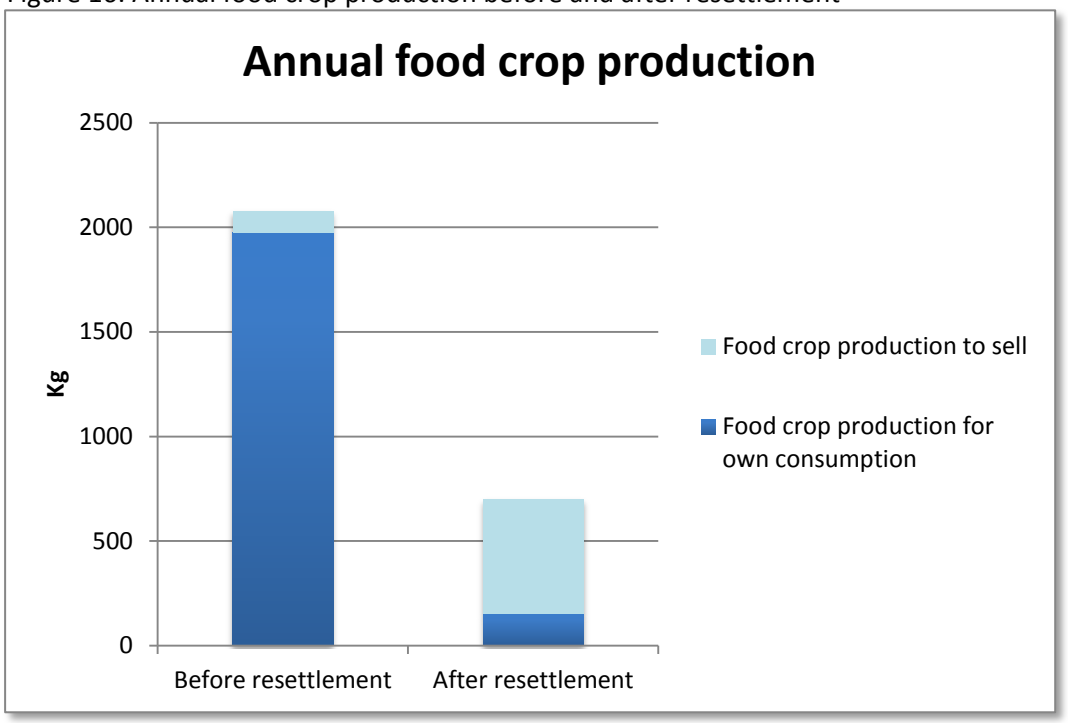
Before resettlement, the inhabitants of Bo Hon cultivated large tracts of land. They planted cassava, wet and dry paddy, fruit and different kinds of herbs. The abundance of fertile land provided them enough food crop production to satisfy their nutritional needs. In the old village 77,5% of the respondents felt that their food crop production satisfied their needs. However, after resettlement none of the respondents felt that their nutritional needs were met by their food crop production. The nutritional dissatisfaction can be accounted for by multiple changes in the resettlement area.

As identified in paragraph 8.1, there has been a significant reduction of land size after resettlement. The reduction of land size, in combination with low soil quality, has diminished the cultivation of crops. These changes resulted in the reduction of annual food crop production from 2078 kilogram to 700 kilograms (Figure 16). In addition, the percentage of production for individual consumption has decreased from 95% before resettlement to 22% after resettlement. The majority of the food crop production is being sold on account of two reasons. First, the production of cassava is no longer fit for consumption. According to the village leader (interview, 2013) the soil is not adequate enough to traditionally cultivate cassava. This cassava was grown in the traditional way, which means cultivated without the use of fertilizers. Due to low quality of the soil, households started to use chemical fertilizer to cultivate the land. However, this method turned the cassava bitter. This bitter taste of the cassava made it inedible and therefore only made the crop useful for industrial purposes. The majority of cassava which has been cultivated with fertilizers is sold to local factories which process the cassava.

Besides inedible food crop production, food crops are sold in order to generate income for households. On account of a decreased monthly income after resettlement, respondents are forced to sell a part of their food production in order to sustain their family. This leaves households with less food for their own consumption.

The risk to food insecurity even increases when comparing the total expenditure of food before and after resettlement (table 3). Before resettlement 33,3% of the households with an income spend 12,5 % of their income on food. 54,5% had income and spend nothing on food, while 12,1 % had no income nor food expenditure. These families completely relied on their food crop production for their own needs. After resettlement this situation changed as fewer households were able to be self-sustaining. Although all households have some form of income, 56% of this income was spend on food. The combination of lower income and the inability to be self-sustaining significantly increased the percentage of income spend on food. This indicates that income is playing an essential role in the food insecurity of families in Bo Hon.

Figure 16: Annual food crop production before and after resettlement



Source: Fieldwork Bo Hon, 2013

Besides income and land size, loss of access to common property also affects the vulnerability to food insecurity. Before resettlement the forest was used to hunt animals, gather plants and herbs, while the river provided the inhabitants of Bo Hon with fish and frogs to eat. Relocation however, led to limited access to the forest and river and therefore hindered the gathering of food many households (from 38,3% to 9,5%).

Table 3: Households expenditure on food before and after resettlement

Type of Household	Before resettlement	After resettlement
Households with income and food expenditure	33,3 %	100,0%
Households with income and no food expenditure	54,5%	0,0%
Households with no income and no food expenditure	12,1 %	0,0%

Source: Fieldwork Bo Hon, 2013

6.4 Health issues

In Bo Hon 57,5% of the respondents experienced various health issues after resettlement. The health issues that were mentioned include stomachache, headache, backache and fever. Complaints about headache and backache are mostly from respondents which work on acacia plantations. They have to work hard and long hours, which creates backache and ache in the muscles. Stomachache is mentioned for two reasons. Some households complain about the amount of food available to them, which is far less than before resettlement. Due to a decrease of food production there is a higher chance of undernourishment. This can cause the stomachache respondents are experiencing. In addition, more chemical fertilizer is used to cultivate the land. Traditionally, the people in Bo Hon cultivated their land without any additional inputs. The low soil quality in the new area requires farmers to use chemical fertilizers in order to cultivate the land. However, people are not used to these chemicals and if not washed of properly, they could explain the stomachaches people experience.

Other complaints relating to stomachache and fever can be traced back to the supply of drinking water, which to some is unsanitary. The drinking water from the old village was cleaner than the water supply that is currently provided to them. According to the Binh Thanh commune (interview, 2013), the water supply to the village is not functioning well and is leading contaminated water. Upstream there are villages that dump waste in the water. There is nobody who can clean the water before it arrives downstream to Bo Hon. Thus, changing labor conditions and unsanitary water supply after resettlement can be seen as causes of increased vulnerability to health issues in Bo Hon village. However, additional research is necessary to determine whether these health issues are actually caused by their resettlement.

6.5 Loss of access to common property

The old village of Bo Hon had access to several communal areas such as forest, river and bamboo forest which grew alongside the riverbeds. Most households used the river (53%) and the forest (31,8%) as common property. The villagers both used the common property as source of income, food or for recreational purposes. The natural forest, which surrounded the village, was used to collect *may* (rattan). This *may* was sold and provided households with an additional income. Likewise, the bamboo from the riverside was used to generate income. One household also used the forest to hunt animals. Most of the meat they collected was for own use and surplus was sold on the local market. An average 1.963.846 VND per month was derived by 65% of the households from these forest activities.

Meanwhile, the river was used mainly for catching fish for own consumption. The market was located far from the old village, which did not allow for fish to be sold. The journey to the market would lower the quality of the fresh fish. Besides catching fish from the river, the Huu Trach river also provided drinking water for the villagers and was used as sanitary facility. Villagers freely used the river to wash themselves and used the forest as natural toilet. In addition, the river functioned as a connection to other villages and provided access to the market (Village leader Bo Hon, 2013).

Table 4: Access to common property before and after resettlement

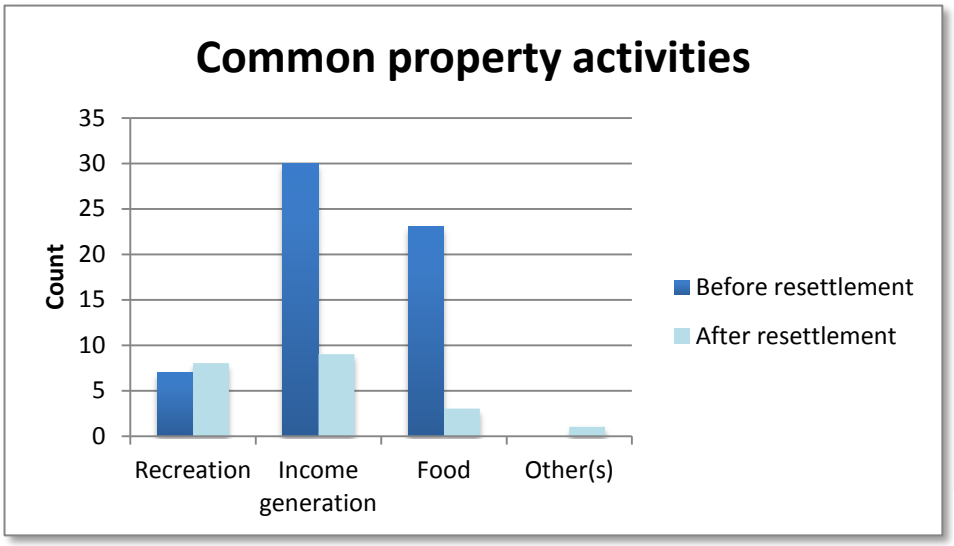
	Bo Hon	
	Before	After
Access to common property	92,5%	45,0%

Source: Fieldwork Bo Hon, 2013

However, the relocation of Bo Hon village has led to less access to common property resources. After resettlement there is a noticeable difference in the percentage of respondents which have access to common property. Only 45% of the respondents has access to common property in contrast to 92,5 % before resettlement (table 4). According to the village leader (interview, 2013) the old village was more accessible to communal areas than the new settlement. Access to common property such as the forest and the river has increasingly declined for villagers. The forest is located far away and is only accessible by boat. Therefore, they can only enter the forest one way, which often means contact with the authorities. These authorities do not allow the people of Bo Hon to plant or retrieve anything from the forest. Lack of access to the forest especially affects the income levels of households. Households can no longer retrieve rattan or bamboo which has led to a decrease of income generated trough common property. Before resettlement 30 respondents could generate income through the forest, which reduced to only 9 respondents after resettlement (figure 17).

As stated before, relocation increased vulnerability to food insecurity. Only 3 respondents catch fish from the river, whereas before resettlement 23 respondents retrieved fish for own consumption. Although the river is accessible for 24,4% of the households in Bo Ho, according to the respondents the river is not providing them with the amount of fish compared to the old river. The village leader (interview, 2013) explains that upstream a village uses professional methods to fish and therefore less fish is left over for Bo Hon village.

Figure 17: Activities undertaken on common property before and after resettlement



Source: Fieldwork Bo Hon, 2013

6.6 ACCESS PUBLIC SERVICES

Access to public services was very limited in the old village of Bo Hon. Access to electricity, medical care, secondary school and sanitary facilities was absent. Still, the Huu Trach river did provide the village with sanitary facilities. They could wash themselves and use the river for drinking water. In addition, the forest was also used as sanitary facility for the village. The only actual public service in the village was the elementary school, which provided education from grade 1 to 6.

After resettlement the access to sanitation facilities, which include toilet, running water and drinking water, increased drastically from 7,7% to 97,4%. However, the opinions on the level of satisfaction regarding these facilities were divided. Some were positive, since they did not have a toilet or a water supply to their house before resettlement. Some are negative, because occasionally the supply of water to the house is absent. Others were not accustomed to using a toilet before resettlement and they are hesitant in using one now. Other negative opinions arise from the fact that the supply of drinking water is contaminated, due to a not proper functioning water system.

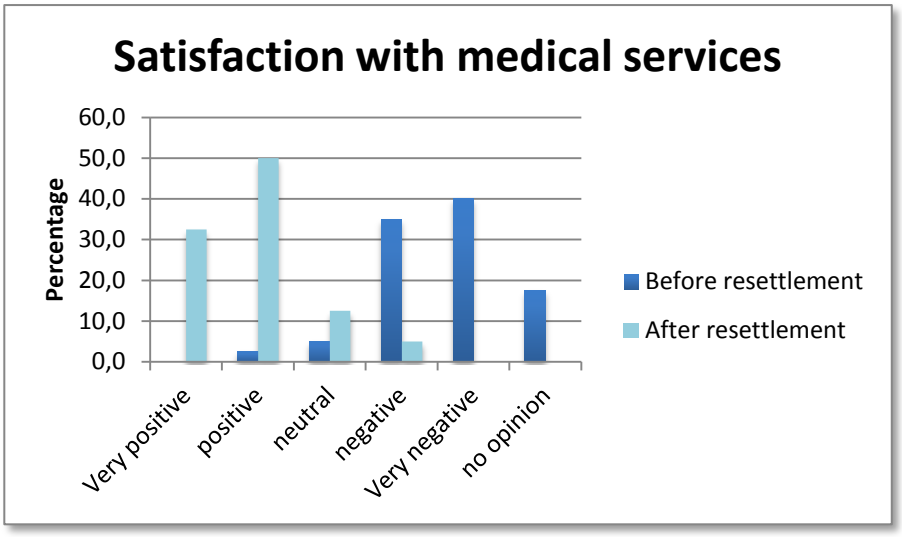
Figure 18: Water supply and toilet outside a house in Bo Hon village

Source: Author, 2013

The provision of electricity was not available for the majority of the households before resettlement. Only 5% of the households had electricity, which increased to 95% after resettlement. All the houses were built with access to electricity. Those respondents without access to this facility were unable to afford electricity. For some electricity is too expensive, especially while faced with a decline in monthly income. Nevertheless, the majority of the households that have access to electricity were positive (50%) to very positive (32,5%) about it.

Relocation increased the access to medical services for all the respondents. Before resettlement only 12,5% of the households in the village had access to medical services. If medical care was necessary, inhabitants had to travel 10 kilometres, since there was no doctor or hospital near the village. The construction of proper roads to the new village of Bo Hon gave access to Binh Thanh commune building, where a doctor and a small medical centre is located. Travelling from Bo Hon to the doctor is only a 3 kilometre journey, which made medical services more accessible. Besides accessibility, the affordability of medical services increased as well. According to an employee of Binh Than commune (interview, 2013a) residents of Bo Hon only pay 5% of the costs of these services. This is part of national policies to support ethnic communities. All together, the households in Bo Hon are very positive regarding the provision of medical services (figure 19). Before resettlement they were very mainly negative regarding medical services due to the absence of a doctor or affordable medicines.

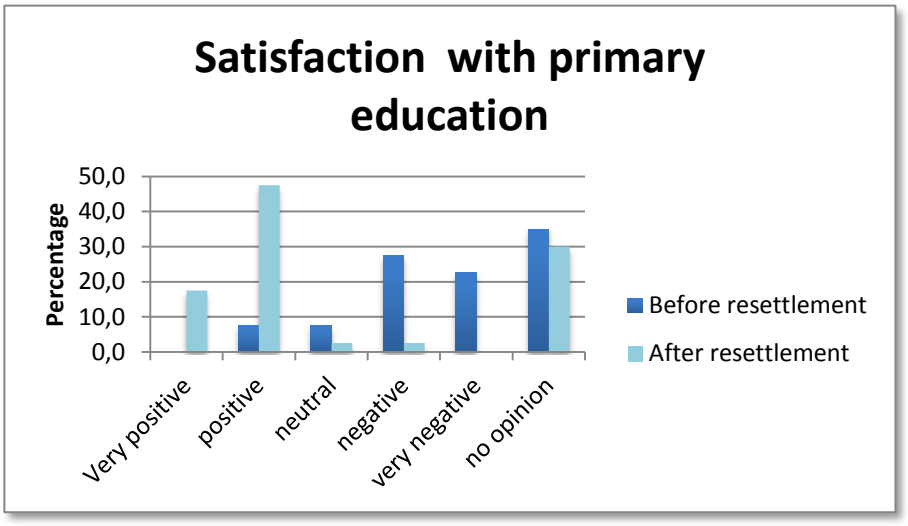
Figure 19: Level of satisfaction with the provision of medical services



Source: Fieldwork Bo Hon, 2013

Before resettlement the respondents had access to primary education, however quality was very low. Children of different grades were often put together, due to the limited amount of teachers. After resettlement, the level of education of the elementary school improved, which was the reason that respondents were positive (47,5%) to very positive (17,5%) regarding primary education (figure 20). Similar to the opinion regarding primary education, the satisfaction with secondary education also increased. Before resettlement secondary school was only accessible through dirt roads, which were dangerous (especially in the rainy season). This limited the access to secondary education for many children in Bo Hon. For this reason the majority (85,0%) of the respondents do not have an opinion regarding this facility, since their children did not have secondary education. Other opinions were negative (7,5%), very negative (5,0%) for the same reason. In contrast to prior opinions, respondents were positive (42,5%) and very positive (15,0%) regarding secondary education. Infrastructure after resettlement improved, making secondary school accessible to their children.

Figure 20: Level of satisfaction with primary education



Source: Fieldwork Bo Hon, 2013

7. INTER-COMMUNITY DIFFERENTIATION

The analysis provided in the previous chapter showed that the displacement of Bo Hon increased vulnerability, to the risk of landlessness, joblessness, food insecurity, health and loss of common property. This chapter will focus on discussing differences between households regarding vulnerability and exposure to risks. In total, 4 groups will be outlined, which include women-headed households, elderly, Kinh ethnic group and handicapped.

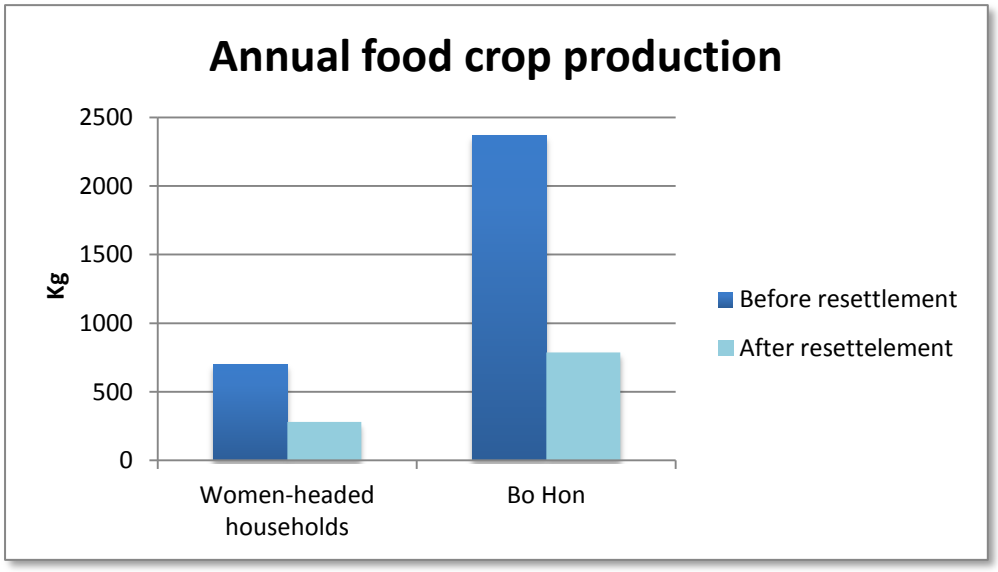
7.1 WOMEN-HEADED HOUSEHOLDS

In Bo Hon village there were households where women had to support their family without the assistance of a husband, on account of death or divorce.The absence of the husband could increase their vulnerability to impoverishment compared to other households in Bo Hon. In total there were 6 women-headed households identified that were questioned during fieldwork. This particular group comprised 15 % of the total number of respondents. The average age of the women is 54 years old, with ages ranging from 31 to 76 years. The average size of women-headed households is 3,2, which is fairly smaller than the average size of 4,6 of most households. The majority (66,6%) of women-headed households were Ka Tu ethnics, while 33,3% belonged to Kinh ethnics. With regard to compensation, there was a large difference between Kinh and Ka Tu women-headed households. On average, the 4 Ka Tu households received 43.500.00 VND after resettlement. This is close to the average financial compensation of 44.718.750 VND that other households received. In contrast, the two Kinh women-headed households received no financial compensation at all. This could be a result of the small amount of land that these households had before resettlement, which was only 0,02 hectares. Nevertheless, the two Kinh households received 0,2 hectares of land after resettlement, similar to the rest of the respondents. The other Ka Tu women-headed households received an average of 1,8 hectares of land, which is far less than the average 10 hectares they had before resettlement. Thus, only the Kinh women-headed households were compensated less compared to the other households and the women-headed households.

The reduction of land size for the majority of women-headed households did not affect their average monthly income, while before resettlement only one household depended on agriculture as main source of income. Half of the women-headed households depended on common property, while other women-headed households worked on land of other or were engaged in small-scale business. Their average monthly income generated through these activities was 1.500.000 VND, which was 70% less compared to the rest of households in Bo Hon. After resettlement, their average income actually increased with 18% to 1.775.00 VND per month. This number is surprising compared to the other responents which experienced a decline of 59,7% of their average monthly income. The increase in income can be partially explained by remittances that 33,3% of the women-headed households received. Remittances generate an average of 2.550.000 VND per month for these households. Half of the women headed households work on land of other or depend on common property as their main source of income. However, all these households have older children above 21 years which support the family as well. There is only one household (female, 76 years) which does not have any income anymore. She relied on her children for food and clothes, while she is unable to generate an income at her age.

Concerning food insecurity, women-headed households are more vulnerable to this risk. Figure 21 illustrates that women-headed households produced less food crops compared to the rest of the respondents in Bo Hon. Before resettlement the food crop production of women-headed households was 70,4% lower compared to other respondents. In addition, these female headed households experienced a 60% decrease of their food crop production. This is more than the 33,2% decrease experienced by the rest of the respondents. In addition, they have 92,9% less food for own consumption, while they sell their food crop production in order to generate income.

Figure 21: Annual food crop production of women-headed households



Source: Fieldwork Bo Hon, 2013

Moreover, the loss of common property contributed to the issue of food insecurity for women-headed households. Although these households experienced a slighter decrease to common property (40%) after resettlement compared to the rest of households (51,4%) it severely impacted their food supply. Before relocation 66,6% retrieved fish from the river, while after resettlement none of the female headed households retrieved fish from the river anymore. Furthermore, the loss of access to common property has led to less income generating activities for one female headed household. Before resettlement 3 households generated income through common property, while this number has reduced to 2 households.

On the whole, women-headed households are particularly vulnerable to food insecurity and loss of common property compared to the rest of households in Bo Hon. Concerning compensation, the Kinh women-headed households were compensated far less in comparison to Ka Tu women-headed households. Surprisingly, their income did not decrease and they were able to continue to sustain their family.

7.2 ELDERLY

Another group which can be more vulnerable to impoverishment are elderly people. During fieldwork 9 households were questioned, which had one parent above the age of 65 years of older. These households had an average size of 4,7 members, varying widely from one single-headed household and one household consisting of 9 members. One household belongs to Kinh ethnic group, one household is women-headed and one household is both women-headed and belongs to the Kinh ethnic group. The other 6 households are all Ka Tu ethnics.

After resettlement, elderly households received 19,7% more financial compensation compared to non-elderly households. It has to be mentioned, that there were two households which received 100.000.000 VND and 190.000.000 VND, which was remarkably higher than the average amount of compensation. This high amount of compensation could be on account if their political status, which was the current and the former village leader of Bo Hon. In contrast, one women-headed Kinh households did not receive any compensation and another Kinh households only received 4.000.000 VND. Similar to financial compensation, elderly households received slightly more compared to 0,2 hectares non-elderly households received, which is 0,26 hectares of land. Still, all elderly households experienced a decline in land size due to resettlement.

With regard to income, elderly household experienced less decrease of their monthly income compared to other households in Bo Hon (table 5). Before resettlement they received slightly more than other households and after resettlement this situation remained the same. However, incomes before varied strongly before resettlement, from 0 VND to 11.200.000 VND per month. After resettlement incomes became less divergent, with incomes ranging from 0 VND to 4.000.000 VND. Still, they experienced a large decrease which can be explained by several factors. While 77,7% remains to depend on agricultural activities as main source of income, the income generated through agriculture declined with a staggering 90%. Moreover, collecting rattan and cutting bamboo to as a source of income is only continued by one household, while before 7 out of 9 households generated an income through common property resources. Still 44,4% of elderly households had an income because they worked for other people. However, common property earned families on average 2.871.429, while work for other people earns elderly households 700.000 VND per month. It has to be mentioned that none of the elderly above 65 years performed activities on the land of other people due to their physical conditions. The elderly farm their own land, while their children cut acacia or bamboo trees on plantations.

Table 5: Decrease of average monthly income between elderly and non-elderly households

	Before resettlement	After resettlement	Decrease
Elderly households	4.566.667 VND	2.216.667 VND	51,0%
Non-elderly households	4.388.108 VND	1.919.643 VND	56,3%

Source: Fieldwork Bo Hon, 2013

Before resettlement elderly households in Bo Hon produced 83,7% more food crops compared to non-elderly households. Besides, this production was completely used for own use. After resettlement they produced 55,3% less than before resettlement and only 15,5% of this production was used for own consumption. Nevertheless, non-elderly experienced a larger decrease of 72% in food crop production and only use 28,1% for own consumption. In absolute numbers this indicates

that elderly households annually had 217 kg food crop production compared to 134 kg for non-elderly households after resettlement. In addition, elderly households spend 41% of their income on food, while the rest of the households in Bo Hon spend 57,7% on food. In other words, the vulnerability to food insecurity is less for elderly households compared to non-elderly households in Bo Hon. They have more food and more income to spend on food. However, still one elderly women-headed household (female, 76 years) does not have any food or income. She relies on her children for food.

Before resettlement 88,8% of the elderly households had access to common property, which decreased to 33,3%. A similar situation occurred with the non-elderly population in Bo Hon, with 93% of the respondents having access to common property to 45% after resettlement. Since less elderly have access to common property, this affected their average monthly income and food supply. Before resettlement 7 out of 9 households generated income through property, while only one household in the new village continues to do so. Equally important is the fact that before relocation the number of households that retrieved fish from the river to eat reduced from 4 to only 1 elderly household.

In conclusion, elderly households experienced less vulnerability to the risk of landlessness, joblessness and food security compared to non-elderly households. This could be on account of the family member (son, daughter or grandchildren etc.) which contribute in supporting the households. The risk of common property affected elderly households more, while there physical condition limits their access to it. Although many elderly households are less vulnerable to risks, it is important to mention that within this particular group there were some large variations. Especially, one women-headed households and one Kinh household were more vulnerable to landlessness, joblessness and food security.

7.3 KINH HOUSEHOLDS

The majority (90%) of the inhabitants in Bo Hon village belong to Ka Tu ethnic group, while the Kinh ethnic group is small minority (10%). In total, 5 households in Bo Hon were Kinh ethnics of which 4 households were questioned during fieldwork. One household was an elderly women-headed household (female, 68 years), one household was elderly (male, 68 years and female, 56 years) and one was women-headed (female, 46 years). Already 3 out of 4 households belong to groups which could be more vulnerable to impoverishment. Therefore, it poses a problem to make general assumption with regard to this group. However, the 4 Kinh households will be analyzed in the same manner as women-headed and elderly households. The Kinh households on average consist out of 5,3 members, varying from 3 to 7 members. In these households the husband average age is 57 years old and the wife 53 years old, which was respectively older than the average age of the husband (45 years) and wife (41 years) of the Ka Tu households.

With regard to compensation, the Kinh households received far less financial compensation compared to the Ka Tu households. After resettlement only one household received financial compensation (4.000.000 VND). In total, 3 households did not receive any financial compensation at all. The absence of financial compensation could be a result of their lack of land before resettlement. On average, the Kinh households had 0,9 hectares of land to cultivate compared to 8,6 hectares of land that Ka Tu households used. Earlier research conducted in Bo Hon by Artati (2011) clarifies why

Kinh people had less land in the former village. After the village of Bo Hon settled in Binh Thanh commune in 1995, the small Kinh group joined this community. However, the Kinh people were considered migrants and therefore did not have the right to open new land for production according to customary rules of the Ka Tu. Consequently, Kinh people were not compensated, since they did not have any land. The same is true for compensation of land, while Kinh households on average received 0,1 hectare of land compared to 0,2 hectares Ka Tu households received.

Without the possibility to open new land in the old village, Kinh households had different livelihood activities in order to generate income. Before resettlement 3 out of 4 households collected rattan and cut bamboo from common property and sold this on the market. One of these households even had a small grocery shop to earn some additional income. Nevertheless, without any agricultural land their average monthly income was 46,5% less than the average income of Ka Tu households. The small amount of land they received after resettlement made them able to generate some income through agriculture. In addition, 2 Kinh household worked for other people and one women-headed Kinh household earned 4.000.000 VND through remittances. On average, they earned 3.350.000 VND per month, which is 82,2% more than Ka Tu households (average 1.838.710 VND per month). The high amount of income could also be on account of the number of family member which contribute in supporting the family. On average, Kinh households have more members which can earn the family additional income.

Unfortunately, 3 out 4 Kinh households did not have information on the amount of food crops their produced annually. Before resettlement, they did not have much land to cultivate in order to grow food crops. All Kinh household did imply that food crop production was only partially able to satisfy nutritional needs. After resettlement 3 out of 4 Kinh households (i.e 75%) felt that their needs regarding food were not met at all. This is higher compared to 42,5% of the Ka Tu which shared this opinion. This could indicate that Kinh households were more vulnerable to food insecurity. On the other hand, their level of income could cover their food expenditure and decreasing food insecurity. However, the data regarding this risk was insufficient in order to make a general conclusion.

With regard to common property, access to it has declined from 75% before resettlement to 50% after resettlement for Kinh households. This 50% still earns income trough products collected from the forest. Although this amount is lower than before resettlement, they were able to switch to other income generating activities to sustain their livelihood. Besides, none of the Kinh households relied on the forest or river as source of food. Therefore, limited access did not affect their food insecurity.

To conclude Kinh households were compensated less in money and land due to their position as a minority in Bo Hon. Their situation before resettlement led to landlessness after resettlement. Fortunately, Kinh households were able to generate income in order to sustain their livelihood. All together, this group was more vulnerable the risk of landlessness (and possibly food insecurity) than ka Tu households, but were able to generate income through other livelihood activities to reduce their vulnerability to the risk of impoverishment.

7.4 HANDICAPPED HOUSEHOLDS

Only two households in Bo Hon have a handicapped member, one was a single-headed household of a 41 year old male and one was a household with 6 members of which the husband (48 years) was handicapped. Although only two households belong to the group 'handicapped', it is important to acknowledge that they could be more vulnerable to risk of impoverishment compared to other households. These cases are outlined separately, because their individual situations differ considerably.

The first household was a single-headed male household. This male is mentally handicapped, however uncertain was what kind of mental disease he had. On account of his disease, the data collected could be different form reality. After resettlement, he received 55.000.000 VND as financial compensation, which was higher than the 44.583.33 VND non-handicapped households received. This could be on account of the amount he had before resettlement. He had 3 hectares of land, while after resettlement he only received 0,1 hectare. However, he did not derive his income from this large piece of land. He earned 500.000 VND per month from agriculture and 1.500.000 from collecting bamboo from common property. The limited access after resettlement had resulted in a significant loss of income. After relocation he relied on agriculture and does some work as a carpenter to generate an income. This amount varies strongly per month, which made the male unable to indicate his monthly income. Regarding food insecurity, he does not have information on his food crop production. However, his nutritional needs from his own production did decline after resettlement. Fortunately, access to public services was equally accessible to him as for other households in Bo Hon. Especially, regarding the affordability and accessibility he was very positive.

The other household consists of 6 members, of which one husband (48), wife (38), 2 sons (15 & 13) and 2 daughters (18 & 10). The husband has arms and legs that are disproportionately smaller compared to the rest of his body, which limits him in his daily activities. Due to his physical condition the family had a small piece of land before resettlement. Therefore, this household received 20.000.000 VND, which was less than the average compensation other households received. In the new village they had ownership of 0,15 hectares land, which was cultivated by the wife and children. Before resettlement the children were too small to help and the wife to occupied with taking care of the family. As a consequence they had no income and only a small food crop production, which made them rely on the help of the community to support the family. After resettlement, the children were older and were able to cultivate the land. They planted cassava, which earns them 200.000 VND per month. In addition, the husband also received 200.000 VND per month from the government for his handicap after the relocation of Bo Hon. The reason why he did not receive these funds before resettlement remains unclear. Although their situation improved, their income is 80,3% less than non-handicapped households. In addition, their food expenditure was 30% higher compared to other households. Before resettlement, the situation of the family made them unable to use common property, while after resettlement access remained limited. In contrast, access to public services was available to this family just like other non-handicapped households.

All together, both households were more exposed to the risks of impoverishment. They both have less land, income, food crop production and access to common property compared to non-handicapped households. Nevertheless, access to public services increased, which is especially important for these households, while they suffer from mental and physical disabilities.

7.5 Divergence or convergence?

The comparison of different groups within Bo Hon community has shown that some groups are more vulnerable to certain risks. Table 6 presents an overview of the groups which were more, equally or less vulnerable to the risks of impoverishment. Loss of access to access to public services was not perceived as a risk, which is why this risk is left out of this table. With regard to risks, almost all groups are equally vulnerable to this risk, while personal health is different in each case. Elderly do experience more health issues, which is more likely caused by their age and personal health than their resettlement. The same is true for the handicapped households.

Table 6: Level of vulnerability of different groups within the community of Bo Hon

	Women-headed	Elderly	Kinh	Handicapped
Landlessness	+/-	-	+	+
Joblessness	-	-	-	+
Food insecurity	+	-	+	+
Health issues	+/-	+/-	+/-	+/-
Loss of access to common property	+	+	+/-	+

+ More vulnerable, +/- Equally vulnerable, - Less vulnerable

Different factors can be identified which could make households more or less vulnerable to impoverishment. These factors are listed below:

Property before resettlement: The amount of land people cultivated before resettlement determined the amount of financial compensation re-settlers received. Although some lost substantial access to farmland, they received financial compensation to cope with this transition.

Especially Kinh people were affected, since in the old village there were unable to open new land. This eventually resulted to none or very little compensation of land and money.

Household size and composition: Most elderly households were less vulnerable to joblessness and food insecurity, which could be on account of their households 'composition and size. Their sons and daughters were able to still cultivate the land or work for other people in order to generate an income. This also decreased vulnerability to food security, since food was grown on the land and the income could be spend on food for the family.

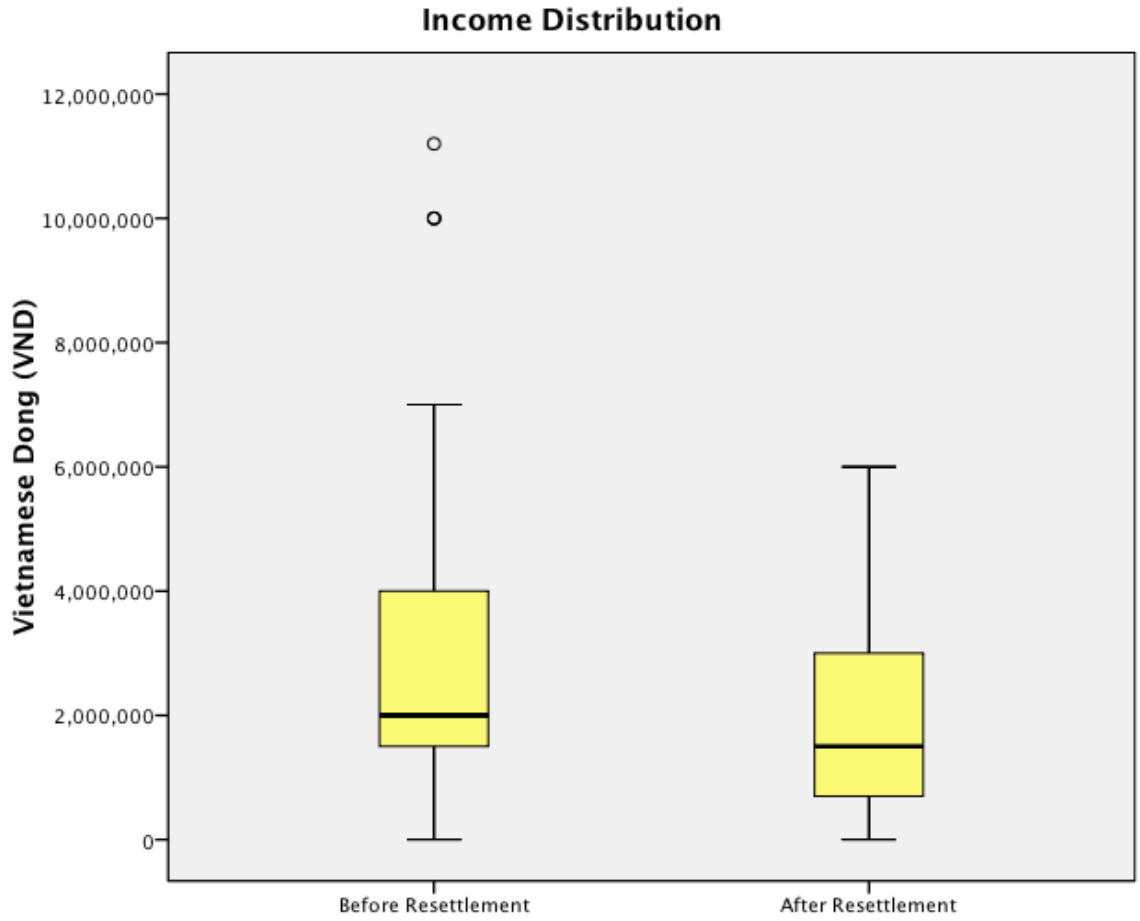
Physical condition: The physical condition of elderly and handicapped households limits their access to common property. After resettlement the forest was located further away from the village, which especially hinders access for people with poor physical conditions. In turn, the lack of access can negatively affect income levels and food insecurity.

Change in livelihood activities: Women-headed and Kinh households were less vulnerable to the risk of joblessness. In most cases, these households turned to other livelihood strategies, besides

agriculture, in order to sustain their families. The application of these strategies will be discussed in the succeeding chapter on adaptation strategies.

Although there are differences between groups, in general resettlement had an equalizing effect in terms of land distribution and income within the community. Figure 22 shows the monthly income of households before and after resettlement. Even though resettled households lost a part of their income, the dispersion of values has decreased after resettlement, indicating smaller differences in income between households. Thus, resettlement did not increase income inequality.

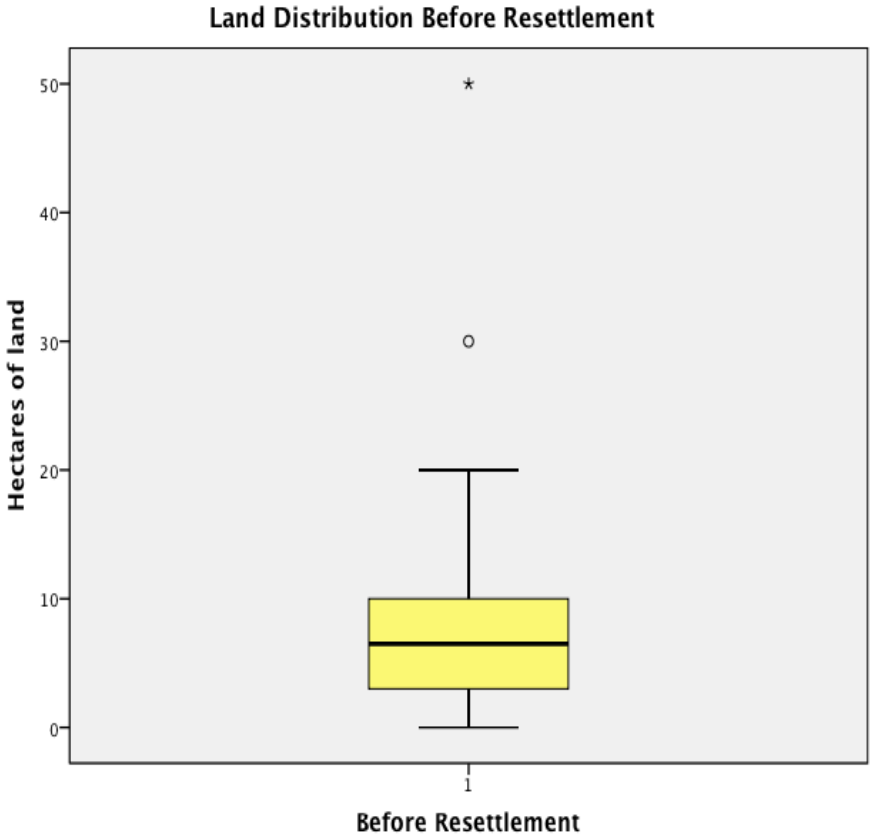
Figure 22: Income distribution of monthly income per household



Source: Fieldwork Bo Hon, 2013

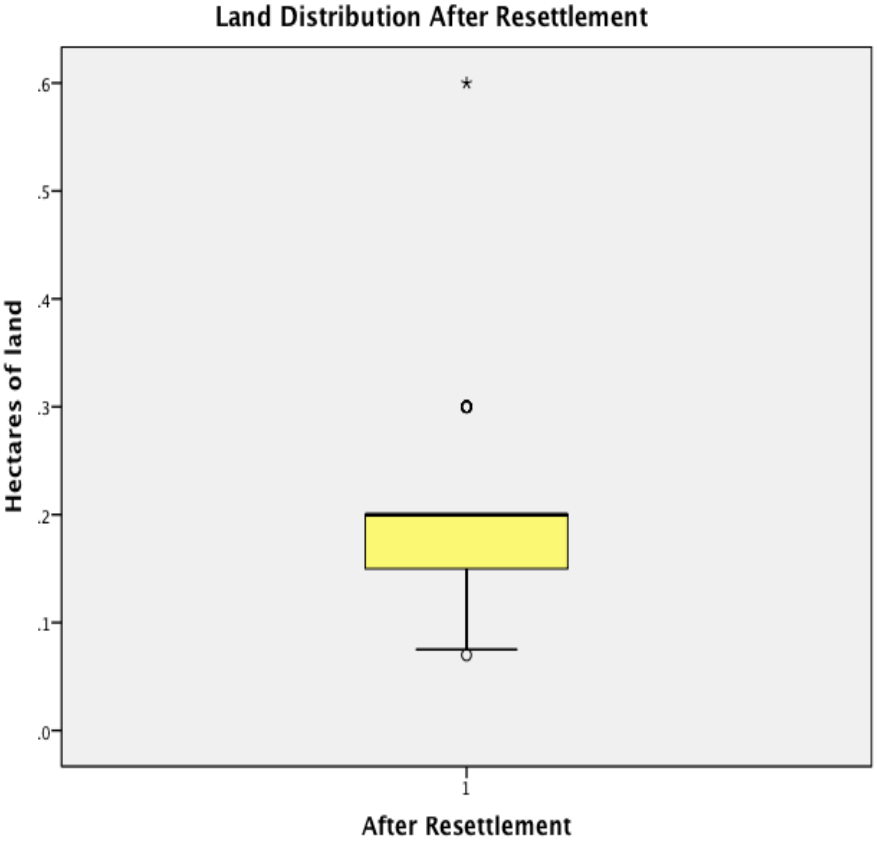
Concerning land size, households have lost a substantial part of farmland after resettlement. This decline is illustrated in figure 23 & 24, which compares land size per households before and after resettlement. There was more inequality between households regarding land size before resettlement. The compensation of land gave the majority of the households the same amount of land. Although land is divided more equally, the loss of land has severe implications on people's livelihood.

Figure 23: Distribution of land size per household before resettlement



Source: Fieldwork Bo Hon, 2013

Figure 24: Distribution of land size per household after resettlement

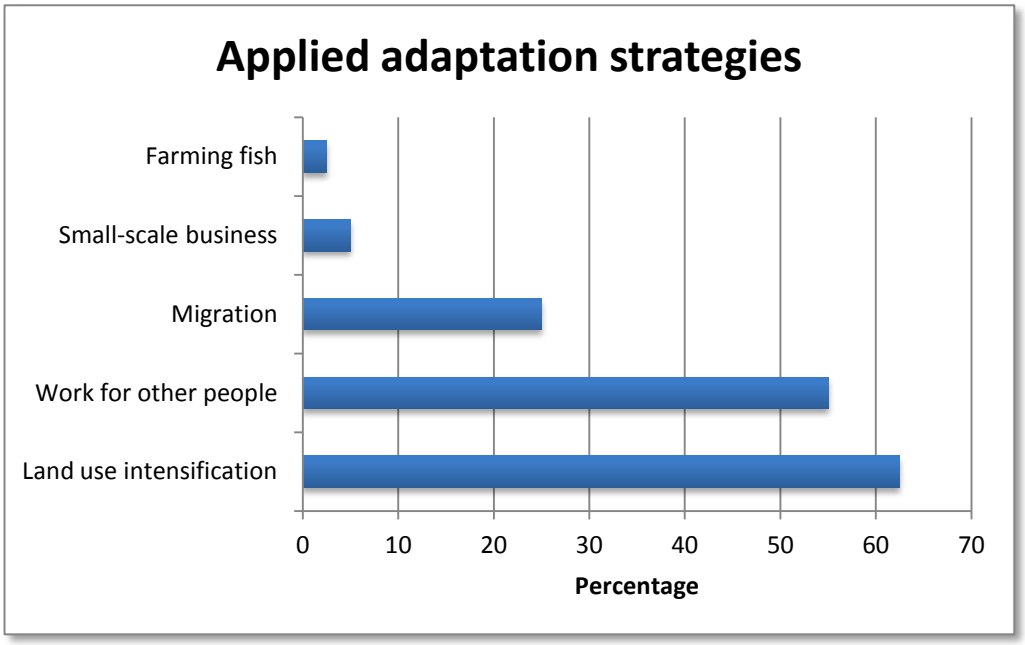


Source: Fieldwork Bo Hon, 2013

8. ADAPTATION STRATEGIES

After identifying the risks Bo Hon was vulnerable to, it becomes clear that the community is faced with impoverishment. This chapter focuses on the adaptation strategies that have been applied in order to cope with their impoverishment. Figure 25 shows the different adaptation strategies and the extent to which they were used. The respondents indicated that they used multiple adaptation strategies to cope with the risk they were exposed to. This explains why the sum of all percentages exceeds 100%. This chapter will provide a detailed description of each of the applied adaptation strategies and the outcomes of these strategies on the living conditions of households in Bo Hon.

Figure 25: Number of applied adaptation strategies



Source: Fieldwork Bo Hon, 2013

8.1 OFF-FARM ACTIVITIES

Off-farm activities (excluding work for other people) was an adaptation strategy applied by 7,5% of the respondents in Bo Hon. The application of this strategy had different outcomes on the living conditions of each household. Each case is elaborated on in the following paragraphs.

Two households opened a small to sell food and drinks in the village. In one of the households (consisting of 7 members), the wife (56 years old) opened a shop. All original income sources, such as bamboo, had been lost due to resettlement. In the new village there was not enough land and no common property to generate an income from. In addition, they only received 4.000.000 VND as financial compensation. This amount was given to their children for education. Besides a lack of income, they had no other savings. One year after resettlement the women saved the little money they made selling cassava and opened up a small shop. She opened the shop, because her physical condition and age did not allow her or her husband to work for other people. This work would be physically too heavy for them. The idea to open the shop came from the fact that there was no other shop in the village. In the beginning the shop provided the family with some additional income, however this income slowly declined. After a few months, a Ka Tu household opened their shop and

took away most of her customers. She and her family are Kinh people and the other villagers, who are Ka Tu, would rather do business with a Ka Tu family instead of a Kinh family. Because there are only 4 other Kinh households, the income from her shop was very limited. Opening the shop improved the situation of the family a little and after the other shop opened there situation is almost the same as shortly after resettlement. In the future, she is thinking of closing the shop. She will try to grow more food in her garden in order to cope with food insecurity.

The other Ka Tu family, consisting of a husband (30), a wife (30) and a son (4), also struggled with a decline in income due to a decrease of their land size and poor soil quality. They lost land to grow acacia, which was their main source of income. In addition, the reduction of land ownership limited the production of food crops, such as rice and cassava. The physical condition of the husband restricted him to work on the land of others in order to provide the family with income. One year after resettlement the family saved enough money to open a small shop. However, around the same time the husband opened his shop, a neighboring household opened a shop as well. Nevertheless, the family received most of the customers due to their Ka Tu ethnicity. The income from the shop provides enough money for the household, which helps them to pay their daily expenditures including school fee, clothes and food.

Another off-farm activity which was encountered was the construction of a large pool to farm fish (figure 26). The fish were able to provide this family, consisting out of a husband (33), a wife (29), a son (12) and a daughter (8) with income and food. After resettlement, the family's income, as well as their food crop production declined. The family often bought fish, which they could no longer afford anymore. Two years after resettlement the husband realized the fish was an expenditure of 6.000.000 VND per year. He decided to build a pool from the financial compensation he received after resettlement. The rent for a machine to dig the pool was 10.000.000 VND and the fish and food for the fish cost him 2.000.000 VND. He found it a thought-out investment, which would pay him back after one year. In the old village his sister had a pool with fish and back then he already had the idea to build a pool, this was however unfeasible for him. The market was located far from the old village, which did not allow for fish to be sold. However, the market was accessible after resettlement due to improved infrastructure. This factor contributed to the decision to construct a pool to farm and sell the fish. Because the family of his sister already had a pool before resettlement, they had the knowledge of building a pool and farming the fish. The income from the pool is however very little. Two years ago he stopped to sell the fish, because there was less money to feed the fish. He used to sell half of the fish and use half for own consumption. Now they mostly use the fish for own consumption and only use a small part to sell.

Figure 26: A pool for farming fish

Source: Author, 2013

8.2 MIGRATION

Migration was another adaptation strategies identified in order to cope with vulnerability to several impoverishment risks. Before resettlement there were no households in Bo Hon which had a family member that migrated and supported the family by remittances. However, after resettlement 10 households had a member who migrated. In all cases, this was to financially support the family. For various reasons, not all of the migrated members were able to support their family through remittances. Some migrants are still waiting to receive their loans and some have decided not to send money back to their families. In total 6 households received financial support through remittances, with amounts ranging from 1.000.000 VND to 4.000.000 VND per household per month. These remittances were their main source of income, which enabled the families to buy food and pay for daily expenditures. Especially female headed household benefited from remittances, since 50% of those households depended on it as main source of income. It is important to acknowledge that in all cases, children migrated to generate this additional source of income. The age of these children ranged from 12 to 25 years old. The majority (54,5%) of these children is even 16 years or younger. Two cases below illustrate the situation of the families who turn to child migration as an adaptation strategy.

This household consist of 5 members of which a husband (40), wife (30) and 1 son (14) and 2 daughters (15 and 16). Before resettlement they had 10 hectares of land, which was mainly used for agricultural activities. They also had a small garden where they grew some fruits. They had a monthly income of around 10.000.000 VND from selling bamboo from their land. The rest of the crops were used for their own food consumption. After resettlement the family received only 0.2 hectares of land. On this land they grew cassava and acacia to sell and to eat. Selling these crops earned them around 1.000.000 VND per month. Approximately 750.000 VND is spent per month on food for the family, because they are unable to grow enough food on their land to provide in their nutritional needs. The lack of income not only caused problems for their nutritional needs, it brought about another problem. The family had no money to send their two oldest children to school. In order to cope with their declining income, the two oldest children were sent to Saigon to work in a sewing factory. The family made this decision, because they had seen other families in the village sent their children to Saigon. They also saw that these families had more money to spend. In fact, there are other children from the village who work for the same boss in Saigon. Several times a year this 'boss' comes to Bo Hon and asks families if they have children who want to work in his factory. Here they work long hours, from 8 am to midnight with only one hour break in the afternoon. Their children only return once each year. The fact that the children have no identification means they do not have a legal contract and have to work harder than is allowed. On account of their low income, the family decided to send their children away. Normally they would not have let their children go away to work, but their current financial situation leaves them no choice. Migration is earning the family an additional 3.500.000 VND per month, which can assure food and some money for daily expenditures.

Another family applied migration as an adaptation strategy to cope with landlessness, loss of income and food insecurity. This household consist of 4 members of which a husband (39), wife (38) and a boy (14) and a girl (12). After resettlement the family received only 0.2 hectares of land, in contrast to the 14 hectares of land they had cultivated before resettlement. On their agricultural land they grew bamboo and sold it on the market. From their garden they retrieved fruit and grew rice for own consumption. Depending on bamboo sales, the family had an average monthly income of 10.000.000

VND. In the new village they grew cassava and acacia to sell and to eat. However, the acacia is currently too young to sell on the market and therefore they did not receive any income from this crop yet. In order to take care of the family, both the father and mother worked for other people to earn an income. They earned about 1.000.000 VND per month from these activities. Approximately half of their monthly income is spend on food, since the lack of land does not provide enough crops in order to meet the nutritional needs of the family. The rest of their income is not enough to send their two children to school. Therefore, the parents decided to send their oldest son of 14 years old to Saigon. In Saigon he works in a factory in order to send money back to the family. The father explains that other children in the village who did not go to school also left to work in Saigon. Seeing the other children leave made the family decide to send their son to Saigon as well. In a couple of years the family hoped to have saved enough money in order for their son to finish secondary school. However, the boy has not been away long enough to earn an income for the family.

Migration, as an adaptation strategy, has made families able to cope with impoverishment. However, migration as a sustainable strategy for the future of the family and the children is questionable. Children could experience a loss of education, which can increase their impoverishment in the future. This adaptation strategy is just a temporary strategy they can apply in order to cope with the risks they experience. In order to sustain the family in the future, long-term investments have to be made and a part of the money should be used for the children's education.

8.3 WORK FOR OTHER PEOPLE

A widely applied adaptation strategy is working for other people. In Bo Hon, all households who 'work for other people' are performing different activities on large plantations. These activities include growing acacia or bamboo, cutting trees, transporting trees to the market and selling them. Before resettlement 10% of the households worked on the land of other people, while after resettlement this percentage increased to 55%. Due to a reduction of land size after relocation, many families struggled to generate income from their own piece of land. In order to maintain their standard of living, they started to work for other people. Half of the households who work for other people fully depended on work on plantations as their main source of income. For the other households the work they perform on plantations was to earn additional income, next to the income they earn from their own agricultural land.

One of the reasons that households in Bo Hon applied this strategy is the presence of a large acacia industry surrounding Bo Hon. Ngo Tri Dung from Tropenbos Institute (interview, 2013) explains the occurrence of the acacia industry in the area where Bo Hon is located. Around 10 years ago forest cover was at its lowest point in Vietnam. There was a lot of bare land without green forests. Therefore it was important that Vietnam engaged in acacia projects to replant the bare land. Therefore the World Bank started the WB3 project, which stimulated the planting of acacia. In this project the people who owned forest land would receive a certificate to grow acacia and receive financial support in order to grow acacia on their land. In 2009, the project started in Thua Thien Hue province. Many wealthy families who owned forest land started to grow acacia. However, they needed people to cut these trees and sell them on the market. People in Bo Hon were hired to perform this work and function as middlemen between the plantations owner and the market. Because many people in Bo Hon grew acacia and bamboo before resettlement, they have experience with cutting acacia and bamboo.

Although working on plantations provides income for many households in Bo Hon, it is not able to maintain the standard of living before resettlement. This family, consisting of a husband (39), wife (38) and a boy (14) and a girl (12), explain their living situation. Due to less land after resettlement, the father and mother were unable to earn enough income. In order to cope with this change the parents started to work for other people. There are large plantation owners who need people to cut the acacia trees. They hire people from the village to cut the bamboo. The father explains he has no other option than to work for people, because he has no education to find other work. Furthermore, he has experience with cutting acacia and therefore uses this skill to earn an income. This income helps the family to spend some money on books, clothes, other daily expenditures and improved their situation after resettlement slightly. However, the income they earn from working on plantation was not enough to feed the family or send their children to school. Besides, the work they do is very hard and earns very little. They do not always have work and are not formally employed by these plantation owners. In order to provide for the families needs, the oldest son was send to Saigon to work in a factory to earn them an additional income. Thus, working for other does not provide a stable and sufficient income in order to sustain an entire family.

8.4 LAND USE INTENSIFICATION

The reduction in land size, in combination with low soil quality, made it difficult for households in Bo Hon to continue their traditional way of cultivating the land. In the old village they used slash and burn systems and shifting cultivation. The ability to open new land to their desire made it possible to carry on this traditional cultivation. This system ensured fertility of the land, which made it unnecessary to use any fertilizers. The situation after resettlement made it necessary for households to use additional inputs in order to cultivate the land. In total, 62,5% of the households used chemical fertilizer on their land. The village leader of Bo Hon (interview, 2013) notes that fertilizers were never used by the households in Bo Hon. However, after resettlement the land was of such bad quality that households were forced to use chemical fertilizers. In addition, Artati (2011) adds that knowledge on cultivating this new land was absent. The use of fertilizer is easy to use in order to make crops grow very fast. However, it has to be mentioned that fertilizers were expensive and therefore not available to all households. On average a households spends 389.545 VND per one hectare per month on chemical fertilizer, which is 26,7% of their average monthly income. However, the use of these fertilizers was unable to restore the amount of crops households grew before resettlement. Therefore land use intensification was often used in combination with other adaptation strategies in order to cope with vulnerability. The majority (52,5%) used land use intensification in combination with one or multiple other adaptation strategies.

Conclusion

Since the resettlement of Bo Hon in 2006, households have applied various adaptation strategies in order to cope with impoverishment. These adaptation strategies include migration, off-farm activities, working for other people and land use intensification. Only a small number of household were engaged in off-farm activities. The outcome varied strongly among the households who applied this strategy. Migration was an adaptation strategy which generated income that enabled families to buy food and pay for daily expenditures. However, the sustainability of this strategy is questionable, since it is only a temporary solution and is leading to child migration. These children do not have a chance of education, which will lead to educational losses in the future. A widely used adaptation

strategy was working on plantations. Although this strategy provided income, working conditions are very hard and employment is very insecure. The most widely applied adaptation strategy was land use intensification, since all households in Bo Hon struggle with less land and low soil quality. However, this strategy cannot be applied by all households, since fertilizers are expensive. The income from this strategy was not sufficient, while the majority of households used this strategy in combination with other strategies in order to cope with their situation.

Although the applied strategies were unable to recreate the living conditions before resettlement, all adaptation strategies were able soften the severity of their situation after resettlement to some extent. Households even applied multiple adaptation strategies in order to cope with vulnerability to risk.

9. COMPARATIVE ANALYSIS

This chapter presents a comparative analysis between the resettled communities of Bo Hon and Kon Tôm. The comparison will mainly focus on the risk that these communities are vulnerable to and if present, which adaptation strategies they applied. Kon Tôm will be shortly introduced before the comparative analysis is presented. More detailed information on Kon Tôm village can be found in the thesis of Koster (2013).

9.1 A LUOI HYDROPOWER DAM

In 2007, the construction of this A Luoi hydropower dam started in 2007 and ended in December 2012. This dam is located in A Luoi District on the A Sap river (figure 27). Besides being built for the purpose of generating hydro electricity, it is designed to manage water flows to A Luoi city. The control of water releases from the reservoirs is able to diminish the chances of floods to the city. The total costs of this multipurpose dam were about 156.24 million USD. Similar to Bo Hon, a joint stock company (Central Hydropower, Ltd.) provided the majority of the funds to construct this dam. A Luoi hydropower dam will annually produce an estimated 686.5 million kWh, which will contribute to the energy supply of the national electricity grid. The objective of this dam is contribute to a stable national electricity supply and stimulate socio-economic development (e.g. tourism, aquaculture and local employment opportunities). Besides economic development, the dam has caused displacement of multiple communities in the surrounding area (Koster, 2013). In total 7 communities, consisting of 1381 households, have lost parts of their land. There were 250 households which lost all their land and needed to be resettled. For these households the village of Kon Tôm was created as resettlement site. Only a part, 106 households, has moved to Kon Tôm. The remaining households left to live in other places or with family (Suu, 2013).

9.2 CHARACTERISTICS OF KON TÔM VILLAGE

The new resettlement site called Kon Tôm is located in Hong Thuong commune, which is part of A Luoi district in Thua Thien Hue province. As mentioned before, a total of 106 households have been resettled at the end of 2011 to this village. After resettlement, the total amount of households increased to 144, since new households joined the community, households separated and young adults formed new households. The majority (68%) of these households belongs to Ta Oi ethnic

group, followed by a mixture of Ta Oi and Pa Co ethnics (10%), only Pa Co ethnics (20%) and Kinh (2%) (Village leader Kon Tôm, 2013).

Figure 27: A Luoi hydropower dam

Source: Tin Tuc, 2012

In total, 60 households were questioned during field of which 58 households belonged to Tai Oi ethnic group and only 2 households were Kinh. Also one of the questioned households was a young family who separated from their parents after resettlement to start their own household. Also 10 households were female-headed and one household was male-headed. The remaining 49 households consisted out of an husband and wife. The household size of the participants varies largely from just one household member to over 8 household members. On average however, each households consists out of 4 household members.

9.3 RISK ANALYSIS

Landlessness

After resettlement, both Bo Hon and Kon Tôm have experienced vulnerability to landlessness. On average, a household in Bo Hon had a decrease of 97,6 % of their land size, while in Kon Tôm there is a 78,5 % decrease of the average land size (table 7). Although Bo Hon has experienced a larger decrease, it is hard to compare numbers between Bo Hon and Kon Tôm. Before resettlement Bo Hon had illegal land, which allowed them to access new land for cultivation without any restrictions. However, due to the illegal status this could not be entirely compensated for after resettlement. Therefore they experienced a large decrease in land size after resettlement. In addition, both villages were faced with poor soil quality and therefore used more fertilizer in order to cultivate their land. Before resettlement only 2,5 % of the households in Bo Hon used chemical fertilizer, which increased to 62,5% after resettlement. In Kon Tôm, the use of chemical fertilizer increased from 33,3 % to 61,7 %.

Table 7: Decrease of average land size per household in Bo Hon and Kon Tôm

	Before	After	Decrease in %
Bo Hon	8,6 hectare	0,21 hectare	97,6
Kon Tôm	3,4 hectare	0,73 hectare	78,5

Source: Fieldwork Bo Hon and Kon Tôm, 2013

The decrease in average land size and the poor quality of the soil had a negative affect on the quantity of crops that were cultivated in both villages. In addition, there was less diversification of the cultivated crops. There was less cultivation of cassava, wet, dry paddy and bamboo after resettlement. In Bo Hon, wet and dry paddy even disappeared entirely, while in Kon Tôm coffee has disappeared as cultivated crop. Only acacia was still a crop which has been planted before and after resettlement in both villages. In Bo Hon, the cultivation of acacia was stimulated though a World Bank project (WB3) while most households in Kon Tôm still cultivated acacia since it was part of people's compensation.

Joblessness

The resettlement of Bo Hon and Kon Tôm led to a loss of income in both villages (table 8). This decrease was accompanied by a noticeable change in the income sources of the households. In Bo Hon most households remained to rely on agricultural activities for their income, however the income derived from these activities was 87,6 % less than before resettlement. In addition, income generated from common property declined, while work for other people as an income source increased. Currently, 22 households are working on acacia plantations, owned by rich families in the surrounding area of Bo Hon. Although many households were engaged in this line of work, it was not able to replace previous income sources. Common property generated on average 1.963.846 VND per month for a family, while work for other people on average only generates 862.500 VND per month. In Kon Tôm agricultural activities, including forestry and garden activities, and livestock were the main sources of income. Livestock as a source of income declined after resettlement, while agricultural activities as an income source nearly diminished. In total 18 households were identified that had no income at all. Those households, that still had an income after resettlement gained this mainly through off-farm jobs that were still available after resettlement or work for other people (although opportunities were limited). These findings indicate an even higher vulnerability to joblessness in Kon Tôm compared to Bo Hon.

Table 8: Decrease of average monthly income per household in Bo Hon and Kon Tôm

	Before	After	Decrease in %
Bo Hon	4.388.108 VND	1.972.059 VND	55,1
Kon Tôm	3.061.500 VND	1.397.423 VND	54,4

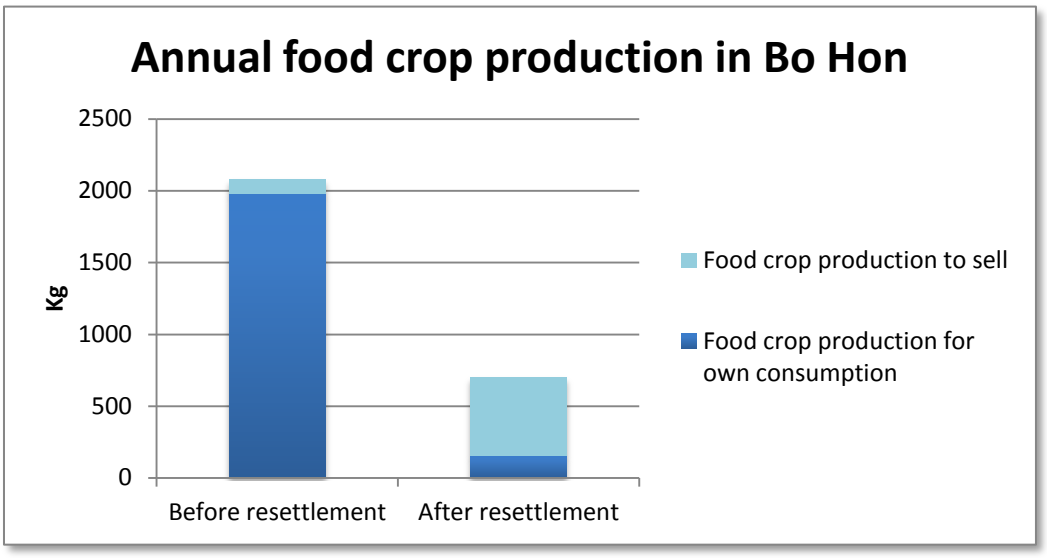
Source: Fieldwork Bo Hon and Kon Tôm, 2013

Food insecurity

Vulnerability to food insecurity was very high in both Bo Hon and Kon Tôm after their displacement. In both villages the annual food production has significantly declined (figure 28 & 29). As an effect, the satisfaction of nutritional needs from own food production has dropped. Before resettlement, food crop production was abundant enough in order to satisfy 77,5% of the households in Bo Hon. After resettlement, more food crops were being sold in order to generate an income which further

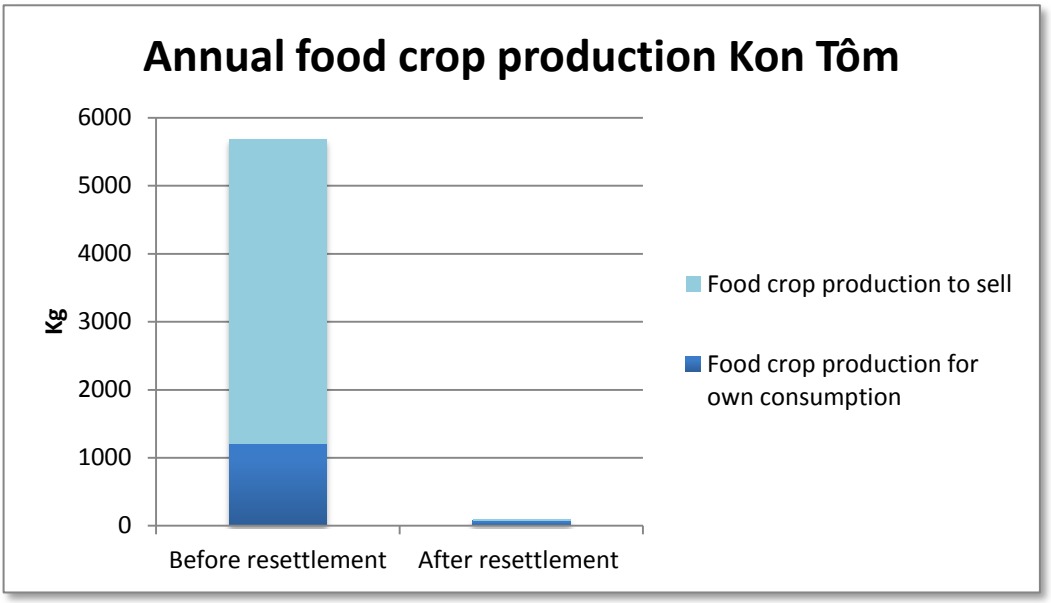
reduced the amount of food that could have been used for own consumption. In Kon Tôm a similar situation emerged, where before 53,3% of the households produced enough food crops to satisfy their own nutritional needs. However, after resettlement this number reduced to only 5% of the households. The decline in food production was another challenge for the resettled in Kon Tôm. Not only did they had less food for own consumption, they also had less crops in order to generate an income.

Figure 28: Annual food crop production before and after resettlement in Bo Hon



Source: Fieldwork Bo Hon, 2013

Figure 29: Annual food crop production before and after resettlement in Kon Tôm



Source: Fieldwork Kon Tôm, 2013

In addition, the average food expenditure of households in Bo Hon increased and has become a significant part of the percentage of the income spend on food (56,0%) (table 5). Before resettlement they used almost their entire food crop production for own consumption. Even 18 households did not spend any of their income on food, since their own food crop production was abundant enough.

In Kon Tôm the average amount of food expenditure declined after resettlement, which implied that households in Kon Tôm had less money to spend on food. Relativity however, a similar part (19,4 %) of a households average income was spend on food after resettlement (table 9).
This can be explained by the reduction of income after relocation. In total, 11 households were identified that neither had income nor any food expenditure, which made them extremely vulnerable to food insecurity.

Table 9: Average food expenditure in Bo Hon and Kon Tôm

	Bo Hon		Kon Tôm	
	Before	After	Before	After
Average food expenditure	174.118 VND	1.135.938 VND	507.500 VND	246.800 VND
Average % of income spend on food	12,5 %	56,0 %	17,6 %	19,4%

Source: Fieldwork Bo Hon and Kon Tôm, 2013

Health issues

Both villages experienced health issues after resettlement. In Bo Hon 57,5% of the villagers experienced various health issues after displacement. Mentioned health issues included stomachache, headache, backache and fever. According to the households, the increased experience of headaches and backaches was caused by hard physical labor on acacia plantations. Stomachaches and fevers could have been caused by the increased use of chemical fertilizer on the food and the drinking of polluted water. In Kon Tôm only 15% of the households experienced health issues after resettlement. Headaches, stomachaches and skin infections were mentioned by several households. Similar to Bo Hon, these complaints can be explained by the increased use of chemical fertilizer and the drinking of polluted water. The water system in Kon Tôm was often broken, which left families without the supply of water for drinking or sanitary use. Therefore, they used water in the river to drink, wash clothes and to bathe themselves. However, the water was polluted, which could have caused the skin infections and stomachaches that were experienced after resettlement. Although the health issues mentioned in both villages can be explained by the situation after resettlement, more research is necessary to determine whether these direct relationships are correct since health issues can also be caused by other factors.

Loss of common property

The old village of Bo Hon was surrounded by forest and there was a river nearby. Almost all households used these types of common property. This however changed after resettlement: only 44 % of the households in Bo Hon had access to common property, compared to 97,5 % before resettlement (table 10). This loss of access had an impact on both their income, as well as their food insecurity. Before relocation income from common property was mainly derived from forest activities, like cutting rattan and bamboo. After resettlement however fewer families generated income through forest activities (from 50,0% to 42,9%). Although there is a river, it does not contain much fish. Therefore they were unable to use the river as source of food. In contrast to Bo Hon, access to common property increased slightly (from 51,7% to 53,3%) in Kon Tôm. It however has to be mentioned that access to the forest decreased while access to the river increased. This shift affected the income levels of some households.

Before resettlement 7 households used the forest to generate income though cutting bamboo, rattan and gathering leaves to make hats. After relocation however 6 households lost the forest as a source of income. Increased access to the river made it possible to catch fish for own consumption. Other non income generating activities on common property included gathering firewood or bathing in the river. Compared to Bo Hon fewer households used common property to generate income and therefore, the loss of access to common property had less effect on the income levels of most households in Kon Tôm.

Table 10: Access to common property in Bo Hon and Kon Tôm

	Bo Hon		Kon Tôm	
	Before	After	Before	After
Access to common property	92,5%	45,0%	51,7%	53,3%

Source: Fieldwork Bo Hon and Kon Tôm, 2013

Access to public services

In Bo Hon and Kon Tôm almost all households had access to sanitation facilities (table 11). However, the opinions of the respondents regarding these facilities were divided. In Bo Hon, households were both negative and positive, because the nature around them was used when facilities did not function properly. This was normal for these households, since sanitation facilities were absent before resettlement. For this reason, some households were not pleased with the current facilities and therefore preferred the outdoors. Most households in Kon Tôm already had access to sanitation facilities (50%) before resettlement. Nevertheless most households were negative to very negative about the current situation. The water system was often broken, which made it very difficult for households to use their sanitation facilities. Besides, this hindered people's access to clean drinking water.

Table 11: Access to sanitation facilities in Bo Hon and Kon Tôm

	Bo Hon		Kon Tôm	
	Before	After	Before	After
Access to sanitation facilities	7,7 %	97,4 %	50 %	98,1 %

Source: Fieldwork Bo Hon and Kon Tôm, 2013

Access to electricity in Bo Hon increased from 5% to 95% after resettlement. In Kon Tôm all households had electricity and remained to have access to electricity after resettlement as well. Both villages are content with the current electricity provision, although there are some complaints regarding the affordability of electricity. For some households electricity was too expensive, especially can be explained by a reduction of their monthly income after resettlement.

When comparing access to medical services, there is a major difference in the situation before and after resettlement between Bo Hon and Kon Tôm. Access to medical services increased in Bo Hon, while it decreased in Kon Tôm (table 12). In Bo Hon the doctor was both accessible and affordable. Therefore households in Bo Hon were very positive regarding the available medical services. In contrast, households in Kon Tôm were very negative about the current situation. In the village there is a medical centre, however there were neither doctors nor any medicines available.

Table 12: Access to medical services in Bo Hon and Kon Tôm

	Bo Hon		Kon Tôm	
	Before	After	Before	After
Access to medical services	12,5 %	100 %	100%	30%

Source: Fieldwork Bo Hon and Kon Tôm, 2013

A similar situation occurs regarding people's opinion about primary and secondary education. Households in Bo Hon were very positive, because the primary and the secondary school were more accessible and of better quality than before. Adverse to these opinions, households in Kon Tôm were negative about the educational services. There were even a high number of households who did not have an opinion about secondary education, simply because they had no access it.

In general, the access to and satisfaction of the public services has increased in Bo Hon. In contrast, access to almost all public services decreased in Kon Tôm after resettlement. For this reason, households in Kon Tôm were besides other risks also more vulnerable to loss of access to public services. In the future, this could lead to educational loss and increased health issues.

9.4 Adaptation strategies

The comparative risk analysis shows that both villages have been vulnerable to risks due to resettlement. However, there is a difference in the way they are adapting to their new situation.

Households in Bo Hon have been resettled for over six years (2006) and have found various ways to cope with the above mentioned risks. Households in Bo Hon have applied adaptation strategies such as migration, working for other people, off-farm activities and land use intensification. There are various reasons as to why these households applied these strategies. In total 10 households used migration as an adaptation strategy in order to cope with landlessness, joblessness and food insecurity. In all these families the children migrated, with ages ranging from 12 to 25 years old, in order to support their respective family with remittances. This enabled the families to buy food and pay for daily expenditures. However, these children did not go to school, which could lead to education loss in the near future.

Due to vulnerability to landlessness, many families did not earn enough income from their own land. In order to cope with this change, they started to work on large plantations. This was possible due to the presence of a large acacia industry surrounding Bo Hon. Many people in Bo Hon grew acacia and bamboo before resettlement, which made them able to use their skills (e.g. cutting acacia and bamboo) on these plantations. However, labour conditions were very hard; people did not have a formal contract and received low wages.

Off-farm activities, as an adaptation strategy, were also present in Bo Hon. Two households opened a small shop to sell food and drinks in the village in order to cope with landlessness, joblessness, loss of common property and food insecurity. Also one household constructed a pool in order to grow fish. The fish could be used for selling and to eat.

The decrease in land size made it harder to provide enough income from agricultural activities. In addition, the soil was of poor quality to continue their traditional cultivation. Therefore the use of chemical fertilizer increased significantly. All these strategies have been able reduce the risk of impoverishment to a certain level. However despite all efforts, the households did not feel they were able to create the situation they had before resettlement.

Adaptation strategies have also been undertaken by households in Kon Tôm order to cope with their current situation. Migration as an adaptation strategy has been applied by only one household in order to earn money for educative purposes. Child migration, as described above in Bo Hon, has not been identified. Also working for other people as an adaptation strategy was rarely applied due to the lack of an acacia industry. The application of 'off-farm activities' as an adaptation strategy (including, wine production, own shops etc.) was also rarely applied by households. In contrast, land use intensification as an adaptation strategy has been identified among many households through the use of chemical fertilizer. Although more households used chemical fertilizer after resettlement, the question is to what extent this will continue in the future since chemical fertilizer has to be bought when the fertilizer from compensation will diminish. The lack of income of most households severely restricts the capability to do this. Besides, there were no unions available in Kon Tôm, which is a crucial factor for diffusing knowledge concerning land use intensification.

The limited occurrence/success of the adaptation strategies can, besides the above mentioned reasons, be explained by the prevailing risks in Kon Tôm, which were even more severe than in Bo Hon. Also less adaptation strategies have been identified in Kon Tôm since households in this village had less time to adapt to their new circumstances (most households were resettled in 2011) compared to the re-settlers in Bo Hon.

9.5 Conclusion

Several conclusions can be made after analysing the situation before and after resettlement between Bo Hon and Kon Tôm. Concerning risks, Kan Tôm is vulnerable to all, while Bo Hon is not vulnerable to the risk of loss of access to public services. The quality and accessibility actually increased after resettlement. When comparing both cases, the situation in Kon Tôm was more severe, this also hindered the application of adaptation strategies in Kon Tôm. Furthermore, less adaptation strategies have been applied in Kon Tôm compared to Bo Hon, due to time limitations. Re-settlers in Kon Tôm have had less time to adapt to the new environment. Households in Bo Hon have already been resettled for over 6 years and therefore have been able to adapt in various ways. Finally, less adaptation strategies have been applied in Kon Tôm, due to specific situational factor. For example, many people in Bo Hon work on acacia plantations due to the presence of an acacia market, while the remoteness of Kon Tôm limits the opportunity to work on the land of others.

CONCLUSION

This research has focused on the effects of dam-induced displacement in Vietnam. Through the identification of the risks and adaptation strategies applied by the community of Bo Hon, insights are given into their limited capacity to actively cope with change. Fieldwork conducted in Bo Hon village has contributed to clarifying the main question of this research:

To what extent are involuntarily resettled communities vulnerable to risk and if present, which adaptation strategies do they use to cope with experienced risks due to dam construction in Thua Thien Hue province?

The planning of a hydropower dam is a top-down process in which the national government of Vietnam determines when, were and by whom a dam should be constructed. Lower levels of government, including the province, district and commune does not have the power to contest this decision. More importantly, the community of Bo Hon was not able to contest the construction of the dam and thus their resettlement. Although a committee is set up to which is responsible for the community's needs, there is substantial discrepancy between the described procedures and its execution. Before resettlement villagers were ill-informed by government officials regarding the resettlement location and compensation. Important information such as, the potential disadvantages of the construction of Binh Dien hydropower dam were withheld. During the planning of the resettlement program neither the village leader nor the residents in Bo Hon were involved. This prohibited them in influencing the location or level of compensation. Due to trust in the government, consent to relocation was given. Nevertheless, this cannot be considered to be done through free, prior or informed consent. All together, this points towards involuntary resettlement of Bo Hon community.

This research revealed that inhabitants in Bo Hon are vulnerable to 5 risks identified by the IRR model (Cernea, 2000), which caused impoverishment. Although these risks can be seen in isolation, the case of Bo Hon has illustrated that vulnerability to one risk often leads to the exposure of others. The community experienced a substantial loss in farmland, which makes them extremely vulnerable to landlessness. In turn, landlessness affected joblessness and food insecurity. Less land, together with bad soil quality, severely impacted food crop production of Bo Hon. In addition, landlessness reduced the income levels of households, because cash crops could no longer be cultivated. Although the farmland is not sufficient to provide in the needs of families, work on plantations provided an additional source of income. Nevertheless, this is physically demanding labour is low paid and does not generate a steady income.

The risk of joblessness in turn enforces the risk of food insecurity. A decline in income forced households to sell parts of their already reduced food crop production. In addition, more income is spend on food since there is less food available from their own land. Food has become a large part of their monthly expenditures, which shows that joblessness needs to be dealt with in order to decrease food insecurity. Loss of access to common property is an additional factor which has influenced food insecurity and joblessness. Increased risks to health issues were also encountered among residents of Bo Hon, caused by undernourishment, lack of access to clean drinking water and physically heavy labour. Opposed to the view of Robinson (2003) public services have not been found to form additional risks to this community. After resettlement, the village had access to drinking

water, sanitary facilities, electricity, medical care, elementary and secondary school. All together people are very content with the accessibility, quality and affordability of these services.

Within the community clear differences can be observed between households and the degree to which they are vulnerable to the risk of impoverishment. The groups most severely impacted by the resettlement process have been women-headed, Kinh and handicapped households. Handicapped households have the highest risks to impoverishment compared to the rest of Bo Hon. Their physical and mental conditions pose additional challenges, which increase their vulnerability. There are additional factors which contribute to the exposure to risks. The property owned before resettlement determines the compensation a household receives. Household's composition and can increase income levels and therefore decrease food insecurity. The physical condition of individuals may hinder them in accessing common property. Finally, change of livelihood activities were identified as factor which influences vulnerability to risks.

In order to cope with these risks, the people of Bo Hon have actively pursued strategies to improve their living standards. They applied adaptation strategies, which include migration, work for other people, off-farm activities and land use intensification. The application of these strategies points to a high adaptive capacity, since households have actively responded to the change in their livelihood. The ability to implement these strategies is heavily dependent on the access to livelihood assets.

Through the use of social capital, households were able to access their network so household members could migrate for the purpose of remittances. Sustainability of this strategy is questionable, since child migration is leading to loss of education. This could mean an additional risk of impoverishment for children of Bo Hon. Access to financial capital enabled the use of chemical fertilizer to increase crop production. Financial capital also facilitated the foundation of two small grocery shops and the construction of a pool to farm fish. In addition, financial compensation was often used for the purchase of motorized vehicles to access employment in a wider area. The relocation of Bo Hon increased the physical capital of the village through improved infrastructure. This increased accessibility to markets and plantations, combined with improved transportation facilitated work mobility. Working on plantations was a strategy that could be applied by human capital, since the majority of Bo Hon could use their agricultural skills on plantations. The application of these strategies improved livelihood outcomes after resettlement.

This indicates that Bo Hon has a high adaptive capacity and was able to reduce their vulnerability to risks. However, this community applied these strategies after experiencing impoverishment risks and not in a pro-active manner. In addition, their adaptation was not able to recreate their living conditions as before resettlement and fully overcome the risks that they were exposed to.

Comparison

By comparing Bo Hon and Kon Tôm different outcomes of resettlement process have been observed. Both the inhabitants of Bo Hon and Kon Tôm have been exposed to impoverishment after being resettled. However, there is a noticeable difference in the level of impoverishment. The situation of Bo Hon is less severe, due to the application of adaptation strategies. Kon Tôm struggles with a lack of access to natural, physical and financial capital, limiting their capacity to implement adaptation strategies. In addition, Bo Hon has had over 6 years to adapt to their new situation, whereas Kon

Tôm has only had less than two years. Hence, time plays a significant role in the implementation of adaptation strategies and the reduction of impoverishment risks.

DISCUSSION AND RECOMMENDATIONS

The results of this study have several implications for theorist and practitioners. This research has found result that support the need for improvement the planning, design and execution of resettlement policies in Vietnam. Although there are policies in Vietnam, their implementation is insufficient. Elements such as active participation in decision-making should be underlined in future policy reformation. Those affected need be recognized as equal partners in the decision-making process and have the ability to influence the resettlement location and level of compensation awarded to them.

In the decision-making process of the construction of a dams, it remains unclear which actors can influence this process. The government has the power to decide the details of the construction, however no influence from other government levels is able to contest this decision. Therefore, transparency is an important issue which need to be dealt with to improve the policy environment in Vietnam and create a more equal decision-making process. Transparency can protect local communities of unfair resettlement schemes and create better conditions for resettlement. In addition, transparency of cash flow from and to actors can reduce corruption and enable for financial funds to reach affected communities.

Financial compensation in the current resettlement programs has adopted a limited view of the impact of resettlement on people's livelihood. This study indicates that people's live are more broadly impacted by resettlement. Compensation should better reflect this impact and protect communities' living standards and support their potential for further development. Additional to financial funds, knowledge and training should be provided to them to broaden knowledge on new local circumstances. In collaboration with affected communities, policies can be made more contexts specific. Those affected should play an important role in assessing their sources of livelihood. As farm land is essential to their livelihood, cash from compensation cannot function as a replacement and restore their livelihood. Carefulness is necessary in every phase of the resettlement program in dam-induced development. Together with improved policies, negative impacts can be minimized for resettled communities in the future.

Feature research can look into the application of adaptation strategies in different national and local context. Strategies can be influenced by culture and other contextual conditions, since vulnerability, adaptive capacity and resilience are dynamic concepts which can change over time and space. Special attention should be given to the role of time in the application of strategies. What is the time when people start implementing adaptation strategies? To what extent do strategies differ from another? Research should focus on the possibility to facilitate the use of resources in a pro-active manner in order to protect people against impoverishment. Government and NGO's can provide training on former resettlement experiences and best practices in order to create successful adaptation after resettlement.

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APPENDIX I. QUESTIONNAIRE

Questionnaire for the study of dam-induced displacement and resettlement

Questionnaire information

Name of interviewer	
Questionnaire Number	
Date of interview (dd/mm/year)	

General information of respondent

1. Village:
a) Bo Hon
b) Kon Tôm

2. Ethnicity:
a) Kinh
b) Ta Oi
c) Ka Tu
d) Pa Co
e) Van Kieu
f) Other, namely

3. Amount and type of household members:

Type	Respondent	Age	Gender	Education	Occupancy
Husband					
Wife					
Children					
Other household members					

2. Resettlement process

Part 1: Free prior and informed consent

4. Place before resettlement:
.....

5. Period of resettlement (dd/mm/year):
.....

6. Were you informed about the resettlement process prior to this event?
a) Yes
b) No (continue with question 13)

7. When were you informed about the resettlement process? (dd/mm/year):
.....
8. Information sources of the resettlement process:
a) Village leader
b) Neighbor(s), friends, family
c) Printed media
d) People's committee
e) Other(s), namely.....

9a. What did you know through these sources about the resettlement process?
.....
.....
.....

9b. What was promised by these sources?
a) Money ..... VND
b) Land ..... ha
c) Training, namely .....
d) Other(s), namely .....
e) Nothing

10. Did you gave your consent regarding the resettlement process?
a) Yes
b) No

11. Did you participate in decision-making regarding the resettlement process?
a) Yes
b) No

12. Were your 'resettlement' wishes/needs/demands taken into account?
a) Completely
b) Partly
c) Not at all

13. What is your opinion about the resettlement process?

a) Very positive
b) Positive
c) Neutral
d) Negative
e) Very negative
f) No opinion

Part 2: Compensation

14. Have you received any form of compensation?
a) Yes
b) No (continue with question 17)

15. How were you compensated? (more answers possible)
a) Money ..... VND
b) Land ..... ha
c) Training, namely .....
d) Other(s), namely .....

16. If applicable, for what purpose(s) has the financial compensation been used? (more answers possible)
a) Housing..... VND
b) Furniture..... VND
c) Savings..... VND
d) Daily expenditures.....VND
e) Land.....VND
f) Others, namely..... VND

Risks

Landlessness

Question no.	Questions	Former Village	Current Village
17	How much land do you have?	……. ha	……. ha
18	What is the main type of land use of your land? (more answers possible)	a) Agriculture ……. ha b) Forestry ……. ha c) Garden ……. ha d) Other(s), namely.... ..... ha	a) Agriculture ……. ha b) Forestry ……. ha c) Garden ……. ha d) Other(s), namely.... ..... ha
19	What kind of crops do you plant on your agricultural land? (more answers possible)	a) Cassava b) Wet paddy c) Dry paddy d) Rubber e) Bamboo f) Acacia	a) Cassava b) Wet paddy c) Dry paddy d) Rubber e) Bamboo f) Acacia

		g) Other(s), namely.....	g) Other(s), namely..... .....
20	What kind of crops do you plant in your garden? (more answers possible)	a) Fruit b) Grass c) Herb d) Other(s), namely	a) Fruit b) Grass c) Herb d) Other(s), namely ....
21	Do you sell your crops or use it for own consumption?	a) Selling crops b) Using crops for own consumption c) Both	a) Selling crops b) Using crops for own consumption c) Both
22	How is the condition of your land?	a) Very good b) Good c) Not bad/not good d) Bad e) Very bad	a) Very good b) Good c) Not bad/not good d) Bad e) Very bad
23	Do you use fertilizer for your land? If so, how much do you spent each year on average on fertilizer? (more answers possible)	a) Yes, natural fertilizer ..... VND/ha b) Yes, chemical fertilizer ..... VND/ha c) No, nothing	a) Yes, natural fertilizer ..... VND/ha b) Yes, chemical fertilizer ..... VND/ha c) No, nothing
24	Is your land registered?	a) Yes b) No	a) Yes b) No

Joblessness

Question no.	Questions	Former Village	Current Village
25	Average monthly household income (VND)	.....	.....
26	Main household sources of income (per month on average in VND)	a) Agriculture .... b) Garden ..... c) Forestry..... d) Fishing ..... e) Livestock ..... f) Construction ..... g) Small scale business ..... h) Other(s), namely	a) Agriculture .... b) Garden ..... c) Forestry..... d) Fishing ..... e) Livestock ..... f) Construction ..... g) Small scale business ..... h) Other(s), namely .....
27	Temporality of formal employment contract (if applicable)	a) 1 - 6 months b) 7 - 11 months c) 1 - 2 years d) More than 2 years e) Unknown	a) 1 - 6 months b) 7 - 11 months c) 1 - 2 years d) More than 2 years e) Unknown
28	Have one or more of the	a) Yes, namely	a) Yes, namely .....

	household members migrated to support the household?	..... b) No	..... b) No
29	How much does the household receive per month from remittances (VND)?	.....	.....

30. Has the resettlement process led to a loss of income sources?
a) Yes
b) No

31. Which economic activities have been lost due to the resettlement process?
.....
.....
.....

Food security & Health

Question no.	Questions	Former Village	Current Village
32	How much food crops do you produce (kg per year)?	..... kg per year	..... kg per year
33	How much food crops do you produce for own use (kg per year)?	..... kg per year	..... kg per year
34	Does the food crop production satisfy own nutritional needs?	a) Yes b) Partly c) Not at all	a) Yes b) Partly c) Not at all
35	How much of the households monthly income is spent on food (VND)?	.....	.....

36. Did your household experience any diseases after resettlement which were absent or less intensive before resettlement? If so, which one(s)?
.....
.....

Loss of common property

Question no.	Questions	Former Village	Current Village
37	Do you have access to common property?	a) Yes b) No	a) Yes b) No
38	What type(s) of common property do you use?	a) Forest b) River c) Agricultural land d) Other(s), namely	a) Forest b) River c) Agricultural land d) Other(s), namely .....

		.....	.....
39	What kind of activities is the common property used for? (more answers possible)	a) Recreation b) Education c) Income generating activities, namely .... d) Other(s), namely	a) Recreation b) Education c) Income generating activities, namely .... d) Other(s), namely ....
40	How much do you earn from these activities per month (VND)?	.....	.....

41. Are you satisfied with current common property resources?
Yes/No/Partly, because .....
.....

Public services

Question no.	Questions	Former Village	Current Village
42	Does your household have access to clean drinking water?	a) Yes b) No	a) Yes b) No
43	Does your household have access to sanitation facilities?	a) Yes b) No	a) Yes b) No
44	To what extent are you satisfied with the available sanitation facilities?	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion
45	Does your household have access to electricity?	a) Yes b) No	a) Yes b) No
46	To what extent are you satisfied with the electricity facilities?	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion
47	Do you have access to medical services?	a) Yes b) No	a) Yes b) No
48	To what extent are you satisfied with the available medical services?	a) Very positive b) Positive c) Neutral d) Negative	a) Very positive b) Positive c) Neutral d) Negative

		e) Very negative f) No opinion	e) Very negative f) No opinion
49	Do your children go to primary school? (if applicable)	a) Yes, ... children b) No, because.....	a) Yes, ... children b) No, because..... .....
50	To what extent are you satisfied with the primary educational services? (if applicable)	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion
51	Do your children go to secondary school? (if applicable)	a) Yes, ... children b) No, because.....	a) Yes, ... children b) No, because..... .....
52	To what extent are you satisfied with the secondary educational services? (if applicable)	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion	a) Very positive b) Positive c) Neutral d) Negative e) Very negative f) No opinion
53	On whose land do you generate income?	a) Own land b) Land of other(s) c) Common property d) Shifting cultivation e) None	a) Own land b) Land of other(s) c) Common property d) Shifting cultivation e) None
54	Whose land do you use for own food consumption?	a) Own land b) Land of other(s) c) Common property d) Shifting cultivation e) None	a) Own land b) Land of other(s) c) Common property d) Shifting cultivation e) None

APPENDIX II. TOPIC LIST

TOPIC LIST NGO'S

1. Introduction about the NGO

2. Projects/research concerning displacement and resettlement (Binh Dien? A Loui?)

3. Project/research questions:
   - Objectives
   - Activities
   - Actors involved and roles of these actors
   - Spatial scope
   - Temporal scope
   - Cooperation with other actors
   - Finance
   - Is it part of a bigger project/program?
   - Impact: is it reaching its goals?
   - What are the biggest challenges of the project/research

4. Knowledge about acacia plantations
   - Acacia dependency: a good thing?
   - Pros/cons of acacia

TOPIC LIST POLITICAL AUTHORITIES

1. Resettlement programme: content
    - Created by whom?
    - Companies involved
    - Implementation responsibility
    - Policy influence
    - Participation
    - Compensation
    - Time planning
    - Awareness raising/information sharing
    - Opinion about the resettlement programme

2. Resettlement process
    - Participation
    - Compensation
    - Time planning
    - Awareness raising
    - Opinion about the resettlement process
    - Challenges

3. Socio-economic data of the village prior and after resettlement
    - Documents (socio-economic data, maps, resettlement programme etc.)
    - Progression (incl. biggest changes before and after resettlement)
    - Resettlement of whole village to the same place?
    - Lay out of the village (same as before?)
    - Public services
    - Access to common property before and after resettlement
    - Challenges

4. Projects after resettlement (incl. training, agricultural projects etc.)
    - Objectives
    - Activities
    - Actors involved and roles of these actors
    - Spatial scope
    - Temporal scope
    - Cooperation with other actors
    - Finance
    - Is it part of a bigger project/program?
    - Impact: is it reaching its goals?
    - What are the biggest challenges of the project/research