DEVELOPMENT FROM RESETTLEMENT? COMPARING DIFFERENCES IN FOOD SECURITY AND COPING STRATEGIES BETWEEN RESETTLED HOUSEHOLDS IN THUA THIEN-HUE PROVINCE, VIETNAM

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Abstract

Background

The economy of Vietnam has been growing rapidly since the Đổi Mới reforms in 1986. As a respond to corresponding higher demands for electricity, more than 300 hydropower dams have been built ever since. While hydropower electricity contributed to further sustainable economic development of the country, the projects have been responsible for the displacement of more than 200,000 people. Unfortunately, most displaced people faced a reduction of living standards due to unclear resettlement policies. Higher rates of food insecurity are a prevalent problem, as many former subsistence farmers lose their cultivable land in exchange for compensation money. Based on earlier research from Dr. Ty Pham Huu, this paper researches longer-term impacts of dam-induced resettlement of three resettlement villages in Thua Thien-Hue Province, Vietnam. Main findings indicate that more than a convenient location, resettlers need time to adapt to the new situation and develop livelihoods in a sustainable manner. Moreover, to adapt to permanent issues such as worse land quality, natural disasters and pollution, resettlers need comprehensive training and assistance in order to decrease chances of health issues and food insecurity.

Objectives

To gain insight in long-term impacts of resettlement on livelihood development in three resettlement villages.

Methods

Data was collected through a household survey

Duration and Location

Research took place from February to May 2019 in Thua Thien-Hue Province, Vietnam.

Budget

There was no budget allocated for this study

Key Words

Hydropower Development; Resettlement; Displacement; Sustainable Livelihood Development; Adaptation; Vulnerability; Impoverishment Risks; Food Insecurity.

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1. Introduction

Over the last thirty years, Vietnam transitioned from being one of the world's poorest nations towards becoming a promising middle-income country. It saw its first stage of economic reform in 1986 with the Đổi Mới policies aimed at creating a socialist-oriented market economy. As a response to the coinciding higher demands for electricity, the Vietnamese government started the construction of multiple hydropower dams. In 2016, Vietnam had 306 hydropower dams in operation (Poindexter, 2016). Over the past decades, however, the construction of these dams has been responsible for the displacement of more than 200,000 Vietnamese people (Bui & Schreinemachers, 2011). They were displaced from their lands with a high risk of losing their jobs and income, consequently leading into poverty, food insecurity, and increased morbidity (Cernea, 1997). Even though large-scale investments in sustainable energy are inevitable to the national development of Vietnam, the risks of displacement of communities have to be taken into account when assessing the prosperity of the nation. Studies found that in most cases, displaced people face impoverishment and a reduction in living standards (Bui, Schreinemachers & Berger, 2013). However, more and more researchers and organisations try to see resettlement as an opportunity for development (Cernea, 1999; Vanclay, 2017). This paper will dive deeper into the implications of resettlement on livelihoods and food- and nutrition security, and whether resettlement helped or hindered sustainable livelihood development for households in Thua Thien-Hue province, Vietnam.

The basis for this research derives from the thesis of Dr. Ty Pham Huu (2015): "Dilemmas of Hydropower Development in Vietnam: Between Dam-induced Displacement and Sustainable Development.*"* Dr. Huu researched the extent to which hydropower offers a sustainable solution in fulfilling the increasing need for energy in a rapidly industrializing Vietnam, while having a limited impact on the environment and the livelihoods of the resettled groups. The research was focused on communities in Thua Thien-Hue province in Vietnam, a province characterized by large watersheds and home to multiple hydropower dams. Huu analysed households of Bo Hon village and communities from A Lưới District before and after resettlement. Bo Hon Village was entirely displaced in 2006; their resettled village is 15 kilometres closer to Hue city. In 2011, in A Lưới District, households from A Den village were resettled and regrouped together with households from five other communes in a new village named Can Tom 2 (recently split up in A Den and A Sap). Resettlement brought about many difficulties for these people. Even though they were compensated for displacement by local authorities and the hydropower companies, it was not enough to preserve them to suffering from long-term implications of land loss, loss of jobs and income, lower agricultural produce

and food insecurity. Many households used compensation money to overcome short-term problems. For example, they used it to buy daily foods because they were unable to keep up their previous lifestyles of subsistence farming (Huu, 2015, p. 110). Because living conditions were structurally worse in the resettlement areas, compensation did not turn out to be a sustainable solution for the problems they faced. However, research showed that Bo Hon village seemed to recover faster than the other communities (Huu, 2015, p. 123). Bo Hon households were resettled into a location that was better connected to Hue city due to improved infrastructure. The new settlement was also better regulated in terms of water, energy, sanitation, education and health care facilities, as well as labour and agriculture product markets, compared to their old village. This made it easier for them to rebuild their livelihoods after resettlement. Additionally, they used half of their compensation money to buy material assets such as farming equipment, motor bikes and mobile phones to increase their productivity, income, and job opportunities (Huu, 2015, p. 113). The case study shows that next to the available livelihood assets in the new resettlement, coping strategies and adaptive capacity determines the development of displaced groups. The question that remains is whether previously found differences in development between the resettled communities in A Lưới and Bo Hon still exist, or that they have been reduced over time.

1.1 Problem Statement

The Institute of Development Consultation found that over 82% of resettled people in Vietnam faced worse conditions after resettlement, this is why research into what helps or hinders sustainable development is key in reducing problems for future resettlement processes (CODE, 2010). This research looks at the development of Bo Hon, A Den and A Sap villages after they have gone through the three stages mentioned by Huu (2011) in "Food Security and Energy Development in Vietnam": the stage before displacement, the stage after displacement, and the third stage in which people do not receive (food) support anymore and have a high risk of getting caught in a poverty trap (p. 25). The question is whether these households got caught in the poverty trap, or that they sustainably developed their livelihoods over time. Moreover, the question is about the role of location and time in explaining differences in development between the groups. Knowing that food security is a prevalent Impoverishment Risk (Cernea, 1997) of involuntary resettlement and a direct outcome of available livelihood assets and adaptive capacity, this paper aims to find further linkages between food insecurity and location, quality of land, use of chemicals and pollution. Learning from what actors influence the outcome of resettlement processes will help to make up better measures for the future.

1.2 Host Organisation

Dr. Ty Pham Huu, head of research at Trường Đại học Nông Lâm Huế (Hue University of Agriculture and Forestry (HUAF)) was my local supervisor in Vietnam. His thesis "Dilemmas of hydropower development in Vietnam: between dam-induced displacement and sustainable development" of 2015 formed the inspiration and basis for my research into implications of resettlement in the Thua Thien-Hue province in Vietnam. Dr. Huu has been researching resettlement in this region for over ten years and supported multiple students in their research on this topic. In the three-month research period, starting from February 2019, he assisted in finding student translators, arranging trips to the field and improving the household survey.

1.3 Research Questions

Based on abovementioned information from previous research and the existing research gap, the main research question is as follows: *What are longer-term effects of dam-induced resettlement on livelihood development and food security in Bo Hon, A Den and A Sap village?* The objective is to find answers on how households have been adapting to the new situation and whether previously found problems with food insecurity are still prevalent. New results are compared to previous research to make a longer-term analysis of the development of the households. The main question is subdivided into the following questions:

1. *What was the livelihood situation before and right after resettlement for A Den, A Sap and Bo Hon village households?*
2. *What is the current livelihood development situation of A Den, A Sap and Bo Hon village households and what differences are still to be found between the villages in terms of sustainable development?*
3. *How did the resettled households cope with—and adapt to the new situation over time?*
4. *Are previously found trends in the livelihood development between the villages still existing, or have they reduced over time? To what extent do differences between resettlement location and time have an effect on this outcome?*

2. Theoretical Framework

The impact of displacement and resettlement is often measured through the Impoverishment Risks Model (Cernea, 1997), which in its turn incorporates the Sustainable Livelihood Approach, and refers to concepts such as food security, resettlement adaptation, resilience, and vulnerability. This chapter provides a literature review of these concepts.

2.1 Displacement and Resettlement

Displacement is a top-down driven process of moving people involuntarily from a project site to a new place. After that, displaced people resettle into a new area. The construction of hydropower dams is already held responsible for the displacement of 40-80 million people worldwide (World Commission on Dams, 2001). Most cases show that during the resettlement process, people face impoverishment and a reduction in living standards, which is why displacement is often paired with compensation for their losses (Bui, Schreinemachers & Berger, 2013). Before 1993, the Vietnamese government did not compensate for such risks as there were only few legal documents published for compensating and helping people to rebuild their lives (Bui & Schreinemachers, 2011). Displacement in Vietnam often meant the involuntary movement of people towards more mountainous, rural areas, where prices of land were not clearly defined, resulting in compensation prices which were lower than market prices (Huu, 2015, p. 73). From 1993 onwards, the Vietnamese government started to implement new laws and orders on resettlement compensation. The 2003 Law on Land introduced "equal-value compensation policies" stating that resettlement projects shall be implemented before land is seized and that resettlement areas "must have developmental conditions equal to or better than the former place of residence" (Bui & Schreinemachers, 2011). Moreover, Decree 188/2004/NĐ-CP, implemented in 2004, regulated fairer land price compensation in which market prices were clearly defined (Huu, 2015, p. 53). Over the years, compensation was also understood as more than providing support in the form of money; the government started providing seeds, agricultural services and techniques and helping to establish new occupations (Bui & Schreinemachers, 2011).

Scudder (1997) says successful resettlement takes time: at minimum, it should be implemented as a two-generation process in a four-stage framework. The first stage is about planning and recruitment, including the first planning of a new dam project and who has to resettle (Scudder, 1997, p. 39). The second stage, about adjustment and coping, includes physical removal and clearing of land. During this second stage, Scudder says the majority of resettlers face reduced living standards because it takes time for governments, companies and

organisations involved to strengthen facilities such as infrastructure, schools, and other social services. This stage comes to an end "only if the majority is able to re-establish their former living standards" (Scudder, 1997, p. 41). Stage three is about further improvement of living standards. There is more emphasis on providing good education, finding non-farm income, and spending rising incomes on quality of housing and equipment (Scudder, 1997, p. 41). In general, he found that "Stage 3 households follow the same investment strategies as they develop their economies" (Scudder, 1997, p. 41). For example, this means that once food self-sufficiency and good livestock management have been achieved, people will start to grow cash crops and start selling meat and dairy. Others will start small businesses such as shops or small factories, thereby diversifying the options for non-farm income. The fourth and latest stage is about handing over resettlement affairs from the first to second generation community leaders and institutions in order to make resettlement process sustainable and successful (Scudder, 1997, p. 42)

2.2 Resettlement as a Means for Development

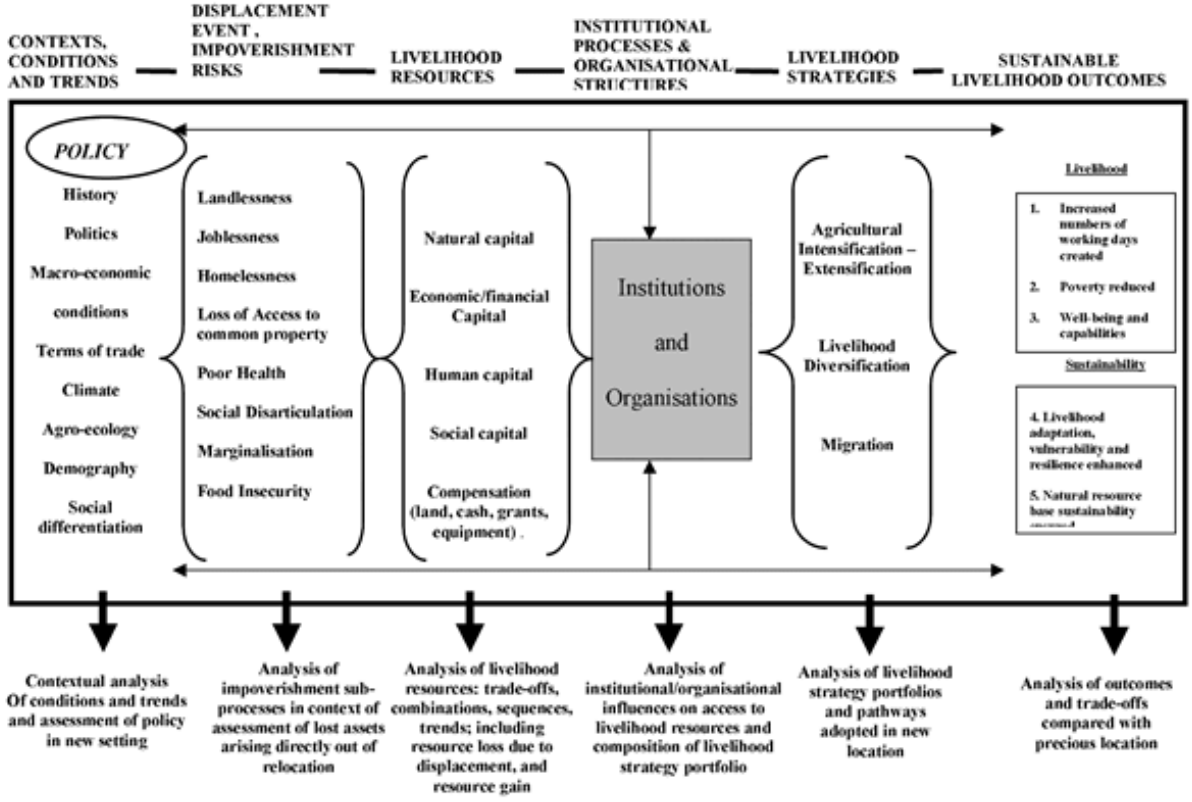
Whereas resettlement is a top-down driven process initiated by large companies and governments, often resulting in a loss of livelihoods for the resettled, there are ways to turn it into a means for development. According to Cernea, "[t]he primary goal of any involuntary resettlement process is to prevent impoverishment and to improve the livelihood of resettlers" (1999, p. 6). He studied the impacts of resettlement on peoples' livelihoods to assess how resettlement can be turned into a tool for development. The question is, however, what development entails and for whom, and what the main priorities are. For many large infrastructure projects, resettling communities is necessary to be able to use the land for developmental purposes. It makes hydropower development "a complex and dynamic development encompassing a wide spectrum of financial institutions, project owners, operators, developers, governments, regulatory bodies, intergovernmental agencies, civil society, and affected stakeholders" (qtd. in Huu, 2015). The World Bank claimed that resettled communities should therefore be included in the decision-making process to bring "all significant players into the debate" (World Commission on Dams, 2001, p. 17). Vanclay agrees that resettlers should be treated not as passive victims but as "effective actors who can negotiate to protect their own interests" because "a negotiated process provides a basis upon which they share responsibility and ownership for ensuring the resettlement proceeds effectively" (2017, p. 18). He also adds that the pre-existing social and political circumstances a resettlement project occurs has significant influence on how the process will unfold. Luckily, the Vietnamese

Decree No. 69/2009/QĐ-TTg states there should be more land allocated to resettlers, and resettlement programs "must be designed to fit the different needs, capacities and customs of the affected people" (Dao, 2010). In order to make resettlement a means for development, compensation policies should be revisited and be more supportive of the rehabilitation of resettled communities.

2.3 Impoverishment Risks

In 1997, Cernea came up with The Risks and Impoverishment Model to better understand impoverishment processes taking place after resettlement. It identified the key impoverishment processes of resettlement: landlessness; joblessness; homelessness; marginalization; food insecurity; loss of access to common property resources; increased morbidity; and community disarticulation (Cernea, 1997). These risks are interrelated and reciprocally related. In 2002, McDowell came up with a revised version of the Cernea's *Model*. He claimed that research into the dynamics of resettlement should also include Sustainable Livelihood Research, and he stresses the importance of institutions and sustainable solutions on livelihood resources and strategies. His revised framework of 2002 is shown in Figure 1. Sustainable Livelihoods Research is valuable to understand livelihoods and how people may react on new situations (see Chapter 2.4). Both formal and informal institutions and organisations are central in carrying out livelihood strategies and are able to play in important role in achieving such outcomes. However, institutional involvement has also frequently showed to be "constraining and exclusive" to community reconstruction, by further marginalizing groups (McDowell, 2002). Either way, institutions are socially embedded and therefore "advance our knowledge about the ways in which forced displacement dismantles patterns of social organisation and how they are re-formed to confront new challenges" (McDowell, 2002). The Revised Framework is therefore a better portrayal of the dynamics between contextual policies, the most important Impoverishment Risks, livelihood assets, strategies and outcomes, and the role of institutional processes in it. It is important to notice that not all eight Impoverishment Risks occur after every resettlement. The applicability of abovementioned Risks depends on contextual conditions such as location and time (Cernea, 1997). Moreover, some groups are more vulnerable to risks than others. Women, children ethnic minorities and poorer households are more vulnerable to adverse impacts (Bui, Schreinemachers & Berger, 2013). They frequently face discrimination, educational loss and loss of income (Cernea, 1997).

Figure 1 Forced Displacement, Sustainable Livelihoods and Impoverishment Risks – A Revised Framework for Analysis.



Source: McDowell, 2002

2.4 The Sustainable Livelihoods Approach

McDowell's framework encompasses both Cernea's (1997) model, as well as the Sustainable Livelihood Model. The Sustainable Livelihoods Approach (SLA) is a well-known strategy to assess the development of communities and the effectiveness of development assistance. It analyses people in the context of vulnerability, in which they have access to certain assets or capitals. These gain their value in a certain social or organisational environment, and together shape livelihood outcomes. Livelihoods are in this approach defined as comprising:

> the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (qtd. in DFID, 2007).

This framework helps to understand how a certain set of assets can shape and change livelihoods. For example, in the context of resettlement, we see that land (natural capital) is an

important asset in determining the income of households (financial capital) and their food security. All assets combined determine how communities rehabilitate after resettlement and what it does to their food security and composition of diets. Huu saw that:

> Displaced households applied a mix of livelihood resettlement, including compensation money spending for survival; restoration of traditional livelihoods and acceptance of new culture for coping; crop diversification; land reclamation for forest plantation; wage labour and migration for long-term adaptation or improved resilience. The case study also showed that displaced households have quite good capacity to self-organize when livelihood opportunities are available, including accessible land, labour market access, good infrastructure and public services, access to urban areas, and good interaction with outsiders, even if they had little support or benefit sharing from hydropower developers after resettlement (2015, p. 123).

The applicability of livelihoods is also closely relation to the adaptive capacity of communities, which will be explained in paragraph 2.5 on resettlement adaptation. Together with the framework of McDowell (2002), who includes both external and internal actors playing a role in livelihood outcomes, the rehabilitation and livelihood outcome of displaced communities can be predicted and measured.

2.5 Resettlement Adaptation, Resilience and Vulnerability

The way displaced communities use livelihood assets and their ability to adapt to the new situation plays an important role in their rehabilitation after resettlement. Adaptive capacity can be defined as "the ability or capacity of a system to modify or change its characteristics or behaviour so as to cope better with existing or anticipated external stresses" (Brooks, 2003). Together with adaptation, resilience, vulnerability, exposure and sensitivity, the term is used to predict the way people respond to environmental changes (Smit & Wandel, 2006, p. 282). However, there are significant differences between the terms. Where resilience indicates the capability to recover from effects or shocks on the short term, adaptation implies negative or positive ways of dealing with adverse conditions on the longer term. Vulnerability is often measurable, as they "occur when affected people are unable to counterbalance adverse impacts to cope short-term and adapt long-term" (qtd. in Huu, 2015, p. 109). The score of vulnerability depends on measures of exposure or sensitivity to shocks, which in their turn are shaped by environmental and social actors. For example, characteristics of (re)settlement location, livelihoods and land uses "reflect broader social, economic, cultural, political and

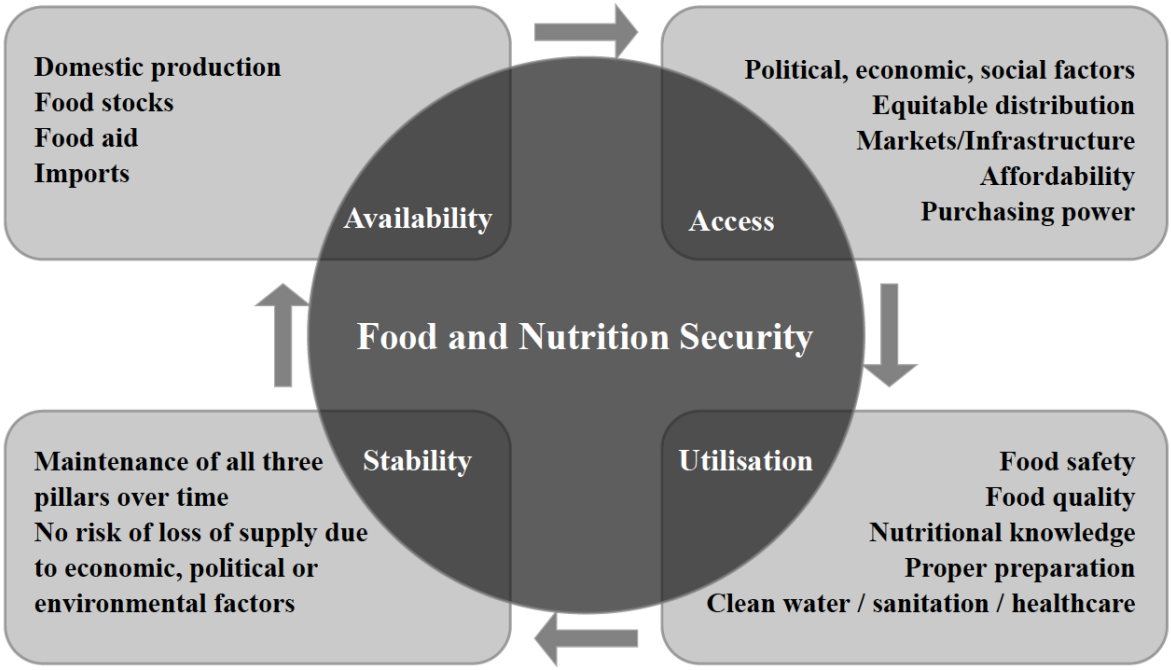
environmental conditions, sometimes called ‘drivers’ or ‘sources’ or ‘determinants’ of exposure and sensitivity” (Smit & Wandel, 2006, p. 286). In that sense, ethnic minority groups resettled into areas with worse environmental conditions are considered to be vulnerable groups. However, the case of Bo Hon village shows that the availability of adequate livelihood conditions is not the only key to a successful rehabilitation after resettlement. Bo Hon village made a faster recovery than other displaced communities in Vietnam, partly due to the fact that the new village gave the community access to “better infrastructure, education, health care, water and electricity, sanitation, and especially labour and agriculture product markets” (Huu, 2015, p. 123). However, most of them also successfully used the available assets to buy new equipment for farming, bought motor bikes to increase their mobility and access to the city, and mobile phones to be better connected with other regions and communities. Moreover, the small income they earned on nearly located Acacia forest plantations was used “to exchange products with retailers from Hue City every day” (Huu, 2015, p. 123). The case study showed that resettling into a more convenient location definitely has a positive effect on livelihood development, however also Bo Hon villagers faced impoverishment in terms of land and land quality after resettlement. What made them recover faster than other villages were their sustainable adaptation strategies.

2.6 Food and Nutrition Security

Food insecurity is incorporated in The Risks and Impoverishments Model (Cernea, 1997) as one of the eight most prevalent issues by resettlers. In most cases, it is a direct outcome of other risks such as joblessness and landlessness, but it has not always been seen as multifaceted as it is now. The concept of food security emerged during the 1970s, when rapidly increasing prices caused a global food crisis (World Bank, 2006). A big influence on the concept of food security was Amartya Sen, who claimed that “starvation is a matter of some people not *having* enough food to eat, and not a matter of there *being* not enough food to eat” (qtd. in World Bank, 2006). Therefore, the focus on the availability of food gradually shifted towards the accessibility and use of food, which were added to the concept. Nowadays, food security is understood as the point “[w]hen all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life” (FAO World Food Summit, 1996). This definition forms the basis for multiple other definitions of food security as incorporated in Hamad & Khashroum’s article (2016). However, food (in)security is hard to measure due to its dependency on personal perceptions on food. For example, a way to measure the concept is by asking adults to rate questions such as “I can’t afford to eat properly,” or “We eat the same

thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more" (qtd. in Hamad & Khashroum, 2016, p. 67). The score that comes out of likewise surveys such as the Household Food Insecurity Access Scale (HFIAS) and the Household Dietary Diversity Score (HDDS) are open for consideration. Food security might be closely related to income, which is measurable and comparable to regional food prices, yet it remains important to note that "relationships between people's food environments and diet and/or health status are not fully explained by socioeconomic status" (Minaker et. al, 2011, p. 66). Food security also depends on physical food availability, economic and physical access to food, food utilization and the stability of these three dimensions over time (FAO, 2008). See Figure 2 for a schematic overview of these dimensions.

Figure 2 The four pillars of Food and Nutrition Security



Source: FAO, 2006.

All four dimensions have to be fulfilled simultaneously. This also related to Maxwell & Smith's statement, claiming that:

> Food security cannot be seen in isolation; it is part of wider livelihood considerations. It is therefore not always a priority and this can be understood in the context of other household considerations and individual members' perceptions (Maxwell & Smith, 1992).

It suggests that when measuring food security, cultural and individual preferences cannot be ignored in the results and play just as an important role as socioeconomic factors. Moreover, perceptions on which foods are healthy and nutritious differ between persons and change over time. This leads into the complexity of measuring utilization of food, which includes aspects such as nutrition, food preparation, food practices, hygiene and dietary diversity. Nutrition is about the composition of macronutrients in food and is "an integral component of food security and should be embedded within all four of its dimensions – availability, access, utilization, and stability" (Hwalla, 2016, p. 167). Even though the relationship between food security and nutrition security is complex, as a lack of access to healthy foods makes obesity "more prevalent in food insecure populations," they should not be seen as separate concepts as they are both significant instruments to measure society's nourishment and health (Hwalla, 2016, p. 168). Both concepts cannot do without the other, because the access people have to nutritious foods, as stated in the FAO World Food Summit (1996) definition of food security, depends on both food and nutrition security. Driven by socio-economic factors, rice is the most consumed food product in Vietnam, providing an average of 80 percent of the carbohydrates and 40 percent of the protein intake (Thang, 2014). This is why insufficient rice production will, without the knowledge of capability to cope with such stresses, directly influence "daily meal nutrition, leading to malnutrition and food insecurity" (Hung, 2001). This is also where the importance of food stability comes in, measuring the risk of loss of supply due to economic, political or environmental factors. When supplies are unstable, there is a high risk of food insecurity.

3. Vietnam: An Overview

This chapter provides an overview of Vietnam, Thua Thien-Hue Province and the resettled villages. It places contemporary issues in a broader context and helps explain some of the ongoing developmental processes on a macro- and microscale. Note that for this chapter, A Den and A Sap are gathered under the name 'Can Tom 2:' the name of the resettlement village these households were moved into. Nowadays the village is split up in A Den and A Sap.

3.1 The Socialist Republic of Vietnam

Vietnam is located in South-eastern Asia, bordering Cambodia, China and Laos. Due to its small, long-stretched form, the climate of Vietnam varies from region to region. Whereas the north knows four distinct different seasons, the south is characterized by a tropical monsoon climate with a dry and rainy season. Temperatures also vary between mountainous areas such as Sa Pa in Northern Vietnam and the coastal lowlands. Thua Thien Hue-Province in Central Vietnam knows a tropical monsoon climate, with an average of 25 degrees Celcius (TTHP, 2019). In 2018, 35.9 percent of the total population lived in urban areas; the rate of urbanization is estimated at 2.98 percent annually (CIA, 2019). Numbers on school enrolment, education quality, mortality rates, life expectancy, household infrastructure (access and use of electricity and sanitation) all show that Vietnam has developed well over the last decades (World Bank, 2019).

The country ranks place 15 of the world's country population comparison with more than 97,5 million inhabitants (World Bank, 2019). Whereas there is not an organized religious system, the Vietnamese folk religion is dominant in the country. It includes a set of traditions of spirit and ancient-hero worshipping. Apart from that, the biggest religions are Buddhism and Catholicism. Vietnamese people are also known as the Kinh people, as the majority of the population have Kinh ethnicity who originate from northern Vietnam. Other ethnic groups such as the Tay, Thai and Muong take up less than 2 percent of the total population. In total, the Vietnamese government recognizes 54 different ethnic groups, each with their own languages, occupations, beliefs and traditions. For example, ethnic minority groups in the highlands can be recognized by their colourful dress. It is still evident that ethnic minorities are more vulnerable and poorer compared to the Kinh (UNFPA, 2011, p. 51). For example, they see higher illiteracy and drop-out rates, worse housing conditions, worse access to water and electricity, higher infant mortality rates and poorer living conditions in general (UNFPA, 2011, p. 51).

3.2 Economy and Politics

The current economic system of Vietnam is the Socialist-oriented market economy, an outcome of the economic Đổi Mới reforms in 1986. It helped the country to enter the global market economy and set off its transition from being a centrally-planned, agrarian economy towards becoming a more industrial, market-based economy (CIA, 2019). The Đổi Mới reforms were an initiative by the Communist Party of Vietnam, with the long-term goal to develop a socialist economy. Moreover, it allowed private ownership of small enterprises to exist next to state-run enterprises. Ever since 1986, Vietnam has been experiencing economic growth. The GDP growth of 6,8 percent in 2017 even exceeded the expected growth of 6.7 percent (CIA, 2019). Main reasons for this were growing foreign investments in manufacturing, especially in electronics and apparel, and growing agricultural outputs (World Bank, 2019). On top of that, the service sector saw a remarkable growth of 6,90 percent in the first half of 2018, which was the highest growth rate in 7 years (GSO, 2018). Increasing rates in wholesale and retail sales were the largest contribution to this growth, yet also the growing numbers of tourists contribute significantly to the growth of the service sector (GSO, 2018). Moreover, agriculture, forestry and fisheries remain important sectors for the economy. Even though Vietnam's global share of rice exports is declining, the country still has the third-largest value of rice exports (Workman, 2019). In 2018, Vietnamese rice exports had a dollar value worth of $2.2 billion (Workman, 2019). To stimulate further economic development, the country chaired the Asia-Pacific Economic Cooperation (APEC) Conference in 2017 where "inclusive growth, innovation, strengthening small and medium enterprises, food security, and climate change" are prioritized (CIA, 2019). Vietnam's investments in inclusive growth have turned out fairly well, noting that the employment rate of women is close to that of men, and that women-led households are less likely to be poor than men-led households (World Economic Forum, 2018, p. 4). However, improvements are still to be made. While poverty rates in Vietnam saw a significant drop in the past years (from 14,2% in 2010 towards 4,25% in 2015), ethnic minority people still make up more than 50 percent of the nations' poor (FAO, 2017, p. 6). The poor are likely to live in remote mountainous areas lacking good infrastructure, and are characterized by large sizes of the household, low education and a high dependency on agriculture (Quyen, 2019, p. 2). Whereas more and more of them are eligible for government grants and support in the form of health insurance cards, education fees and livestock, poverty remains a prevalent problem in Vietnam.

3.3 Food Security in Vietnam

Improvements in food security in Vietnam are also closely related to land and trade liberalization policies, and economic growth in general. Ever since 1986, food has become more available and diets have diversified and changed (Nhat, 2010, p. 52). For example, rising incomes among the Vietnamese population led to dramatic increases in the consumption of fruits and animal-sourced products such as meat, fish, eggs and milk (Thang, 2014). For many vulnerable, poor groups, however, animal-sourced foods are still costly and less accessible. While this is mainly a problem caused by economic inequality, Vietnam still has many other improvements to be made in the coming years when it comes to food insecurity. The Food and Agriculture Organisation claims food utilization is still unsatisfactory and climate extremes such as droughts and flooding are an increasing threat to food stability (2017, p. 2). Food safety is also a growing concern among consumers due to increasing pollution, incidents of food contamination and food poisoning (World Bank, 2017, p. 63). A recent representative survey found that food safety was a more pressing issue for Vietnamese people than education, health or governance and that many of them distrust the quality of bought products (World Bank, 2017, p. 15). Industrialization and the rise of global food systems further increased the distance between consumers and food production. A lack of transparency in relations between value chain actors in the food industry created distrust among consumers, fed by recent food scandals related to Chinese food imports (Figuié et. al, 2019, p. 139; 151). In 2012, China reportingly used prohibited toxic pesticides on their apples, resulting in "a general mistrust in food coming from this country" (Figuié et. al, 2019, p. 151). However, the other way around, Cambodian consumers express distrust against agricultural products from Vietnam (Figuié et. al, 2019, p. 153). To build trust in Vietnamese food systems again, the focus will be on reducing the use of polluting chemicals, linking up small-holders in farmers' organisations and making agriculture development more sustainable (FAO, 2017, p. 6).

3.4 Hydropower Development in Vietnam

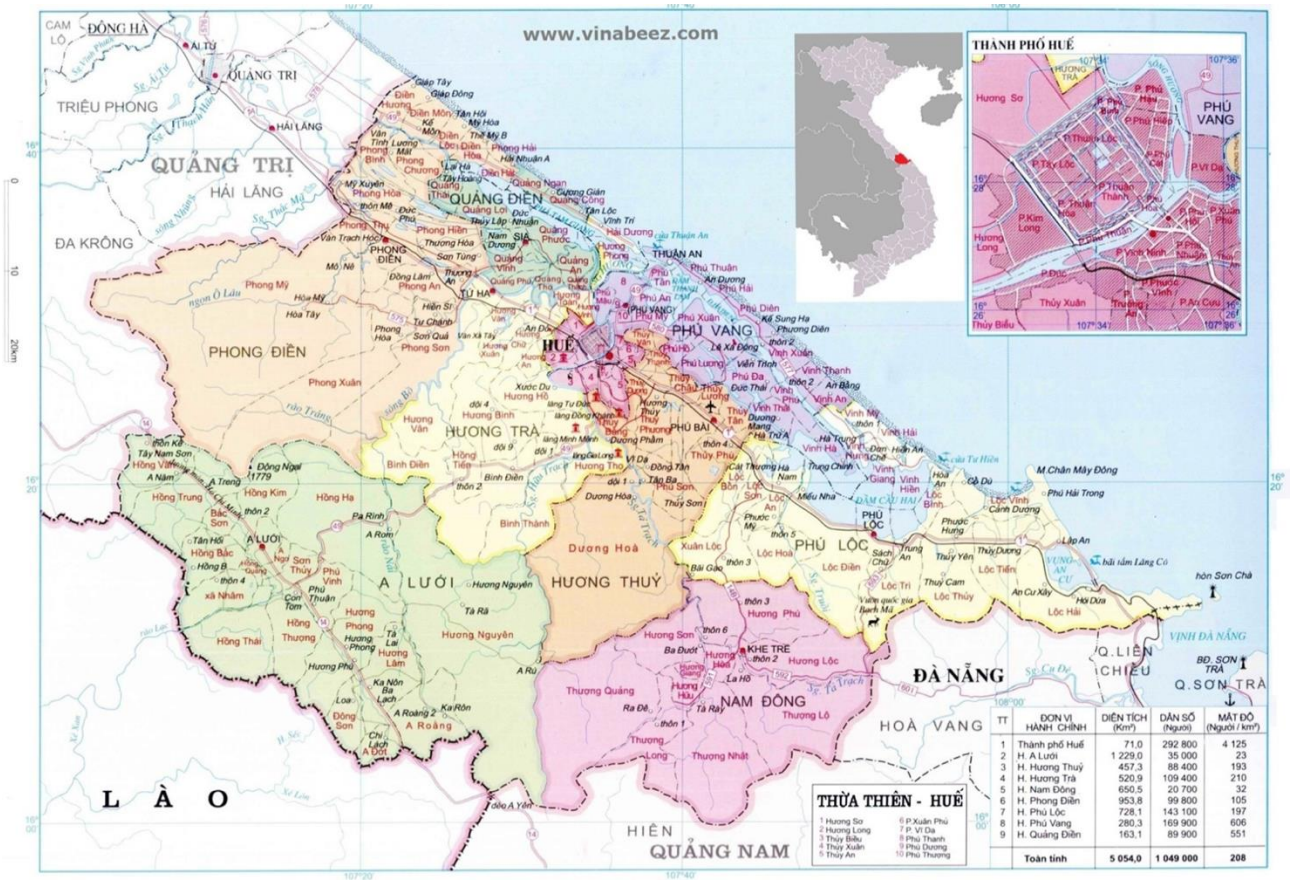
Vietnams' rapid economic development had major impacts on energy demands. The first small energy generating plant in Vietnam was built by the French in 1892 in Ha Noi (Huu, 2015, p. 25). Up to 1986, only a few other hydropower plants were built. It was between 1986 and 1994, during the first stage of economic reform in Vietnam that the largest hydropower dam in Southeast Asia was built: the Hoa Binh hydropower plant (Huu, 2015, p. 26). It set in motion the construction of more than 200 hydropower dams in order to fulfil rising electricity demands in the country (Huu, 2015, p. 29). Hydropower has contributed significantly to industrialization,

modernization and economic growth of Vietnam. It gave people living in rural areas access to electricity and reduced the national poverty rate as a whole (Huu, 2015, p. 163). However, poverty among displaced communities intensified (Huu, 2015, p. 163). The construction of the Hoa Binh hydropower alone displaced more than 58,000 people from their lands (Huu, 2015, p. 26). Yet the impoverishment of displacement people was not the only downside to hydropower development. Vietnam lost many valuable ecosystems, fertile lands and forests to make room for hydropower-related infrastructures. Additionally, many resettlers who did not receive sufficient land for cultivation cleared forests to expand their territories. Without plans to replant lost forest areas, Vietnam did not implement sustainable solutions for the loss of valuable ecosystems (Huu, 2015, p. 162).

3.5 Thua Thien-Hue Province

This research is about resettled villages in Thua Thien-Hue Province in Central Vietnam, being Bo Hon (Hương Trà) in the west, A Sap and A Den village (A Lưới) in the east near the border of Laos (see figure 3). Hue city, the former capital of Vietnam, is the centre of the province.

Figure 3 Map of Thua Thien-Hue province



Source: VinaBeez (2019)

The region is characterized by its large watersheds, of which Huong, O Lau, and A Sap river Watershed are the most important. This made the province a practical site for the construction of six hydropower dams, consequently leading to the resettlement of these communities. As presented in Table 1, the Province is following the national trend of economic growth, estimated at 7,5 to 8,0 percent in 2018. The province is keen on improving infrastructure to further stimulate investments in tourism, real estate, IT, technology, healthcare and education industries ("New Investments Thừa Thiên-Huế," 2018). Moreover, the province also contributed to the construction of the Phong Dien solar power plant, which is the first to operate in Vietnam. The power plant is built in Dien Loc Commune, Phong Dien in uninhibited coastal dunes north of Hue city, and will provide 32,628 average households with sustainable energy ("TTC Group", 2018). More solar plants will be built in the upcoming years, which will be expected to contribute to local socio-economic development and job creation.

Table 1 Main socio-economic objectives of Thua Thien-Hue Province

No	Main objectives	Estimated achieved rate in 2018
I	**Economy**	
1	Gross Regional Domestic Product growth (GRDP) (%)	7,5-8,0
	Therein: - Agriculture - Forestry - Aquaculture (%)	2,23
	- Industry - Construction (%)	8,5
	- Services (%)	8,6
	- Product tax (%)	3,98
2	Gross Regional Product per capita (USD)	1.750
3	Export value of goods (million USD)	920, up 5%
II	**Society**	
4	Population size	1.154.300
5	Natural population growth (‰)	10,8
6	Malnutrition rate in children under 5 years old:	
	- By weight (%)	7,6
	- By height (%)	10,4
	Rate of health insurance participant (%)	95
7	Poverty rate (%)	5% (decrease 1,06%)
III	**Environment**	
8	Rate of rural population access to clean water (%)	80
9	Forest coverage (%)	57,0

Source: Thua Thien-Hue Portal (TTHP), 2019; GSO, 2019

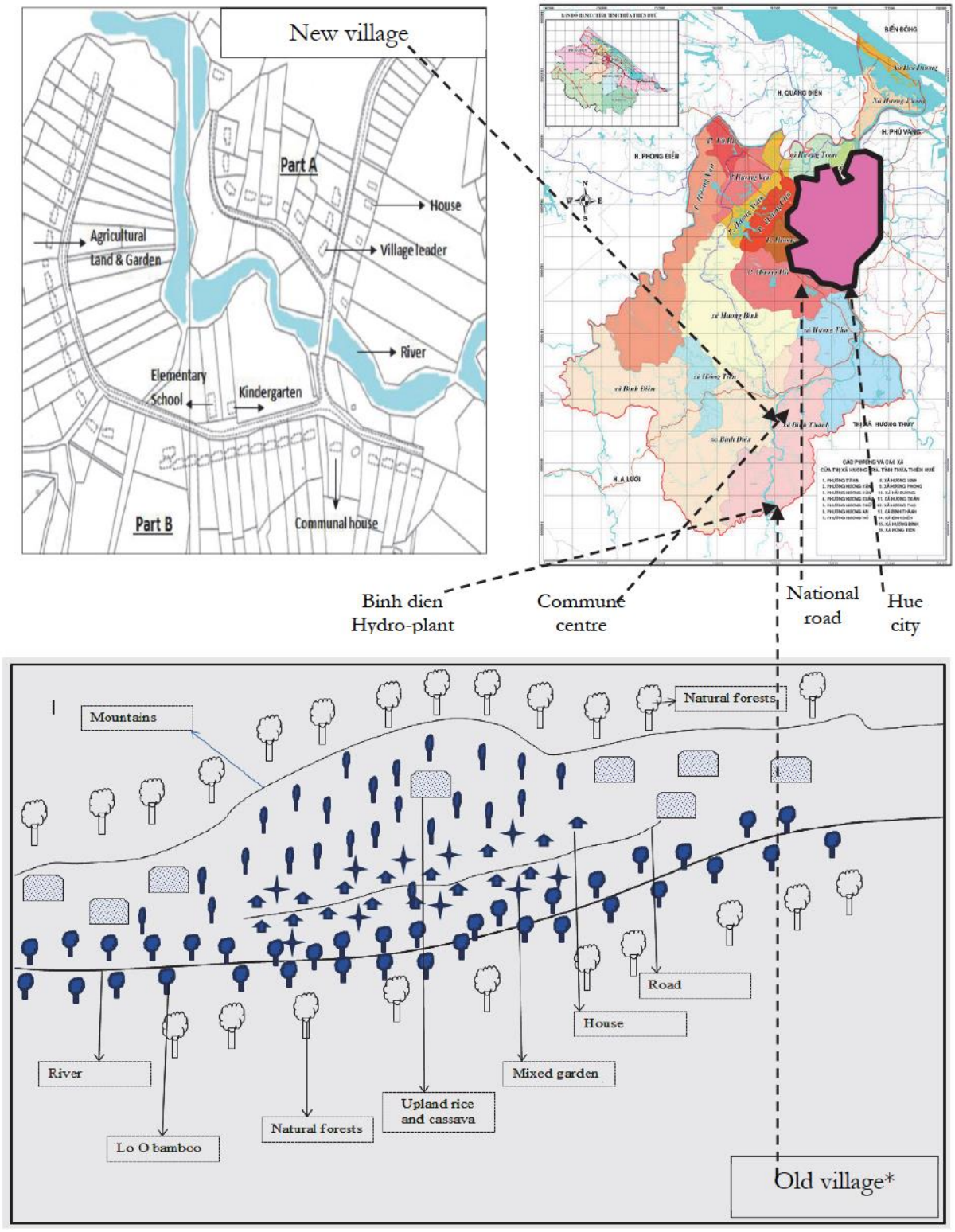
Additionally, the province spent nearly 70 billion VND for sustainable poverty reduction in 2018 in order to reduce the rate of poor households by 1,06 percent (VUFO-NGO Centre, 2018). Included in the plans were "helping 15,000 needy families access preferential loans from the Vietnam Bank for Social Policies and providing vocational training for 1,200 rural workers, especially those from disadvantaged and ethnic minority areas" (VUFO-NGO Centre, 2018). Furthermore, poor households would be supported with legal assistance and education and healthcare services (VUFO-NGO Centre, 2018). As can be concluded from Table 1, such support systems are still much needed in order to combat the numbers of malnourished children and help more rural people access clean water. Fortunately, the ratio of needy households supported in A Lưới district are expected to decline with 4 percent each year (VUFO-NGO Centre, 2018).

3.6 Bo Hon

Bo Hon Village was resettled due to the building of Binh Dien dam on the Huu Trach River in Huong Tra District (Nguyen, Huu & de Bruyn, 2017). This river flows from A Lưới district, through Huong Tra District and then combines with Ta Trach River, flowing in to the Huong River that crosses the city of Hue (Nguyen, Huu & de Bruyn, 2017). It is also known as 'Perfume River' and plays not only an important role as water resource, but also for cultural and societal landscape values in the city (Nguyen, Huu & de Bruyn, 2017). In 2006, Bo Hon village was completely resettled to a place closer to the centre of Binh Thanh commune; 15 kilometres from the old village and 25 kilometres away from Hue City (Huu, 2015, p. 105). See Figure 4 for a map of the resettlement site.

Whereas the old village had poor infrastructure, no electricity, water supply and no school, the new place connected them to better infrastructure, education, health care, water, electricity, sanitation, labour and agriculture product markets (Huu, 2015, p. 123). In 2013, the village consisted of 54 households with 278 people. The majority of Bo Hon village people are from Ka Tu ethnic origin. After a flood in 1995, they moved into Bồ Hòn hamlet together with five Kinh households (Huu, 2015, p. 105). Approximately 95 percent of them were dependent on agriculture for their livelihood (Nguyen, Huu & de Bruyn, 2017). They were used to produce rice, cassava crops and bamboo in the old village, where 70 percent of them were able to supply themselves (Huu, 2015, p. 110). It was difficult to find replacement for their agricultural lands, consequently leading to food insecurity. To compensate their losses, Binh Dien Hydropower Joint Stock, Ltd. offered 35.8 million VND per household, consisting of 0.3 ha of land, a house and cash compensation (Nguyen, Huu & de Bruyn, 2017). Additionally, the households were

Figure 4 Map showing the resettlement sites of Bo Hon Village



Source: Huu, 2015, p. 106

allowed to use residential land to produce their cassava, lemongrass and pineapple. There was no longer space for rice and maize production in the new location (Nguyen, Huu & de Bruyn,

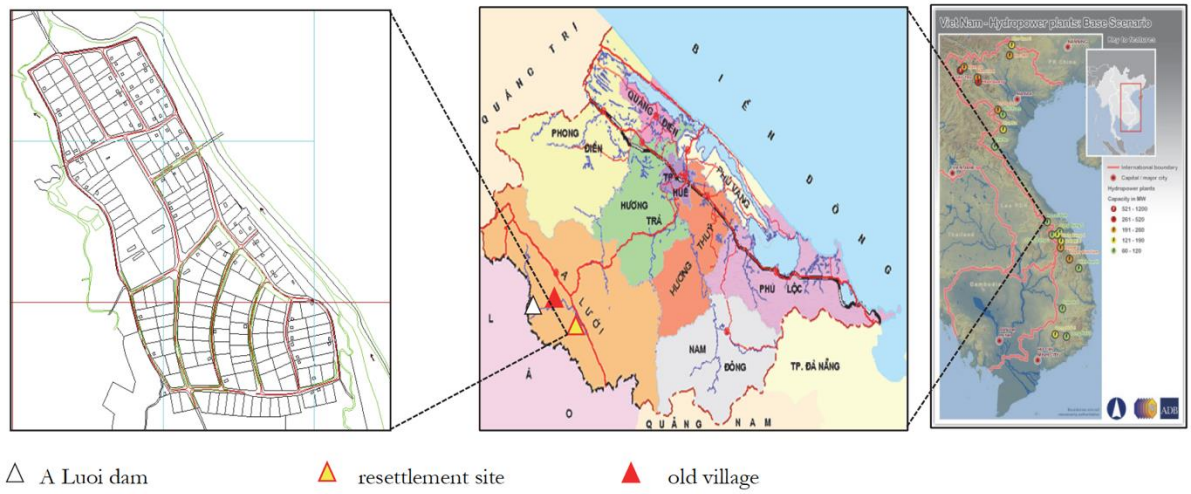
2017). By using fertilizers, the farmers could remedy the poor quality of the soil and maintain productivity. Moreover, they used compensation money for equipment and increasingly invested in motorbikes and mobile phones to be able to find jobs in the region and communicate with their families when they moved to work in nearby places (Huu, 2015, p. 113). In the first eight years after resettlement, the average annual income of the households amounted to only half of the income they were used to earn before resettlement (Nguyen, Huu & De Bruyn, 2017, p. 12) After that, both household income and remittance income of the resettlers increased substantially compared to their income before resettlement, making them less vulnerable to food insecurity (Huu, 2015, p. 117). Seventy percent of remittances send by their family members was used for daily food and 30 percent for health care and household facilities (Huu, 2015, p. 117). Additionally, most households claimed that the compensation they received for resettlement allowed them to buy enough food (Huu, 2015). On top of that, Kinh people living in neighbouring villages taught people from Bo Hon tailoring skills which helped them to work in the textile and garment industries in nearby cities, which also led into increasing remittances (Huu, 2015, p. 123). After resettlement, the Ka Tu people have been adopting more Kinh practices because they could not maintain their culture and religion as a result of bad economic conditions (Huu, 2015, p. 112). They spoke Kinh language more often, changed their clothes and traded their Ka Tu religious traditions to Buddhism and Christianity in order to receive hunger relief from related organisations (Huu, 2015, p. 112). On top of unfair compensation and increasing income gap, this change of culture resulted in distrust and reduced social cohesion in the village.

3.7 Can Tom 2

When Huu (2015) executed his research in 2014, A Den and A Sap were still collected under the name Can Tom 2 village. The village is laid in the Central Highlands of Vietnam, bordering Laos on the left and Huong Tra Town on the East (see Figure 5). The site was in the border area where communist North Vietnam was separated from capitalist South Vietnam during the Vietnam war, and is also well-known for the battle on ‘Hamburger Hill’ in May 1969. It is connected to Hue city by National Road 49. However, this road is poorly maintained and leads a long way through the mountains. For this reason, a drive to the city will still take up around two hours by car. A Lưới district has 1 townlet and 20 communes; households from A Den and A Sap are part of Hong Thai Commune. The inhabitants of A Den village originate from Ta Oi ethnic group in Laos. In 1972, they settled in Hong Thai commune. Due to the start of the construction of the A Lưới hydropower dam in 2007 in the A Sap river, resettlement had to take

place in June 2011, when around 872 villagers were displaced from their lands (Huu, 2015, p. 79). Sixty-one households from A Den and around 46 households from five other villages were relocated into Can Tom 2 village, around 70 kilometres away from Hue City. Of the mixed group of resettlers, 36 per cent were from Pa Co origin and 14 percent from Kinh origin (Huu, 2015, p. 89). Even though Vietnamese scholars regard the Pa Co a sub-group of the Ta Oi, the communities requested separate villages due to a lack of social cohesion and tensions between them (Schliesinger, p. 95). Both communities had their own patriarchy and leaders in the previous settlement, and wanted to maintain this order (Huu, 2015, p. 89). Nowadays, Can Tom 2 village is now separated into A Den and A Sap village.

Figure 5 Map of Can Tom 2 resettlement village



Source: Huu, 2015, p. 78

Most of the resettled were previously working as farmers; few of them were unemployed (Huu, 2015, p. 76). Only a slight majority of them are categorized as non-poor. In the previous settlement, they planted Acacia, upland rice, cassava, and maize (Huu, 2015, p. 84). Due to displacement, they lost a considerable amount of land and income. Before resettlement Ta Oi people claimed to earn about 32 million VND a year, in the new settlement Huu found that incomes dropped to around 6 million VND a year (2015, p. 87). Most of them became wage laborers on Acacia plantations in the region where they earned only a small amount of money. The poorest households even had an income loss of up to 91 percent due to lower food production, making food insecurity a bigger issue than it was before resettlement (Huu, 2015, p. 87). Not only did affected families produce less food for their own use, household expenditures on food did decline considerably. It implied that the resettled population had less

money to spend on food than before. Some households did not even have an income and were extremely vulnerable to effects of food insecurity. The satisfaction of nutritional needs from own crop production dropped from 53,3 percent in the old village to 5 percent in the new place (Huu, 2015, p. 88). Compensation for land loss was between US $2,500 and US $15,000 for each family (Huu, 2015, p. 81). Additionally, families received rice supplies for two years, electricity for one year, fertilizer to improve soil quality, agriculture and job training, some livestock, free education for a year and a small amount of money for other related costs (Huu, 2015, p. 81-2). However, around 86 percent of the households complained about low compensation for land and property (Huu, 2015, p. 82). They stated they were forced to accept any compensation because rejection would leave them with nothing. The case study showed that involvement of resettled people, NGOs and community-based organisations in decision-making about land acquisition needed to be improved.

3.8 Comparison of resettlement outcomes

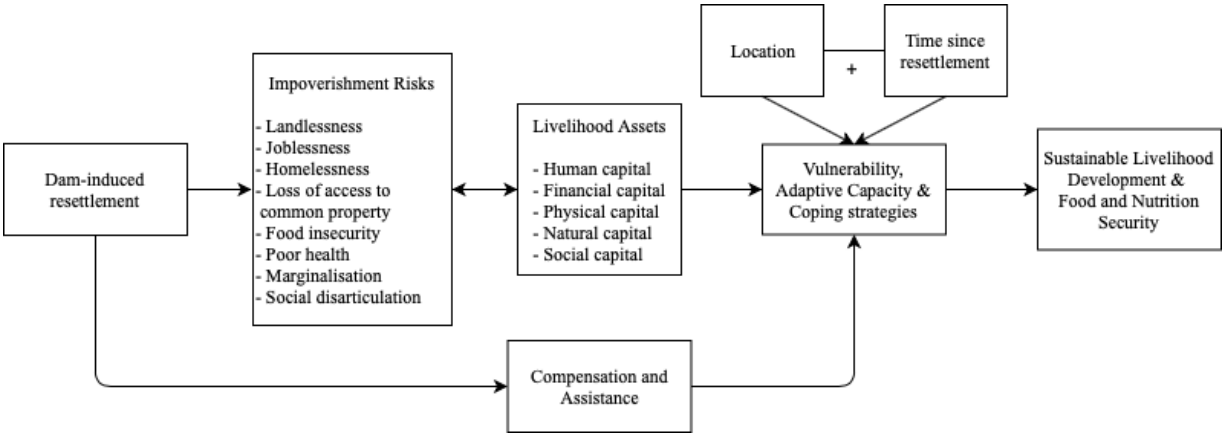
Both villages faced impoverishment after resettlement. However, Bo Hon village made faster recovery than other communities in Vietnam due to the convenient location of the resettlement village, provided with better livelihood conditions. Whereas income decreased right after resettlement, it only took a few years for people to recover and earn a slightly higher income than before displacement. The presence of Acacia plantations stimulated job creation, and people found a way to earn small wages by selling cash crops. This way, many households escaped from poverty and became less vulnerable or more resilient to food insecurity and marginalization. Households resettled into Can Tom 2 village were less successful in rebuilding their livelihoods. Not only did they lose most of their lands, and saw a significant drop in income, they were also not provided sufficient electricity, safe, unpolluted water and adequate health care in the new settlement. Food security became a big issue, as subsistence food production became difficult due to land loss and pollution. Lastly, due to the mixing of multiple communities into one new village, social cohesion became an obstacle in creation farmer unions and an effective village leader board (Huu, 2015, p. 89).

Differences in the success of resettlement development seem to be influenced mainly by the presence of a convenient location, a complete set of livelihood assets and facilities, and an unpolluted environment. The fact that Bo Hon village was resettled 5 years earlier than the households in Can Tom 2 may, however, affect the conclusions of previous research. The question is therefore whether earlier found differences in the development of the communities are still existing, or that they have been reduced over time.

4. Methodology

In order to answer research question '*What are longer-term effects of dam-induced resettlement on livelihood development and food security in Bo Hon, A Den and A Sap village?'* both primary data from household surveys and interviews, as well as secondary data from previous research and contextual data is used. All factors playing a role in the outcome of involuntary resettlement of A Den, A Sap and Bo Hon households are represented in the conceptual framework below.

Figure 6 Conceptual Framework



The conceptual framework represents the influence of dam-induced resettlement on the Sustainable Livelihood Development and Food and Nutrition Security of households from A Den, A Sap and Bo Hon village. Through McDowells (2002) revised framework of Cernea's (1997) eight Impoverishment Risks and the Sustainable Livelihoods Approach, the impacts of resettlement on both communities are measured. The concepts of vulnerability, adaptive capacity, coping strategies, and risk-reducing compensation policies and assistance are included to explain the outcome of the model.

4.1 Population and sample size

Resettlement of Bo Hon village displaced 54 households; Can Tom 2 village contained 107 resettled households. The aim was to make at least half of both groups participate in the household survey. The sample size was based on availability of the participants, which is why the household surveys were conducted at different times during afternoons and evenings in order to reach as many households as possible. A total of 74 questionnaires were gathered: 30 out of 65 households in Bo Hon; 30 out of 61 households in A Den and 14 out of 46 households in A Sap participated. However, as previous research done by Huu was mainly focused on the resettlement outcomes of A Den households, who are from Ta Oi ethnic origin, chapter 8 is

only focused on Ta Oi resettlers. Five participating Pa Co households who live in A Den village now will then be excluded in this chapter, and the twelve Ta Oi households now belonging to A Sap village will be included in order to make the comparison with previous research as fair as possible.

4.2 Research methods

Data is collected by the use of household surveys, interviews and secondary data. The results are be drawn from quantitative and qualitative information on the three stages of resettlement: on the situation before resettlement, right after resettlement and newly generated data on the contemporary situation. Most of the secondary data comes from previous research done by Huu, Nguyen and the Bruyn (2015, 2017). They conducted a livelihood survey among Bo Hon villagers between 2010 and 2013, in which they were asked about 2004, before resettlement, and about their lives after resettlement in 2009. A similar approach was done to research resettled households of A Lưới District. Additional data came from organisations and companies involved in hydropower resettlement and from interviews and focus group discussions with resettled people. Table 2 shows which sources are used to answer which sub-questions. The household survey was made to answer sub-questions 2, 3 and 4. They were administered in person to make sure the questions are interpreted correctly. Any additional comments made by participants were written down on the survey and later processed in Excel.

Table 2 Data source matrix per sub-question

Research Question	**Data source**		
	Household survey	Interviews	Secondary sources
What was the livelihood situation before and right after resettlement for A Den, A Sap and Bo Hon village households?			X
What is the current livelihood development situation of A Den, A Sap and Bo Hon village households and what differences are still to be found between the villages in terms of sustainable development?	X	X	
How did the resettled households cope with— and adapt to the new situation over time?	X		
Are previously found trends in the livelihood development between the villages still existing, or have they reduced over time? To what extent do differences between resettlement location and time have an effect on this outcome?	X	X	X

The survey has a similar set-up as the one used by Huu (based on the Risks and Impoverishment Model of Cernea from 1997) but is less extensive on resettlement compensation and social disarticulation. However, the survey still incorporates questions on natural, human, physical, financial and social capital. Food security is measured by combining questions from the Household Food Insecurity Access Scale and the World Food Programme's Emergency Food Security Assessment (2007), along with questions 8.2 through 8.6 that ask for dietary patterns and nutrition. The financial situation of households is researched in combination with their ability to fulfil their nutritional needs, and how they cope with times of food insecurity. This is done by using questions from the Coping Strategies Index, which "has been shown to correlate well with other measures of food security. […] The strength of the relationship has been tested in over fourteen studies" (WFP, 2008, p. 14-5). The higher the score of this test, the more food insecure a household is (Maxwell & Caldwell, 2008). Lastly, question 8.14 asks for people's views on the future of local food security. The questions on food insecurity in the household survey do therefore not completely follow one of the existing food security measurement instruments but are inspired by them. As mentioned in chapter 2.6, food insecurity is difficult to measure and is highly dependent on the socio-economic and cultural context. The questions included in the survey are chosen to make a link between food insecurity, resettlement and coping strategies. For example, it analyses expenditures on food, where daily foods come from, what food groups commonly consumed and what social, economic or cultural factors influence food choices to find answers on how accessible, available, stable and utilizable foods are in the resettled villages. Using existing food security measurement methods might have resulted in more legitimate results, yet it would also have taken in a lot of valuable time which was rather spend on making the survey more inclusive on livelihood development after resettlement. To get more context out of the survey questions on food security and food behaviour, one focus group was set up with 12 villagers from Bo Hon (see Appendix 2). All comments made during this conversation are used to explain results found in the data from the surveys. Additionally, interviews were conducted with Hearts for Hue (see Appendix 3), a national organisation working in resettled villages, and with the village leader of Bo Hon. Both conversations were semi-structured and focused on coping strategies and expectations for future development.

4.3 Data Analysis

Data analysis of the questionnaire is done by the use of SPSS Statistics 23. Answers given during the interviews, focus group and to open questions in the questionnaire and any additional

remarks made during conducting the survey are coded in Excel and categorized in order to make analysis easier. All quantitative data is collected on a household-level, with some additional information on individual household members. In total, information on age, gender, education and occupation from 326 people are included, coming from the 74 surveyed households. Demographic information of households and individual participants was analysed by descriptive analysis and frequency tables. All data is split up on the basis of the three villages. One-way ANOVA tests are used to compare means of variables between the three groups, regression tests for relationships between variables. Paired independent T-tests are used to compare results from previous research, with new results. All quantitative data is backed up with qualitative data.

4.4 Limitations

Unfortunately, many challenges and difficulties faced during the research period stood in the way of gathering an equal amount of information from all three villages. This made it hard to test the significance of variables and make extensive comparisons between the communities, as many hypothetical relationships between variables were found to be statistically insignificant. Bad infrastructure and transportation options, on top of not knowing the language were two major obstacles in conducting research in A den and A Sap. This is why most data was gathered in Bo Hon village. Moreover, it is hard to compare results from A Den and A Sap separately with previous results based on research in A Den and Can Tom 2 because the recent split up of Can Tom 2 village made some Ta Oi inhabitants, who originally come from A Den village, move into A Sap village. This may indicate that cultural differences between ethnicities may have reduced, yet also makes it hard to make a fair comparison with previous research. One-on-one comparisons with previous research are also difficult to make due to the fact that questions were often misinterpreted, answered incorrectly or not filled in at all. Especially open questions on food production, applied coping strategies, income and loss of income were frequently left blank. Part of this problem was the language barrier between me and the students who helped me in conducting the research, another was the unforeseen shortage of time we had to conduct the surveys in A Lưới District. It was hard to get into the details of subjects such as land and income, which is why many answers will more likely be rough estimates instead of exacts. Interpretations of questions and answers given during research may also differ between the many students who helped with conducting the surveys. Luckily, many of them wrote down additional notes next to answers given when in doubt if they ticked the most fitting answer to the question.

5. Current Livelihood Development

Results of the study are ordered on the basis of the three sub-questions: what is the current livelihood development situation in Bo Hon, A Den and Sap? How did the resettled households cope, adapt and develop in the new situation over time? And are previously found trends in livelihood development still existing or did they reduce over time? The first sub-chapter includes descriptive demographics of the villages focusing on ethnicity, gender, age, occupation, income and migration. After that, the most important results are presented according to the Impoverishment Risks of Cernea (1997), being land size, land quality, access to common property, food security and health.

4.1 Demographics

As mentioned in chapter 3, Vietnam recognizes 54 different ethnic groups; all with their own origins, cultural habits and languages. However, nowadays none of the villages included in this research represents only one ethnic group (see Table 3). It is evident that people from different ethnicities and communities have been moving and mixing with other cultures.

Table 3 Demographics of Bo Hon, A Sap and A Den (*n*=326 people).

		Bo Hon		**A Sap**		**A Den**	
		Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Ethnicity	Kinh	11	7,90	0	,00	0	,00
	Ka Tu	128	92,1	0	,00	0	,00
	Ta Oi	0	,00	50	83,3	102	92,7
	Pa Co	0	,00	10	16,7	8	7,30
	Total	139	100,0	60	100,0	110	100,0
Gender	Male	74	53,2	31	51,7	68	54,0
	Female	65	46,8	29	48,3	58	46,0
	Total	139	100,0	60	100,0	126	100,0
Age	< 18	40	28,8	21	35,0	38	29,9
	18-26	31	22,3	9	15,0	33	26,0
	26-45	41	29,5	16	26,7	40	31,5
	45-65	16	11,5	9	15,0	10	7,90
	65 >	11	7,90	5	8,30	6	4,70
	Total	139	100,0	60	100,0	127	100,0

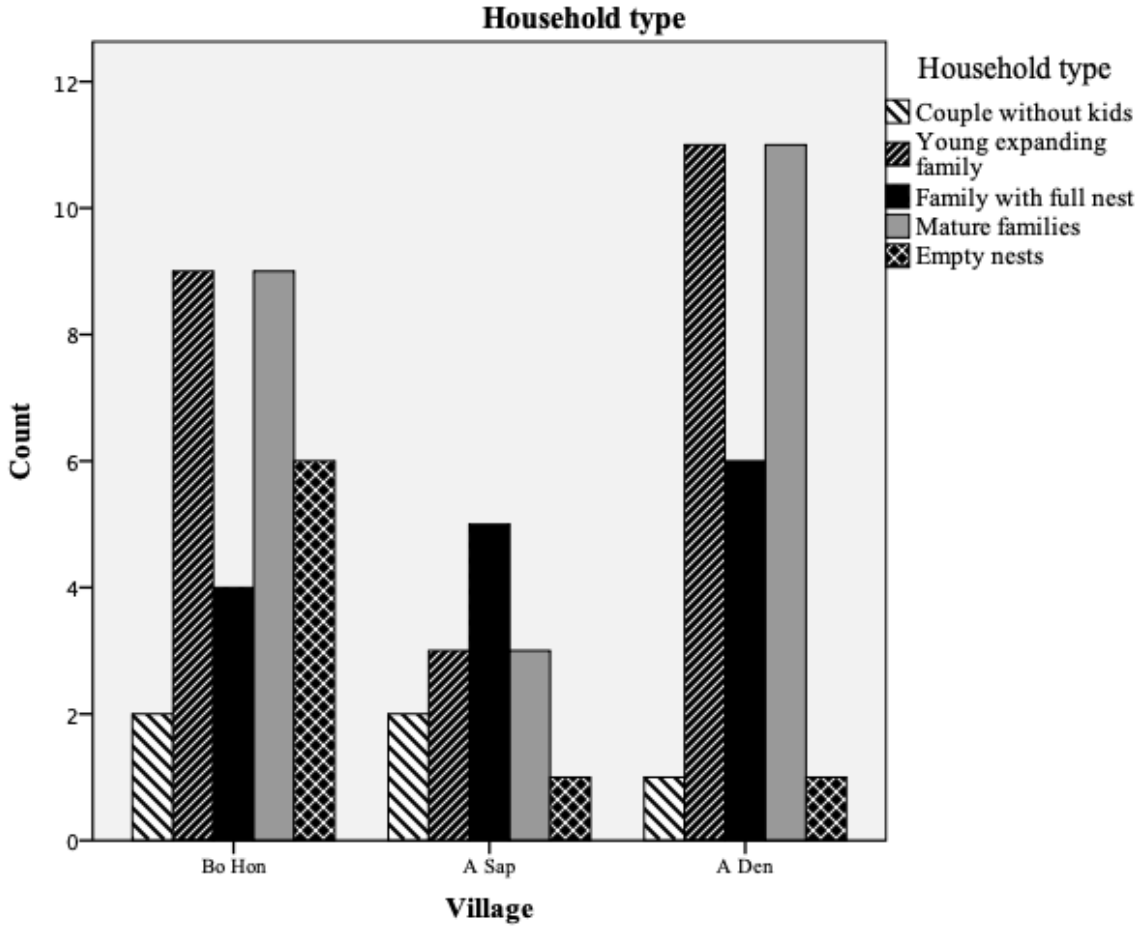
Source: Author's household survey, 2019

The sample in Bo Hon, as presented in Table 3, shows a similar distribution of ethnicities as previous statistics, when over 90 percent were Ka Tu people and the rest was from Kinh origin (Huu, 2015, p. 105). Within the village, all Kinh families still live in the same area and have a close relationship with each other. For A Sap and A Den, the results from figure 7 are crucial in explaining differences between the two and how the compositions of the villages have changed over time. Originally, all 60 households from A Den village living in Can Tom 2 were from Ta Oi origin. The other 46 households that moved into this village were from Pa Co (36%) and Kinh (14%) origin. Based on the survey done in 2019, Ta Oi people still make up 92,7% of A Den village. However, 7,3 percent of the households are from Pa Co origin. This indicates that the split up of Can Tom 2 village also made people who are not originally from A Den village move into the new A Den settlement. This is also seen the other way around, noting that 83,3 percent of the respondents from A Sap are from Ta Oi origin. No participants of the survey are from Kinh origin, most probably due to the small sample size taken in A Sap. This redistribution of ethnic minority groups over the two villages is remarkable, knowing that five years ago Pa Co and Ta Oi people requested separate villages due to a lack of social cohesion and a will to remain their own leaders and patriarchy (Huu, 2015, p. 89). Furthermore, Table 3 shows the count of men and women represented in the sample size of the three villages. All three villages show a small underrepresentation of women. Women are also not likely to be the head of the household. In both Bo Hon and A Den, only 26,7 percent of the participating households have a female household head. In A Sap, only one of the participating households has a female household head.

Because demographic information is continuously changing, all households were categorized based on household size, individuals' ages and occupations to make a more dynamic depiction of the villages. By far most households in the villages have 4 household members, consisting of two parents and two children. As displayed in Figure 7, most households of Bo Hon and A Den are categorized as young expanding families or mature families. For Bo Hon, young expanding families are families with children born after 2006; for A Den and A Sap they should be born after 2011. These families have children who were born after resettlement took place. In A Sap, families with a full nest are most common. Mature families consist of 1 or 2 parents with particularly mature, working children. This category also includes households with migrated children. It can be assumed that migration among the youth is most prevalent in Bo Hon, where 47 percent of the households have children that migrated for a job outside the village. In two families all 5 children migrated. In A Den, 40 percent of the surveyed households have kids that migrated; in A Sap the percentage is 33 percent. Some

young couples were still studying when previous surveys were undertaken. Most of the young adults who were still students by the time they settled in the new village, now work for others, on Acacia plantations or migrated to become doctors, teachers or to work in a clothing factory.

Figure 7 Distribution of household types (*n*=74)



Source: Author's household survey, 2019

5.2 Education and occupation

The availability of jobs plays an important role in the composition of households and whether people stay in the villages or leave for better job opportunities. Migration to Saigon is common among the youth, both male and female, who find jobs in clothing factories and shops. To a lesser extent they find jobs as teachers, doctors, drivers or in the military (see 'Other' in Table 4). On average, the monthly income of migrated youth from Bo Hon is 3,5 million VND (*n*=8); in A Den this is 4,7 million VND (*n*=8). Important to note is that of 6 Bo Hon households with migrated children, information on monthly income is not specified, in A Den 3 households missed data. Clear is that these amounts are low, especially compared to the hard work done by migrants. On man from Bo Hon worked in Saigon for a year, but said he came back to the

village because he suffered from having to work too hard there. Not all of the migrants earn enough to send back remittances; only 21 percent of Bo Hon households claimed to receive remittances from their children. On average, they receive 41 million VND per year. Remittances are most often spent on clothing, extras during Tet Holiday or used to pay back bank loans. Migration for higher education is not prevalent because university teachers regularly come to the villages to teach their students. This is done to help them maintain their jobs alongside their courses. However, only a small percentage of the youth attend university after high school (see Table 4). For most young adults, earning an income has priority. This is also reflected in the high illiteracy rates among adults. On top of that, a remarkable amount of older people is jobless. The average age of the jobless respondents is 46 in Bo Hon and A Sap; in A Den the average age is 61 years. A majority of them said this is related to health issues.

Table 4 Education and occupation (Age>15yrs) in Bo Hon, A Sap and A Den (*n*=326).

		Bo Hon		**A Sap**		**A Den**	
		Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Education	Kindergarten	1	,80	1	1,9	6	5,4
	Primary education	34	27,9	8	15,1	22	19,6
	Secondary High school	25	20,5	9	17,0	31	27,7
	High school	28	23,0	21	39,6	40	35,7
	University	4	3,30	3	5,7	5	4,5
	Not schooled	30	24,6	11	20,8	8	7,1
	Total	122	100,0	53	100,0	112	100,0
Occupation	Farmer	21	18,6	6	16,7	31	39,7
	Working for others	52	46,0	8	22,2	22	28,2
	Livestock farmer	4	3,50	0	0,0	0	0,00
	Till the fields	1	,90	0	0,0	6	7,7
	Clothes factory	14	12,4	0	0,0	2	2,6
	Unemployed	16	14,2	21	58,3	8	10,3
	Other	5	4,40	1	2,8	9	11,5
	Total	113	100,0	36	100,0	78	100,0

Source: Author's household survey, 2019

The respondents said there are not much job opportunities other than to work for others or as farmers. Due to unstable harvests and seasonal work, the availability of work is not stable. Many people work for others a few days per week and are committed to have multiple jobs

alongside each other to earn an adequate income. Working for others is the main source of income for households in all three villages (40,4% in Bo Hon; 47,4% in A Sap; 37,0% in A Den). Working for others implies working on Acacia plantations, clearing lands or tilling the fields. Sometimes people earn an additional income by hunting, livestock breeding, growing rice or selling crops. Few people use common property for income generating activities, earning a monthly income up to 5 million VND per month. For example, three households coming from Bo Hon and A Den mentioned they make bamboo hats and bamboo mats to sleep on. One of these households could earn 100.000 VND per day by selling handmade bamboo hats. Another household mentioned to cut trees outside the village to make paper of. However, income generated from such activities fluctuates throughout the year depending on the season. Table 5 shows the average total income per household in million VND per year, split up in female and male household heads.

Table 5 Average income per household in million VND per year (*n=74)*

			Valid N	Minimum	Maximum	Mean	Std. Deviation
Bo Hon	Income	Male HHead	18	3,00	125,00	40,18	31,75
		Female HHead	6	,00	62,00	33,67	27,17
		Total	24	,00	125,00	38,55	30,23
A Sap	Income	Male HHead	11	,00	96,00	24,80	28,88
		Female HHead	1	10,80	10,80	10,80	.
		Total	12	,00	96,00	23,63	27,83
A Den	Income	Male HHead	19	,00	144,00	30,83	35,68
		Female HHead	8	5,00	60,00	29,30	19,66
		Total	27	,00	144,00	30,37	31,02

Source: Author's household survey

An analysis of variance tests shows that there is not a statistical difference between the mean incomes of in the villages, $F(2, 68) = ,747$, $p = ,477$. Results of a linear regression test indicate that gender of the household head explains ,095% of the variance in Bo Hon ($R^2 = ,009$, $F(1, 22) = ,201$, $p = ,658$) and ,023% of the variance in A Den ($R^2 = -,039$, $F(1, 25) = ,013$, $p = ,911$). However, the results suggest that gender of the household head does not have a significant effect on the height of the households' income. In all three villages, at least one household does not earn an income. A woman from Bo Hon said she and her husband are both too sick to be able to work, and therefore do not have an income anymore. Their sons recently

moved to Saigon to work in a clothing factory but are not able to send remittance money back yet. She now makes and sells bamboo hats as a short-term solution to be able to buy food. Another woman from A Sap village in similar circumstances told that she sold her hair for money.

5.3 Land

As most people are still farmers or work for others on plantations, income is closely related to land size, quality of land and stability of jobs and harvests. During a conversation with the village leader of Bo Hon, one thing was stated clearly: "without adequate land, there will be no development" (Interview Bo Hon, 2019). Without land, people will not be able to grow cash crops or create Acacia plantations, which in their turn create new jobs opportunities. Acacia is still a major source of income for people in Bo Hon, where 70 percent of the households grow acacia on their land. In A Den this percentage is only 40,7. However, unlike A Sap and A Den, no rice or rubber is grown in Bo Hon. Next to growing acacia, half of the households from Bo Hon grow cassava and fruits. In A Sap, cash crop production is most prevalent. Livestock breeding has also become one of the major uses of land in all three villages. However, not many people have separate spaces for livestock breeding. Almost all households in Bo Hon still live in on small plots in the houses they received from the hydropower company after resettlement (see Photo 1). However, a few new young families built their own wooden houses on plots owned by family members. A few households in Bo Hon own significantly bigger houses than others because they asked for compensation money instead of a house for resettlement. Whereas households in Bo Hon have to make optimal use of their land by planting banana trees around the house, houses in A Den and A Sap village are set up more spacious (see Photo 2). There is more variety in houses and people own more agricultural land. Some households own small ponds suitable for fish farming. Table 6 shows the average sizes of land owned by households.

Table 6 Land owned by households in hectares (n=74).

		Valid N	Minimum	Maximum	Mean	Std. Deviation
Bo Hon	Land inside village	27	,02	1,00	,18	,22
	Land outside village	7	,10	15,00	3,36	5,4
A Sap	Land inside village	14	,05	,98	,22	,24
	Land outside village	4	,25	2,00	1,11	,72
A Den	Land inside village	29	,02	7,55	,57	1,41
	Land outside village	12	,10	1,40	,52	,44

Source: Author's household survey

Photo 1 Houses in Bo Hon village; **Photo 2** House in A Sap village

Source: Author's field research (2019)

Table 6 suggests that Bo Hon households have the largest land size outside the village and A Den and A Sap households own the biggest lands inside the village. However, a Kruskal-Wallis test indicates that owned land inside the village of Bo Hon (*Mean Rank* = 30,96), A Sap (*Mean Rank* = 35,93) and A Den (*Mean Rank* = 39,52) show no significant differences. X^2 (2) = 2,5, p = ,283, η^2 = 0,04.

5.4 Land quality

Whereas plot sizes remain an issue in the new settlements, some people were able to buy or rent new land by getting a bank loan. The severest problem in the resettlement villages is therefore still the poor quality of cultivable land, which directly impacts the availability of jobs, levels of income and food insecurity. Almost all participants from the three villages claim the quality of their land to be 'bad' to 'very bad'. More than 70 percent of them use of either chemical or natural fertilizer to make their crops grow. One woman mentioned bad land quality is a permanent problem for Bo Hon because there is a rock underneath the land. On the other side, drought and flooding are major causes for bad land quality.

Photo 3 Land in A Sap

Photo 4 Road between Hue and Bo Hon

Source: Author's field research (2019)

Photo 3 is taken in April 2019, in A Sap village. The cracks in the soil show how dry and unworkable land was at that moment. Households complained that there are not enough water resources to combat drought, neither do they have other ideas or resources to cope with natural disasters such as flooding. A household from A Sap told that when they just moved into the relocation village, all of their animals died due to high flooding. They said they have experienced fewer heavy rains and flooding in the last couple of years, but that the droughts have become worse.

In Bo Hon, the flooding causes major problems for land quality, livestock and the quality of houses. One household received a better roof from the hydropower company one year after resettlement because the previous one could not withstand flooding. Also, the small road that leads to the village has been breaking down due to natural causes (see Photo 4). Lastly, pollution is mentioned to be a major issue in A Den and A Sap. The dioxin pollution found in the water streams derives from American bombs dropped during the Vietnam War. Households said it the growth of animals and the quality of land. Some households explicitly do not own animals because there, as they believe, too much toxicity to raise them healthy.

5.5 Food Insecurity

Most of the resettled households were subsistence farmers in their previous village, meaning their domestic food production was used for own consumption. Huu (2015) already found that after resettlement, it was hard for the communities to grow sufficient amounts of crops to satisfy their nutritional needs due to the lack of cultivable land. Chapter 5.3 and 5.4 already assessed the current status of land and land quality in the villages, from which we can conclude that the quality of land is still a leading factor in directing the outcome of sustainable development for these communities. When researching food insecurity, the connection with land is inevitable as it directly impacts which crops are produced, how many crops are produced and the stability of harvests. This sub-chapter will dive deeper into the access to, the availability, the utilization and the stability of foods to make more complete outlook on the current status of food security in the villages. Lastly, it will dive into food coping strategies used by the households to measure the severity of the problem.

5.5.1 Availability

The availability of food is influenced by domestic production, food stocks, food aid and imports (FAO, 2006). As mentioned in chapter 5.3, many people still struggle to produce enough crops due to limited land size and soil quality. Harvests are unstable, making it hard for them to

estimate the amount of foods they produce per year. Moreover, the majority of the villagers grow crops for own consumption and are only concerned whether their own produce is sufficient to feed the family (see Table 7). Only a very small proportion of the participants grow crops for sale. Those that do sell their food crops, trade with their neighbours within the village (Focus Group, 2019). It is more common to earn money by raising livestock. Most people own chickens; in A Den half of the respondents owns at least one cow. Also pigs, buffalo's, ducks and goats are common. Many households also own cats and dogs and in some exceptional cases these are eaten as well.

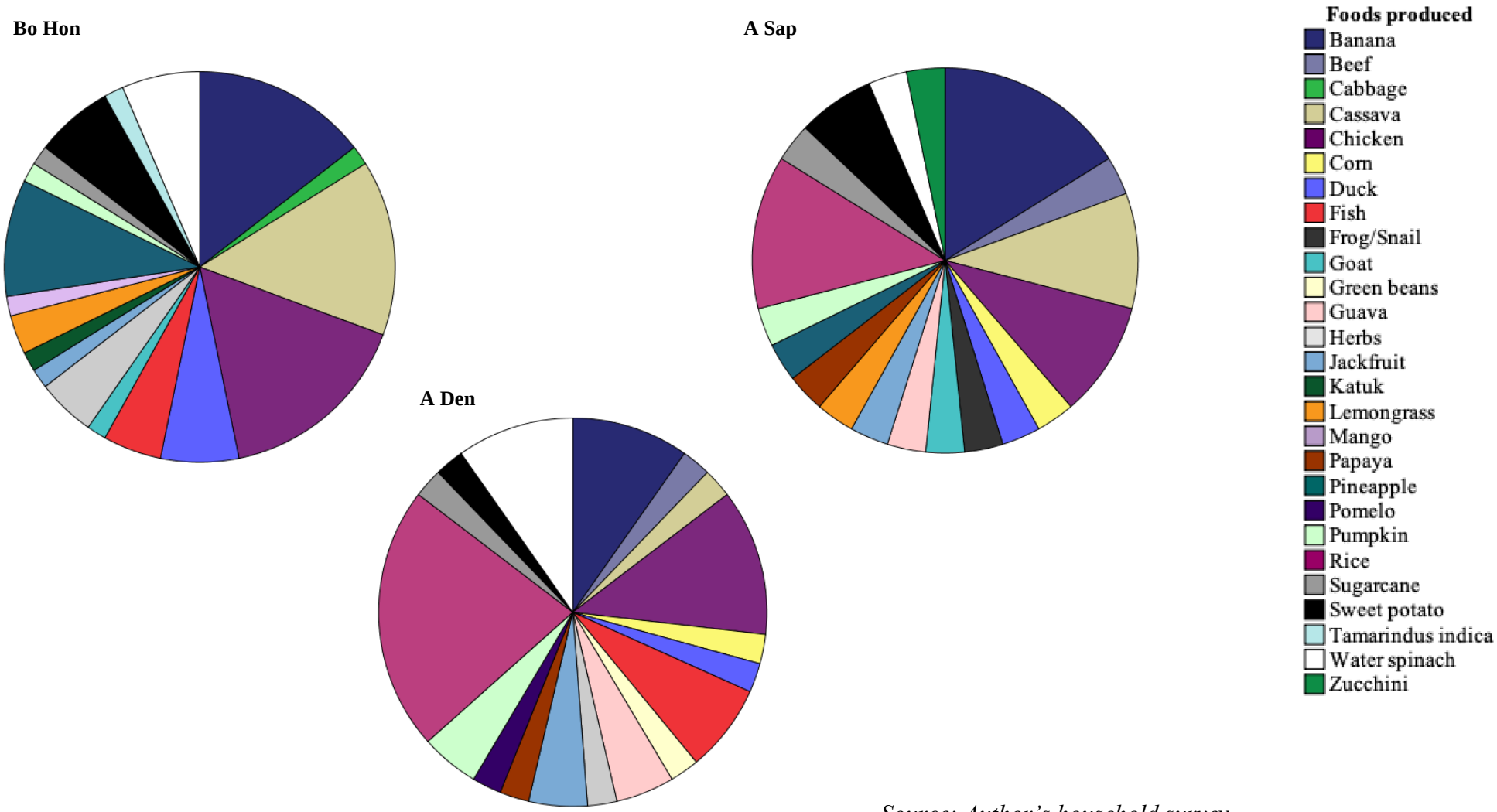
Table 7 The use of crop produce and livestock (*n* = 74)

		Bo Hon		A Sap		A Den	
		Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Crop production	For sale	4	14,3	0	0,0	3	10,7
	Own consumption	19	67,9	12	92,3	21	75,0
	Both	5	17,9	1	7,7	4	14,3
	Total	28	100,0	13	100,0	28	100,0
Livestock	For sale	2	8,7	1	12,5	5	17,9
	Own consumption	11	47,8	5	62,5	12	42,9
	Both	10	43,5	2	25,0	11	39,3
	Total	23	100,0	8	100,0	28	100,0

Source: Author's household survey

Figure 8 presents which foods are produced for own consumption. Chicken, bananas and cassava are the most prevalent foods produced. Unlike in Bo Hon, rice is a popular crop to grow in A Den and A Sap. Raising chicken and growing cassava and pineapple is more common in Bo Hon. All in all, there is a wide variety of foods produced by the villagers. Additionally, it is common to try to make the most use out of edible products, which is why leaves from sweet potatoes, katuk and banana trees play an important role in the Vietnamese diets. The variety of foods available in the village is also appreciated by the villagers themselves. Multiple respondents in Bo Hon said that while the quality of foods have gotten worse in the new Bo Hon settlement, the variety of crops grown have increased. Some foods are gathered outside the village on common property lands such as forests, river basins and grass fields. A slight majority of Bo Hon households make use of common property, mostly for income generating activities, bamboo harvesting and for hunting and/or fishing. Few households explicitly mentioned they go out at night to hunt for frogs and snails. However, common property has

Figure 8 Crops produced per village in percent of cases



Source: Author's household survey

become more difficult to access, consequently leading into a lower consumption of meat and fish since resettlement (Focus Group, 2019). In A Den and A Sap, only few people make use of common property, both for hunting and/or fishing and for income generating activities. Some households in these villages own a small pond suitable for fish farming, yet not all of them are able to buy and raise fish.

Respondents were asked whether their own food production satisfied the nutritional needs of the household. The results are presented in Table 8, which suggests Bo Hon households are the least positive about their own food production; households from A Den are the most satisfied. These results suggest that the extent to which villagers are able to be self-sufficient are quite low. However, the question alone needs a lot of context in order to be interpreted correctly because even households who said their food production satisfies the nutritional needs of the household, said to worry frequently or daily about not having enough food. This might be related to a misinterpretation of the questions, or by taking into account unstable harvests.

Table 8 Does your food production satisfy the nutritional needs of the household? (*n* = 74)

	Yes		**Partly**		**Not at all**	
	Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Bo Hon	3	10,0	12	40,0	15	50,0
A Sap	3	21,4	5	35,7	6	42,9
A Den	7	25,0	15	53,6	6	21,4
Total	13	18,1	32	44,4	27	37,5

Source: Author's household survey

Food aid also determines the availability of food. Every year each registered household coming from one of the three villages receives a small present from the hydropower company. The package consists of 2 litres of oil, 10kilograms of rice, 100.000 VND in cash and monosodium glutamate. Overall it can me concluded that foods are available but not always accessible. Money is needed to be able to buy seeds, animals, agricultural utilities, fertilizer and foods in general. The availability of food is therefore closely related to its accessibility.

5.5.2 Access

Having access to food depends on political, economic and social factors; equitable distribution; markets and infrastructure; affordability; and purchasing power (FAO, 2006). As stated before, many different foods are already grown within the villages, making it possible for most people to rely on domestic production. However, during Tet Holiday, the celebration of the Vietnamese

New Year, the demand for more (special) foods is higher. Before this important week-long celebration, few households from Bo Hon village buy groceries at Big C supermarket in Hue, the biggest in the city, in bulk for a lower price than usual. It is sold to other households in the village for a higher price. Apart from this celebration, nobody said to buy groceries in the city (Focus Group, 2019). For additional foods not being produced within the villages, there is a mobile food vendor visiting the villages on a daily basis (Focus Group Bo Hon, 2019). They mainly sell meat and fish products. However, many households mentioned they only bought food if they had money for it, implying that they are not always able to eat the foods they want or need. Figure 15 displays the percentage of income spend on food.

Table 9 Percentage of income spend on food (*n* = 74)

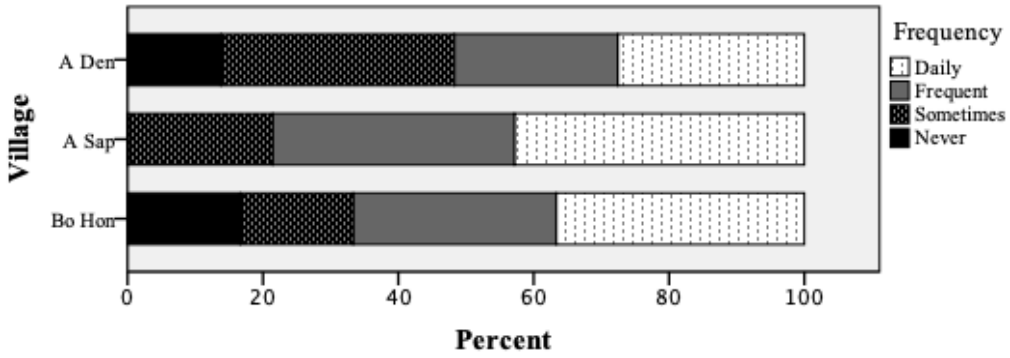
		Valid N	Minimum	Maximum	Mean	Std. Deviation
Bo Hon	% of income	18	30,00	100,00	75,2778	26,03573
A Sap	% of income	11	2,00	90,00	29,9091	34,29710
A Den	% of income	26	,00	90,00	49,3462	26,35745

Source: Author's household survey

Many households found it hard to estimate this percentage, as their expenditures depend heavily on how much money they have to spend. As described before, incomes and harvests are in most cases not stable. Exact numbers on expenditures on foods also varied widely. One household in A Sap claimed to spend 50.000 VND per month, another household in Bo Hon said they spend 150.000 VND per day. This last household said they have to spend more than a 100 percent of their income on food to satisfy their needs, noting that they do not have sufficient money to buy it, and that there is no money left for other expenditures. To cope with this problem, some households got a low interest loan from the bank to directly buy food, or indirectly by buying animals for livestock breeding. The high average percentage of income spend on food in Bo Hon may relate to the low rate of satisfaction from subsistence food production in the village, however a correlation test shows there is no significance between income and the satisfaction from subsistence food production, with $r(30) = ,417$, $p = ,085$.

In order to put expenditures on food in a broader context, households were asked how often they worry that they will not have enough food. The results are presented in Figure 9. The smallest number of respondents answered 'never', the majority says to worry about it frequently or daily. A Spearman's rho test was used to test the relationship between income

Figure 9 How often do households worry about food



Source: Author's household survey

and worrying about food (r_s = -,359, p = ,229) and between satisfaction from own food production and worrying about food (r_s =,072, p = ,553), showing a moderately weak relation between income and worrying about food. However, both tests were found to be statistically insignificant.

5.5.3 Utilisation

The utilisation of food incorporates food safety and nutrition, which in their turn depend on food quality, nutritional knowledge, proper preparation and the availability of clean water, proper sanitation and healthcare (FAO, 2006). Respondents were asked to describe what food groups they eat on a daily basis and how often they eat. No significant differences were found in the diets between the three villages. Breakfast consist of instant noodles, rice soup, or rice with vegetables. In contrast to lunch and dinner meals, meat or fish are not common for breakfast. One pattern was among all households: meat and fish are only consumed when households are able to afford it. Many households tend to cook once a day and eat the same for lunch and dinner. In Bo Hon, half of the households said to eat snacks, in A Den only 30 percent. Most prevalent snacks eaten were cake, milk, corn, fruit, candy and bread. These are often only consumed by the children. Milk is also perceived to be a healthy snack for adults. One man mentioned he drinks it when he feels tired. Apart from that, respondents said they are not aware or interested in the nutritional facts of the foods they consume. The nutritional value of the foods they consume is largely determined by the availability and access to it, notwithstanding the cultural context by which food preferences are made.

Hygiene is mentioned as a problem by Bo Hon respondents. Sometimes there is not enough water to clean the products, or hygiene is simply not always taken serious during the cooking process (Focus Group, 2019). Additionally, pollution and the use of chemicals, as

described in chapter 5.4, is often mentioned as a major cause for health problems. However, participants in the Bo Hon Focus Group said there is even less trust in the safety of the foods sold at the big supermarket in Hue than in the foods grown within the village. They mentioned the distrust about excessive food exports from China to Vietnamese supermarkets, and the suspect that many chemicals are used to produce it (Focus Group, 2019). They said that within the village, chemical fertilizer is more commonly used for non-food products such as Acacia and bamboo, than for food products. They said that farmers living nearby cities use more chemicals for producing cash crops because they have to supply food for more people.

In general, food insecurity is related to higher healthcare utilisation and costs. Many respondents claimed diseases have become more prevalent since resettlement. Most of them said either not to smoke or drink alcohol, or that they reduced its consumption due to health issues. A small percentage of respondents from Bo Hon and A Den increased their consumption of tobacco and alcohol. Note that few people mentioned to drink more now, only because they were too young to consume alcohol when previous research was conducted. Households from all three villages said that health issues are most likely to have increased due to usage of chemicals and a polluted environment. It is hard to claim there is any reliable correlation between food safety and health on basis of this research. Chapter 6.3 will dive deeper into current the health status of the villagers and the access to health care.

5.5.4 Stability

Lastly, the stability of food depends on the maintenance of the other three pillars over time (FAO, 2006). Political, economic or environmental factors may all contribute to the (in)stability of food security. As stated before, many people mentioned the instability of harvests and the difficulties of predicting the growth of new crops. Natural disasters play a big role in this, but also the general bad condition of land and soil in the villages. Many households say drought and flooding are the main causes for food insecurity and that there is no change or solution possible. They lack enough water to combat drought and do not know how to cope with the heavy rains starting in May every year. The only short-term solutions seem to be buying food instead of relying completely on subsistence farming. However, in all three villages at least 80 percent of the respondents say that their financial situation is not strong enough to overcome local food shortages. This percentage is alarming, yet also needs to put into context of wider considerations on food security. For example, there is no significant correlation found between income and strength of financial position (r_s =,158, p = ,184). This

might imply that when shortages occur, buying food products is for the majority still too expensive.

5.5.5. Coping Strategies Index

The Coping Strategies Index measures people's behaviour when they do not have access to enough food. It contains coping strategies such as relying on less expensive foods, reducing number of meals or limiting meal sizes. Respondents were asked how often they apply such measures, from daily (score = 4) to never (score = 1). The higher the score, the more food insecure a household is. The theoretical maximum score is 36. Sometimes, questions were non-applicable. These answers are noted as missing, in order to calculate fairer mean values. Table 10 contains the results from this study.

Looking at the total average scores of the villages, A Sap scores the highest with an average score of 17,69; Bo Hon scores close with 17,69. A Den households score significantly lower than the other groups, with an average of 12,70. A One-way ANOVA test shows that there is enough evidence to conclude there is a statistical difference in means based on village, $F(2, 67) = 17{,}893$, $p < 0.001$. The Tukey-Kramer test shows that we are 99 percent confident that Bo Hon and A Sap village show similar results, and both differ from A Den village. Between male and female-headed households, female-headed houses scored higher-than-average scores in A Sap ($M = 20$) and A Den ($M = 13{,}25$). The correlation between total land size and the score of the Coping Strategies Index is only statistically significant in Bo Hon, with $r(25) = -{,}517$, $p = 0{,}10$. It shows that for households with more land, the likelihood of food insecurity is lower. In A Sap ($r(11) = {,}172$, $p = 0{,}573$) and A Den ($r(27) = -{,}191$, $p = 0{,}321$) no significance was found.

In all villages, Strategy C: 'limiting meal sizes' scores the highest average. Skipping days without eating, arguably the most radical short-term strategy, is never applied in A Den and A Sap. To get more context out of this test, respondents were asked how many meals are eaten daily. All respondents said to eat between 1,5 to 4 meals a day, with an average of 3 meals in Bo Hon and A Den, and an average of 2 in A Sap. On average, children under 5 years are most likely to eat more meals than adults. Of the people that eat 2 meals a day, most will skip breakfast. In Bo Hon, one-third of the respondents said to eat less meals compared to right after resettlement. In A Sap, this was stated by 28,6 percent, in A Den only by 16,7 percent. However, many people said that eating 2 meals a day rather has become part of a normal, daily routine than something that has particularly changed due to lower food security. Some respondents also mentioned relying on less, preferred, less expensive food includes eating rice

or crops produced by themselves. This partly explains the higher score of coping strategy A, while it does not directly point out a sign of food insecurity. Lastly, none of the households from either village receive help from non-profit organisations or local authorities (Strategy I). The only food aid they make use of is from the hydropower company, which is the yearly Tet-holiday gift every registered household receives.

Table 10 Results of Coping Strategies Index

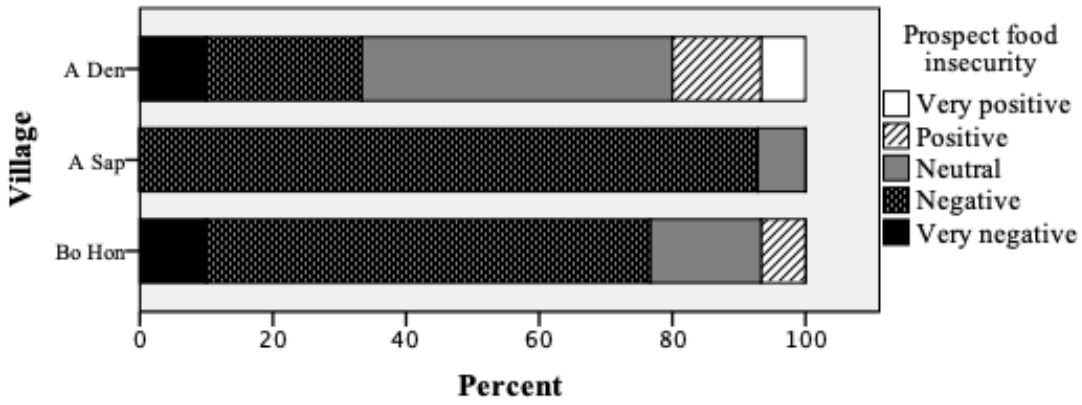
		Valid N	Minimum	Maximum	Mean	Std. Deviation
Bo Hon	A	30	1,00	4,00	2,17	,75
	B	30	1,00	3,00	1,90	,71
	C	30	1,00	4,00	2,27	,94
	D	30	1,00	4,00	2,07	,98
	E	30	1,00	2,00	1,40	,50
	F	30	1,00	4,00	2,20	,76
	G	28	,00	4,00	1,93	,81
	H	29	,00	4,00	1,55	,87
	I	30	1,00	4,00	1,63	,67
	Total	27	9,00	33,00	**17,12**	.
A Sap	A	14	1,00	4,00	2,43	1,09
	B	14	1,00	4,00	2,43	,94
	C	14	1,00	3,00	2,50	,65
	D	14	1,00	3,00	2,14	,86
	E	14	1,00	2,00	1,64	,50
	F	13	1,00	4,00	1,62	,96
	G	14	1,00	4,00	2,14	,95
	H	14	1,00	4,00	1,50	,85
	I	14	1,00	2,00	1,57	,51
	Total	13	9,00	30,00	**17,69**	..
A Den	A	30	1,00	4,00	2,20	,89
	B	30	1,00	4,00	1,53	1,04
	C	30	1,00	4,00	1,60	,86
	D	30	1,00	4,00	1,27	,64
	E	30	1,00	1,00	1,00	,00
	F	30	1,00	4,00	1,53	,86
	G	30	1,00	4,00	1,40	,81
	H	30	1,00	1,00	1,00	,00
	I	30	1,00	3,00	1,17	,46
	Total	30	9,00	29,00	**12,70**	.

Source: Author's household survey

5.5.6 Conclusions on Food Insecurity

The four dimensions of food insecurity are closely related and based on dietary habits alone, the villages seem to be quite similar. However, Bo Hon village sees the highest percentage of people worrying about food on a daily basis. It also has the highest share of households claiming to have insufficient income to buy food, and the least people saying that own food production satisfies the nutritional needs of the household. Additionally, the village scores the highest according to the Coping Strategies Index. A Sap comes on a second place, even though these households spend the least percentage of money on food. Respondents from A Den are most satisfied with their own crop production, even though they still face issues with water pollution. Income does not seem to be statistically related to levels of satisfaction on food insecurity in the villages. This might be due to a majority of people feeling unsatisfied with land quality, own crop production and having a negative prospect on food security for the future (see Figure 10). On the question how people feel about the future of local food security, the majority of Bo Hon and A Sap respondents said to be (very) negative. Limited land sizes, poor soil quality and influence of natural disasters are mentioned as permanent issues influencing food security, for which no coping strategies are to be found. In contrast, A Den respondents are more neutral about the prospect.

Figure 10 Evaluation of the future of local food insecurity (*n*=74)



Source: Author's household survey

6. Development since Resettlement: A Comparison

This chapter compares the results on current livelihood development from chapter 4 to those of previous research done in 2009, 2011, and 2013. However, whereas the previous chapter made a comparison between A Den and A Sap as being separate villages, this chapter again will address only results of the Ta Oi people. In the end, the results of the evaluation of livelihood assets since resettlement are presented.

6.1 Bo Hon village

Bo Hon village saw initially faster recovery from resettlement than other villages, due to its convenient location with access to electricity, water, good infrastructure, schools and health care (Huu, 2015, p.123). While most things are still there, the village school has been closed and some households complained that roads have become worse over time (see chapter 5.4). Whereas in the old situation only 12,5 percent of the inhabitants were illiterate and most of the people completed education from primary to high school, new survey results show that 28,6 percent of the respondents from 18 years or older are not schooled, and that only 26,5 percent attained high school or university (Huu, 2015, p. 105).

After resettlement, households from Bo Hon village first experienced disruption between 2006 and 2009. After that came recovery from 2009 to 2013, especially seen in a recovery of incomes. In this second stage, income increased from 130 to 903 million VND (Huu, 2015, p. 118). However, a paired sample T-test revealed that income in 2013 (M = 23,8, SD = 39.7 million VND) was not statistically higher than before displacement in 2006 (M = 15,6, SD = 17,8 million VND) per household per year, with $t(39) = 1,25$, p = 0,220 two tailed (Huu, 2015, p. 118-9). A reason given for this finding was the fast recovery often seen directly after resettlement, which slows down over time (Huu, 2015, p. 119). A new independent samples T-test shows that incomes in 2019 (M = 38,55, SD = 30,23 million VND) are significantly higher than in 2013, with $t(68) = -1,76$, $p = 0,041$. Also compared to 2006, incomes in 2019 are significantly higher, with $t(68) = -3,7$, $p < ,001$ two tailed.

Remittances from migrants also became an important source of income right after resettlement, but the rates started to decline shortly after. In 2011, migrant households received over 10 million VND of remittances; in 2013 it dropped to about 4 million VND; in 2019 the average is set at 3,42 million VND per month (Huu, 2015, p. 117). Previously, 70 percent of remittances was spent on daily food and 30 percent on healthcare, education and buying household facilities (Huu, 2015, p. 117). New results showed that remittance money is most often spend on clothing, extras during Tet Holiday and paying back bank loans. Migrants still

earn low salaries which are often only enough to support themselves. Currently, the mean income of migrants is found to be 3.5 million VND per month, which is at the top end of the 2.5 to 3.5 million VND mentioned in previous research (Huu, 2015, p. 117). Other differences found are that no people are working in the industrial zone in Hue city anymore, and in contrast to previous times when over 80 percent of the migrants were men, there is now an equal amount of men and women migrating to work outside the village (Interview Bo Hon, 2019). After resettlement, there was no restoration of income from common pool resources: only six households continued this activity and generated only 0,9 million VND per month (Huu, 2015, p. 114). New results found seven people earning an income from common property activities, earning a higher average of 1,92 (SD = 1.81) million VND per month.

On average households lost 1,6 to 0,18 hectares of productive land due to resettlement (Huu, 2015, p. 109). In the new settlement, each household received a piece of land of 0,3 ha attached to a house, with water supply and electricity. Women-headed households lost more land than male-headed households. In table 11, household survey results land sizes are compared between 2014 and 2019. However, it is unlikely that land sizes have decreased as suggested in the results, especially when noting that in the past five years some households bought or rented new land as a coping strategy.

Table 11 Variation of income in million VND per month and land in hectare in 2014 (*n*=40) and 2019 (*n*=30)

		Mean		**Min**		**Max**		**St. Deviation**		**Sum**	
		2014	2019	2014	2019	2014	2019	2014	2019	2014	2019
Income	Female HHhead	15	34	0	0	38	62	18	27	90	202
	Male HHhead	24	40	0	3	74	125	19	32	813	723
Land	Female HHhead	0,4	0,1	0,3	0,02	1,2	0,2	0,3	0,07	2,6	0,62
	Male HHhead	2,1	1,32	0,3	0,05	9,5	16	2,5	3,53	73,7	27,65

Source: Huu, 2015, p. 111; 121 and author's household survey.

To cope with lesser quality of land after resettlement, households were forced to cultivate other crops than before such as lemongrass, pineapple and taro (Huu, 2015, p. 114). Over the years, this selection has been expanded with jackfruit, katuk, pumpkin, mango and sugarcane. Lemongrass and cassava production remain important. Cash crop production became more important to earn an income after resettlement, and this trend is still visible; around 30 percent of the households sell their crops. Moreover, livestock production seems to play a bigger role now in in the village. Where only 5,3 percent of the respondents earns an income from cash,

12,3 percent said to earn money from livestock. Catching frogs and snails at night is also used as a coping strategy. Even though Bo Hon households showed to have a good capacity to self-organize and improve livelihood opportunities after resettlement, they still struggle to cope with structural problems such as land quality, flooding, and drought (Huu, 2015, p. 123; Focus Group, 2019). Apart from the increasing focus on livestock production, most people said to use more fertilizer and work for others as ways to cope with the new situation. Others are able to get a bank loans with low interest. One household used this loan in 2017 by planting Acacia as a warranty, He said he was supported by the World Bank to get a land certificate and training on planting techniques.

In conclusion, results presented in chapter 5.5 suggest that of the three resettlement villages, Bo Hon still has the most issues with food insecurity. Food insecurity was the most severe vulnerability to the households because they did not have productive land for cultivating rice and cassava crops. Over 65 percent of households had to spend compensation and income to buy rice and food in the relocation village, whereas 70 percent could supply themselves in the former village (Huu, 2015, p. 110). Now that households do not have compensation money anymore, and only 10 percent said their own food production satisfies the needs of the household, food insecurity is still an issue. Remittance money helped to significantly overcome food insecurity before, yet no statistical significant correlation was found between receiving remittances and how often people worry about food, $r(28) = 0{,}33$, $p = 0{,}266$.

6.2 Ta Oi

On average, Ta Oi households more than 80 percent of their land due to resettlement, from 2,8 to an average of 0,7 hectares of land. This average of 0,7 was again found in 2019 ($n = 36$, $SD = 1{,}32$). Compensations given in exchange did not match the big losses of income and livelihoods that followed. The Ta Oi lost their practice of slash and burn farming, and the ability to grow crops for food and medicine on open areas (Huu, 2015, p. 76). In the previous settlement, households lived from the production of Acacia, upland, coffee, rice and cassava. Still only 9 households said to access common property, most of them use nearby forest and water for foods and income generating activities. Before resettlement, households earned an average of 32 million VND per year ($SD = 38$), of which 59 percent came from cassava and rice production; 23 percent sourced from livestock (Huu, 2015, p. 87). After resettlement, incomes decreased by 80 percent. However, looking at average income of the Ta Oi in 2019 (see Table 12), it suggests that the households have recovered from the first shock after resettlement. An independent samples T-test confirms that there is a significant difference

between incomes in 2013 (*m* = 6, *SD* = 15 million VND) and those found in 2019 (*m* = 27, SD = 29), *t*(95) = -4,08, *p* = < 0,001. However, compared to the average income before resettlement (*m* = 32, *SD* = 38), incomes in 2019 show no statistical differences, *t*(95) = 0,73, *p* = 0,767).

Table 12 Income in million VND per month and land in hectare for Ta Oi resettlers in 2013 (*n* = 60) and 2019 (*n* = 37).

	Mean		**Min**		**Max**		**St. Deviation**		**Sum**	
	2013	2019	2013	2019	2013	2019	2013	2019	2014	2019
Income	6	27	0	0	75	144	15	29	263	954

Source: Huu, 2015, p. 87 and author's household survey.

Currently, the most important income sources are working for others (37,5%) and salary (17,9%). Other sources are forestry and livestock (both 14,3% of the households). This is in strong contrast to the situation short after resettlement, when government jobs accounted for 85 percent of total village income, only 11 percent sourced from wage labor and 4 percent from livestock (Huu, 2015, p. 87). Additionally, at time of research in 2013, no households generated income from agricultural production and forestry (Huu, 2015, p. 87). Now, 18,9 percent of the households said to sell their crops. Working for others, focusing more on growing crops and raising livestock are also mentioned as the most effective coping strategies by households. Almost none of them said to find new land to rent or buy. Also, less than in Bo Hon village, people increased their use of fertilizer. Moreover, finding work outside the village as a way of coping is not as common for Ta Oi people as in Bo Hon; only one Ta Oi household receives income from remittances. Instead, illiteracy rates are lower in the Ta Oi community. They have dropped from 33,3 percent in 2013 to 11,8 percent in 2019, also the percentage high school students has increased by 15,9 percent (Huu, 2015, p. 77). The percentage unemployed people (15% in 2013, 18,8 % in 2019) show no remarkable differences.

More improvements are found in the state of food insecurity among the Ta Oi community. Due to resettlement, "satisfaction of nutritional needs from subsistence food production dropped from 53,3 percent in the old village to 5 percent in the new settlement" (Huu, 2015, p. 88). Simultaneously, expenditures on food saw a significant drop, which implied that people had less money to spend on money than before (Huu, 2015, p. 88). Nowadays, 22,9 percent of the Ta Oi people said that subsistence food production satisfied the nutritional needs of the household; an improvement of 17,9 percent compared to 6 years ago. It can be said that the households are no longer "extremely vulnerable to the effects of food insecurity" compared

to that period, even though only a small group (11,1%) says to never worry about food insecurity (Huu, 2015, p. 88).

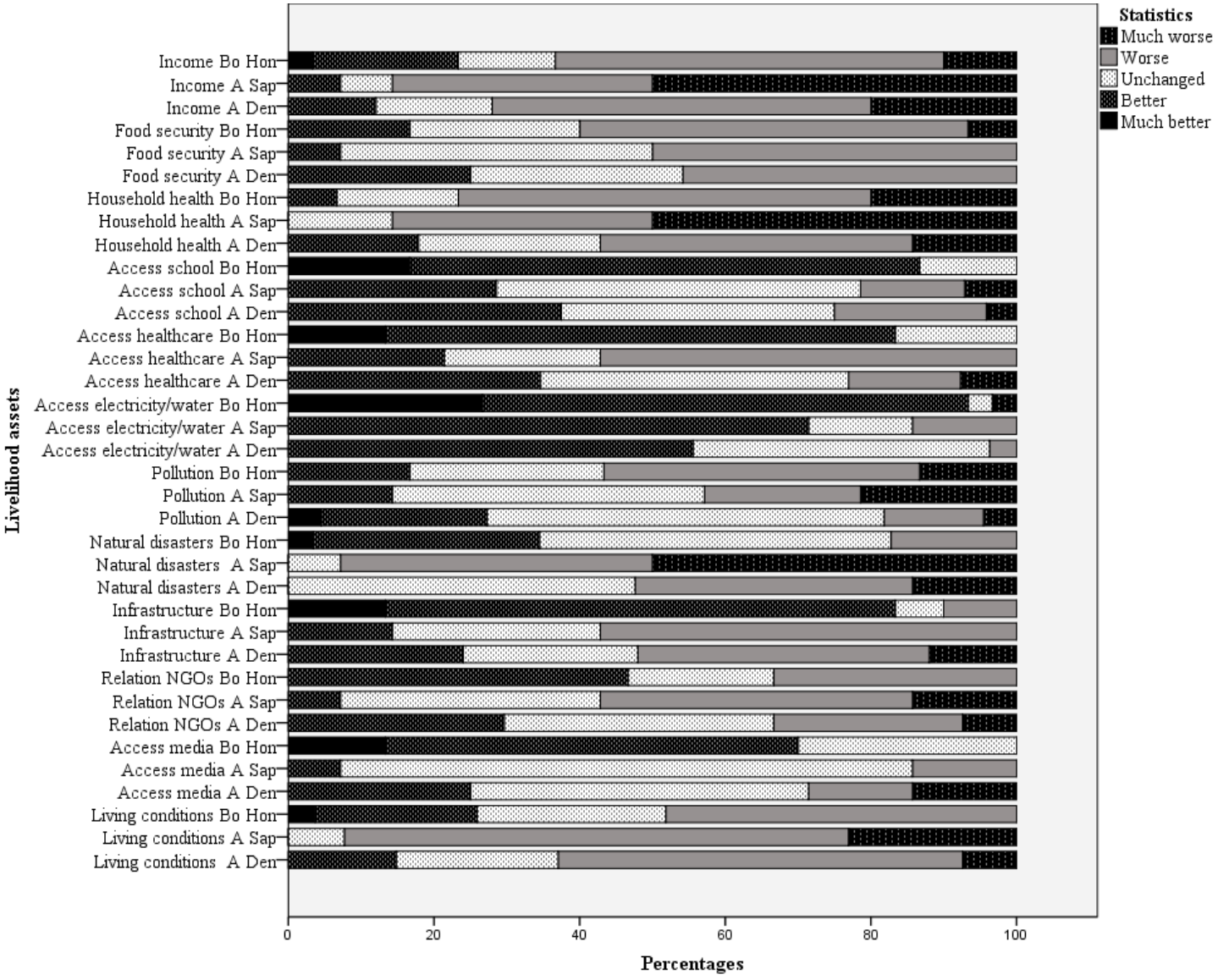
Just as Bo Hon village, Ta Oi households were resettled into a new village provided concrete roads, primary schools, a community house and a health clinic, gravity irrigation systems, water and electricity (Huu, 2015, p. 82). However, after resettlement this health clinic did not open because there were no doctors to operate it (Huu, 2015, p. 89). According to a household from A Sap village, the clinic is still closed for the same reason. Water facilities were also a problem after resettlement, as households have been using water from a contaminated stream for years ("Supply Relocated Families", 2015). In 2015, after years of pleading by local media and social organisations, the hydropower's authorities fulfilled their promises by providing fresh water.

6.3 Evaluation of Livelihood Assets: A Comparison

To research the dynamics of development, the last question of the household survey asked respondents to rate several livelihood assets to be better or worse compared to the situation right after resettlement. The results are presented in Figure 11. Remarkable is that respondents were careful in saying that livelihood assets have become 'much better' than before. Based on the frequency of using the highest and lowest scores, respondents from Bo Hon village are the most positive about the development since resettlement, especially about infrastructure and the access to school, healthcare and media. Initially, the convenient location of the village also made Bo Hon recover faster than other villages, and still seems to have impact on further development (Huu, 2015, p. 123). Compared to the other two villages, the respondents are positive about the amount of pollution and natural disasters compared to 2006. The low score given on food insecurity development in Bo Hon seems to correspond with the outcomes of chapter 6.5, where the people from Bo Hon village appear the have the most issues. Respondents from A Sap are least positive about the development since resettlement., scoring the lowest average score. Whereas access to water and electricity are better than before, income, household health and natural disasters are rated be worse to much worse. Additionally, even though incomes have risen over the years (some households did not have any income before resettlement), the majority of respondents rate income to be worse now. Multiple households said the economic situation has degraded because expenditures have risen, especially on water and electricity. Prices were raised in Vietnam in March, 2019 by 8,36 percent to cover production costs. Additionally, jobs are still not stable and there is not a lot of work available. Many people are therefore unable to save money like they could in the old

village (Interview Bo Hon, 2019). However, the village leader of Bo Hon admitted that neighbouring villages have the same problems regarding the availability of jobs and food insecurity. Despite that, most respondents say living conditions are worse for them compared to neighbouring villages (see Figure 11). Such outcomes might be related to emotions towards the resettlement process, as the largest part of Bo Hon (73,3), A Sap (92,9%) and A Den respondents (71,4%) say resettlement still has a high impact on their daily life.

Figure 11 Evaluation of livelihood assets (*n* = 74)



Source: Author's household survey

In all three villages, the majority of respondents rate household health as worse than before. All ethnic minority groups in Vietnam are given a health insurance card by the

government, yet some respondents said they still spend unaffordable amounts of money on health care. In A Den, 4 households claimed to spend amounts from 15 up to 50 million VND per year. On average, households spend 5 million VND in A Den; in A Sap and Bo Hon respectively 0,54 and 1,38 million VND a year.A seven-member household from Bo Hon mentioned that both father and son suffer from heart and stomach issues and need to go to the hospital every week. They told that they need to sell their of belongings to be able to pay the hospital bill because the insurance card only pays up to 60 percent of medical costs. Another household had to borrow money from a neighbor to be able to go to the hospital. Being unable to work also led some people further into a poverty trap, as they are not able to afford high medical costs when they do not earn a stable income. Table 13 shows the average amount of hospital visits per household, which seem to be related to the evaluation of household health in Figure 11. Households from A Sap village have the highest number of hospital visits and rate household health and access to health care the lowest. However, hospital visits may differ among members of the household.

Table 13 Hospital visits per household

		Bo Hon		**A Sap**		**A Den**	
		Frequency	Valid %	Frequency	Valid %	Frequency	Valid %
Hospital	Once per month	8	26,7	8	61,5	3	10,0
visits	A few times a year	13	43,3	4	30,8	19	63,3
	Once a year	2	6,7	0	,00	2	6,7
	Less than once a year	5	16,7	0	,00	4	13,3
	Never	2	6,7	1	7,7	2	6,7
	Total	30	100,0	14	100,0	30	100,0

Source: Author's household survey

Relations with local authorities and NGO's have become better over time. However, no non-profit organisations are involved in the development of the villages anymore. Organisations previously involved in rebuilding livelihoods after resettlement ended their projects in 2016. Among them were the Centre for Social Research and Development (CSRD) and Consultative and Research Centre on Natural Resource Management (CORENARM). Their collaboration in the LAMPE project supported communities with land and forest allocation, community rights and training courses (Hanh & Vinh, 2016, p. 24). In 2015, 300 hectares of natural forest were planned to be allocated to Ka Tu people in A Sap village, nevertheless this was not approved as Land Law 2013 stated that "natural forest land [was]

only allowed to be allocated to the state's and commune's forest management boards" (Hanh & Vinh, 2016, p. 11). However, the project saw successes by training the communities on crop production, sustainable forest farming and job finding, consequently leading into increasing incomes (Hanh & Vinh, 2016, p. 38). Local peoples were taught the role of forests and biodiversity protection, making them more aware of the importance of long-term sustainable livelihood development (Hanh & Vinh, 2016, p. 38). Moreover, thanks to strengthened voices from the people, project members claimed that hydropower company staffs were more open and aware of negative impacts of hydropower resettlement (Hanh & Vinh, 2016, p. 31). The companies are still involved in compensation policies and funding programs. Next to providing food aid every year with Tet holiday (see chapter 6.5.1), they fund education fees, school books and bikes for children to go to school. In some cases, they supported families in improving the safety of houses. From the government, the villages receive 50 million VND yearly for local development. On top of that, the government recently donated households categorized as 'poor' 1 cow and the 'near poor' 1 goat (Interview Bo Hon, 2019). In Bo Hon, 3 households received a cow and 15 received a goat. In A Den, households received 1 or 2 beeves from the government, yet some people asked for money instead. Many of them are still in the process of negotiation. For example, one family asked 3 million VND compensation money from local authorities, who offered giving 500 fishes instead. They did not agree with the offer, as it was worth less than what they asked for. Simultaneously, at the moment of research, they were also negotiating with the government to receive 15 million VND instead of a buffalo as they said a buffalo is only worth 7,5 million VND. However, the director of Hearts for Hue, a national organisation working with resettled communities, said that compensation money on itself tends to make people passive and is often only used to solve short-term problems. He stressed the importance of handing resettlers training and knowledge on adaptation instead in order to make rebuilding livelihoods sustainable. Apart from that, the organization offers programs on livestock breeding and microfinance. Both programs are proven to help disadvantaged peoples move out of poverty and might be valuable to implement on a larger scale in rural Vietnam. Additionally, the organisation was at the time of research working on setting up mobile medical and dentist buses, because even though there are medical centres in rural areas, the quality of them is often not comparable to the centres in the city (Interview Hearts for Hue, 2019).

7. Discussion

The main aim of this research is finding longer-term implications of resettlement on communities. The difficulty in answering this question is that is hard to estimate how the communities would have developed in their old settlements, and to what extent external influences in the new area, such as natural disasters, can still be owed to resettlement. Therefore, most studies focus on what can be analysed: the development of communities over time. Scudder (1997) argued that resettlement processes take time and only see a successful closure when communities are able to recover former living standards and develop them further in a sustainable way. This raises the question whether the people from Bo Hon, A Sap and A Den village saw a sustainable and successful closing of their resettlement process, or that they are still in one of the four stages as described in four-stage framework of Scudder (1997).

Based on the results, it is hard to be convinced that the majority of the resettlers re-established their former living standards (Scudder, 1997, p. 41). When looking at incomes, one of the most dynamic indicators of development, it can be concluded that households in Bo Hon recovered from resettlement as incomes have become significantly higher than before displacement. Between 2013 and 2019, the trend of income growth was clearly set forward. For Ta Oi resettlers, income levels are not yet restored to those before displacement. However, it is important to consider the shorter period of time since resettlement of this group. For the Ta Oi, incomes have increased significantly compared to right after resettlement. Nonetheless, the development of living standards comprises of more actors than economic assets only. Respondents still face difficulties in coping with lesser land quality and smaller land sizes, mainly affecting job availability and food security. The case of Bo Hon shows that for half of the households, subsistence food production does not satisfy their nutritional needs, and the majority worries at least frequently about not having enough food. Households from A Sap see similar issues with regard to food insecurity and face worse household health than before resettlement.

Even though the majority of resettlers may not have yet rebuilt former living standards in the new settlement, it can be argued that all three communities have moved into stage three of Scudder's framework, by showing that they did make further improvements of living standards. For example, in terms of food insecurity scores and illiteracy rates, the Ta Oi community has been developing well compared to 2013. Furthermore, a growing share of households grow cash crops and live off livestock production. A significant number of them found non-farm income by working for others. For Bo Hon village, improvements made in the last years are less visible because in previous research, they already showed resilience against

the first shocks after resettlement. In contrast to the other villages, the small group of A Sap respondents included in this research show no promising improvements in living conditions. The majority of them suggest that low income levels and a high number of unemployed people are related to health issues, deriving from environmental pollution.

Based on these considerations, it is hard to place these communities in one of the four stages, neither do they comply with characteristics of a village that saw a sustainable and successful closure of the resettlement process (Scudder, 1997, p. 42). Even though Scudder (1997) argues that successful resettlement often takes at least two generations to develop, it is important to note that adaptation and livelihood development after resettlement does not follow a structured pathway as suggested in the framework. Some livelihood assets in the new settlement may be permanently worse and requires resettlers to adapt on the long term, while others are easily improved further. Bo Hon villagers were resettled more than a decade ago and still cope with land quality issues and food insecurity. It is remarkable that the latter issue is a bigger problem in Bo Hon than in A Den, who resettled 5 years later. It is therefore reasonable to say Bo Hon got stuck in the so-called poverty trap, often seen in the third stage after displacement when communities receive no compensation or assistance anymore and the land they received is insufficient to fulfil their nutritional needs (Huu & van Westen, 2011). However, more issues are at stake, referring to the presence of drought and flooding in the new settlement, which are less prevalent in A Den and A Sap villages. As long as no assistance is given on how to cope with such severe issues, food insecurity issues in Bo Hon may not decrease. In order to make resettlement a means for development, compensation policies should be revisited and be even more supportive of the rehabilitation of resettled communities. On top of that, it is important to note that land quality, environmental pollution and natural disasters are marked as the biggest obstacles in successful development. Therefore, the development of neighbouring communities should also be monitored in order to see whether these issues are also shared by non-resettled communities.

8. Conclusion

The main question of this research is: '*What are longer-term effects of dam-induced resettlement on livelihood development and food security in Bo Hon, A Den and A Sap village?*' In order to answer this question, a comprehensive analysis of the situations before and after resettlement was used as a reference point to show how villages dealt with the first shocks. After that, the current livelihood development situation in A Den, A Sap and Bo Hon village were described and compared. The results showed that illiteracy rates are still high in Bo Hon and A Sap, and that only a fraction of all respondents attended university. Most young adults are farmers or work for others on acacia plantations. Remarkably, there are no statistical differences found between the villages, neither between female- and male-headed households, in terms of yearly incomes. What did show differences were the outcomes of food security measures, in which Bo Hon and A Sap scored significantly worse than A Den village. In both villages, people worry the most about food, have a low satisfaction from own food production and score high in the Coping Strategies Index. High expenditures on daily food in Bo Hon might to be related to these issues, yet also A Den households claim to spend half of their income on food. Because no significant relation was found between income and food expenditures, and the majority of all respondents said their financial situation is not strong enough to overcome local food shortages, high food expenditures may imply that food prices are relatively high. This suggests that the ability to live from subsistence food production is still important. Next to cultural preferences, daily food choices are also largely dependent on the availability and access of food within the villages, instead of what is offered by external (super)markets, as diets show many similarities within the villages.

However, it is evident that the majority of the respondents claim that resettlement still has a high impact on their daily life. Especially issues with land size and quality seem permanent and hard to adapt to as they are major causes of the instability of harvests and income. To cope with these issues, there is an overall growth of income from livestock production and working for others, especially seen by the Ta Oi community. Conversely, income from remittances clearly decreased over time. Remittances previously helped Bo Hon households to reduce vulnerabilities against food insecurity, yet migration income is in many cases not sufficient for migrants to send money back to their families. Despite that, incomes for both groups increased significantly since resettlement. Especially the Ta Oi community saw major improvements since previous research was conducted and are moving towards earning the same amounts of income as before resettlement. The community also saw declining illiteracy rates, and significant stronger satisfaction levels from subsistence food production. It

is clear that development trends seen in the Ta Oi group, follow the process previously experienced by Bo Hon village. However, those now living in A Den and A Sap experienced major issues with polluted water streams after resettlement, which has long-lasting effects on the growth of livestock, crops and personal health. Even though the problem of pollution has been solved, worsened household health is still related to environmental pollution, increased use of chemicals and hard work conditions.

What can be concluded is that the villages are in different stages of development, yet this is largely related due to time passed since resettlement. Households from A Den and A Sap village, who were resettled in 2011, show similarities in their livelihood losses and development as Bo Hon village after its resettlement in 2006. When Dr. Huu conducted his research in 2013, A Den and A Sap households were still in the middle of recovery from the first shock. Now, around 6 years later, research shows that there are not many differences anymore in the livelihood development between the villages. Previously found differences in recovering from resettlement shocks did reduce over time and do no longer seem to be dependent on resettlement location. The advantage of living near a big city, for example, does not appear to have a significant influence on the livelihoods of households from Bo Hon, noting that no villagers work in the city anymore or travel their frequently. However, there are some differences found between the villages, reflected in levels of food security, environmental issues and household health, that are dependent on location. Whereas Bo Hon villagers have difficulty with adapting to natural disasters, A Den and A Sap households still recover from the polluted environment they were resettled into.

However, some differences found between households from A Den and A Sap are not likely to be affected by location as both villages are situated next to each other. This may also relate to the small sample size taken in A Sap. Both villages constitute of a majority of Ta Oi resettlers, who saw major improvements in livelihood development since they were resettled. It is therefore not safe to assume that the development of households from A Sap is slower or worse than those from A Den. On top of that, small sample sizes may have been the main cause for the insignificance of some statistical tests. Correlations between income, worrying about food insecurity and financial position in relation to local food shortages were not statistically significant, and therefore raise questions on the clarity of the questions and validity of the results. Answers given by respondents may also be driven by dissatisfaction about the resettlement process, noting that the majority of them said resettlement still has a high impact on their daily lives.

8.1 Recommendations for further research

The impacts of displacement and resettlement are hard to predict as they vary from case-to-case and are highly dependent on location, time, compensation and assistance, as well as socio-economic and cultural contexts in which it takes place. This study investigated long-term implications of resettlement on the development of communities with a similar cultural background, and shows that differences found in their development processes are shaped by natural conditions in their new settlement location. However, further research is needed to claim that increased health issues experienced by these communities is related to their new environments. It is then necessary to monitor neighbouring communities to gain a clearer view on which issues are related to resettlement and which issues are present on a larger scale.

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Appendix 1: Household Questionnaire Bo Hon, A Den & A Sap

Date:
Questionnaire number:
Interviewer:

Part I: Household characteristics

1. Village:
    a. Bo Hon
    b. Can Tom 2
2. Ethnicity:
    a. Kinh
    b. Ta Oi
    c. Ka Tu
3. Composition of the household:

Members of family	Age	Sex	Education	Main occupation	
				Before resettlement	Nowadays
Husband					
Wife					
Children					
Other members					

4. Household head:
    a. Male
    b. Female

Part II: Livelihood assets

5. Landlessness

No.	Questions	Answers
5.1	How much land do you have?	a. In the village: ……..…… ha b. Other places: ……..……. ha
5.2	What is the main type of land use of your land? (more answers possible)	a. Agriculture……..…… ha b. Forestry…….……. ha c. Garden…….……... ha d. Housing……..…… ha e. Livestock…… ha f. Other(s), namely…… ha
5.3	What kind of crops do you plant on your agricultural and forest land? (more answers possible)	a. Cassava b. Wet paddy

		c. Dry paddy d. Rubber e. Acacia f. Cash crop, vegetables, lemon grass g. Fruits h. Other(s), namely……
5.4	How much food crops do you produce (kg per year)?	a. Rice: ……kg per year b. Cassava……kg per year c. Vegetable: ……kg per year d. Fruit……kg per year e. Others……kg per year
5.5	Do you sell your crops or use it for own consumption?	a. Selling crops b. Using crops for own consumption c. Both
5.6	What kind of animals do you own in your land? (more answers possible)	a. Pig b. Cow c. Buffalo d. Chicken e. Duck f. Dog/cat g. Goat h. Other(s), namely ……
5.7	Do you sell your animal or use it for own consumption?	a. Selling animals b. Using animals for own consumption c. Both
5.8	How is the condition of your land?	a. Very good b. Good c. Not bad/not good d. Bad e. Very bad
5.9	Do you use fertilizer for your land? (more answers possible)	a. Yes, natural fertilizer ……..…. VND/year b. Yes, chemical fertilizer ……..…. VND/year c. No, nothing
5.10	Is your land registered?	a. Yes b. No

6. Joblessness/income

No.	Questions	Sources	Income in cash in million VND/year
6.1	What are the main sources of the households' income?	a. Crop (fruit, vegetable, cash crops)…….....	……..…
		b. Forestry …….	……..…
		c. Fishing ……..……..	……..…
		d. Livestock……	……..…
		e. Construction …….	……..…
		f. Small scale business ……..……	……..…
		g. Remittances …….....	……..…
		h. Salary …….	……..…
		i. Working for others ……..……..	……..…
		j. Hunting/collecting non-timber products, harvesting bamboos ..	……..…
		k. Other(s), namely …….	……..…

6.2.Has the process of resettlement led to a loss of income sources?

a. Yes
b. No

6.3 Due to displacement and resettlement, which main economic activities did you lose?

……

7. Loss of access to common property

No.	Questions	Answers
7.1	Do you have access to common property (former bamboo forests, natural and protected forests, river, grass fields)?	a. Yes b. No (go to question 8)
7.2	What type(s) of common property do you use?	a. Forest/bamboo b. River/ hydropower reservoir c. Grass field d. Other(s), namely ……..
7.3	What kind of activities is the common property used for? (more answers possible)	a. Recreation b. Income generating activities, namely ……... c. For foods d. Bamboo harvesting e. Other(s), namely…….
7.4	How much do you earn from these activities per month? *Please ask each income sources in question 7.3, then sum up to the total.*	……..VND

8. Food Security

8.1	How many times per day do the household members eat meals?		
	Age Group	Number of meals	Compared to right after resettlement:
	Children under 5 years		1 = less meals 2 = more meals 3 = no change
	Children 5-17 years		1 = less meals 2 = more meals 3 = no change
	Adults 18+ years		1 = less meals 2 = more meals 3 = no change
	Pregnant / lactating women		1 = less meals 2 = more meals 3 = no change

No.	Questions	Answers
8.2	What kind of foods do you have for breakfast?	…… …… …… …… ……
8.3	What kind of foods do you have for lunch?	…… …… …… …… ……
8.4	What kind of foods do you have for dinner?	…… …… …… ……

		……
8.5	What kind of snacks do you eat?	…… …… …… …… ……
8.6	How many snacks do you eat on a daily basis?	…. snacks
8.7	What kind of food products (crops, grains, rice, meat, fish) do you grow or raise for your own consumption?	…… …… …… …… ……
8.8	Does your own food production satisfy the nutritional needs of the household?	a. Yes b. Partly c. Not at all
8.9	What percentage of your household's income is spent on food?	…. percent
8.10	Is your financial situation strong enough to be able to overcome local (seasonal) food shortages?	a. Yes b. No
8.11	How often do you worry that your household will not have enough food?	a. Daily b. Frequent c. Sometimes d. Never
8.12	Are you able to receive assistance from NGOs/local authorities/churches/neighbouring villages?	a. Yes b. No

8.13	How often do you apply the following coping strategies when faced with food insecurity?	
	Coping strategies	1 = daily 2 = frequent (3-6 days a week) 3 = sometimes (1-2 times a week) 4 = never
A	Rely on less preferred, less expensive foods	
B	Borrow food/get help from friends/family/neighbours	
C	Limit meal sizes	
D	Reduce number of meals	
E	Skip days without eating	
F	Reduce other expenditures in order to buy food	
G	Restrict consumption for adults so children have enough	
H	Let household members eat somewhere else	
I	Receive assistance from NGOs/local authorities/churches	

8.14 Are you positive about the future of local food security?

a. Very positive
b. Positive
c. Neutral
d. Negative
e. Very negative

9. Loss of health

No.	Questions	Answers
9.1	How often do you go to the hospital	a. Once per month b. A few times a year c. Once a year d. Less than once a year e. Never
9.2	How much do you spend on health care on a yearly basis?	…… VND
9.3	Did the amount of alcohol you consume increase after resettlement?	a. Increased b. The same as before c. Decreased
9.4	Did the amount of smoking increase after resettlement?	a. Increased b. The same as before c. Decreased

Part III: Livelihood adaptation after resettlement

10. Did you receive any assistance from the hydropower company in the past 5 years?
    a. Food: ……..……..
    b. Cash: …….. VND
    c. Utilities: ……..……..
    d. Fertilizer: ……..……..
    e. Seeds: ……..……..
    f. Breedings: ……..……..
    g. Others, namely: ……..……..
11. What is the most important strategy you applied to cope with loss of land and poor soil condition after resettlement? You may choose multiple answers:
    a. Grow other crops, such as ……..
    b. Use common property to grow crops
    c. Find new land to rent/buy
    d. Use more fertilizer
    e. Focus more on raising livestock
    f. Works for others (construction, acacia, housekeeping, harvest,…..)
    g. Other(s), namely …….
12. Can you tell us more about the most important strategy?
    ……..……..……
    ……..……..……
    ……
13. Did any of your relatives move out of the household after resettlement to find work outside of the village?
    a. Yes, …. persons
    b. No (go to question 16)
14. How much do they earn per month? ……..…. VND
15. If applicable, what are the main things remittance money is spend on?
    a. ……..

b. ……..
c. ……..

Part V: Evaluation of living standards before and after resettlement

16. How would you evaluate your living standards compared to the situation at the beginning of resettlement?

No.	Assessment fields	Much worse	Worse	Unchanged	Better	Much better
16.1	Income					
16.2	Food security					
16.3	Household health					
16.4	Access to school					
16.5	Access to health care					
16.6	Access to electricity and water					
16.7	Pollution (water, air, noise…)					
16.8	Natural disasters (flood, drought, ...)					
16.9	Infrastructure / condition of transportation					
16.10	Relation with local authorities and NGOs					
16.11	Access to mass media					
16.12	Living conditions compared to neighbouring villages or communes					

17. How high is, would you say, the impact of the resettlement still in your daily life?
    a. Very high
    b. High
    c. Neutral
    d. Not high
    e. None

Appendix 2: Focus group guide

Questions:

1. Can you introduce yourselves briefly with your name and age?
2. Do you think that many households in the community have a problem with food security?
    a. How big is the problem? What is the cause of the problem?
3. Do you think that food is accessible, available, and affordable in the community? Explain
4. Are there differences between time periods (harvest/non-harvest, (Tet) holiday) when it comes to food security?
5. How often do you face natural disasters such as drought or flooding? How do you cope with it? Is there enough water to combat drought?
6. How would you evaluate quantity versus quality of food in the community?
7. Why do many people choose for chemical fertilizer instead of natural fertilizer?
8. Where do most people buy their food? (Outside village? Supermarket? Local market?)
    a. How do you get there? How how long does it take?
    b. What kind of food products do you buy?
    c. What do you think of the quality of bought food?
    d. Do the available markets/food outlets satisfy your needs?
9. Do people eat different foods now compared to in the old village?
    a. If yes, what are the differences? More protein (fish/meat?) or other vegetables and fruits?
10. How many times per week do you eat fish? How often do you eat meat?
11. Do you think you get enough protein-rich foods (fish/meat/tofu/beans/lentils) in your diet?
12. Some people in the village mentioned their household health has become worse, can you think of any reasons for this?
    a. Do you think these diseases are related to smoking, drinking, food (quality of quantity) or pollution?
13. What can be done to improve the food situation in the community in the long-term?
14. Does anyone have other comments or questions to make?

Appendix 3: Interview guide Hearts for Hue

Interview guide for NGO's

1. Introduction (about the NGO)
2. Projects/research concerning displacement and resettlement
   2.1. Objectives, activities, actors involved, finance/funding
   2.2. Where do you start with a project? (activity & place)
   2.3. Severest problems found in resettled communities (differences with hydropower resettlement?)
   2.4. What are the biggest challenges? (finance, poor soil, etcetera…)
   2.5. What is your relationship with government/local authorities? (responsibility, finance, lobby)
   2.6. Do you know more about the People Committee investing in poverty reduction? (70billion VND to reduce rate of poor households by 1,06%. Underprivileged people will also be provided with legal assistance, education and healthcare services. The province will cover 30% of expenses to buy health insurance cards for people living under the poverty line)
3. Current-day involvement with issues in Binh Dien, Huong Tra District (Bo Hon) / A luoi (Huong Thai Commune)?
   3.1. If applicable: objectives, activities, actors involved
   3.2. If not involved: why?
   3.3. New findings on quality of land and food insecurity: sustainable solutions?
   3.4. What about pollution of water and land?
   3.5. What about broken roads and houses, solutions?
   3.6. What is a good sustainable development strategy?
4. Further knowledge about resettlement in Vietnam:
   4.1. Resettlement as an opportunity/tool for development?
   4.2. Recommendations for future resettlement/projects (money-for-land?)
   4.3. Goals for the future of H4H?