

# Dam-induced displacement and resettlement in Vietnam: risks & adaptation

Master thesis

July 2013



Name: Daniël Koster

Student number: 3402304

E-mail: daniel.koster1@gmail.com

Postal address: Boven Zevenwouden 160, 3524CK, Utrecht (Netherlands)

Master: Sustainable Development

Track: ID

Supervisors: Guus van Westen (UU) and Pham Huu Ty (Hue University of Agriculture & Forestry & UU)

## Acknowledgements

First of all, I would like to thank my colleague Cherrelle Druppers for her enthusiastic, positive and cooperative attitude throughout the research. I couldn't have wished a better research partner. My sincere thanks also goes to my supervisors Guus van Westen and Pham Huu Ty for their guidance and support throughout this research. Without them, this research could have never been realized.

I also would like to thank Hue University of Agriculture and Forestry (HUAF) for providing the opportunity to undertake this study. I really enjoyed the welcoming, helpful and friendly attitude of its staff members. I am also very grateful for the help of Ms. Suu of the Centre for Social Research and Development (CSR) and the Vietnam Rivers Network (VRN), Mr. Nghi of Tropenbos and Mr. Dung of CORENARM who provided me with interesting facts, figures and viewpoints concerning displacement and resettlement in Vietnam. I also would like to thank the political authorities (e.g. village leader, district spokesperson and vice-chairman of the commune) for their collaboration. Of course, I would also like to thank all the households that participated in this study. I was really moved by their hospitality. Finally, I would like to thank the translators Ms. Nguyen, Ms. Nhung and Ms. Ngoc for their incredible work.

## Executive summary

Ongoing industrialization and urbanization in Vietnam have stimulated the need for power, leading to the construction of dams all over the country. While dams seem sustainable due to the production of hydropower, its 'true' sustainability is often doubtful due to its negative impact on the environment and people. More than 200.000 ethnic minorities have been displaced in Vietnam due to the construction of dams. The question is to what extent involuntary displacement has affected the livelihoods of the displaced. This thesis can be seen as a contribution to the ongoing research in Vietnam (and all over the world) that tries to answer this question.

Generally, those displaced end up impoverished after resettlement. This research used the Impoverishment Risks and Reconstruction (IRR) model of Cernea to identify to what extent the involuntarily displaced people in Vietnam (Thua Thien Hue province) have been impoverished after resettlement. Due to time limitations, it was chosen to focus on 5 out of 8 impoverishment risks (e.g. landlessness, joblessness, food insecurity, increased mortality and morbidity and loss of access to common property). Also one extra risks has been investigated; access to public services, which is crucial for every household in order to overcome impoverishment. Besides a risk assessment, this research also investigated to what extent adaptation strategies have been applied by households in order to overcome impoverishment and which factors influenced the adaptive capacity and resilience of the re-settled that made such strategies possible.

In collaboration with C. Druppers two resettlement sites have been investigated in Thua Thien Hue province: Bo Hon village in Binh Dien district and Kon Tôm village in A Luoi district. While this thesis provides an extensive review of the issues in Kon Tôm village, the thesis of C. Druppers will mainly focus on the case of Bo Hon village. Collaboratively, the prevailing risks and adaptation strategies of the re-settled in both resettlement sites have been compared in order to increase understanding of the impact of dam-induced displacement on the lives of the re-settled. Both questionnaires and in-depth interviews have been undertaken to investigate this topic.

This research shows that all investigated risks were present in Kon Tôm village. This was however not the case for Bo Hon village since the risk 'lack of access to public services' was not prevailing in the village. Besides, even though the remaining risks were impoverishing people in Bo Hon, they were less severe compared to Kon Tôm. This is a surprising finding since displacement policies have improved over time while Kon Tôm has been created 5 years later than Bo Hon. Also different adaptation strategies have been identified in both resettlement site including land use intensification, work for other people, migration and off-farm activities. Although most households saw their situation improve due to these strategies, many still couldn't sustain their livelihoods after resettlement. Also less adaptation strategies have been identified in Kon Tôm which can be explained by the prevailing risks in the village which were more severe than in Bo Hon. Besides, households had less time to adapt in Kon Tôm since resettlement took place in 2011, while most households in Bo Hon have been resettled in 2006.

Thus, these results show that both dams in Binh Dien and A Luoi have not been truly sustainable due to their negative impact on the livelihoods of the displaced. In order to overcome impoverishment of re-settled in the future, it is essential to enforce existing resettlement policies and improve participatory mechanisms since households lack any influence concerning their own resettlement.

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## Acronyms and abbreviations

ACCRA	Africa Climate Change Resilience Alliance
CDD	community-driven development
CSRD	Centre for Social Research and Development
FPIC	free, prior and informed consent
HDI	Human Development Index
HUAF	Hue University of Agriculture and Forestry
IRR	Impoverishment Risks and Reconstruction (model)
LAC	Local Adaptive Capacity (framework)
ODI	Overseas Development Institute
VRN	Vietnam River Network
WB	World Bank
WBED	World Bank Environment Department
WCD	World Commission on Dams

# 1. Introduction

Land is often needed for development projects, resulting in the displacement of people who previously occupied this land (Stanley, 2004). These people are forced to move for the goal of economic development. This event is commonly called "development-induced displacement" (Dao, 2010). Forced displacement is more than just the physical relocation of people; it has the potential to destroy people's lives economically, physically, culturally and socially, leading to the impoverishment of current and future generations (Maldonado, 2012). Globally, development-induced displacement happens at a massive scale, displacing around 10 million people each year (Bisht, 2009). Causes of development-induced displacement include urban infrastructure, transportation (canals, roads etc.), forest and park reserves, population redistribution schemes, agricultural expansion, energy (power plants, oil extraction and exploration, mining, pipelines) and water supply (incl. dams, irrigation and reservoirs) (Courtland Robinson, 2003).

This research will focus on the displacement of people due to the construction of dams, which can be seen as the largest contributor to displacement of all the different types of development projects. This can be partially explained by the large scale of many dam projects. The World Bank Environment Department (WBED) for example calculated that about 40% of the people displaced each year by development projects (e.g. 4 million people) is caused by dam projects. Thus, enormous amounts of people are being displaced due to the construction of dams, which has major consequences for their lives (Stanley, 2004).

The research area will be Thua Thien Hue province in Vietnam. Ongoing industrialization and urbanization in Vietnam have stimulated the need for power, causing a boom in the construction of dams in Vietnam, which are used for flood control, irrigation and the generation of electricity. Dam projects have especially accelerated in the last few decades. Between 1959 and 1999, around 500 dams, sluices and weirs have been constructed in Vietnam. Until now, hundreds of dams have been added to this number, which severely influences the livelihoods of people being displaced by these dams (DAO, 2010).

Development-induced displacement increases the vulnerability of people for certain risks, including landlessness, joblessness, homelessness, marginalization, food insecurity, increased mortality and morbidity, loss of access to common property and social disintegration (Cernea, 2000). This research will compare the vulnerability of two displaced Vietnamese communities to these risks and analyze how people adapt to these risks in order to reduce or completely overcome impoverishment. The central question is:

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

In order to answer this question, different elements of the resettlement process (incl. the degree of participation and compensation) and the prevailing risks (incl. variation within the community) will be investigated. The resettlement process will also be compared with the resettlement programme in order to analyze where improvements (if necessary) need to be made. Furthermore, factors that influence people's adaptive capacity and thus their vulnerability to risks will be identified. Finally, the implemented adaptation strategies will be described and evaluated on their (long-term) impact. All of these topics have been summarized as research questions in section 1.1.

In collaboration with C. Druppers two resettlement sites have been investigated in Thua Thien Hue province: Bo Hon village in Binh Dien district and Kon Tôm village in A Luoi district (figure 4.2). While this thesis provides an extensive review of the issues in Kon Tôm village, the thesis of C. Druppers (2013) mainly focuses on the case of Bo Hon village. Collaboratively, the prevailing risks and adaptation strategies of the re-settled in both resettlement sites have been compared order to answer the central and research question(s).

This thesis is structured as follows. Section 2 provides a theoretical framework that starts with a general introduction about the costs and benefits of dams, followed by a description of development-induced displacements, its consequential risks and the underlying causes of these risks. Furthermore this section also describes the clash between dams and sustainability and how dams could become more sustainable, including the importance of free, prior and informed consent (FPIC). The final part of this section will give a description of the term 'adaptive capacity' and interconnected concepts like vulnerability and resilience. Section 3 will provide more information about Vietnam, including its history geography, history, demography, economy and hydropower development. This section then continues with a review of the changing Vietnamese policy environment concerning hydropower development and ends with a general description of Thua Thien Hue province, including its current hydropower situation and future plans. The next section will describe the methods used for this research and the limitations faced during fieldwork. Section 5 describes the resettlement programme, resettlement process and the prevailing risks in Kon Tôm, followed by section 6 that describes the variation within the community concerning risks and analyzes which factors increases or decreases people's vulnerability to these risks. Section 7 continues with the case of Kon Tôm by giving an overview of the applied adaptation strategies, their impact, and factors that hinder the implementation of these strategies. Finally, section 8 compares the case of Kon Tôm with Bo Hon concerning the prevailing risks and implemented adaptation strategies. This thesis ends with a conclusion and recommendations.



## 1.1 Central and research question(s)

### Central question:

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

### Research questions:

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

## **2. Theoretical framework**

This section starts with a general introduction about the costs and benefits of dams, followed by a description of the term 'development-induced displacement', including its consequential risks and the underlying causes of these risks. Furthermore this section describes the clash between dams and sustainability and analyzes how dams can become more sustainable, including the importance of free, prior and informed consent (FPIC). This section ends with a short description of key concepts of development-induced displacement and resettlement.

### **2.1 Dam construction: costs and benefits**

The belief that dams can reduce poverty and stimulate development by increasing hydroelectricity and irrigation, has stimulated many nations to construct dams (Duflo et al., 2007). The rising demand, in combination with increasing pollution of water sources has stimulated the need to effectively manage water for human needs (ICOLD, 1999). Until 2000, approximately 45.000 large dams have been constructed. While this number is still growing, heated debates about the costs and benefits of dam construction are taking place (Duflo et al., 2007). This short section will give an oversight of these costs and benefits.

Benefits of dams range widely. These include:

#### **1. Water Supply for industrial and domestic purposes**

Industrial and domestic water demand requires millions of liters a day. Scarcity is however common; 80% of the people worldwide are dependent on an insecure water supply. Dams increase the consistency of the supply, by releasing and storing water. The release of water by dams also dilutes discharged waste, thus improving the quality of water (McLinden Nuijen, 2011).

#### **2. Irrigation**

Also irrigation practices need a lot of water; in 2000, approximately 1147 liters per day per capita is necessary to satisfy demand. Irrigation is essential for food production; by 2025, about 80% of the food production will be produced on irrigated land. Reservoirs need to be constructed in order to make this possible (ICOLD, 1999).

#### **3. Flood control**

Reservoirs and dams can be used to control downstream flooding through storage and release (ICOLD, 1999).

#### **4. Hydropower and safety**

Dams generate renewable, efficient and clean energy, which can be crucial for the socio-economic development of a country. On a global level, hydropower plants produce about 2.3 trillion kWh per annum and 90% of the total amount of renewable electricity produced worldwide, is composed out of hydropower. The construction of dams in a nation also reduces its dependency on energy from other countries (McLinden Nuijen, 2011).

## **5. Inland navigation**

Natural river conditions (e.g. changes in channels, river level, flow rate etc.) problematizes inland navigation. Dams, reservoirs and locks improve inland navigation through increasing control over these natural river conditions (ICOLD, 1999).

## **6. Recreation**

Reservoirs are often very attractive spots for tourists, which is good for the economy. Recreational benefits include birdwatching, swimming, boating, nature walks etc. (ICOLD, 1999).

## **7. Services and employment**

Dams provide employment for (un)skilled workers during the construction phase, which can greatly benefit the local population. The construction of dams also increases community access to education, markets and health facilities (McLinden Nuijen, 2011).

## **8. Wildlife**

Reservoirs can greatly benefit wildlife by acting as habitats for (threatened) species. It can also provide fishing opportunities for sport and production (McLinden Nuijen, 2011).

Besides benefits, there are also concerns regarding dam construction, including:

### **1. Safety**

Dam safety activities (including monitoring, creation of an emergency action plan, implementation of risk reduction activities etc.), are essential to reduce safety risks, especially when dams age. Frequent inspections, modifications, upgrades and evaluations are necessary in order to adapt to current regulations, technology and statutes (ICOLD, 1999). The storage and release of water in a reservoir can also cause earthquakes. Furthermore, landslides can occur when soil gets destabilized by water (McLinden Nuijen, 2011).

### **2. Environment**

Dams influence the natural water cycle, depending on the extent of development, natural conditions and size of the area (ICOLD, 1999). Dams impact the environment (incl. the existing ecosystems) through flood control. Floods for example influence fish migration, sediment distribution and floodplains. Flora and fauna are adapted to the natural conditions of the river. This high dependency on natural conditions makes ecosystems very sensitive for change. Modified natural conditions due to dam construction can create ecosystems that are unstable, nurture diseases or are unable to support the social and historical components of the surroundings. Reservoirs also contribute to climate change by disturbing the downstream flow of organic carbon, resulting in greenhouse gas emissions like carbon dioxide and methane. Dam construction can also indirectly stimulate environmental degradation and climate change through the displacement of people, which can influence their economic activities and resource extraction. Finally, dams and their reservoirs affect sedimentation, which influences soil fertility, downstream river channels, ecosystems and the morphology of the coastal areas and riparian (McLinden Nuijen, 2011).

### **3. Socio-economic impact**

Improved irrigation and flood control can be beneficial for communities living downstream. Dams can however also increase flooding due to the loss of environmental buffers, farmland reduction, and increased volumes of water into the primary river channel (McLinden Nuijen, 2011). Furthermore, it can disrupt agricultural practices that are based on natural flooding conditions, causing reduced productivity, harvest reductions and impoverishment. Dam construction can also problematize fisheries downstream since it disrupts fish migration (Cernea, 1997). Reservoirs in tropical areas can also negatively influence the health of communities since it can nurture numerous diseases, including schistosomiasis, malaria, cyanobacterial toxins etc. (WDC, 2000). The construction of dams can also lead to the resettlement of communities, which can result in the impoverishment of people. Adequate compensation is necessary in order to overcome impoverishment (McLinden Nuijen, 2011). The issue of 'resettlement' will be further analyzed in the next section.

## **2.2 Development-induced displacement**

During the 1950s and 1960s, modernization theory dominated the development discourse. According to this theory, development was perceived as the transformation of a traditional society into a complex and modern Western one. Capital-intensive development projects were the key to success. Issues like displacement were seen as a necessary evil in order to develop or even as a good deed, since it will make people more sensitive to change. The current development paradigm however changed from this perspective with its focus on social justice, human rights, environmental protection and poverty reduction. It is nowadays often believed that development not only brings benefits but also imposes costs, including development-induced displacements (Courtland Robinson, 2003).

As mentioned in the introduction of this thesis, development-induced displacement will be defined as the involuntary displacement of people due to the goal of economic development (Dao, 2010). Development-induced displacement is a worldwide issue that already displaced millions of people. This was already the case in the early 1990s, in which the construction of 300 high dams (e.g. dams higher than 15 meters) has resulted in the displacement of 4 million people. This also gives an indication of the high numbers of displaced people today, since processes like urbanization, industrialization and electrification are ongoing. It is also evident that while development projects are beneficial for many people, often the costs of these development projects have to be paid by the most marginalized and poorest of society. During 1951-1990 in India for example, about 2% of the total population has been displaced. While 40% of the displaced were tribal, they only constituted 8% of the total population. Besides displacement by dams, the term development-induced displacement also consists out of other development activities, including urban infrastructure, transportation (canals, roads etc.), forest and park reserves, population redistribution schemes, agricultural expansion, energy (power plants, oil extraction and exploration, mining, pipelines) and water supply (incl. dams, irrigation and reservoirs) (Courtland Robinson, 2003).

### **2.3 Development-induced displacement and resettlement: an ethical issue**

Development-induced displacement raises ethical questions. When is development-induced displacement for example justified and what is owed to the displaced? Penz (1997; 2002) categorized the ethical viewpoints concerning development-induced displacement into three perspectives:

**1. The public-interest.** This perspective assumes that development-induced displacement is justified when the project has net benefits for the population as a whole. Thus, based on a cost-benefit analysis, people with this perspective justify a project when the benefits of the project exceed the costs (e.g. impoverishment, displacement etc.). A minority can be worse off, but if the population as a whole (the public interests) gains more than it loses, then the project will be approved. Questions can however be raised concerning the term 'public interests'. Is this term only restricted to the elite within a society or are also the interests of the poor included?

**2. Self-determination.** This perspective can be divided into two forms, the libertarian and the communitarian form. The libertarian form, which mainly emphasizes individual self-determination, views displacement as immoral due to the violation of people's freedom and the right to property. Thus, people should not be forcibly displaced since it takes away their freedom and property. The communitarian form of this perspective emphasizes the importance of self-determination of whole communities, which is violated when communities are forcibly displaced. The 'self-determination' perspective also has some limitations, since it ignores the public interests. This perspective can also make a project too costly and lead to an unequal distribution of benefits when the displaced demand compensation that is way more than what is necessary in order to sustain (or even improve) their lives.

**3. Egalitarianism.** This perspective justifies a project when it reduces inequality and poverty. In order to do this, a project should mainly benefit the poor while the burdens should be carried by the better off. Concerns arise however concerning horizontal inequality. It could for example be the case that some disadvantaged groups benefit from a project while other disadvantaged groups suffer (due to displacement for example).

As can be noted from the above perspectives, development-induced displacement is a difficult ethical issue in which individual rights and self-determination stand in tension with distributive concerns and the public interest (Stanley, 2004). Penz (1997; 2002) however mentions that development-induced displacement can be justified when certain conditions are met, including: negotiated resettlement instead of coercive displacement, utilizing development benefits for inequality and poverty reduction, minimization of the amount of re-settlers and compensation for all the losses of the displaced. These conditions are however rarely met.

## **2.4 Risks & development-induced displacement**

Development-induced displacement has consequences for the displaced population. These consequences are however very dependent on how resettlement is negotiated, planned and executed. Positive resettlement case studies are however rare (Stanley, 2004). Most people that are displaced are left without strategies to cope with their new circumstances. Many cases can be given to validate this statement. In India for example, only 1/3 of the 60 million people that have been displaced between 1947-2004, were resettled on a planned fashion. Displacement has the potential to impoverish people, to eventually destroy their lives (Maldonado, 2012).

Cernea has created the Impoverishment Risks and Reconstruction (IRR) model which attempts to identify the different impoverishment risks that are intrinsic to displacement (Stanley, 2004). In total eight impoverishment risks have been identified by Cernea (2000), including:

### **1. Landlessness**

Land is an important foundation for people's livelihoods, productive systems and commercial activities. Losing land due to displacement may severely impact these aspects. Both man-made and natural capital will be lost (Cernea, 2000).

### **2. Joblessness**

When displacement occurs, there is a high risk of joblessness for people employed in agriculture, enterprises and services. In urban areas, people may lose their jobs in services and industry. In rural areas, landless employees lose their jobs on land of others (that are sharecropped/leased) and assets that could be used during common property regimes. Finally, self-employed producers lose their business (incl. customers). Joblessness is often still visible for a long duration after relocation. In the beginning of resettlement however, the issue of joblessness might not yet be visible due to temporary employment opportunities in project-related jobs. However, these opportunities are often short-lived. This is for example the case during dam projects in which resettled people may get the opportunity to get employed during the construction phase. Evidence of multiple case studies however has shown that these employment opportunities diminish when the project nears its end (Cernea, 2000).

### **3. Homelessness**

Displacement can lead to reduced housing standards or even homelessness. Loss of a household home or the cultural space of a group can lead to status deprivation. Housing standards can worsen when compensation is based on the market value instead of the replacement value. A temporary reduction of housing standards can occur when displaced people do not have the capability to quickly pay for the costs of adequate housing, thus forcing them to live in temporary shelters that often have the same conditions as refugee camps. Case studies however have shown that this 'temporality' may be extended to very long time periods. A study of the Kukadi-Krishna irrigation subprojects in India for example, has shown that 59% of the displaced people had to live up to 10-15 years in semi permanent or temporary houses after their resettlement (Cernea, 2000).

### **4. Marginalization**

Marginalization takes place when people lose their economic power and get caught in a spiral of downward mobility. Skills, obtained before resettlement might not be useful for the new location, thus severely impacting the applicability of acquired human capital. Economic deprivation and

marginalization can already begin before displacement has taken place due to the decrease in investments in services and infrastructure in areas which were chosen for development projects. Not only economic marginalization can occur but also psychological and social marginalization. This is for example the case when the social status of people is deprived. People can lose their confidence in themselves and the society as a whole. A feeling of injustice may arise and vulnerability may be deepened. Their self-image may be negatively affected due to their victimization and the coerciveness of displacement. The host community may also perceive them as a socially degraded people. They can be seen as strangers and denied entitlements and opportunities (Cernea, 2000).

#### **5. Food insecurity**

Inadequate resettlement stimulates the risk of temporary or chronic undernourishment. This can be caused by reduced incomes and food crop availability after relocation. Food production capacity needs to be rebuilt in the new area which might take many years. In the meanwhile, risks of undernourishment and hunger increase. Joblessness and landlessness need to be dealt with in order to reduce this risk (Cernea, 2000).

#### **6. Increased mortality and morbidity**

Health levels can be severely deprived due to displacement. This can for example be caused by, psychological trauma, social stress, relocation-related illnesses (incl. schistosomiasis, malaria etc.), improvised sewage systems and unsafe water supply that increases vulnerability to illnesses such as dysentery, chronic diarrhea etc. The weakest segments of the relocated population (like, infants, children and elderly) are most vulnerable for health deprivation. There is also a strong link with the risk 'homelessness' (or reduced housing standards) which can negatively impact health. Reservoirs can also lead to accidents (like drowning incidents) and act as a source of diseases. The health of people that were not displaced can also be seriously affected (Cernea, 2000).

#### **7. Loss of access to common property**

Common property assets of communities (incl. water bodies, quarries, burial grounds, pastures, forests etc.) will be lost due to development-induced displacement, which especially negatively affects the livelihood and income levels of the assetless and landless poor. These people heavily depend on common property resources for generating income. A lack of protection of people's access to common property sources, stimulates them to use common property resources of the host population (thus stimulating conflict) or protected areas (Cernea, 2000).

#### **8. Social disintegration**

Involuntary resettlement destroys the social fabric of communities: it ruins patterns of interpersonal ties and social organization and fragments and disperses kinship groups and communities. It disrupts production systems (incl. consumer-producer relationships), local labor markets, local voluntary associations, self-organized mutual services and reciprocal help. Thus, involuntary displacement reduces social capital, worsening powerlessness, vulnerability, dependency and poverty. It is proven to be very difficult to rebuild social networks. Social disintegration is especially the case when families are dispersed separately instead as groups. It can also diminish people's cultural identity due to the abandonment of spatial contexts and/or symbolic markers (graves, shrines etc.) (Cernea, 2000; Courtland Robinson 2003).



It has to be mentioned that these eight risks are not all-inclusive. Also other risks have been added by scientists like human rights violations, loss of access to public services (incl. access to health, education, water, electricity etc.) and failure to implement. The risk 'loss of access to public services', which is one of the investigated risks in this research, can greatly accelerate impoverishment. Especially delayed or lost educational opportunities can lead to severe long-term impoverishment. The risk 'human rights violations', emphasizes that displacement without adequate compensation is, in itself, a violation of human rights. Besides the violation of economic and social rights, displacement can also lead to the violation of political and civil rights like disenfranchisement, degrading treatment or penalties, arbitrary arrest, the loss of political voice etc. (Courtland Robinson, 2003; McDonald-Wilmsen et al., 2010).

A common issue is the unequal vulnerability of different segments within the displaced community for the above mentioned risks (Cernea, 2000). Women for example, are frequently more adversely affected by development-induced displacement than men. This is for example the case when resettlement compensation is only given to the heads of the households (which are often men). Compensation criteria can also be based on the age of the person to receive compensation. Agnihotri for example has found that in Orissa, unmarried women are able to obtain land compensation when they are 30 or older, while men can already receive land compensation at the age of 18. Women are often also more adversely affected by development-induced displacement due to their high dependency on common property resources for generating income. Limited inclusion of women in resettlement planning further increases their vulnerability to risks. Children are another example of a vulnerable group since displacement often disrupts children from going to school. A lack of schooling can also be a long-term problem when a reduction of the resettled households income and living standards pushes children into the labor market. Factors like resettlement procedures, project conditions and the resettlement area, influence the unequal distribution of risks (Stanley, 2004).

## 2.5 Causes of impoverishment

Dam-induced displacement can cause the above mentioned risks. This is the case in many developing countries in which there is still a lack of binding policies and laws to limit the risks and size of development-induced displacement and legal measures to protect the displaced people for largely paying the project costs. Existing resettlement policies can be insufficient in restoring the lives of the displaced (Maldonado, 2012). Compensation for example is often provided in order to compensate for the income loss, economic disruption and dispossession of displaced people (Cernea, 2003). Many case studies however have shown that the provided compensation is often not enough to restore the livelihoods of people (Cernea 2008). There are various underlying causes for this, including (Cernea, 2003):

- Undercounting of assets that should be compensated
- Low valuation of assets
- Limited or no incorporation of non-market costs and income
- Difficulties with compensating for non-physical losses
- Compensation delays
- Corruption
- Inappropriate use of compensation by the recipient which makes him/her quickly cashless and assetless
- Appreciation of assets after determining the compensation that will be provided

The over-reliance on compensation alone is also a frequently observed mistake in resettlement policies, since this ignores the cultural and social effects of displacement. Cash compensation alone is not enough to completely restore the livelihoods of the displaced (Maldonado, 2012).

Even when there are appropriate resettlement policies present in a country, there can still be impoverishment of displaced people due to the limited implementation of these policies. It can for example be the case that local authorities are not aware of the existing resettlement policies (Maldonado, 2012). The policy goals are often not clearly described which can lead to different interpretations, making implementation problematic. It can also be the case that weaknesses within decision making and communication chains (due to coordination issues, limited capacity, work pressures etc.) problematizes effective implementation. Finally, corruption can also limit the implementation of proper resettlement policies (De Wet, 2002).

Another issue concerns the limited participation of displaced people within the process of dam-induced displacement. Many authors (including Cernea, 1997; WCD, 2000; De Wet, 2002; Price, 2009 and so forth) emphasize the importance of participation of the displaced community within the planning and implementation of dam projects although this is often absent or limited (WCD, 2000). People that are going to be displaced by development projects should have the right to participate since it will greatly affect their way of life and existence. Participation also has benefits including, greater re-settler satisfaction, fewer delays and conflicts, lower project costs, reduced need for institutional coordination (which is often a significant weakness in displacement programs) and increased long-term sustainability. An important part of participation concerns the provision of information about the project (incl. information about the need to resettle, people's options, entitlements, eligibility, appeal mechanisms etc.) (Cernea, 1997). Many case studies however have shown that this is often inadequate and incomplete (Courtland Robinson, 2003).

## 2.6 Dams and sustainability

As shown in the sections above, the construction of dams could negatively affect the people and environment. Thus, despite the production of renewable energy (hydropower) the question is whether dams are truly sustainable. To answer this question, it is important to be aware of the key concepts of sustainable development including (Parlak, 2007):

- (1) Just, inter-generational distributions
- (2) Human-centered development
- (3) Poverty reduction
- (4) People as 'able actors' and trust building
- (5) Social justice
- (6) Environmental protection
- (7) Combining ecology with economy during decision-making
- (8) Democracy (incl. governance, participation etc.)

These factors need to be incorporated in order to make dam construction truly sustainable. Human centeredness for example emphasizes that the success of a dam is not only based on the production of energy but also on solving people's problems incl. those who are directly affected by it. Besides the incorporation of human needs, it is also important to recognize and deal with the potential negative environmental effects. Another example is trust building which emphasizes the importance of an effective decision-making and administration mechanism that is trusted by the affected people (Parlak, 2007).

Over time, many recommendations have been given in order to make electricity and water development environmentally sustainable and socially equitable. One of the most comprehensive guidelines concerning dam-induced resettlement have been created by the World Commission on Dams (WCD). Based on a global review of dams all over the world, the WCD (2000) has created the following recommendations:

1. Gaining public acceptance. In order to create sustainable and equitable energy resources and water development, it is important to gain public acceptance. In order to get this acceptance, it is crucial to address risks, recognize rights and protect the entitlements of affected people. This is especially the case for the most vulnerable people like women, tribal and indigenous groups etc. Mechanisms and decision-making processes have to be established that ensure informed participation of all affected groups. When projects have an impact on tribal or indigenous groups, it is of utmost importance to have their prior, free and informed consent.
2. Comprehensive options assessment. Alternatives of dam projects should be explored, based on clear objectives and development needs that have been established through a participatory process in which all the institutional, policy and technical options have been identified and assessed. Within this assessment process, financial and economic factors have the same weight as environmental and social aspects. The assessment process should take place within all the different phases of planning, operations and project development.
3. Addressing existing dams. It is important to take advantage of opportunities to maximize the benefits from existing dams, strengthen restoration and environmental mitigation measures and

address social issues. Dams and their context are dynamic. Impacts and benefits may vary over time due to changing water use priorities, technological developments, land use and public policy changes etc. It is important that operation and management practices adapt to this changing environment and deal with social issues that may develop over time. Post-project reviews, evaluation and monitoring processes are essential to make this a success.

4. Sustaining rivers and livelihoods. It is crucial to understand the impact of dams on landscapes, their related ecosystems and dependent community livelihoods. Besides understanding, it is also important to protect and restore ecosystems in order to stimulate the welfare of all species and equitable human development. Decision-making and options assessment processes should try to avoid negative impacts (through project design, site selection etc.). It is also possible to design tailor-made environmental flows in order to maintain dependent downstream communities and ecosystems.

5. Recognizing entitlements and sharing benefits. Affected people due to dam construction need to be the beneficiaries of the project through the creation of legally enforceable and mutually agreed development and mitigation provisions. These provisions improve the quality of life of affected people through the recognition of entitlements. The developer and the state are responsible for appropriate resettlement, development and mitigation. Accountability to these tasks is ensured through legal methods (incl. legal recourse, contracts etc.).

6. Ensuring compliance. Acquiring the confidence and trust of the public requires that regulators, operators, developers and governments meet all implementation, planning and operation commitments (including guidelines, regulations, criteria, agreements etc.). Compliance and regulatory frameworks should use sanctions and incentives to ensure success. Corruption is prevented through the enforcement of instruments like debarment, legislation, integrity pacts etc.

7. Sharing rivers for peace, development and security. It is important to overcome conflicts between and within countries concerning the diversion and storage of water. Constructive co-operation (through state agreements) is essential. Rivers and their related benefits need to be shared. External financing agencies can support these sharing principles.

Incorporating these guidelines will greatly enhance dam sustainability. Another important player is the World Bank (WB) which was the first development agency (engaged in constructing and funding projects which displace people) that established a policy on involuntary resettlement. Adopting this policy will also greatly improve dam sustainability (concerning displacement and resettlement). Although this policy has been upgraded numerous times, the key elements remain the same (Stanley, 2004), which include (Cernea, 1997):

1. Minimize or avoid. Involuntary displacement should be minimized or avoided as much as possible due to its impoverishing and disrupting impact.

2. Restore or improve livelihoods. The earning capacity and living standards of the displaced people should be improved or at least restored. An adequate resettlement plan should be incorporated within the project.

3. Move people in groups. Adaptation to the resettled area will become easier when people move in groups and when the distance between the original location and the new location is smaller.
4. Share benefits and allocate resources. The losses of displaced people should be fully compensated. The displaced people should also have a share of the project benefits and need to be supported during the transfer and transition period.
5. Promote participation. Not only the re-settlers but also the host population should participate within resettlement planning. It is important to rely on the cultural and social institutions of these people when creating the reestablishment and transfer process.
6. Protect indigenous people. Groups of which resources are taken from for the project or who have informal customary land rights (incl. pastoralist, ethnic and tribal minorities etc.) should receive appropriate compensation. Thus, compensation should also be given to those who don't have legal land rights.
7. Rebuild communities. The new resettled community should be able to integrate with the socio-economic context of the area. Adequate services, infrastructure and settlement systems are crucial.
8. Consider hosts' needs. Not only the re-settlers but also the host population needs to be assisted, since the increased population density due to resettlement can cause negative environmental and social effects.

Also many scholars have written recommendations for improving dam sustainability concerning displacement and resettlement. Price (2009) for example argues that transnational advocacy (accelerated through social groups and NGOs) can be a crucial factor in stimulating better accountability mechanisms and policies concerning development-induced displacement. De Wet (2002) also calls for increasing public pressure and support for pressure groups and NGOs in order to improve resettlement planning.

Price (2009), just like many others (Cernea, 1997; De Wet, 2002; Drydyk, 2007; McDonald-Wilmsen et al., 2010) also emphasize the importance of participation. According to price, participation is important in order to incorporate sociocultural concerns within resettlement planning. Drydyk (2007) also mentions that participation is necessary in order to attain equitable outcomes. McDonald-Wilmsen et al. (2010) also speak of the importance of community-driven development (CDD) which creates capacity within communities by valuing and integrating their knowledge within the resettlement programme; it empowers communities.

Cernea (2000) also made many recommendations in order to improve resettlement planning. From the risks mentioned above (section 2.4), Cernea (2000) argued for risk reversal through appropriate financing and targeted strategies. These strategies include: land-based resettlement, reemployment, house reconstruction, social inclusion, improved health care, adequate nutrition, restoration of services and community assets, community rebuilding and the creation of networks. These compensation measures go beyond merely financial compensation. Cernea (1997) also mentioned major factors which make resettlement planning a success, including:

1. Political commitment, which should be expressed in law and policy, fair resource allocations, effective grievance procedures and implementation of norms.
2. Technical expertise in resettlement planning, reliable demographic assessments and an adequate social analysis.
3. Public participation with finding and implementing resettlement solutions.
4. Commensurate financing and correct cost assessments.

## **2.7 Free, prior and informed consent**

The above mentioned recommendations provide many ways in order to improve dam sustainability. One of the aspects which have been emphasized is the importance of participation. In this master thesis, the term free, prior and informed consent (FPIC) will be used in order to analyze the degree of participation. FPIC started as a medical term, relating to the importance of informed consent of patients before any drug or medical treatment was given. Nowadays, the term is seen as a political right, and applicable for many different situations of indigenous communities. The word "free" relates to the absence of outside pressure and coercion. Thus people should be 'free' to say no to a project. The word 'prior' emphasizes the importance of sufficient time to engage in discussions and gather information (incl. translations) which should be completed before the project starts. Thus, constraints and time pressures should be absent during this process. The word 'informed' emphasizes that people should be fully aware of the project including all the different views and positions. Finally, the word 'consent' relates to a compelling and clear agreement, which takes the decision-making structures of the indigenous into account. Full participation of decision-making institutions, representatives or authorized leaders is necessary in order to reach an agreement (as chosen by the indigenous) (Global Forest Coalition, 2008). In sum, the term FPIC grants the indigenous (who are often the ones that need to move due to dam construction) the right to participate in the decision-making process and to give consent (or disapproval) regarding activities that influence their traditional territories, lands and resources. This consent, which is based upon complete understanding of the issues which might arise due to these activities, should be given freely and before the activities have been authorized or implemented (MacKay, 2004).

## 2.8 Resilience, vulnerability, adaptation & adaptive capacity

Many definitions have been given to the concepts "vulnerability", "resilience" and "adaptation" due to many writings by distinct communities (Janssen et al., 2006). Despite this issue an attempt will be made to define these concepts.

Resilience is often used by ecologists when studying ecosystem management and the population ecology of animals and plants. Over time, many mathematical and theoretical models of resilience have been created by ecologists. From the late 1980s, the concept has been gaining popularity within studies focusing on human-environment relations. These studies mainly try to understand how the resilience of ecosystems have been affected by humans (Janssen et al., 2006). Maguire et al. (2008) have distinguished three perspectives of resilience:

1. Resilience as stability: the capability of a system to change to a pre-existing state, determined by the amount of disturbance that the system can take before switching to another state.
2. Resilience as recovery: The ability of a system to bounce back to its original state. The longer it takes for the community to recover, the lower its resilience.
3. Resilience as transformation: the ability of a system to adaptively respond to change. This goes beyond the return to a pre-existing state: it can lead to a better, more sustainable state. Disturbance within a resilient social-ecological systems can create new opportunities for development and innovation.

Maguire et al. (2008) also use the term 'social resilience' which is described as the capacity of a community to deal with changes or disturbances and to keep adaptive behavior. A community is resilient when it is capable of responding positively to stress or changes and when it is able to keep its core functions. Social resilience differs over time and space. The term 'resilience' has also been used interchangeably with sensitivity or adaptive capacity (ABARA-BRS, 2010). Maguire et al. (2008), however emphasize that there is a difference between resilience and adaptive capacity. Resilience is seen by Maguire et al. (2008) as a necessary factor for translating adaptive capacity into adaptation. The essence of resilience is the ability to adaptively utilize resources for transforming and responding to change. The resilience of a community is high when it is able to use its adaptive capacity and resources on a pre-emptive and proactive manner. It is formed by its resources vulnerabilities and adaptive capacities.

The term 'vulnerability' originated from poverty and natural hazard studies. Like "resilience" and "adaptation", vulnerability has been interpreted differently, although it often includes attributes of groups or persons that can be used to cope with disturbances. The focus on the vulnerability of people to environmental change (in particular climate change) gained popularity in the 1990s. The emphasis was not so much on mathematical models as in the concept of resilience, but on comparing case studies (Janssen et al., 2006). According to Smit et al. (2006), the vulnerability of a system reflects its sensitivity and exposure to hazardous circumstances and the, resilience, ability or capacity to recover, adapt or cope with the effects of these circumstances. This description closely links vulnerability with adaptive capacity, sensitivity and exposure. The vulnerability of a system rises when the sensitivity and exposure levels of a system to climate stimulus increase and lowers when the sensitivity and exposure levels decrease. Furthermore, high adaptive capacity also reduces the vulnerability of a system. Thus, sensitivity, exposure and adaptive capacity significantly influence the



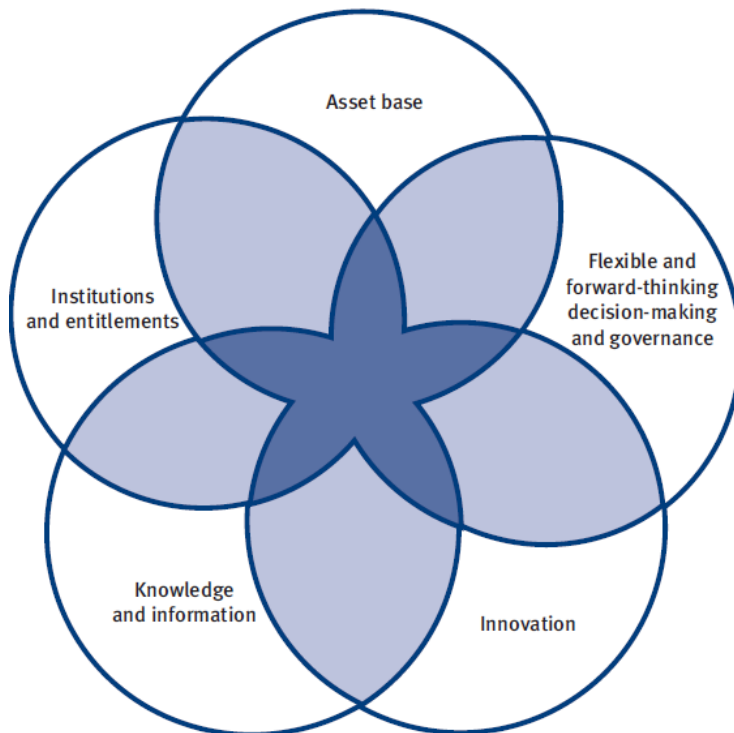
vulnerability of a system. The sensitivity and exposure of the system to a risk, represents the likelihood that the system will experience the risk and the livelihood and occupation characteristics (incl. livelihoods, settlement location, land use etc.) of the system that affects its sensitivity to such exposure. These occupation characteristics represent broader environmental, political, social, cultural and economic conditions which can be called determinants or drivers of sensitivity and exposure. Most of these drivers also influence the adaptive capacity of a system.

Since the early 1900s, the issue of adaptation to environmental variability has already been a popular topic of anthropologists. From the 1990s, the term 'adaptation' has increasingly been used in studies focusing on the effects of human-induced climate change. Descriptions of adaptation by scholars often include adjustments in social-ecological systems as a reaction to perceived, expected or actual changes in the environment and their related effects. Just like vulnerability studies, adaptation research often analyzes case studies instead of using mathematical models (Janssen et al., 2006). Adaptation can be seen as the expression of adaptive capacity in order to deal with threatening sensitivities and exposures. The concept 'adaptive capacity' is closely related (or similar) to terms like resilience, robustness, coping ability, adaptability, stability etc. Adaptive capacity is influenced by so called 'drivers' or 'determinants', which (as mentioned before) are often the same as the drivers of exposure and sensitivity. Adaptive capacity at the local level depends on different aspects including, access to technological, financial and information resources, managerial ability, the institutional environment, infrastructure, networks, political influence, kinship and so forth. Adaptive capacity is not only influenced by local factors (like kinship networks) but also by broader, more general political and socio-economic system (like crop subsidies provided by the state). Thus, over time, adaptive capacity can increase or decrease due to changing social, institutional, economic and political conditions. These 'determinants' are interrelated; kinship networks for example, can increase access to economic resources which can enhance political influence, improve access to training opportunities, reduce stress, introduce new technologies etc. Broader political and socio-economic factors can also reduce or totally diminish the impact of local initiatives to improve adaptive capacity. Thus, the interaction of the drivers (which can change over time and space) determine adaptive capacity (Smit et al., 2006).

As part of the Africa Climate Change Resilience Alliance (ACCRA) programme, the Overseas Development Institute (ODI) has created a framework in order to understand factors influencing local adaptive capacity (figure 2.1). This framework goes beyond capitals or assets as indicators of local adaptive capacity. Although this framework is mainly for the purpose of understanding and assessing local adaptive capacity to climate change, it can also be used for other contexts. The Local Adaptive Capacity (LAC) framework consists out of characteristics: the asset base, knowledge & information, innovation, institutions & entitlements and flexible and forward-thinking decision-making and governance. The asset base consists out of five capitals, including social natural, political, physical and human capital that are necessary in order to respond to and deal with change (Jones et al., 2010). These assets relate to the term 'livelihood' which can be defined as the activities, assets and capabilities necessary for a means of living (IRP, ISDR & UNDP, 2010). The characteristic 'knowledge and information' relates to the capability of the system to analyse, collect and diffuse information and knowledge for undertaking activities to adapt. The characteristic 'entitlements and institutions' refers to the existence of an adequate institutional environment, that facilitates fair entitlement and access to capitals and assets. The fourth characteristics 'innovation' refers to the importance of an enabling environment which stimulates experimentation, innovation and the capability to investigate niche solutions in order to make use of new opportunities. The last characteristic 'flexible forward-

looking governance and decision-making' reflects the ability of the system to incorporate, anticipate and respond to changes regarding its future planning and governance structures. These five characteristics are interdependent; innovation for example, can take place due to supportive and effective institutions, while flexible forward-looking decision making requires adequate information, knowledge and expertise (Jones et al., 2010).

Figure 2.1: The local adaptive capacity framework



Source: Jones et al., 2010

Different adaptation strategies have been identified by Bui et al., (2011;2013) concerning dam-induced displacement and resettlement. One of these strategies is undertaking off-farm activities. Bui et al., (2011;2013) for example showed in their Vietnamese case study that resettled households had no access to the river anymore, which was an important income source. As a response re-settlers began to collect more forest products. Other off-farm activities were however not possible due to the absence of a local cash economy and the remoteness of the commune. Another identified adaptation strategy was land use intensification, which the re-settlers applied to compensate for the reduction of natural capital. Finally, migration can also be seen as an adaptation strategy. Although only shortly mentioned by Bui et al., (2011), this strategy can be crucial in order to overcome impoverishment. According to Mayer (2011), migration can be a way to reduce vulnerability to changing environmental conditions. Displacement and resettlement commonly causes people to shift to a location in which different environmental conditions exist. In order to overcome the potential negative impact of these changing conditions, one or more of the resettled household members can migrate in order to generate income for the whole household.

### 3. Vietnam: an overview

This section describes the Vietnamese context in which this research takes place. A start will be made with a description of Vietnam (incl. geography, history, demography and economics) followed by an overview of hydropower development in Vietnam and the Vietnamese displacement and resettlement policy environment.

#### 3.1 Geography

Vietnam is located in Southeast Asia, bordering Cambodia, Laos and China (figure 3.1). It is also bordered by different water bodies including the Gulf of Tonkin, Gulf of Thailand and the South China Sea. The country extends for about 1650km from north to south. The width of the country varies significantly with merely 50km at its narrowest point (CIA World Factbook, 2013). Vietnam is mainly mountainous although there are also densely populated fertile plains around the Mekong and Red River deltas in the south and north. The country is composed out of three regions; the south, centre and north. The 54 ethnic minorities of Vietnam are mainly living in mountainous regions in the central and northern highlands (Foreign & Commonwealth Office, 2012). The Vietnamese climate varies significantly from north (monsoonal with a warm dry season and a hot rainy season) to south (tropical) (CIA World Factbook, 2013). The Vietnamese river network is very dense, consisting out of 2360 rivers that are longer than 10km and 16 river basins that exceed the size of 2000 km<sup>2</sup>. The eight largest basins (Mekong, Red River/Thai Binh, Dong Nai, Ma-Chu, Ca, Ba, Ky Cung/Bang Giang and Thu Bon) cover 77% of the Vietnamese territory. The two largest basins (Red River/Thai Binh and Mekong) cover 45% of the country. The division of water resources varies largely over time which is mainly due to the unequal distribution of monsoon rainfall. High fluctuations, limited flood control and water storage infrastructure causes very low water flows during the dry season and enormous floods during the wet season. This 'water flow variability' is confirmed by the annual runoff numbers: approximately 70-75% of the annual runoff is produced within 3-4 months. Water shortages are aggravated during the remaining months when runoff is low (FAO, 2011).

Figure 3.1: Vietnam



Source: CIA World Factbook

### **3.2 History**

The conquest of Vietnam by the French from 1858 to 1884, eventually led to the full control of the French over Vietnam (it became incorporated into French Indochina in 1887) (CIA World Factbook, 2013). During WO II, the French shortly lost control of French Indochina due to the Japanese. This however changed again after WO II, when France once more began to rule Vietnam. This however lasted until 1954 when Vietnamese Communist forces under Ho Chi Minh took control of North Vietnam. In that same year, the Geneva Accords led to the division of Vietnam into the anti-Communist South and the Communist North (Coleman, 2012). During the 1960s, South Vietnam increasingly received military and economic aid from the United States in order to strengthen the government. This aid however ended after many years of conflict, which eventually led to a cease-fire agreement in 1973. In 1975, Vietnam was once again reunited when Northern forces gained control over the South. The whole country was now led by Communist rule. Economic growth was low during the first decade after the reunification due to mass exodus and persecution, international isolation and conservative leadership policies. This however changed in 1986 when the so-called 'doi moi' (renovation) policy was enacted. Economic liberalization became the new trend; structural reforms were implemented in order to create export-driven and competitive industries (CIA World Factbook, 2013). Since the 'doi moi' policy, economic development in Vietnam has increased significantly and it is now one of the fastest growing economies in the world (Coleman, 2012). Despite this success, political expression and human rights in Vietnam remain topics of improvement (CIA World Factbook, 2013).

### **3.3 Demography**

Approximately 91 million people currently live in Vietnam. These people practice different beliefs including Buddhism, Catholicism, Hoa Hoa, Protestantism, Cao Dai, Islam etc. The population consists out of 54 different ethnic groups, including Kinh (85,7%), Tay (1,9%), Thai (1,8%), Khmer (1,5%), Muong (1,5%), Mong (1,2%), Nung (1,1%) and others (5,3%). These numbers show that Kinh is the most dominant ethnic group in Vietnam. Concerning education, with an average school expectancy of 10 years, most inhabitants have at least finished primary school (CIA World Factbook, 2013; Coleman, 2012). The literacy level, with an average of 94% in 2002 (of people who are 15 or older) is also relatively high. Life expectancy is also not too bad with 72,41 years on average in 2012 (69,95 years for males and 75,16 years for females). In that same year, the infant mortality rate was approximately 20,24 deaths per 1,000 live births (CIA World Factbook, 2013). When looking at the Human Development Index (HDI), Vietnam ranks 128 (with an HDI of 0,593) out of the 187 countries in 2011. This score places Vietnam within the medium HDI category (UNDP, 2011). Large variations can however be seen between different ethnic groups in Vietnam. Especially Kinh benefited from the previously mentioned economic reforms. Ethnic minorities however have gained less from these reforms; although these minorities comprise about 1/8 of the population they account for 2/5 of the Vietnamese poor. This difference can also be seen when examining the reduction of poverty over the years; although the overall poverty level decreased with 38,6% (from 58,1% to 19,5%) between 1993-2004, the poverty level among ethnic minorities decreased with 25,7% (from 86,4% to 60,7%) (McLinden Nuijen, 2011).

### **3.4 Economy**

As mentioned before, despite major setbacks in the past, Vietnam is now one of the fastest growing economies in the world with a GDP growth rate of 5,9% in 2011. This number however used to be higher in the last decade (7% on average). The fall in economic growth can be explained by the global recession which heavily influenced the export-oriented economy of Vietnam. The economy is however still growing rapidly despite this setback, with an average export increase of more than 33% every year. The total economic output of Vietnam consists out of the industrial, agricultural and service sector. The agricultural share of the economic output decreases over time with a reduction of 3% (from 25% to 22%) between 2000 and 2011. On the other hand, the contribution of the industrial sector to the total economic output is increasing over time; within the same time period, the share of the industrial sector increased with 4% (from 36% to 40%). The remaining 38% of the total economic output is made up by the service sector. Although poverty has decreased significantly, about 14,5% of the population was still living below the poverty line in 2010. A main challenge in Vietnam is the creation of jobs in order to satisfy the growing labor market which increases with more than one million people a year. A trade issue for Vietnam is the decreasing value of the Vietnamese dong caused by persisting trade imbalances. The growth-oriented policies in Vietnam problematize the control of the inflation rate, which was 18% on average in 2011. Vietnam however shifted its focus from economic growth to economic stability. Despite this change, challenges including high borrowing costs, an undercapitalized banking sector and low foreign exchange reserves remain (CIA World Factbook, 2013).

### **3.5 Hydropower in Vietnam**

The construction of dams in Vietnam began in the 1950s, when dams were mainly used for the purpose of food production by supplying water for irrigation. The purposes of dams however have been extended with other goals including electricity production, provision of drinking water and adaptation to and mitigation of climate change. Nowadays, hydropower in Vietnam makes up to 40% of the total electricity supply. Dam construction in Vietnam is perceived as a crucial component of modernization and industrialization; as a fuel for economic development. The importance of modernization is emphasized by the Vietnamese government that wants to create an industrial modern Vietnam by 2020. The energy master plan (2006-2015) has been established in order to reach this goal. An annual energy increase of 17-20% is necessary for attaining the targeted capacity of 20,178 MW by 2025. Hydropower development is believed to be a crucial factor for achieving this objective (Artati, 2011). Currently 10 river basins in Vietnam are perceived as potential hydropower sources (table 3.1).

Table 3.1: Potential hydropower development in Vietnam

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

Source: Dao, 2010

According to Bui et al., (2011), about 200.000 people in Vietnam have been resettled due to the construction of dams. These people are often poor ethnic minorities and thus more vulnerable for the potential risks (landlessness, joblessness, homelessness, food insecurity, marginalization, increased mortality and morbidity, social disintegration and loss of common property) as mentioned by Cernea (2000). A sound Vietnamese policy environment is necessary in order to deal with this. The next section will describe the Vietnamese displacement and resettlement policy environment and how this has changed over time.

### 3.6 The ever-changing policy environment

After independency, the Vietnamese state quickly took ownership of all the land. Thus, the land belonged to the state which made it possible to take land whenever necessary. Resettlement processes were undertaken by People Committees who persuaded people to move to a resettlement site. Rehabilitation planning was absent and compensation was very low since land was seen as property of the state instead of people. The resettlement sites were often places that lacked favorable conditions or farming land which are necessary for restoring people's lives. Deforestation was a common practice by re-settlers in order to create new farmland (Dao, 2010).

Land allocation and management in Vietnam improved significantly after the land tenure reform in 1992. An important law that followed was the Land Law (1993) which described the obligations and rights of land users (e.g. people who lease or are assigned to land) concerning the right to mortgage, lease, transfer or change land use rights. The land users were now also able to obtain compensation for land loss. Another important law was the Environmental Protection Law (1993) which obligates investors to undertake an Environmental Impact Assessment (EIA) before executing a project. Between 1993 and 1997, investors of resettlement projects (who were responsible for implementation) needed to negotiate with the governments of the respective provinces about compensation. From 1994, the World Bank (WB) became an important donor for Vietnam, thus having much influence on the policies in Vietnam. In 1997, the government implemented (with assistance of the WB) a national resettlement policy for establishing resettlement and compensation standards that were also in line with the demands of the WB (Dao, 2010). One of these changes is the Decree 22/1998/ND-CP which states that legal land users should obtain compensation for their land and related assets. Furthermore, the revised Land Law in 2003 gave more detailed instructions about land recovery. It also led to a shift of responsibilities; not the investor but the local government became responsible for resettlement implementation. The underlying idea was that the local government has a better understanding of the local context (Dao, 2010).

Vietnam also recognizes and supports the activities of the World Commission on Dams (WCD). The country showed its commitment to the work of the WCD by hosting the WCD's Regional Consultation in East and South East Asia in 2000. Vietnam also published a Vietnamese version of the WCD report in 2002. In that same year, a national workshop was held in which the outcomes of the WCD report were discussed. Three of the recommended policies by the WCD were prioritized (addressing existing dam issues, public acceptance and sustaining livelihoods and rivers). Thus, the WCD was a contributing factor in improving the Vietnamese resettlement policies. It however did not lead to actual legal documents for the application or adoption of the WCD recommendations. Despite this shortcoming, improvements within the Vietnamese resettlement policy continued. In 2004, Decree No. 197/2004/NĐ-CP for example provided more detailed resettlement instructions. It loosened compensation conditions which made it possible for people to receive compensation when they lived on undisputed land without any legal title. This change is, according to experts, caused by the influence of the WB's safeguard policy. The last policy change (Decree No. 69/2009/QĐ-TTg) raised the level of support, which is determined by the profit obtained through the use of new land. It also emphasized that housing types should vary within the resettlement site. Another focus point of this Decree was that the resettlement programme should be able to fit with the capacities, customs and needs of the re-settlers. Furthermore, the decree states that local governments and investors should implement programmes for re-settlers to shift to new income generating activities (Dao, 2010).

Thus, it can be concluded that over time, significant improvements have been made within the Vietnamese policy environment to improve resettlement programmes. The question is however whether these improvements really improved the lives of the re-settlers.



### 3.7 Thua Thien Hue province

Thua Thien Hue province (the main research area) is located in the centre of Vietnam (figure 3.2). The province consists out of eight districts that together comprise 5,053 km<sup>2</sup>. In the west, it is bordered by Laos and in the east by the East Sea. The varied geography of the province consists out of rivers, rice paddy fields, mountains, hills streams, marine areas and coastal lagoons. Most inhabitants live within 25km of the coast, thus making them very vulnerable for the impact of climate change and natural disasters. The province is a very popular tourist destination due to its ancient cultural history (McLinden Nuijen, 2011).

Concerning economics, the province is one of the four provinces of the Central Key Economic Zone since it connects Laos, Myanmar, Vietnam and Thailand with the East Sea. The goal of the province is to have an average annual economic growth rate of 12-13% between 2011-2020. The province also aims to reach an export turnover of \$1 billion USD in 2020. Modernization and industrialization are the key focus areas in order to accomplish this (McLinden Nuijen, 2011).

Figure 3.2: Thua Thien Hue province



Source: Vo Van et al., 2004

Dam construction is perceived as an essential element in order to modernize. The provincial planning act (2005-2015) states that eleven hydropower dams are constructed and planned in the province (table 3.2) in order to produce 370 MW for economic activities. The construction of three of the eleven power plants (Hong Ha, A Ling and Ha Thuy) has not yet started due to a lack of investments. Promotion is still ongoing in order to attract these investments. The eleven dams are not only useful for the generation of hydropower but also for other purposes including flood control, drinking water and irrigation (Artati, 2011).

Table 3.2: Planned and constructed dams in Thua Thien Hue province

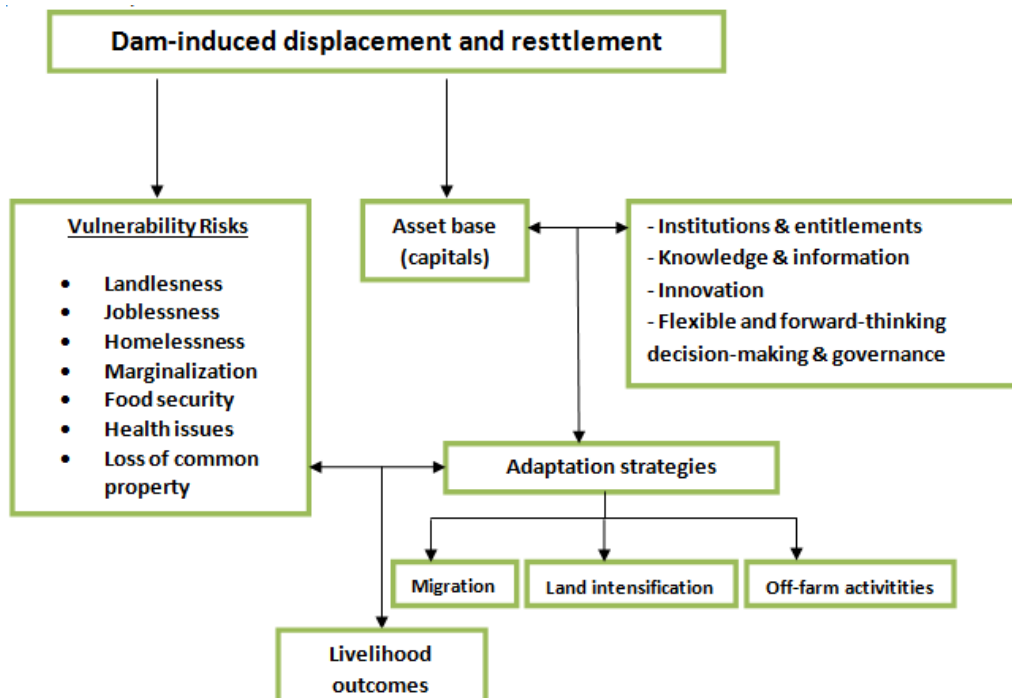
Hydropower	River	Construction (year)	District	Installed capacity (MW)	Annual electricity production (million kwh)
Binh Dien	Huu Trach	2005	Huong Tra	44	181.7
Huong Dien	Bo	2005	Huong Tra	81	300
Ta Trach	Huong	2005	Huong Thuy	18	60
A Luoi	A Sap	2007	A Luoi	170	686.5
Thuoy Lo		2008	Namdong	7.5	29.41
Thuong Nhat		2008	Namdong	6	32.73
A Roang		2009	A Luoi	7.2	28.41
Bo River		2009	A Luoi	15	60.34
Hong Ha					
A Ling					
Ha Thuy					

Source: Artati, 2011

## 4. Methodology

As mentioned before in the introduction, this research focuses on gaining more in-depth knowledge on vulnerability to risks due to dam-induced displacement and the adaptation strategies that displaced communities apply in Thua Thien Hue province. In order to do this, a conceptual model (figure 4.1) has been created that reflects the relationships between the theoretical elements that have been identified in section 2. First, the concept of dam-induced displacement and resettlement can increase vulnerability to risks as identified by Cernea (2000). Dam-induced displacement and resettlement also influence the asset base of the re-settlers, which in combination with the other interrelated factors of local adaptive capacity (as mentioned by Jones et al., 2010), influence the adaptive capacity of people and thus in turn their adaptation strategies. Both vulnerability to risks, as well as adaptation strategies (including migration, off-farm activities and land intensification) lead to certain livelihood outcomes.

Figure 4.1: Conceptual model



## 4.1 Operationalization

Based on the theoretical framework and the resulting conceptual model, different factors have been identified in order to answer the research questions (table 4.1).

Table 4.1: Factors influencing the livelihood outcome of displacement and resettlement

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

### Risks

The vulnerability to risks was measured by using the concept of "risks" as described by Cernea (2003). The different risks have been turned into measurable variables, which were measured after resettlement. It however has to be mentioned that not all the risks have been measured due to time limitations. Only those risks have been chosen that were measurable within the limited time frame (table 4.1). Also the risk "loss of access to public services", which was not specifically mentioned by the Impoverishment Risks and Reconstruction (IRR) model of Cernea, has been added in this research due to its measurability and importance in order to overcome impoverishment.

### Adaptation strategies

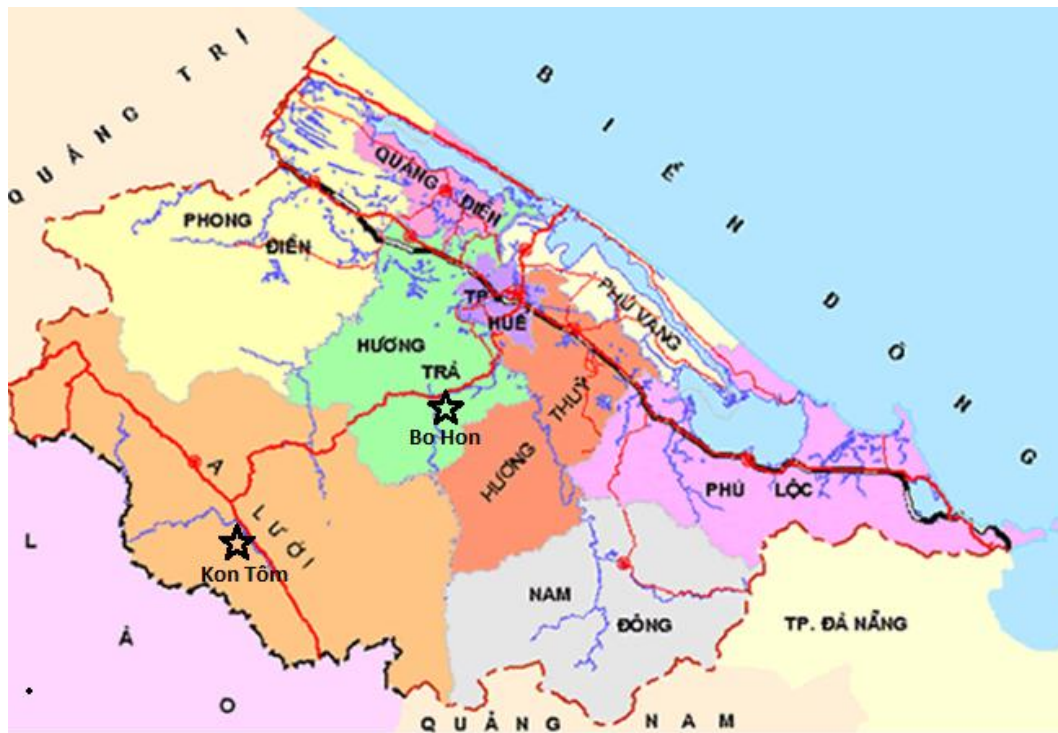
The concept of 'adaptation strategies' is defined in this thesis as the actions which people undertake to react to the experienced vulnerability to risks. Thus, during fieldwork, households were questioned about these actions.

## 4.2 Selection of the research areas

This research has been done in collaboration with C. Druppers (IDS student), which made it possible to undertake an in-depth comparative research within the limited time frame. In total, two resettlement sites have been investigated; Bo Hon village in Binh Dien district, which was the main research area of C. Druppers and Kon Tôm in A Luoi district, which was the main research area of D. Koster (figure 4.2). These villages have been chosen due to the focus of the supervisor (Pham Huu Ty) on both sites (for his phd research) and due to the fact that both resettlement sites have been created during different time periods; which makes it interesting to compare since resettlement

policies have improved over time. Furthermore, both resettlement sites differ in location and ethnicity of the re-settled. Concerning location for example, while Bo Hon is located close to Hue, Kon Tôm is more remotely located which might hinder market access and employment opportunities. Thus, it is also interesting to analyze whether these differences have led to different outcomes. The comparative section in this thesis (section 8) has been written in collaboration with C. Druppers.

Figure 4.2: Location of Kon Tôm and Bo Hon village



Source: Thua Thien Hue Portal, 2013

### 4.3 Research instruments

In order to obtain the required data for this research, the use of mixed methods was applied. Thus, both qualitative and quantitative methods were used since this enabled to collect both factual information such as information about household size, income sources etc. and subjective information concerning the thoughts, ideas and experiences of re-settled households. Both methods have strengths and weaknesses. These weaknesses were however reduced by combining both methods which allowed for a comprehensive approach.

### 4.4 Transect walk

A transect walk was undertaken in both villages in order to get a grasp of the (physical) situation of both resettlement sites. This method has also been used in order to draw maps of both resettlement sites. While a map of Bo Hon has been provided by a district spokesperson, no maps of Kon Tôm were available. Thus, the map made during the transect walk in Kon Tôm has been added in this thesis (figure 5.3).

#### **4.5 Household surveys**

A Household survey (appendix 1) has been used in order to get a picture of the severity of the prevailing risks in both resettlement sites. Besides this objective, the survey has been used to identify households that applied adaptation strategies. Furthermore the questionnaire was useful to obtain information about the community characteristics and resettlement process. The questionnaire made it possible to reach a high amount of households within the limited time frame.

A similar questionnaire was used in both resettlement sites to contribute to the comparative nature of this research. In total, representatives of 100 households (e.g. 40 households in Bo Hon and 60 households in Kon Tôm) have been questioned. These amounts were jointly decided with Pham Huu Ty; in both resettlement sites more than half of the re-settled households have been questioned (e.g. 72,7% of the displaced households in Bo Hon and 56,6% of the displaced households in Kon Tôm) which gave a good indication of the situation in both villages. The selection of the households was based on availability, ethnicity and equal sex distribution. It however has to be mentioned that due to time limitations, it was not possible to incorporate all the different ethnicities of the re-settled in Kon Tôm village. Thus, it was decided to focus on the majority of the displaced in Kon Tôm: the Ta Oi ethnics.

The survey made use of the recall method in order to obtain information concerning the lives of the households before resettlement. This method was very useful since factual information about the situation before resettlement was limited. Thus, it allowed for a comparison of the situation before and after resettlement.

#### **4.6 Interviews**

Undertaking interviews was an appropriate method to obtain in-depth knowledge regarding re-settlers resettlement experiences, risks and applied adaptation strategies. During the interviews, questions were asked regarding the characteristics, challenges and (long-term) impact of the applied adaptation strategy/strategies. Also extra questions were asked when there were still some uncertainties or knowledge gaps regarding the prevailing risks and household characteristics.

In total, 10 households have been interviewed (6 households in Bo Hon and 4 households in Kon Tôm). As mentioned before, the survey has been used in order to identify households that applied adaptation strategies. From these surveys, households were selected who applied one or more adaptation strategies. Selection of these households was based on availability and type of adaptation strategy in order to obtain information about a diverse range of strategies. The interviews were semi-structured, which ensured that important topics were covered while providing space for the interviewees to bring up their own ideas and thoughts.

Besides interviews with households, also interviews were held with government officials (on the district, commune and village level) and NGOs (Corenarm, CSRD, ICCO, Tropenbos, Vietnam River Network) in order to get more in-depth knowledge regarding displacement and resettlement in Vietnam and/or the specific cases of Bo Hon and Kon Tôm (appendix 2 & 3).

#### **4.7 Secondary research**

Throughout this research, secondary sources (incl. papers, maps, statistics etc.) have been used to increase understanding of the various elements of the research questions. Also knowledge was gained during a displacement and resettlement workshop at Hue University of Agriculture and Forestry. During this workshop, different researchers had presented their findings about

displacement and resettlement issues in Vietnam (incl. issues in Kon Tôm and Bo Hon village). Some of these findings have been added in this research.

#### **4.8 Limitations**

This research faced different limitations which have been listed below.

1. Time. The fieldwork period to collect data for this research was about 10 weeks, which limited the amount of data that has been collected. For this reason, it was decided to focus on 5 of the 8 risks (table 4.1) that have been identified by Cernea (2000) plus one extra risk (e.g. access to public services). The selection of these risks was based on time availability and measurability. The three risks that have been left out (e.g. homelessness, marginalization and social disintegration) were difficult to turn into variables that could be measured properly within the limited time frame.

2. Data bias. This research only collected data after resettlement. In order to learn more about the situation of the households before resettlement, a recall method has been used. This method however relied on the memory of the participant to describe past events and circumstances. This could have led to data of low quality due to the time interval between the experience and the moment of data collection. In addition, the process of resettlement could have been experienced as negative, which might stimulated households to romanticize the past. The negative experience could also have led to an exaggeration of the negative aspects of the situation after resettlement. Furthermore, other actors like government officials also might have given incorrect answers to provide a more positive image of the resettlement process. In order to diminish the impact of these issues, answers of different types of actors (including government officials, households and NGOs) have been compared with each other to create more balanced conclusions.

3. Language. The re-settled often only spoke Vietnamese or other existing dialects. In order to communicate and collect data through surveys and interviews, it was crucial to hire a translator who understood the native language. In total, two Vietnamese students who studied English were used as translators. Both translators were clearly informed about the questions of the survey and the content of the interviews. It could however still be possible that the translators slightly transformed the questions during the surveys and interviews or that the translators translated the answers incorrectly. Although the chance that this occurred was minor (due to their English skills and understanding of the questions), it could still have happened.

## 5. Displacement and resettlement: the case of Kon Tôm village

This section describes the case of 'Kon Tôm' village, which is a resettlement site for 106 households that have been displaced due to the A Luoi hydropower plant. A start will be made with shortly describing the hydropower plant and the underlying arguments for the construction of this dam. This section then continues with a description of the resettlement programme which will be compared with the actual resettlement process. Furthermore, the current situation in Kon Tôm will be described, through an extensive description of the prevailing risks.

### 5.1 A Luoi hydropower dam

As the title already mentions, the A Luoi hydropower dam (figure 5.1) is located in A Luoi district on the A Sap River. Construction started in 2007 and ended in December 2012. In total, the dam costs about 156.24 million USD. The Central Hydropower Joint Stock Company was the main investor of this dam. The dam is not only built for hydropower production but also for water management (incl. flood control in A Luoi city). It was also build to provide extra water for the Huong Dien hydropower plant on the Huong (Perfume) river. The A Luoi Hydropower dam can produce up to 686.5 million kWh each year, which is added to the Vietnamese electricity grid, while also partly sold to Laos. Thus, the dam contributes to the stability of the national electricity system and stimulates socio-economic development. It is expected that the dam will stimulate the development of tourism, aquaculture and agriculture and provide local job opportunities (Artati, 2011; official of A Luoi District Department of Natural Resources and Environment, 2013;). The dam however not only brings development but also affects the environment and causes displacement. In total, 1890 ha land (including forest land, alluvial river areas, grass land, agricultural land etc.) on which 1381 households in 7 different communes lived has been affected. All of these households lost at least parts of their land. In total, 205 households lost all of their land and had to move to another location. The resettlement village 'Kon Tôm' was created for the displaced. However, only 106 households moved to this village. The remaining 99 households that lost all of their land left to other places. This is however at the costs of the land that they would otherwise receive in Kon Tôm (Interview Suu, 2013).

Figure 5.1: A Luoi hydropower dam



Source Tin tức, 2012



### 5.2 Kon Tôm village

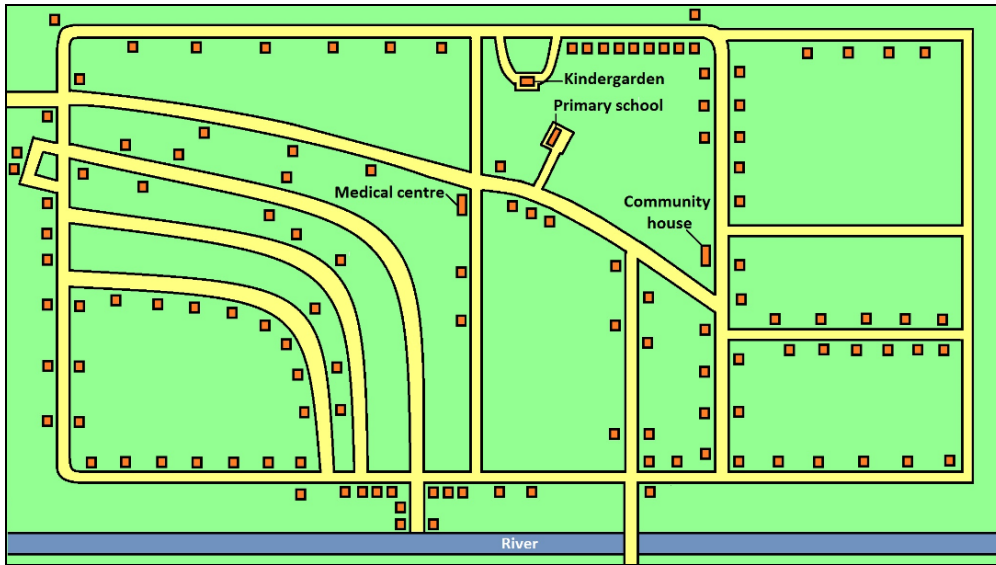
Kon Tôm village is located in Hong Thuong commune, which is part of A Luoi district in Thua Thien Hue province (figure 4.2, 5.2 & 5.3). In total, 106 households have been displaced to this resettlement site (Official of A Luoi District Department of Natural Resources and Environment, 2013). However, according to the village leader of Kon Tôm (2013), the amount of households increased to 144, which is mainly due to the arrival of households from other places and due to the separation of young adults from their former households in order start an own family. The re-settlers came from different communes. In total about 4 villages came from Hong Thai commune, 1 village from Hong Thuong commune, and 4 households from Son Thuy commune. Ethnicity differed although most households were Ta Oi ethnics (68%), followed by a mixture of Ta Oi and Pa Co ethnics (10%), only Pa Co ethnics (20%) and Kinh (2%).

Figure 5.2: Location of Kon Tôm in A Luoi district



Source: Thua Thien Hue Portal, 2013

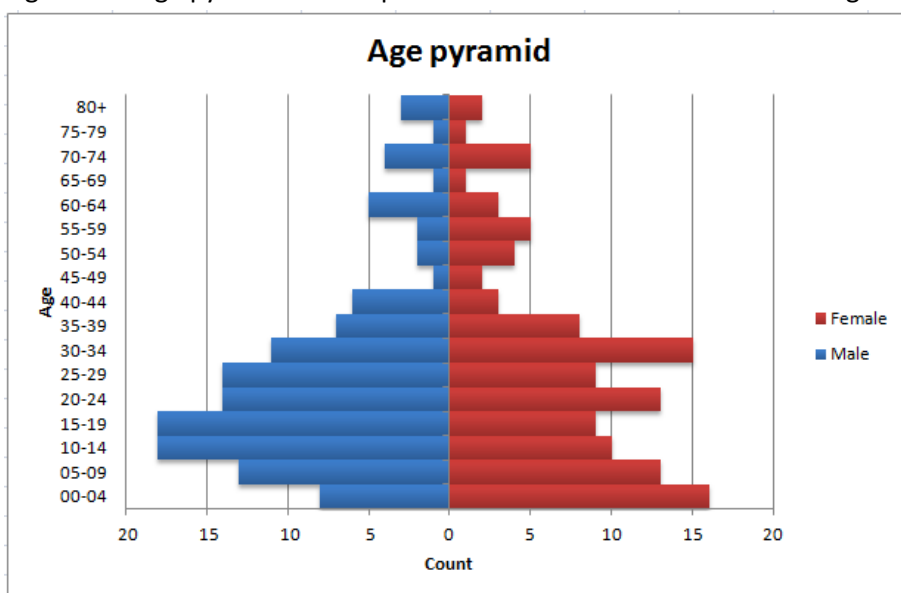
Figure 5.3: Kon Tôm village



Source: Fieldwork, 2013

During fieldwork only Ta Oi and Kinh ethnics were identified. Out of the 60 households (e.g. 250 people) that were questioned, only 2 households were Kinh while the remaining 58 households were Tai Oi ethnics. Also one of the questioned households was a young family who separated from their parents after resettlement to start their own household. Also 10 households were female-headed and one household was male-headed. The remaining 49 households at least consisted out of a husband and wife. The household sizes varied largely from just one household member to over 8 household members. On average however, each households consisted out of 4 household members. Figure 5.4 shows the age structure of the 250 household members. As can be seen from this figure, most household members were younger than 35. A strong decrease of re-settlers can be seen after this age, thus confirming that many households consisted out of young household members.

Figure 5.4: Age pyramid of the questioned households in Kon Tôm village



Source: fieldwork, 2013

The education level of the questioned households (of 6 years or older) was not too bad since only 18,1% of the re-settled didn't have any educational degrees. This percentage can be divided into children (2,3%) and adults (15,3%), which consists out of the husband, wife or elder(s) within the household. Also 1,4% of the 2,3% were 6 years old and therefore will probably go to primary school in the near future. Thus, these numbers show that almost all children go to school. Most household members (81,9%) at least finished or were still going to primary school. Also more than half of the re-settled (53,0%) at least finished (or were still going to) secondary school. Higher educational levels were less often mentioned. While 14,5% of the people had an high school degree or were still going to high school, only 1,8% of the re-settled had finished or were still going to the university.

Concerning the area of origin (e.g. the location before displacement), all questioned families came from Hong Thai commune, except the two Kinh households who came from Son Thuy commune (figure 5.2).

### **5.3 The resettlement programme**

A resettlement programme has been created for the displacement of households due to the Kon Tôm hydropower dam. According to Decree No. 69/2009/QĐ-TTg, this resettlement programme should be able to fit with the capacities, customs and needs of the re-settlers. Furthermore, the decree states that local governments and investors should implement programmes for re-settlers to shift to new income generating activities (Dao, 2010).

Concerning compensation, the displaced households should receive land for land, house for house and money for trees. Also extra fertilizer, rice and acacia trees should be provided, depending on the situation before resettlement. Also households should receive farming training including, livestock feeding, planting acacia, wet paddy etc. Besides, households can choose between different livestock options including fish, chicken (40), ducks (40) or pigs (2) (Kon Tôm village leader, 2013; vice-chairman of Hong Thuong commune, 2013). Households also receive extra money when moved on time and for the movement itself. In sum, 12.195.625.562 Vietnamese Dong (VND)<sup>1</sup> was provided to compensate for housing, 14.412.337.165 VND for constructions (including public services) and 36.166.802.660 VND for trees and farm products (Rin, date unknown). This compensation should, according to the Vietnamese resettlement policies, be enough to at least sustain the livelihoods of the re-settlers (Artati, 2011).

Concerning participation, displaced households should get informed about the importance of this project, the resettlement site, time to move and their compensation. Actual influence is however limited. Households can only complain about their compensation when the amount of compensation is lower than it should be according to calculations of the national government. Households can also propose potential resettlement sites to the communes. After approval by the communes, the site will be proposed to A Luoi district. The district however has the final say in determining the resettlement site (Rin, date unknown).

The whole resettlement process will be monitored according to the resettlement programme. Besides, the situation after resettlement will also be monitored in order to find out whether people's lives improved or worsened. Solutions will be implemented in order to overcome difficulties of the re-settled (Rin, date unknown).

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<sup>1</sup> €1,00 is about 27.640 VND (currency rate of 26-6-2013)

#### **5.4 The resettlement process: participation, compensation and opinion**

Most people resettled to Kon Tôm during the months September, November and December in 2011. Almost all the households (86,2%) had the feeling that they gave their consent regarding the resettlement process. However, as confirmed by the village leader and vice-chairman, people were persuaded to sacrifice themselves for the country. The households also had to move since their area of origin would be flooded (at least partly) due to the A Luoi hydropower plant. The households were however free to choose to go to another location or to the resettlement site. Households were however pushed to go to the resettlement site since land for land compensation was provided instead of cash for land compensation. This land was given to the households in the new resettlement site (Kon Tôm), thus stimulating them to move to this new area (Interview Suu, 2013). Concerning participation, more than half (53,4%) of the households didn't have the feeling that they participated in decision-making regarding their own resettlement. Only 3,4% of the households had the feeling that their needs were completely taken into account. The remaining households said that their needs were taken partly into account (48,3%) or not at all (48,3%). This dissatisfaction concerning participation is confirmed by the village leader (2013) and vice-chairman (2013) who both argued that households didn't have any influence about their own resettlement (incl. compensation, location, time of movement etc.). Also Artati (2011), who investigated households in A Den village that needed to resettle to Kon Tôm, confirmed that there was only a one-way information transfer (e.g. from the project developer and the government to the households) in which households had no influence regarding their own resettlement.

Every household mentioned to receive compensation (excluding one household that separated from their parents after resettlement) in order to rebuild their lives in the resettlement site (table 5.1). Cash compensation was provided to almost every household: on average, re-settled families received 63,3 million VND. The amount of cash compensation however ranged widely from 2 million VND to 200 million VND. Also all the households received land as a form of compensation. Besides land and cash, also farming training was provided ranging from livestock feeding to planting crops. As can be seen from table 5.1, only 28,8% of the households received training. Possible explanations for this low number is that households did not join the training by own choice or that the spokesperson of the household did not receive training while other members of the household did receive training. The majority of the questioned households (67,8%) also mentioned to have received livestock as a form of compensation. Most people chose for 2 pigs (39%) or 40 chickens (16,9%). Other livestock options that were available, but not frequently chosen were 40 ducks (6,8%) and fish (3,4%). Also one household has received livestock but did not mention the livestock type that was chosen for. Besides cash, land, farming training and livestock also fertilizer, rice (for 6 months) and acacia trees were provided as a form of compensation. As can be seen from table 5.1, the majority of the households received these compensation types. The amount of received fertilizer however ranged widely from 50 to 400 kg. The same goes for acacia trees, ranging from 800 trees to 2650 trees.

Table 5.1: Compensation types

Compensation type	% received	% not received	% total
Money	98,3%	1,7%	100,0%
Land	100,0%	0,0%	100,0%
Farming training	28,8%	71,2%	100,0%
Livestock	67,8%	32,2%	100,0%
Fertilizer	57,6%	42,4%	100,0%
Rice	74,6%	25,4%	100,0%
Acacia	55,9%	44,1%	100,0%

Source: Fieldwork, 2013

Finally, people also received a house as a form of compensation (figure 5.5). Only one household did not receive a house in the resettlement site since this household chose to move their old house to Kon Tôm village.

Figure 5.5: Resettlement houses in Kon Tôm village



Source: Fieldwork, 2013

The received cash compensation was used for different purposes (table 5.2). Of the 58 households that did receive cash compensation, more than half used it for housing, thus indicating that many people were unsatisfied with the new house in the resettlement site. Also Artati (2011) confirmed that most re-settled were unsatisfied with their new houses in Kon Tôm, which led to large housing investments. As can be seen from table 5.2, on average about 37.3 million VND was spent on this purpose, which is a significant part (58,8%) of the average cash compensation that households received. Table 5.2 also shows that about one-third of the questioned families used the money to further improve their house by buying furniture. However on average, only a small part of the financial compensation (e.g. 7.8 million VND) was used for this purpose. Also almost half of the questioned households used cash compensation for their daily expenditures. However, the average amount of compensation spent on this purpose was low, with an average of 7.6 million VND. Also a significant amount of households used the compensation money to improve their mobility by buying motorbike(s) and/or bicycle(s). On average about 17.3 million VND was spent on motorbikes, which is

a significant share (27,3%) of the average cash compensation that households received. On the other hand, far less money was spent on bicycles (2.2 million VND on average). Also about one-third of the questioned households used the cash compensation for buying livestock (e.g. cows and buffalos) which can be seen as a productive investment since livestock is often used to increase people's income. Besides, 20% of the households used their compensation money for educational purposes, which can also be seen as a long-term strategy in order to improve their lives. Furthermore, table 5.2 shows that many households used their cash compensation for paying their debts. On average, about 18.5 million VND was spent on debts, which is about one-third of the average cash compensation that households received. Also 20% of the households gave parts of their compensation to family members. These households were mostly consisting out of elders who wanted to support their family members (often their children) by providing them with compensation cash. Large amounts of compensation (e.g. 41.6 million VND on average) was spent on this purpose. Finally, some households also used their cash compensation for medical purposes or for savings.

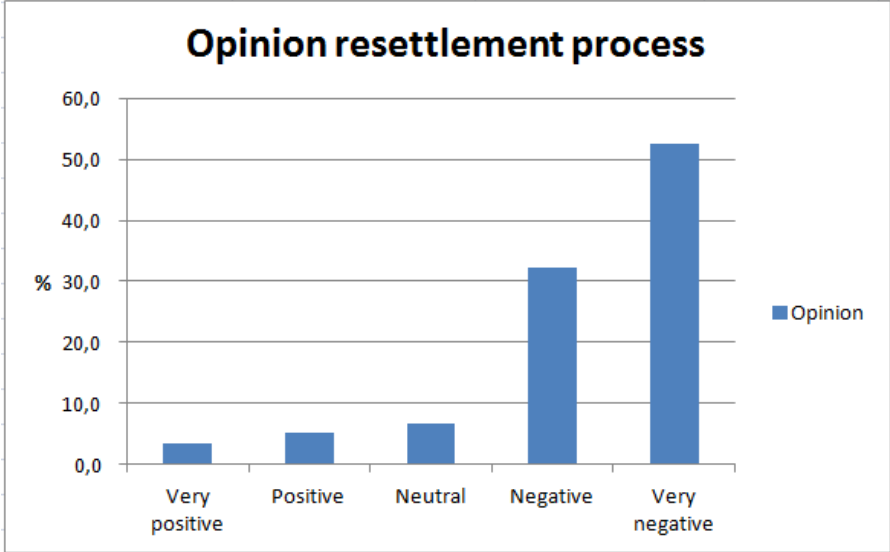
Table 5.2: Compensation expenditures of the re-settled households

Compensation expenditure type	% Households	Average expenditure (VND)	% Of average cash compensation
<b>Housing</b>	58,6%	37.258.621	58,8%
<b>Furniture</b>	32,8%	7.792.857	12,3%
<b>Daily expenditures</b>	44,8%	7.624.882	12,0%
<b>Motorbike(s)</b>	51,1%	17.260.870	27,3%
<b>Bicycle(s)</b>	6,7%	2.166.667	3,4%
<b>Livestock</b>	31,1%	17.583.333	27,8%
<b>Education</b>	20,0%	27.428.571	43,3%
<b>Debt</b>	37,8%	18.466.667	29,2%
<b>Family giveaway</b>	20,0%	41.571.429	65,6%
<b>Medical purposes</b>	15,6%	14.000.000	22,1%
<b>Savings</b>	12,1%	24.142.857	38,1%

Source: Fieldwork, 2013

The household representatives were also asked about their opinion of the resettlement process. Most households were negative (32,5%) or very negative (52,5%) (figure 5.6). Besides the lack of influence on decision-making regarding their own resettlement, many households complained about the land size after resettlement, stating that it is too small. Besides complaints about the land size, many households were also negative about the land quality, arguing that the land quality is too poor to grow crops. Agricultural activities are further at risk due to the lack of water, which was another common complaint. The lack of water is also an issue for people's daily activities like washing, drinking etc. Furthermore, complaints were given about the lack of medical services and the bad quality of the house. The vice-chairman was also very negative about the resettlement process. When asked whether there were any positive changes after resettlement he said there were none. Also the village leader was very negative, stating that people have a lack of land and water. He also complained about the lack of doctors, bad road quality, and the lack of teachers for the secondary school. Furthermore, he also complained about the primary school, arguing that children of different classes have lessons together in one room.

Figure 5.6: Opinion of resettled households in Kon Tôm about the resettlement process



Source: Fieldwork, 2013

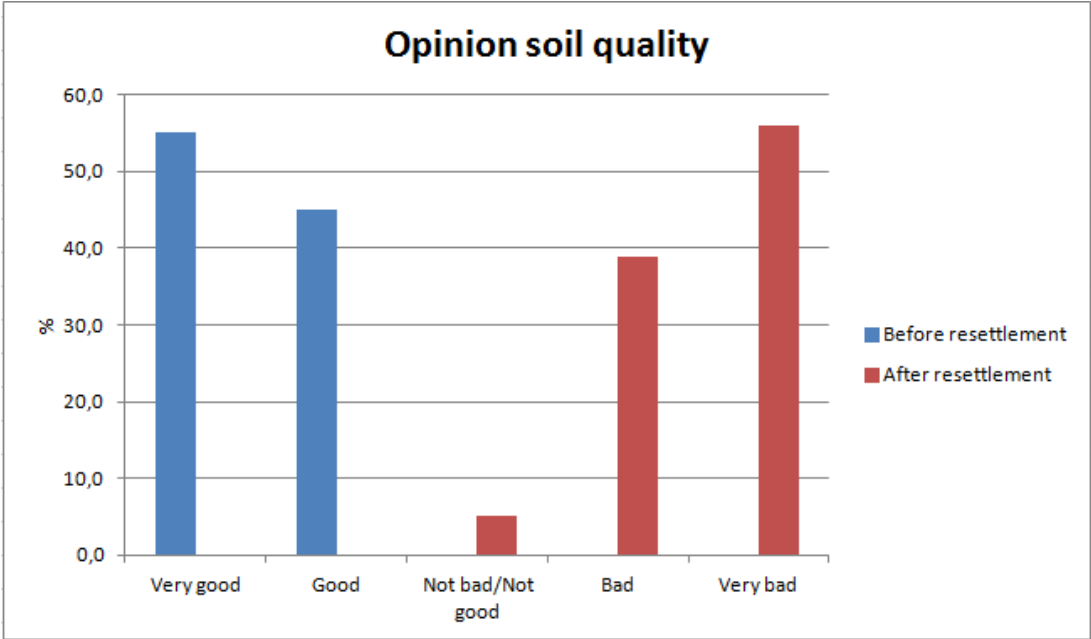
These above mentioned complaints will be more comprehensively described in the next sections which will analyze to what extent the five selected risks (e.g. landlessness, joblessness, food security and health, loss of common property and loss of access to public services) were present in Kon Tôm village.

### 5.5 Landlessness

Landlessness is a significant issue in Kon Tôm village since many households lost land after resettlement. On average, the 59 households (e.g. all the questioned families excluding the household that was created after resettlement) mentioned to have 3,4 ha of land before resettlement and only 0,7 ha after resettlement, which is a reduction of 78,7%. Besides this significant decrease in land size, many people also complained about their land quality stating that it is very difficult (or even impossible) to grow crops on their land. Figure 5.7 shows the opinion of all the questioned households about their own land. There is a big difference between people's opinion about the soil quality of their previous land and their current land in the resettlement site. Most households were (very) positive about the land quality of their original location and (very) negative about their land in the resettlement site. This issue has also been emphasized by Artati (2011), who states that the soil in the resettlement site has a low nutrient content, pH value and saturation level. The soil, which can be classified as "ferralsols" has a lack of minerals that are essential for plant growth. This lack of minerals is caused by the process of leaching, which also increases the acidity level of the soil. Additional inputs (like fertilizer) are needed in order to effectively grow crops on this soil.

Thus, in order to cope with the reduced land size and quality, more households nowadays use chemical fertilizer. The use of chemical fertilizer increased from 20 households before resettlement to 37 households after resettlement. The use of natural fertilizer also increased although minor, from zero households before resettlement to two households after resettlement. Another possible explanation for this change (besides the reduced land size and quality) is the fact that many households received chemical fertilizer as part of their compensation. The question is however whether people would continue using chemical fertilizer after all their fertilizer from compensation has been used, which will greatly depend on people's income.

Figure 5.7: Opinion about the soil quality before and after resettlement

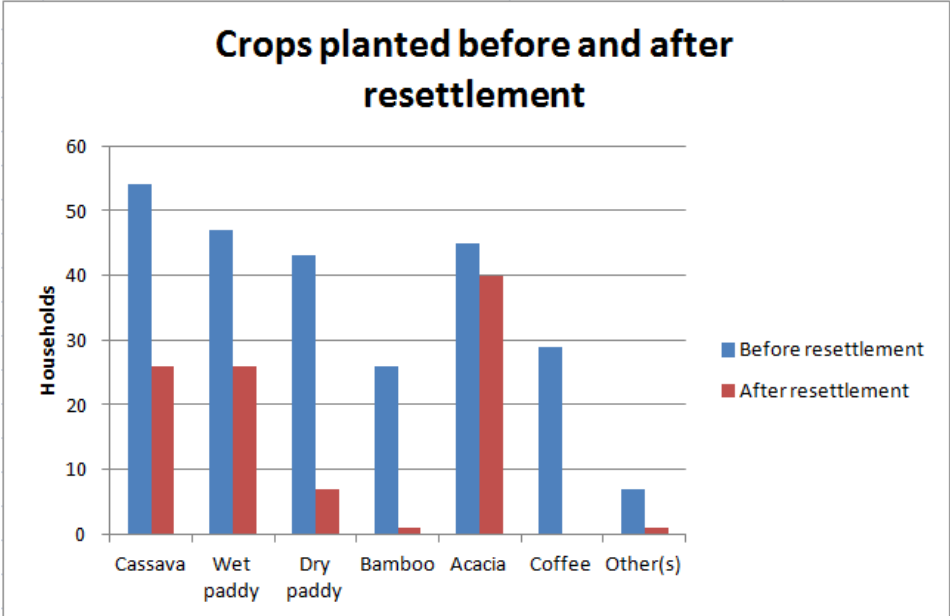


Source: Fieldwork, 2013



The issue of landlessness is also observable when looking at the types of crops planted before and after resettlement (figure 5.8). Far less households now plant cassava, wet paddy, dry paddy, bamboo and coffee. The category other(s) in figure 5.8 consists out of fruit and vegetables, which also significantly decreased after resettlement. Coffee production reduced the most (absolutely and relatively) from 29 households to zero household. This dramatic change is caused by the absence of compensation for coffee land. The district and the hydropower company still need to compensate for this loss. The significant decrease in type(s) of crops produced can also be explained by the lack of land and poor land quality. Acacia is the exception since it is still produced by many households after resettlement. This can be explained by the provision of acacia to the households as part of their compensation.

Figure 5.8: Types of crops planted before and after resettlement

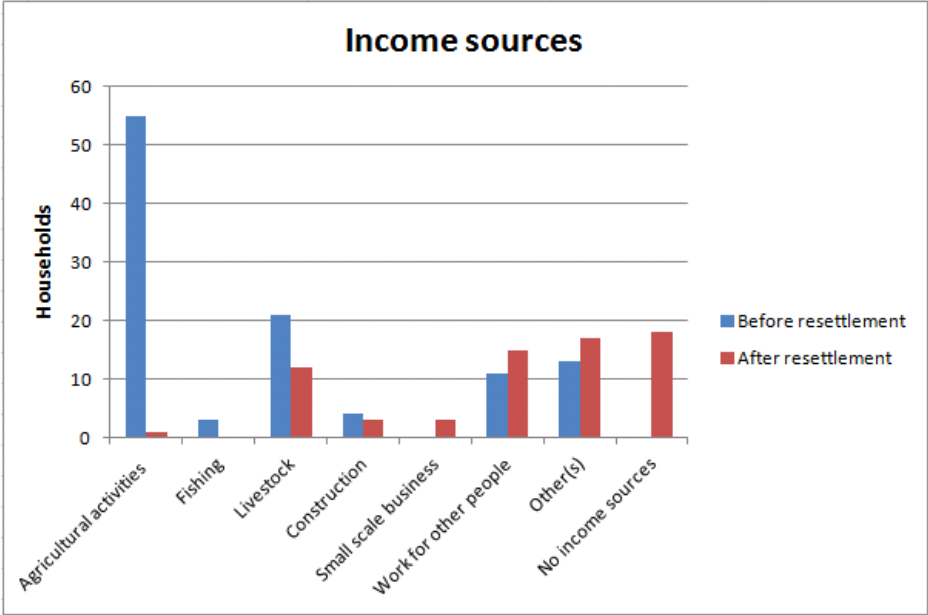


Source: Fieldwork, 2013

### 5.6 Joblessness

The risk 'joblessness' is also prevalent in Kon Tôm village. Figure 5.9 shows the income sources of the questioned households before and after resettlement. As can be seen from this bar chart, income sources have decreased significantly after resettlement. Before resettlement almost all the questioned households (55 of the 59) had agricultural activities (including forestry and garden activities) as an income source. After resettlement however, this number decreased significantly to only one household. Figure 5.9 shows that also other income sources have been lost after resettlement, including fishing, livestock and construction work. It is however highly possible that livestock as an income source will increase significantly in the future, since livestock (as mentioned before) has been given as a form of compensation. Also some households used the compensation money to buy cows and/or buffalos. To what extent the livestock from compensation will be used as an income source is however hard to say, since it could be used for own consumption or the livestock could unexpectedly die. Figure 5.9 also shows that 18 households (e.g. 30,5%) lost all of their income sources after resettlement, thus significantly reducing their adaptive capacity. It however has to be mentioned that 15 out of 18 households did receive livestock and/or acacia from compensation thus it could be highly possible that these compensation forms will be used as income sources in the near future (if there are no unforeseen events like diseases, floods etc.). According to the director of Tropenbos (2013), the acacia market is currently very stable and profitable for Vietnamese farmers and thus a good way of earning an income. However, the director also mentioned that monocropping should be avoided in order to overcome (unexpected) price fluctuations in the future and unforeseen events (diseases, droughts etc.). The director of Corenarm (2013) also mentioned that poor people who only rely on acacia as an income source often don't have the time to wait for acacia to be fully grown (which takes about 7-10 years), thus leading to the pre-mature cutting of acacia which earns less profit. This could also occur in Kon Tôm since many households saw their income sources decline (or even totally diminish) after resettlement. Also seven households were identified who only relied on acacia after resettlement which makes them extra vulnerable for this problem.

Figure 5.9: Income sources of the households before and after resettlement



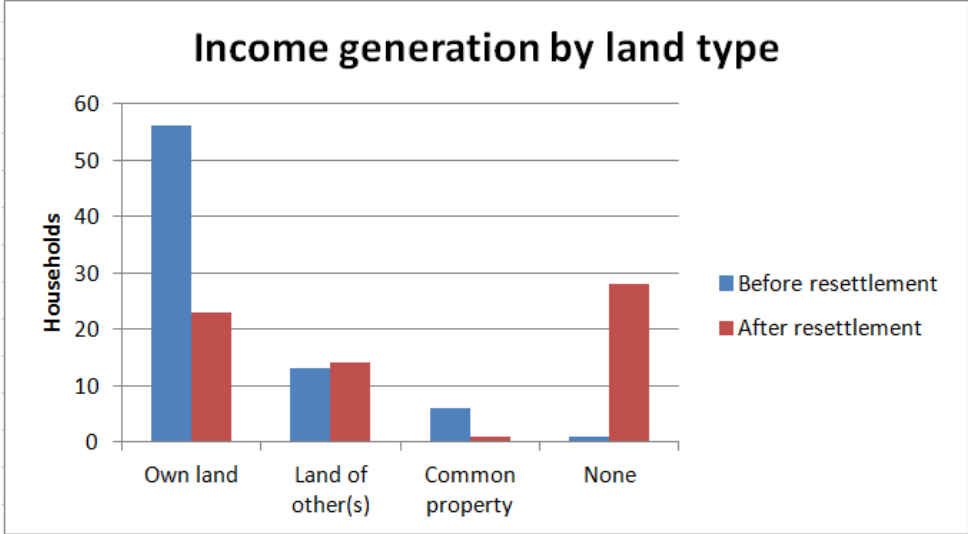
Source: Fieldwork, 2013

Besides drastic reductions of some of the income sources, there are also income sources that gained popularity after resettlement, including small scale businesses (from 0 to 3 households), work for other people (from 11 to 15 households) and other(s) (from 13 to 17 households). Work for other people often includes the clearing of land, wood cutting and/or acacia cutting. The category other(s) represents different types of income sources that were rarely mentioned like retirement, interest, handicap subsidy and different jobs/activities like being a teacher carpenter, tailor, policeman, hunter etc. This category increased moderately after resettlement due to an increase of households that gained income from interest, retirement and salary jobs.

Despite a moderate increase in the above mentioned income sources, the reduction of the other income sources was significantly higher, leading to a severe loss of income. Households earned on average about 3.062.500 VND per month before resettlement. This however reduced significantly to an average income of 1.397.423 VND per month, which is a decrease of more than half (e.g. 54,4%) of people's income. This significant decline can be largely explained by the reduction of agricultural activities (including forestry and garden activities) which was an important source of income before resettlement since households earned about 1.865.172 VND on average per month from these activities. This income source has diminished after resettlement and has not been sufficiently replaced by other income types. For example, although work for other(s) has increased moderately after resettlement (from 11 to 15 households), it remained difficult to work for other(s) due to the lack of an acacia industry in Kon Tôm and surroundings (Interview Suu, 2013). Also many re-settled complained about the lack of job opportunities. Another issue is that most people were used to earn income from their land. This was however not possible anymore after resettlement due to the bad land quality and reduced land size. Thus, households now have to distance themselves from traditional cultural practices and find new ways of making a living which could be very challenging, especially with the lack of support to undertake these new activities.

The issue of landlessness and joblessness can also be seen in figure 5.10. Before resettlement almost all the households (e.g. 56 out of 59 households) used their land to generate income. This however changed drastically to only 23 households after resettlement, which is a decrease of 58,9%. This can be explained by the reduced land size and land quality after resettlement. Also the use of common property to generate income decreased after resettlement from 6 to 1 household. Only the generation of income on the land of others increased, although minimal (with only one household). The figure also shows that after resettlement many families (e.g. 28 households) didn't generate income on any type of land, while before resettlement this was hardly the case.

Figure 5.10: Income generation by land type before and after resettlement



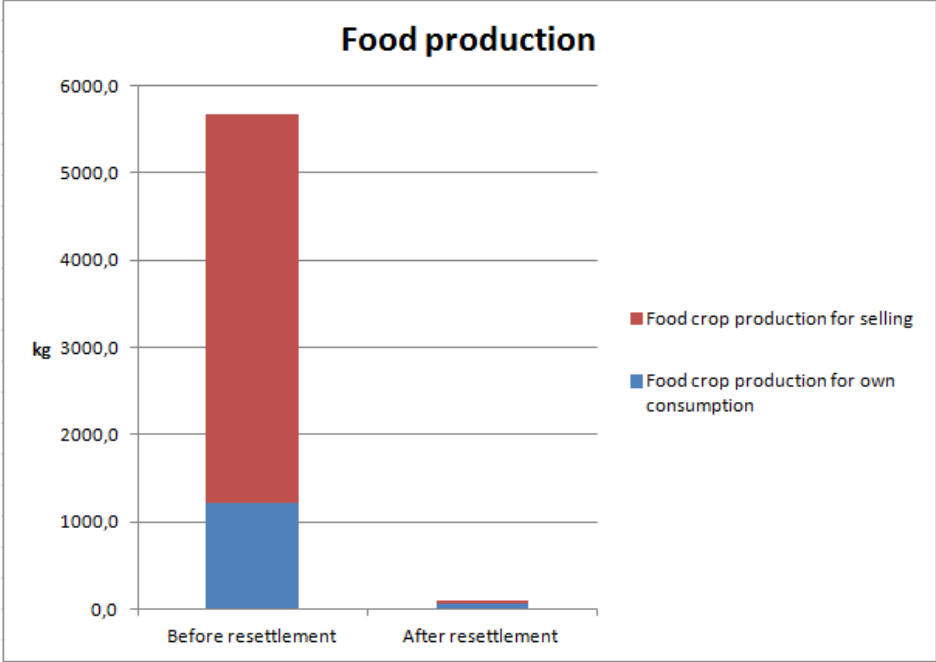
Source: Fieldwork, 2013

### 5.7 Food security and health

Another prevailing risk in Kon Tôm was food insecurity, which increased significantly after resettlement (figure 5.11). Before resettlement all the resettled families (e.g. 59 households) produced food, with an annual average food production of 5798,7 kg per household. This however changed radically after resettlement since 15 questioned households stopped producing food. Together with a low income, these households became very vulnerable to food insecurity. The remaining 44 households that still produced food crops had an annual food production of 93,1 kg per household which is far less (e.g. a reduction of 98,4%) than the food production before resettlement.

The food insecurity issue can be further confirmed by analyzing the amount of food crops used for own consumption (figure 5.11). Before resettlement each household on average used 1225,0 kg of their annual food production for own consumption. This number however reduced to 70,8 kg per household, which is a significant reduction (e.g. 94,2%) compared to before resettlement. Thus, these numbers show that far less produced food crops are used for own consumption, which makes households very vulnerable to food insecurity.

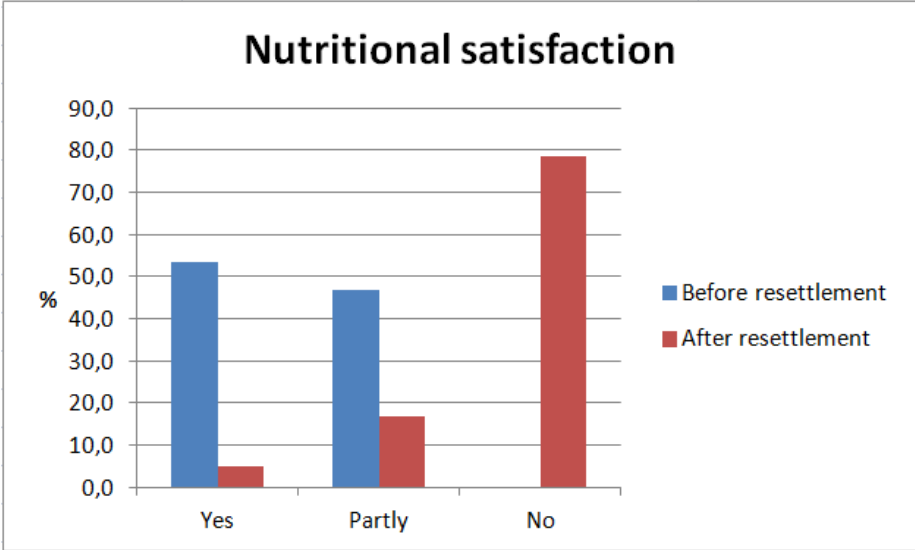
Figure 5.11: Annual food crop production before and after resettlement



Source: Fieldwork, 2013

The dissatisfaction with their current food consumption is also confirmed by the households themselves since 78,3% of the households mentioned that their own food production doesn't satisfy their nutritional needs (figure 5.12). Before resettlement however, households were totally (53,3%) or partly (46,7%) satisfied with the fulfillment of their nutritional needs by their own food production.

Figure 5.12: Nutritional satisfaction of own food production before and after resettlement



Source: Fieldwork, 2013

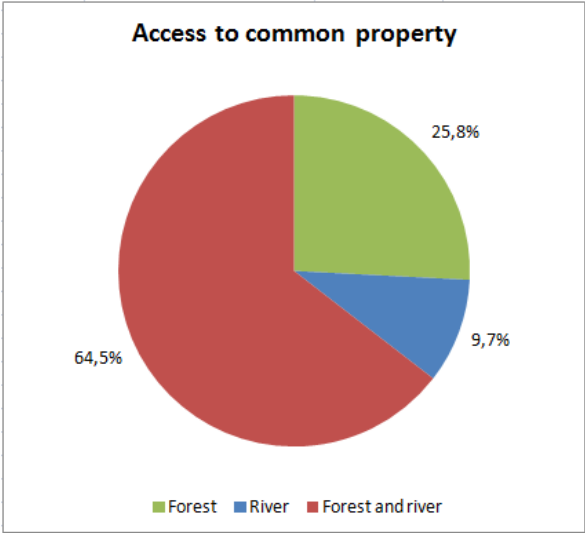
More food needs to be bought in order to cope with the reduced food consumption of own production. This is however very difficult since people's income reduced significantly (e.g. 54,4%) after resettlement which reduced people's food expenditures. Before resettlement, households spent on average about 507.500 VND per month on food. After resettlement however, this reduced drastically (with 50,8%) to only 249.796 VND per month. Thus, households not only produced less food for own consumption after resettlement but also bought less food due to lower income levels.

Concerning health, households were asked whether they experienced any health issues which were absent or less intensive before resettlement. Of the 60 households, only 9 households mentioned to have new or more intensive health issues after resettlement, including headaches (4 households), stomachaches (3 households), less eyesight (2 households), skin infection (2 households), high blood pressure (1 household) and throat issues (1 household). The eyesight issue is probably caused by aging, since both households who mentioned this issue were elders (e.g. 70+). The skin infection (e.g. red itchy spots all over their body) is according to both households caused by the drinking of polluted river water. This water is used for drinking since the water system is often broken. More information about this water system will be provided in section 5.9. The other mentioned health issues, such as the stomachaches and headaches can be explained by the increased use of chemical fertilizer after resettlement which has been provided as part of their compensation. The headaches and high blood pressure can also be caused by stress and worries concerning their current (deprived) situation. However more research is necessary to analyze whether these identified health issues are indeed due to the resettlement process and to what extent the above explanations for these issues are correct.

**5.8 Loss of access to common property**

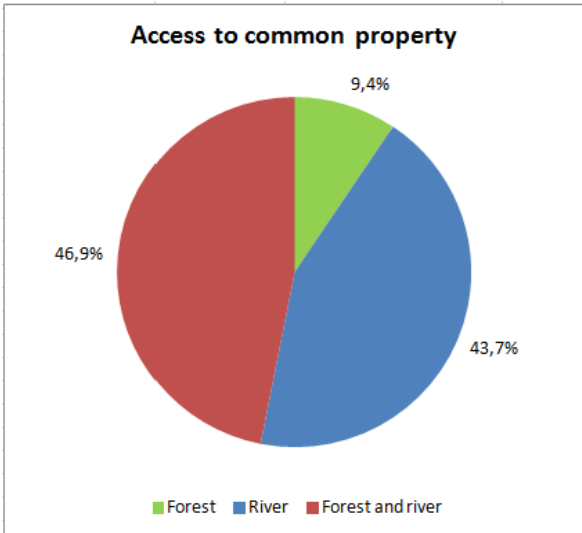
Before resettlement about half of the questioned households (e.g. 31 of the 60 households) had access to common property, including the forest and/or river. Access to common property however increased after resettlement, although minimally from 31 to 32 households. About 7 households lost their access to common property, while 8 households gained access to common property. However, when distinguishing between different types of common property, a decrease of access to the forest can be seen (figure 5.13 & figure 5.14). Of the 31 households that had access to common property before resettlement, almost all the households (e.g. 28 households) had access to the forest. This number decreased significantly after resettlement to 18 households. Access to the river however increased from 23 to 29 households after resettlement, which can be explained by the presence of a river in in Kon Tôm (figure 5.3).

Figure 5.13: Access to different types of common property before resettlement



Source: Fieldwork, 2013

Figure 5.14: Access to different types of common property after resettlement



Source: Fieldwork 2013

The common property is used for different purposes by the questioned households. These purposes can be divided into income-generating activities and non-income generating activities. Before resettlement, only seven households mentioned to use common property to generate income. These income-generating activities included fishing, hunting, wood cutting, bamboo cutting, rattan cutting and collecting leaves to make hats. After resettlement however only 1 household mentioned to use common property to earn an income (by hunting). Thus after resettlement, there is a significant decrease in the use of common property for generating income. Only 5 households knew what they earned from common property before resettlement, which was 390.000 VND on average, although ranging widely from 50.000 VND to 1.000.000 VND per month. Thus, the percentage of income that was earned by common property ranged as well from just 3,7% to about 33,3%. The reduction of the use of common property for generating income can be largely explained by the decreased access to the forest since almost all the income-generating activities were forest-related (except two households who earned money through fishing).

Almost all the questioned households who had access to common property before resettlement and after resettlement used it for non-income generating activities, including fishing, hunting, gathering firewood and collecting vegetables. While fishing increased after resettlement

(from 20 to 24 households), forest activities decreased including the collection of firewood (from 16 to 12 households) and hunting (from 4 to 0 households). Also more households now use the river for their daily activities including drinking, bathing etc. These numbers can be explained by the above mentioned findings, which state that access to the river has increased, while access to the forest has decreased. The use of the river for daily activities is further stimulated by the frequently broken water system.

People's opinion about common property after resettlement differed, although most households were not (e.g. 61,7% of the households) or partly (e.g. 11,7% of the households) satisfied with it. Most of these households complained that common property was too far away and that they lacked a vehicle to access it. Some households also mentioned that they didn't have the time to go to the river or forest. Several households (e.g. mostly elders) also complained that they could not access common property due to their bad health. Another common complaint concerned the lack of resources on common property after resettlement. Some households complained for example about the lack of fish in the river and the polluted water. Also two households complained that common property became too dangerous after resettlement due to the presence of snakes. Besides these negative opinions, there were also households (e. g. 26%) satisfied with common property after resettlement, stating that there is enough fish, wood and/or vegetables available and that the river can also be used for bathing.

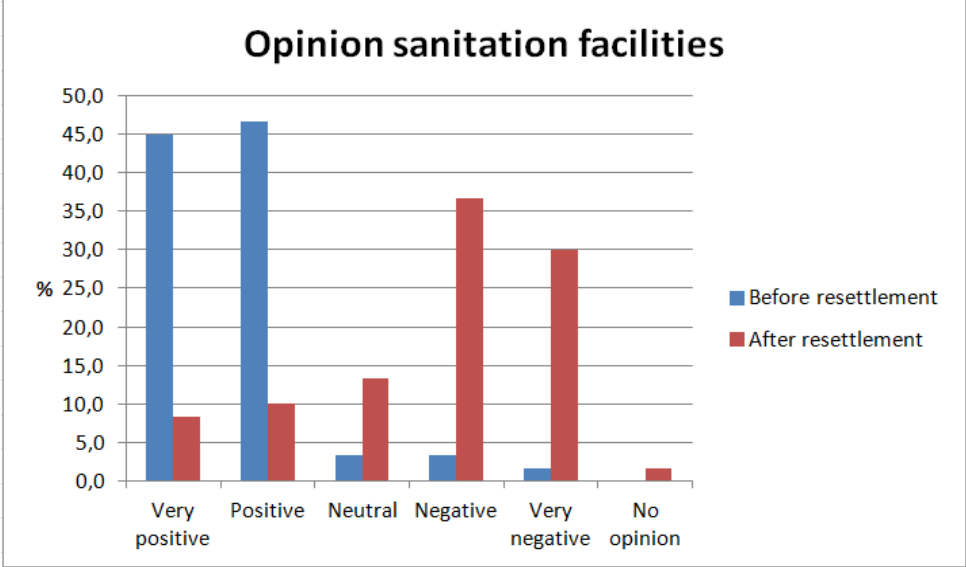


### 5.9 Loss of access to public services

In this section, people's access to public services (including water, sanitation facilities, electricity, medical services and education) will be analyzed. Concerning water, most households (e.g. 61,7%) mentioned to have access to clean drinking water. This is an increase compared to people's access to clean drinking water before resettlement (e.g. 31,7%). However, a large complaint concerns the availability of clean drinking water, which is often limited due to the deficit water system. A separate reservoir was made to provide clean drinking water to the villagers of Kon Tôm. The water system is however often broken (also during the fieldwork period) and has to be repaired by the village leader who is responsible for the proper functioning of this system. The village leader (2013) complained that the quality of the system is very bad since it has to be repaired a lot. More research is however necessary in order to determine the exact problem of the system.

The limited availability of water is also a problem for the use of people's sanitation facilities. Although almost all the households (e.g. 98,3%) mentioned to have access to sanitation facilities, which is a significant increase compared to the amount of households that had access to sanitation facilities before resettlement (e.g. 50%), the broken water system hinders the use of these facilities. Besides, the broken water system obligates households to get polluted water from the river which can (as mentioned in section 5.7) lead to serious health issues. This is the main reason why households in Kon Tôm are negative about their current sanitation facilities (figure 5.15). Households were more positive before resettlement, stating that there was enough clean water for their sanitation facilities. The households that didn't have access to sanitation facilities before resettlement were also positive, since they were satisfied with using the nature around.

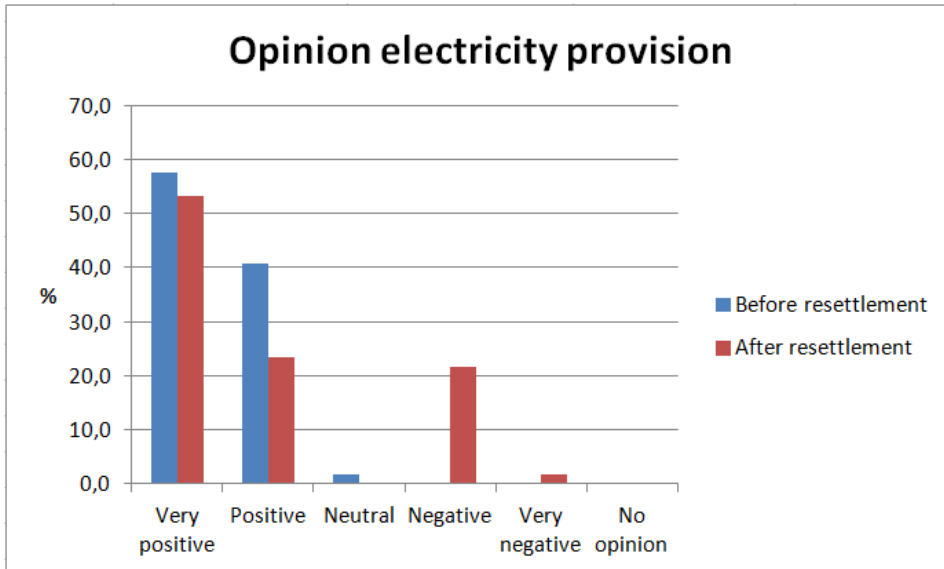
Figure 5.15: Opinion sanitation facilities before and after resettlement



Source: Fieldwork, 2013

Concerning electricity, all the households had access to this service before and after resettlement. Most households were also very satisfied with it before and after resettlement. However, there were some households less positive about the provision of electricity after resettlement (figure 5.16), stating that the costs are too high. This argument can be explained by the reduced income levels of the households, thus making it more difficult to pay the electricity bills.

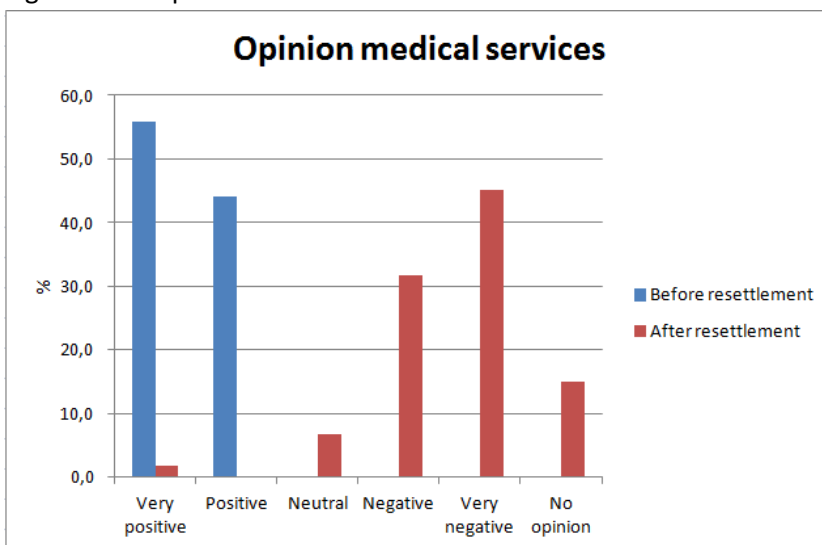
Figure 5.16: Opinion electricity provision before and after resettlement



Source: Fieldwork, 2013

In contrast, access to medical services (which was based on time, distance and affordability considerations of the questioned households) reduced drastically after resettlement. While all the households had access to medical services before resettlement, only 30% still had access to these services after resettlement. The lack of access to medical services was also confirmed by the village leader, the vice-chairman of the commune and the district spokesperson. A building has been constructed for medical purposes in the village (figure 5.3). There are however no doctors, nor is there medicine available for the villagers. Thus, only highly mobile households still had access to medical services. A problem however concerns the bad road quality, which made it impossible to reach medical services outside the village during heavy rainfall. The lack of access to medical services also negative influenced people's opinion about it (figure 5.17). Before resettlement however, almost all the households were positive or very positive about the medical services, stating that these services were close to their homes and of good quality.

Figure 5.17: Opinion medical services before and after resettlement

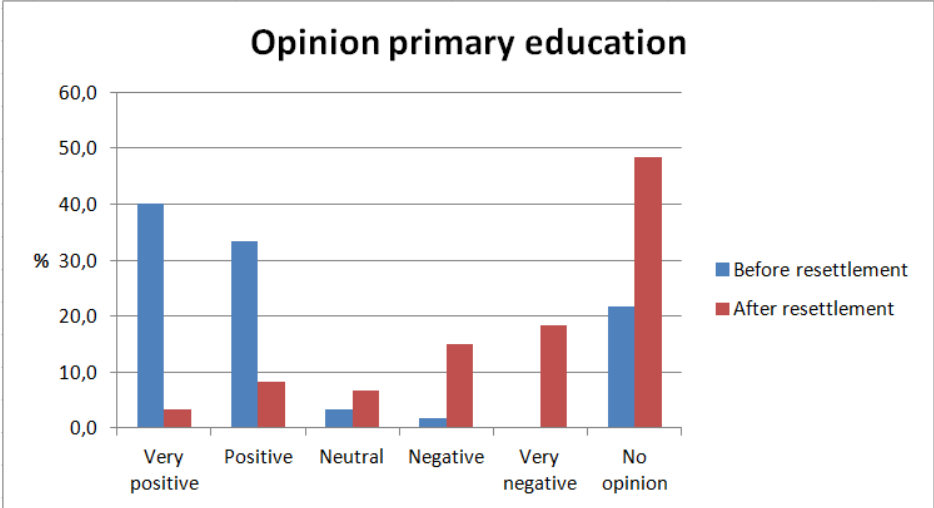


Source: Fieldwork, 2013

Concerning access to education, a distinction has been made between primary and secondary education. As mentioned before, the education level of most households was not too bad, since most household members (81,9%) at least finished or were still going to primary school. Also more than half of the re-settled (53%) had at least finished (or were still going to) secondary school. Thus, many households had access to primary and secondary education before resettlement. Only one household mentioned to have no access to primary and secondary education before resettlement due to a lack of money.

After resettlement, all households still had access to primary education. A primary school has been built in the resettlement site in order to make primary education accessible (figure 5.3). It however has to be mentioned that people were less satisfied with primary education after resettlement (figure 5.18). Different reasons have been mentioned by the households, including the lack of drinking water for the students. Also parents complained that different classes of different levels are educated in the same classrooms (due to a lack of students) and that some teachers are not very motivated and often late. Also some households complained about the bad facilities of the primary school. Most households however did not have an opinion about the primary education in Kon Tôm since none of the households members used it.

Figure 5.18: Opinion primary education before and after resettlement



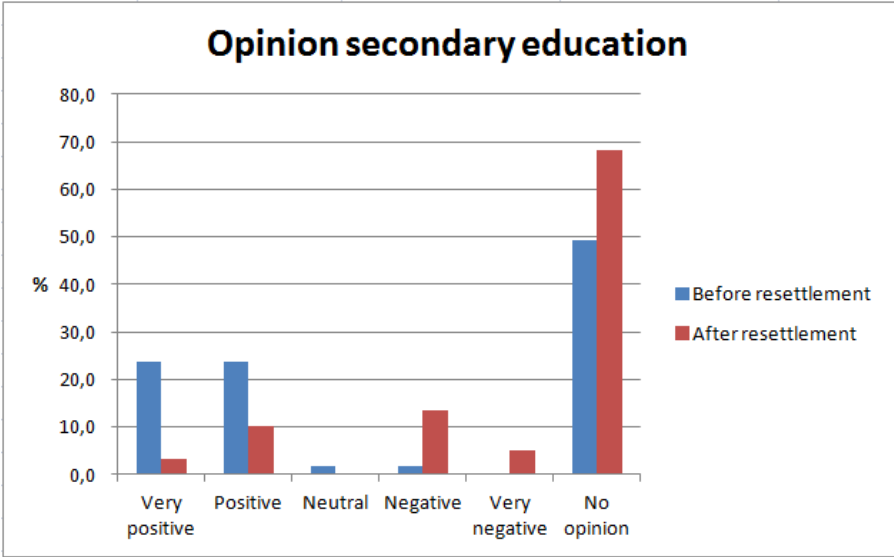
Source: Fieldwork, 2013

On the other hand, access to secondary education decreased after resettlement. In total seven households complained that they couldn't send their children to secondary school. Reasons for this include the lack of money and the absence of a secondary school nearby. The lack of money can be explained by the new situation after resettlement in which the households earn far less money than before resettlement. The absence of a secondary school in the resettlement site also obligates students to go to another village, which is only possible for mobile households, although even these households sometimes cannot go to the secondary school when heavy rainfall makes the roads impassable. The village leader, vice-chairman and the district spokesperson mentioned that there are not enough teachers and students to open up a secondary school in the village.

The above mentioned complaints made households less positive about the secondary education after resettlement (figure 5.19). However, most households didn't have an opinion about

the secondary education since many household members were too young, too old or already finished it before resettlement.

Figure 5.19: Opinion primary education before and after resettlement



Source: Fieldwork, 2013

## 5.10 Conclusion

This section has shown that all investigated risks (e.g. landlessness, joblessness, food insecurity, health issues, access to common property and lack of access to public services) were present in Kon Tôm which could lead to severe impoverishment. This section has also shown the interconnectivity between the risks. The issue of landlessness for example increased the risk of joblessness since many people earned an income through agricultural activities before resettlement. The issue of landlessness in combination with joblessness and lack of access to common property further stimulate the risks of food insecurity and health issues since less food can be produced and bought for own consumption. Besides, a lack of access to clean drinking water could further diminish people's health.

This section has also described the resettlement programme and process for the case of the A Luoi hydropower dam. It can be concluded that the provided compensation did not fit with the capacities, customs and needs of the re-settlers. For example, not enough land was provided to continue people's agricultural activities, which was traditionally an essential food and income source of many households. Besides farming training (which was rarely attended), no programmes were implemented in order to help re-settlers shift to new income-generating activities. Also the financial compensation was not enough (despite productive investments of some of the households) to sustain people's lives after resettlement.

Concerning participation, free, prior and informed consent (FPIC) was nonexistent. People were persuaded and eventually forced to move. Households had hardly any influence on their own resettlement.

## **6. Risks and vulnerability: variation within the community**

The previous section has shown that all the investigated risks are prevailing in Kon Tôm, leading to impoverishment of the re-settled. This section will investigate whether there are differences between groups within the community concerning their vulnerability and exposure to risks. Different types of groups will be described in this section including female-headed households, elder(s) and Kinh ethnics. Also the situation of a household will be described that was formed after resettlement by two young adults who left their former re-settled households to start an own family in Kon Tôm.

### **6.1 Female-headed household**

Female-headed households (e.g. households without a husband) have to sustain their livelihoods without the help of the husband which could make them even more vulnerable for the prevailing risks in Kon Tôm compared to the other questioned households (e.g. households of which there is at least a wife and husband present or only a husband). In total 10 re-settled female-headed households were questioned, which comprised about 16,9% of all the questioned households. All female-headed households were Ta Oi ethnics. The average household size of the female-headed households was 3,4, although varying largely from 2 to 8 household members. Concerning compensation, the female-headed households received far less financial compensation: While the 10 female-headed households on average received 40.4 million VND, the remaining re-settled households (e.g. all the re-settled households excluding the female-headed households and the household that was newly created after resettlement) received 67.6 million VND which is 67,3% more compared to the female-headed households. The same is true for the amount of received land after resettlement: while the female-headed households received on average about 0.66 ha, the remaining households received 0,96 ha which is 45,5% more compared to the female-headed households. The big compensation difference between female-headed households and the other re-settled can be explained by the limited property of female-headed households (compared to the other households) on which the amount of compensation is based. For example, while the female-headed households on average owned 2,0 ha of land before resettlement, the remaining households on average owned 3,7 ha. Thus, the female-headed households received far less land compared to the other households since they owned less land before resettlement. Nevertheless the land size of female-headed households reduced drastically after resettlement from 2,0 ha on average to 0,66 ha (e.g. a decline of 67,0%), The other re-settled families saw their land decline from 3,7 ha on average to 0,77 ha (e.g. a decline of 79,2%). Thus, although the female-headed households on average lost less land compared to the other families, the female-headed households still owned less land compared to the other re-settled households after resettlement.

The small amount of land (which is even smaller than most other re-settled households) and the bad soil quality after resettlement made it impossible for the female-headed households to earn an income by growing crops. This is however no difference compared to the other re-settled. Three female-headed households mentioned to have lost all of their income sources after resettlement. The other female-headed households still earned some money after resettlement through activities that continued after resettlement like working for the police, producing medicine and livestock. Also two other female-headed households started to work for other people to earn an income. Despite these income sources, the average income of the female-headed households reduced drastically after resettlement from 2.295.000 VND per month to 1.070.000 VND per month. It however has to be mentioned that income varied largely among the female-headed households from 0 to 3.000.000

VND per month. Despite this variation, all female-headed households saw their income decline after resettlement. This decline is however no drastic difference with the remaining 49 households since their income also declined after resettlement from 3.187.442 VND per month to 1.475.381 VND per month. However, as can be seen from these numbers, the average income of the female-headed households is even less when compared to the average income of the other questioned households.

The small amount of land and the bad soil quality after resettlement also made it impossible to satisfy own nutritional needs with own food production. Before resettlement, the female-headed households mentioned that their own food production partly (by 5 households) or even totally (by the 5 remaining households) satisfied their nutritional needs. This changed drastically after resettlement since only one female-headed household was still satisfied with her own food production. The lack of satisfaction is logical since less food crops could be grown in the resettlement site. Three female-headed households even saw their food production decline to zero after resettlement. This food insecurity issue is not only a problem for the female-headed households but also for the other questioned households, although the female-headed households often had less land available for growing food crops, thus leading to less food production (e.g. 83,3 kg food crops per year on average by women-headed households compared to 95,0 kg per year on average by the other questioned households).

Concerning common property, only 3 out of 10 female-headed households had access to the forest and/or river before resettlement. This is low since more than half (e.g. 56,0%) of the other resettled households had access to common property. After resettlement, the amount of female-headed households that had access to common property increased from 3 to 4 households, while the amount of other households that had access to common property remained the same (e.g. 56,0%). Only one female-headed household lost its access to the forest, while still having access to the river. The female-headed households who had access to the forest and/or river before and after resettlement only used it for non-income purposes like fishing and gathering wood. The other questioned households (that at least consisted of a husband and wife or husband only) however did use common property as an income source. Nevertheless, this also reduced drastically after resettlement from seven to only one household. Those households who still had access to common property used it for non-income purposes (fishing, gathering firewood etc.).

Concerning access to public services, differences between the female-headed households and the other re-settled households is minimal since both groups live in the same resettlement site. For example; access to drinking water is an issue for all the households since all are dependent on the water system that is often broken, thus making the available sanitation facilities unusable. The same goes for medical services: the lack of doctors and medicine makes it impossible to access medical services in the village. Also no evidence has been found that access to education is lower for children in the female-headed households compared to children in other re-settled households.

Despite variations between female-headed households, the above mentioned numbers have shown that most female-headed households have less land and income, compared to the other questioned households, which makes them very vulnerable for impoverishment. The use of common property by female-headed households was also limited due to reasons like bad health, no time, no vehicle etc. No large dissimilarities have been identified between female-headed and the other questioned households concerning access to public services.

## 6.2 Elder(s)

During fieldwork also numerous elder(s) were questioned. In total, 12 households were identified of which at least one of the parents of the household was 65 years or older. The average household size of these 12 families was 3,6, although varying largely from 2 to 6 household members. Almost all the households were Ta Oi ethnics, except one Kinh household. Also 4 elderly households were women-headed.

Most elderly households received more financial compensation in comparison with other households: while the elderly households on average received 75.909.091 VND, the non-elderly households received 60.331.087 VND. It however has to be mentioned that the received financial compensation differed largely between the elderly households, ranging from 7.000.000 VND to over 150.000.000 VND. The same is true for the amount of land received: while elderly households received 1,02 ha on average, the non-elderly households received 0,88 ha. It however has to be mentioned again that the amount of received land by elderly households differed largely from 0,2 to 2,5 ha. Nevertheless, all elderly households saw the size of their land decline, although some more than others. Thus, whether elderly households face the issue of landlessness more than other resettled households cannot be concluded due to the large variation among elderly households.

The risk 'joblessness' is prevalent among almost all the elderly households. On average, the income of the elderly households reduced from 2.505.909 VND to only 872.727 VND, which is a reduction of 65,2%. In comparison, the income of the non-elderly households reduced from 3.219.487 to 1.538.195 VND which is a reduction of 52,2%. Thus, the elderly households relatively lost more of their income and also had a lower average income level. This large reduction can be mainly explained by the fact that almost half of the elderly households (e.g. 5 families) lost all of their income after resettlement. Besides, income of the remaining elderly households reduced drastically after resettlement. Those seven elderly households that still earned an income gained it through different ways like tailoring, retirement, financial support from children and livestock. Work for other people, was only mentioned by two households which is logically since many elder(s) didn't have the strength anymore to undertake labor-intensive activities and due to the lack of job opportunities in Kon Tôm and surroundings. Also agricultural activities were lost after resettlement due to the lack of land and bad soil quality which was an important income source for all the elderly households before resettlement. Thus, it can be concluded that the risk 'joblessness' is a severe issue for most elderly households in Kon Tôm.

The risk 'food insecurity' is also prevalent among the elderly households. All elderly households produced food before resettlement (e.g. 6000 kg per year on average), while after resettlement only 6 out of 12 elderly households still produced food. Those elderly families that still produced food also produced far less than before resettlement (e.g. 150 kg per year on average). This is however not significantly different compared to the other questioned households. The difference however is that relatively more elderly households stopped producing food after resettlement (e.g. 50% compared to 18,8%) which can be explained by the hard work that is necessary in order to grow crops on a small piece of land, consisting out of infertile soil. Those 6 elderly households that still produced food used it largely (or even totally) for own consumption. Only two elderly households were still satisfied with their own food production in order to satisfy their nutritional needs, while before resettlement, all the resettled elderly households were totally or partly satisfied with their own food production. Thus, in order to satisfy their nutritional needs, food has to be bought from other(s). However, 5 elderly households did not spent anything on food, of



which 4 elderly households were producing limited (e.g. 50 kg per year) or no food by themselves. Thus, these households face a high risk of food insecurity.

Concerning common property, access to it has increased after resettlement from 3 to 5 households. In comparison with the other questioned households, access to common property is relatively lower: while 5 out of 12 elderly households (e.g. 41,7%) had access to common property after resettlement, more than half of the other questioned households (e.g. 56,3%) had access to common property. Thus, elderly households have more difficulties accessing common property which is logical due to their age, which makes them less capable to use it. Nevertheless, access to common property has increased since 2 extra households gained access to it, of which one household to the forest and river and the other household only to the river, while on the other hand, only one household lost access to the forest (although still maintaining its access to the river). Only one elderly household used common property as a source of income (though cutting rattan) before resettlement. This household however lost this income source after resettlement and now only uses the common property for fishing. The remaining elderly households who also had access to common property mainly used it for collecting firewood and/or fishing.

Concerning public services, no big changes have been found between elderly households and the other questioned households. Especially the lack of access to medical services is an important issue since many elderly households need to use these services more often than younger households.

To conclude, all elderly households faced the same risks as any other re-settled household. The above mentioned numbers however have shown that, despite large variations, most elderly households are even more exposed to the risks of joblessness, food insecurity and access to common property. Besides, 4 elderly households were also female-headed. Thus, these households also have to survive without the help of the husband of the family, which makes them even more vulnerable for impoverishment. Many elderly households are also aided by their son(s) and/or daughter(s) in order to survive. More research is however necessary in order to identify to what extent these households depend on these family ties.

### **6.3 Kinh households**

In total, 2 of the 60 questioned households were Kinh ethnics, while the remaining households were Ta Oi. The Kinh population makes up for only a small part of the total re-settled population (e.g. about 2% of the households). It is however hard to make any generalizations about the Kinh population since only 2 very different Kinh households were questioned. One household consisted out of two elders (a 73 years old male and 73 years old female), while the other household consisted out of a husband and wife (of respectively 38 and 32 years old) and two children (of 1 and 6 years old). No significant changes have been identified between both Kinh households and the Ta Oi households. Both Kinh households suffered the same risks as the Ta Oi households, including landlessness, joblessness, loss of access to public services and food insecurity. Health issues (that were related with the resettlement process) were however not mentioned. Another difference (compared to most Ta Oi households) is that the younger Kinh household applied an adaptation strategy in order to improve its situation. This adaptation strategy will be further discussed in section 7.2. The elderly household survived by continuing their tailor activities. The household also gave their agricultural land to other people, who in turn, provided the Kinh household with a share of the food crop production.

### **6.4 Newly formed households in Kon Tôm**

Besides the re-settled household, also one household has been questioned that was formed after resettlement. This household, consisting out of a young couple (both 24 years old) and a small child (of 3 years old) left their old re-settled families and decided to start an own household in Kon Tôm. Although no generalizations can be made since only one household has been questioned, these newly formed households might face severe difficulties in order to survive due to the absence of re-settlement compensation (including, money, land, house, livestock, acacia etc.) in order to build up their lives, while facing the same difficulties in Kon Tôm as any other household. The members of the household had to build a house by themselves and received a small piece of land from the uncle of the wife of the household. This land was however unusable due to its bad soil quality so no food crops could be produced, nor did the household had any other source of income, which made the household dependent on other family members. Besides, both the husband and female of the household lacked any form of education. Also farming work on land of other(s) was difficult due to the lack of an acacia industry in Kon Tôm and surroundings. Thus, the question is to what extent this household will find other sources of income.

Although the above mentioned findings cannot be generalized, it could be highly possible that other newly formed households after resettlement face similar difficulties. More research is however necessary in order to confirm this.

## 6.5 Variation within the community?

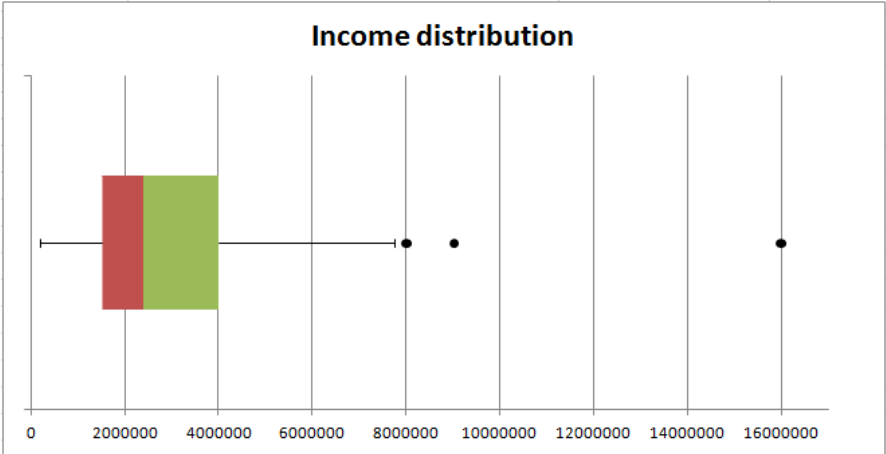
The above mentioned findings have shown that different groups in the community were more exposed to risks than others like women-headed households and elder(s). Nevertheless, even within these groups, the level of impoverishment varied. Whether households were more vulnerable to impoverishment than others depended on different factors. One of these factors was for example the amount of property that households had before resettlement, on which the amount of compensation is based. Most women-headed households for example had less property compared to other households, which led to less compensation. Thus, there is a higher chance that these households become impoverished compared to other households. Another factor concerned the household composition. Most elderly households for example had trouble producing food, accessing common property and earning an income after resettlement. Another factor concerned the availability of a transport vehicle to access public services and common property. Although not measured directly, an often mentioned complaint among households was that the common property and medical services were too far away since these households did not have a transport vehicle to access it. Another important factor was the extent to which households were able to sustain their income sources after resettlement. While all the households lost agricultural activities as an important income source, some households were able to continue their income sources after resettlement. These income sources often included off-farm jobs like construction work, teaching, tailoring, irrigation work, police work, but also other sources like retirement money and working on land of others. Also several households found new jobs on land of other(s) after resettlement or used interest from their financial compensation as an income source. All these households were better off than the households that were fully depending on their agricultural, forestry and/or livestock activities as sources of income. Finally, some households have been identified that are less worse off than others by applying adaptation strategies after resettlement. These households will be further analyzed in the next section.

Thus, different factors influence the situation of the re-settled. The question is however: what makes the biggest difference? The most important factor for the case of Kon Tôm is whether households diversified their income sources before resettlement and whether households were able to sustain these income sources after resettlement. This is crucial in order to overcome the prevailing risks. While agriculture as an income source is a lost case, due to the significant reduction of people's land size and quality after resettlement, other off-farm income sources (as mentioned above) were crucial in order to overcome impoverishment. Besides, employment opportunities in Kon Tôm and surroundings are limited, which makes it even more important for households to sustain their income sources. Thus, those households that earned income from different income sources before resettlement were often better off after resettlement than those who were only depending on agriculture. Whether people diversified their income sources before resettlement depended on different factors like connections, household size and composition, education level etc. Furthermore, whether households were able to sustain their income sources after resettlement depended on income type since some income sources are more mobile than others. For example, an elderly household can still receive retirement money after resettlement and a resettled teacher can still teach. However, whether the teacher can still work after resettlement also depends on the presence of a school in Kon Tôm. Thus, also context specific factors determine whether a job is still possible after resettlement. Besides, connections probably also play a crucial role for undertaking the same income activities. The teacher for example has a higher chance of finding work when he or she has

the right connections. More research is however necessary to investigate the importance of these connections.

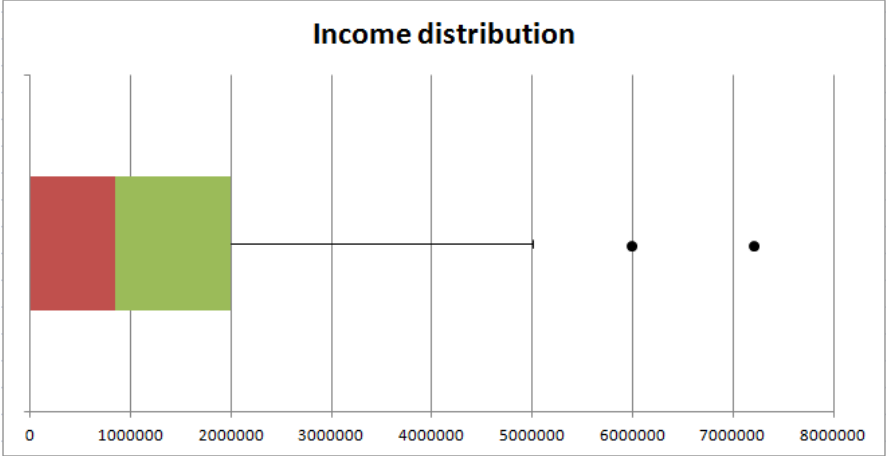
Despite the fact that some households were more impoverished than others, it has to be mentioned that all households were worse off after resettlement. Also socio-economic differences between households decreased after resettlement. This can for example be seen when looking at the income distribution of the questioned households as depicted below (figure 6.1 & 6.2). The outliers (e.g. those households that earned substantially more or less compared to the other households) that are shown as dots in the boxplots, reduced significantly after resettlement. The same is true for the interquartile range, which is a measure to show the dispersion of data (in this case the income levels of the households) by calculating the difference between the third quartile of the boxplot (e.g. the income level of which 75% of the questioned households are under) and the first quartile of the boxplot (e.g. the income level of which 25% of the questioned households are under). The interquartile range reduced from 2.500.000 VND per month before resettlement to 2.000.000 VND per month after resettlement. Thus, there was a significant reduction of income variation after resettlement.

Figure 6.1: Income distribution before resettlement



Source: Fieldwork, 2013

Figure 6.2: Income distribution after resettlement



Source: Fieldwork, 2013

The reduction of differences between households can also be seen when looking at the land size before and after resettlement. While before resettlement, land size ranged from 0,06 ha till 17,0 ha, after resettlement, it ranged from 0,0 ha till 2,5 ha. Also the interquartile range reduced from 3,3 ha till only 0,53 ha. These numbers obviously also led to less variance concerning food production after resettlement; the interquartile range of food production reduced from 9000 kg food crops per year to only 100 kg food crops per year.

## 7. Adaptation strategies

Re-settlers in Kon Tôm face severe impoverishment risks. Adaptation strategies can be applied in order to cope with these risks. A distinction has been made in different types of adaptation strategies (as identified in section 2.8) including migration, off-farm activities, working for other people and land use intensification. This section describes to what extent these different adaptation strategies have been applied by households in Kon Tôm village and the (potential long-term) impact of these strategies on the lives of the re-settlers.

### 7.1 Migration

In order to cope with the above mentioned impoverishment risks, it would be possible that one or more of the household members migrate to support the household. This adaptation strategy has been rarely used by households in Kon Tôm village; of the 60 questioned households, only one household had a migration member who migrated to support the household (figure 7.1). This female-headed household (consisting out of one parent and seven children) also combined the 'work for other people' strategy to overcome impoverishment. Before resettlement, income was derived solely from agricultural activities. Different crops were grown including cassava, wet paddy, dry paddy, bamboo, acacia and coffee. After resettlement however, only acacia, wet paddy and cassava were produced, which can be explained by the reduced land size (from 1,4 ha to 0,9 ha), the bad soil quality and the provision of acacia as part of people's compensation. No income however was derived from these activities. The acacia trees were still too young to harvest, while the wet paddy and cassava were only used for own consumption.

Thus, in order to cope with the deprived circumstances in Kon Tôm village, one of the older male(s) of the household started clearing pieces of land for other people. Besides this activity, the elder brother also started cutting acacia for other people. The household is now totally dependent on these activities as a source of income. Despite these activities, the household still generates less income than before resettlement. The income of the elder brother is not enough to let the three younger children go to primary school. It is however enough to pay for the high school fees of the 18 year old female household member. Therefore she went to work in Saigon as a tailor in order to pay for the last year of her high school. She expects to earn enough money within one year. She also wants to contribute to the education of her three younger brothers, which should reduce the pressure on the elder brother to generate enough income for the household. Two of the elder children also have the ambition to go to the university. The success of this attempt will be based on whether they pass the examination which is a necessary requirement for going to the university.

Thus, on the short- term, the situation of this household has worsened since less income was earned. On the long-term however, the household members expect their situation to improve due to their investments on education. The household members also expect to earn more money in the future when the acacia can be harvested (within 5-6 years).

As mentioned before, this was the only identified household in Kon Tôm that used migration as an adaptation strategy. It however has to be mentioned that migration is a commonly used adaptation strategy when including the 99 households (of the 205 households that lost all of their land due to the A Luoi hydropower dam) that choose to move to another location instead of Kon Tôm. More research is however necessary to analyze whether these households are better off than the 106 households that moved to Kon Tôm.

Figure 7.1: Household members of the migration case (left) and translator (right)



Source: Fieldwork, 2013

## 7.2 Off-farm activities

Another possible adaptation strategy is to undertake off-farm activities. This adaptation strategy was also rarely used; in total three households were identified that undertook off-farm activities (excluding those households that work for other people). These households and their respective adaptation strategies will be described shortly in this section.

One of the identified households (consisting out of a husband (44), wife (37), and three children of 17, 14 and 10 years old) produced wine after resettlement in order to at least sustain or improve their livelihoods (figure 7.2). Before resettlement, many crops were grown including cassava, wet paddy, dry paddy, bamboo and acacia. Also herbs and fruits were grown. These crops were used for themselves and for the market. Before resettlement, the household also cut wood in the forest as an income source. In total, the household earned on average about 3.000.000 VND per month. These income-generating activities however totally disappeared after resettlement. The spokesperson of the household (e.g. the wife) mentioned that the forest is nowadays too far and that bad health further diminishes their access to the forest. Also their land size and quality reduced after resettlement, which made it impossible to grow the same crops as before resettlement. Only cassava, which was used for own consumption, was still after

In order to at least maintain their current standards of living, the household started to cook wine and sell pigs. They decided to cook wine because nobody else in the village did it. The main ingredient of the wine is rice, which was provided as a form of compensation for six months. After these six months however, the household had to buy rice in order to produce wine since it was not possible anymore to produce rice on their own land after resettlement. The rice leftovers (from the wine cooking) were used to feed their pigs. The household also feeds the pigs with cassava, which is produced on their own land. The wife of the household learned from her younger sister how to make wine. She also received training (as a form of compensation) about how to feed pigs and protect them from diseases. She also learned how to grow pigs through learning by doing. Two pigs were received from compensation and 6 pigs were bought from her aunt for 4.000.000 VND. She feeds the pigs for three months and sells them. The six pigs of her aunt for example were sold for 16.000.000 VND. This money was partly used to buy more pigs. At the time of the interview, the household had about 15 pigs and sold approximately 40 pigs per year. Besides buying and selling, she also aims to breed the pigs in the near future.

Concerning income, the situation remained the same after resettlement since the household earned approximately 3.000.000 VND each month which is about the same as before resettlement. She however mentioned that she and her husband have to work harder than before. On the long term however, she thinks that her situation will improve since she aims to sell more pigs and wine. She also wants to open a grocery shop in the future when she has enough money. It is however uncertain when this plan will become a reality.



Figure 7.2: wine under progress



Source: Fieldwork, 2013

The second identified household (consisting out of two parents and three children of 11, 10 and 4 years old) that undertook off-farm activities opened up a coffee shop in order to overcome the deprived situation in Kon Tôm (figure 7.3). The husband was handicapped, thus the wife had to be the breadwinner of the family which was a hard task. She grew different crops on their land before resettlement including cassava, rice, acacia and coffee. These crops were partly used for own consumption and to sell on the market. On average, the household earned about 900.000 VND per month from these crops. The household also received about 85.000 VND per month from the government for the handicapped husband. The total income of the household (e.g. about 985.000 VND per month), in combination with their own crop production satisfied the nutritional needs of the family.

After resettlement however, the household had no income, nor was there enough food to satisfy the nutritional needs of the household. The family received less land than they had before. Not only was their land smaller, but the land was of very poor quality compared to the land in the old village. She tried to grow rice and acacia, but because the land was so poor, she had to work even harder than before. She failed to grow the crops and therefore the family's income dropped drastically which led to a lack of food for her children. In the old village there could be a poor harvest, but they would still have some corn to eat. She also received chickens as a form of compensation. She however did not know how to take care of the chicken, which led to a large decline of her livestock. Thus, the family struggled with different risks including landlessness, joblessness and food insecurity.

In order to overcome these risks, the wife of the household decided to stop investing in crop production (although the household continued growing acacia and wet paddy) and start a coffee shop. She used the financial compensation from the resettlement programme (e.g. 40.000.000 VND) to build the shop next to her house. In the coffee shop she sells drinks and food. People can also play pool for a small fee. Opening up a shop has always been one of her wishes. Besides, she argued that there were no other options due to a lack of income opportunities. She made this choice all by herself, without any help or assistance. Opening up a coffee shop was however not possible without the financial compensation received from the resettlement programme.

The shop reduced the risks and thus improved the situation of the household. However, the situation of the household was not as good as before resettlement. The shop did not earn as much as agriculture did before resettlement (e.g. 600.000 VND per month compared to 900.000 VND per month from agricultural activities). She also noticed that the people in the village had a low income and therefore could not always buy something at her coffee shop. On the long-term however, she expects that the income of the household will increase. In the future her crops will grow and she can earn income from agriculture in addition to her income from the shop. She also hopes that the income of other households in the village will increase when their crops can be harvested, thus leading to more customers for her shop.

Figure 7.3: Coffee shop



Source: Fieldwork, 2013

The last identified household (consisting out of a husband (38), wife (32), and two young children of 1 and 6 years old) that undertook off-farm activities after resettlement, opened up a grocery shop to overcome their impoverished situation (figure 7.4). Before resettlement, this Kinh household was dependent on the construction work of the husband, and on the production of coffee and the cutting of acacia on land of others. This however totally changed after resettlement since construction work became hard to find. The husband of the household also complained of health issues due to his age, which made it difficult for him to get out and find a job. Also no coffee land has been provided to people in the resettlement site, thus their coffee production stopped.

In order to still generate income, the wife and husband decided to open up a small grocery shop at home. They choose for this activity since only a few households (e.g. 3) in the village owned a grocery shop and because the wife of the household couldn't go out since she had to take care of the children. The household received neither training nor any other help in order to run their business. In order to earn more income, the household aims to expand the shop. They are however still waiting to receive a property certificate, which will be used to get a loan at the bank in order to expand the shop. The household is also trying to expand their shop by finding investors. The couple however also argued that expanding the shop could pose difficulties, since many villagers lack money to buy goods at their grocery shop. Thus expanding the shop might not necessarily lead to more income. Another issue concerns customer payments. Often, villagers obtain goods from the shop and pay it back later

(depending on when the customers receive their income). This makes the household very vulnerable on the short-term, since income might be absent. Fortunately, the household also obtained two pigs as part of the resettlement compensation. Both pigs were grown for 4 months and sold for 3.500.000 in total. This money will be used to buy two more pigs for 1.000.000 VND. The pig dung will also be used as fertilizer for their agricultural activities. Besides enlarging the shop, the couple also plans to increase their livestock and to cook wine. The rice, of which the wine is made from, will also be used to feed the pigs. Finally, the household plans to harvest their 1000 acacia trees (which are received as part of their resettlement compensation) after 6-7 years.

Thus, on the short-term their situation has worsened since income reduced significantly from 6.000.000 VND to 2.600.000 VND each month. On the long-term however the husband and wife expect that their situation will improve due to their plans to enlarge the shop, grow more pigs, produce wine and harvest their acacia trees in the near future.

Figure 7.4: Grocery shop



Source: Fieldwork, 2013

### **7.3 Working for other(s)**

Besides migration and off-farm activities, also other households were identified who tried to adapt by working for other people after resettlement (incl. activities like land clearance, farming etc.) In total, the amount of households that worked for other people increased from 11 to 15 households after resettlement. While 4 households lost their work for other(s), 8 households found work on land of other(s) in order to generate more income. This increase is however moderate, considering the deprived situation of almost all the questioned households in Kon Tôm. Thus, this finding hints at a lack of opportunities for the re-settled to work elsewhere. The lack of jobs is also confirmed by the households themselves, since many respondents complained about this issue. Miss Lam Thi Thu Suu, who is director of the Centre for Social Research and Development (CSR) and coordinator of Vietnam River Network (VRN), also confirmed that job opportunities on land of others (which are valuable jobs for the re-settled since most of them have the proper skills for this kind of work) are limited. Miss Suu especially emphasized the lack of an acacia industry in Kon Tôm and surroundings, which limits the amount of jobs available for the re-settled. Those 15 households that however still worked for other(s) after resettlement did not sustain the same amount of welfare as before resettlement. On average, the monthly income of the fifteen households declined from 2.761.538 VND to 1.585.846, which is a decrease of 42,6%. Only two out of the fifteen households who worked for other(s) after resettlement saw their income increase. Thus, while work for other(s) might be a solution to overcome heavy impoverishment, it alone is often not enough to at least sustain or even improve the situation of the households after resettlement.

### **7.4 Land use intensification**

Land use intensification is a necessary activity in order to cope with the reduced land size and quality. This is also happening in Kon Tôm since more households started using chemical fertilizer after resettlement. In total, the amount of households using chemical fertilizer increased from 20 to 37 households after resettlement. Also the amount of households that only used natural fertilizer increased from 0 to 2 households, while the amount of households that used a combination of natural and chemical fertilizer reduced from 7 to 2 households. The increased use of chemical fertilizer can also be explained by the fact that most re-settled received chemical fertilizer as part of their compensation. The question is however whether people will continue using chemical fertilizer when this fertilizer has been used since income reduced drastically after resettlement. Another issue which further hinders land use intensification (as mentioned by the village leader) is the absence of an administrative system, which makes it impossible to set up a farmer union in the village. Besides the farmer union, there are also other unions, like the youth and women unions. These unions are part of the political system and present on all administrative levels (central, province, district and commune). Concerning land use intensification, especially farmer unions are essential since these unions are important to share opinions, learn from each other, receive vocational advice, support and training, undertake social activities etc. (VNFU, 2012). Thus, in order to further stimulate land use intensification, it would be of great importance that the village members organize themselves into a farmer union. However, the district and commune still have to set up an administrative system in order to make this possible. After this has been done, the village administration committee will, together with the villagers, establish the unions. It is however unknown when this will become reality.

## 7.5 Conclusion

Different adaptation strategies have been applied by households in Kon Tôm, including migration, off-farm activities, work for other people and land use intensification. Migration and off-farm activities as adaptation strategies have been rarely applied by households in Kon Tôm. Those who did use these strategies expected their situation to improve over time. However, during the period of fieldwork, no households that applied these strategies have sustained their welfare (compared to before resettlement). Only the household who produced wine earned about the same as before resettlement, although the work became harder. It also has to be mentioned that migration, as an adaptation strategy, plays a significant role when including the 99 households that decided to move to other locations instead of Kon Tôm. More research is however necessary to identify whether these households at least sustained or improved their lives.

Besides these strategies, also other adaptation strategies were identified including working for other people (e.g. activities on land of other(s), like farming, land clearance etc.) and land use intensification. Working for other people has only increased slightly after resettlement due to the lack of an acacia industry. Those households who worked for other(s) after resettlement still earned less income compared to before resettlement. Thus, working for other people has not proven to be sufficient to at least sustain people's welfare. The last identified adaptation strategy "land use intensification", was the most widely applied adaptation strategy. The question is however whether this strategy will be sufficient enough to improve people's lives in the future due to the absence of a farmer union and the limited income to buy fertilizer.

Thus, the above mentioned strategies have improved the lives of the re-settlers in Kon Tôm although often not sufficiently to at least sustain the well-being of the families. Also more research is necessary over time to determine the long-term impact of the above mentioned adaptation strategies. Besides, there were still many households who lacked strategies to adapt to the new circumstances. It however could be that over time, more families will develop adaptation strategies since most households have been recently resettled (November-December 2011).

## 8. Resettlement and displacement: a comparison

This section compares the findings of Kon Tôm with Bo Hon village, which is another resettlement site in Thua Thien Hue province that has been formed due to the construction of a dam. This section starts with a short introduction of the dam and Bo Hon village, followed by a comparison of the risks and applied adaptation strategies. This section will only compare the main findings of both resettlement sites. A more detailed description of the risks and adaptation strategies in Bo Hon can be found in the work of C. Druppers (2013).

### 8.1 Binh Dien hydropower dam

The Binh Dien hydropower plant (figure 8.1) is, as the title already mentions, located in Binh Dien commune which is part of Huong Tra district. The dam is built in the Huu Trach river, which is one of the tributaries of the Huong river. Construction started in 2005 and ended in 2009. Total costs of the dam reached about 5.3 million USD. In order to finance these costs, support was given by the Binh Dien Hydropower Joint stock, which is a consortium consisting out of multi-private companies that besides their financial support, also manage electricity transactions with the Vietnamese government. The Binh Dien hydropower dam is just like the A Luoi hydropower dam used for multiple purposes including, irrigation, flood control and electricity production. In total, the hydropower plant has a water storage capacity of 423 million m<sup>3</sup>, which is used for irrigating 11,000 ha in Thua Thien Hue province and for providing drinking water during the dry season. Flood occurrence in the coastal areas and Hue city also declined due to the dam, which reduces damage done to business activities (incl. tourism, transportation etc.), agriculture etc. The Binh Dien hydropower dam, also produces hydropower for the national electricity grid which is about 181 million KW/h electricity per year. The current capacity of the hydropower plant (44 MW) makes it a medium-sized dam. Besides these positive developments, the hydropower plant also led to a loss of production land (incl. forests and agricultural land) in Binh Dien and Binh Than communes. In total, about 1,220 ha of production land has been submerged in these communes. The hydropower plant also flooded Bo Hon village, which led to the displacement of Ka Tu and Kinh ethnics that originally lived in this village. The Ka Tu ethnics are just like the Ta Oi in A Luoi, one of the ethnic minority groups in Vietnam (Artati, 2011).

Figure 8.1: Binh Dien hydropower dam

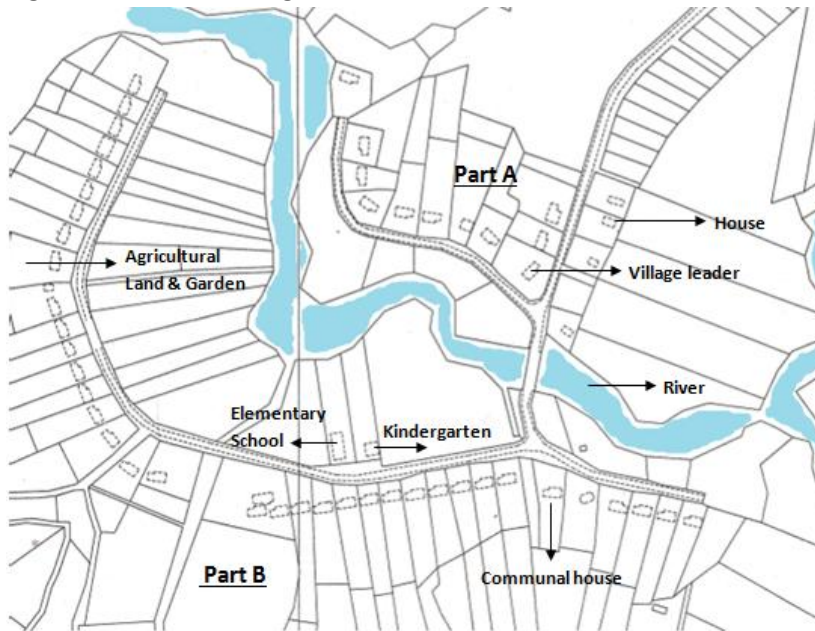


Source: Dan Tri, 2010

## 8.2 Bo Hon village

Bo Hon village is a resettlement site in Binh Than commune, which is part of Huong Tra district (figure 4.2). The village lies about 30km to the south of Hue. Bo Hon village has been created due to the construction of the Binh Dien hydropower dam (Artati. 2011). Resettlement took place in 2006. Currently about 55 households reside in Bo Hon (village leader, 2013). The Ka Tu ethnics make up for the largest part of the population (95%) followed by Kinh ethnics (5%). The village can be divided into two blocks with one block on the high slope, and the other block on the lower slope (figure 8.2). A stream called Rang separates both blocks from one another. Roads connect Bo Hon with other villages and Hue city.

Figure 8.2: Bo Hon village



Source: Binh Dien District Department of Natural Resources and Environment, 2013

### 8.3 A comparison of risks

#### 8.3.1 Landlessness

After resettlement, both Bo Hon and Kon Tôm have experienced vulnerability to landlessness. On average, a household in Bo Hon had a decrease of 97,6 % of their land size, while in Kon Tôm there is a 78,5 % decrease of the average land size (table 8.1). Although Bo Hon has experienced a larger decrease, it is hard to compare numbers between Bo Hon and Kon Tôm. Before resettlement Bo Hon had illegal land, which allowed them to access new land for cultivation without any restrictions. However, due to the illegal status this could not be entirely compensated for after resettlement. Therefore they experienced a large decrease in land size after resettlement. In addition, both villages were faced with poor soil quality and therefore used more fertilizer in order to cultivate their land. Before resettlement only 2,5 % of the households in Bo Hon used chemical fertilizer, which increased to 62,5% after resettlement. In Kon Tôm, the use of chemical fertilizer increased from 33,3 % to 61,7 %.

Table 8.1: Decrease of average land size per households before and after resettlement in Bo Hon and Kon Tôm

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

Source: Fieldwork, 2013

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



### 8.3.2 Joblessness

The resettlement of Bo Hon and Kon Tôm led to a loss of income in both villages (table 8.2). This decrease was accompanied by a noticeable change in the income sources of the households. In Bo Hon most households remained to rely on agricultural activities for their income, however the income derived from these activities was 87,6 % less than before resettlement. In addition, income generated from common property declined, while work for other people as an income source increased. Currently, 22 households are working on acacia plantations, owned by rich families in the surrounding area of Bo Hon. Although many households were engaged in this line of work, it was not able to replace previous income sources. Common property generated on average 1.963.846 VND per month for a family, while work for other people on average only generated 862.500 VND per month. In Kon Tôm agricultural activities, including forestry and garden activities, and livestock were the main sources of income. Livestock as a source of income declined after resettlement, while agricultural activities as an income source nearly diminished. In total, 18 households were identified that had no income at all. Those households that still had an income after resettlement, gained this mainly through off-farm jobs that were still available after resettlement or through work for other people (although opportunities were limited). These findings indicate an even higher vulnerability to joblessness in Kon Tôm compared to Bo Hon.

Table 8.2: Decrease of average monthly income per household before and after resettlement in Bo Hon and Kon Tôm

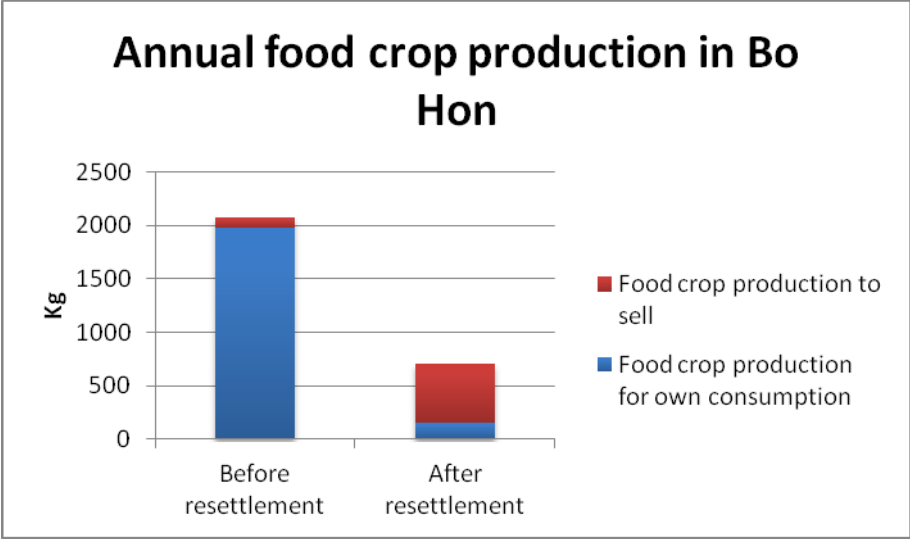
	Before	After	Decrease in %
<b>Bo Hon</b>	4.388.108 VND	1.972.059 VND	55,1
<b>Kon Tôm</b>	3.061.500 VND	1.397.423 VND	54,4

Source: Fieldwork, 2013

**8.3.3 Food insecurity**

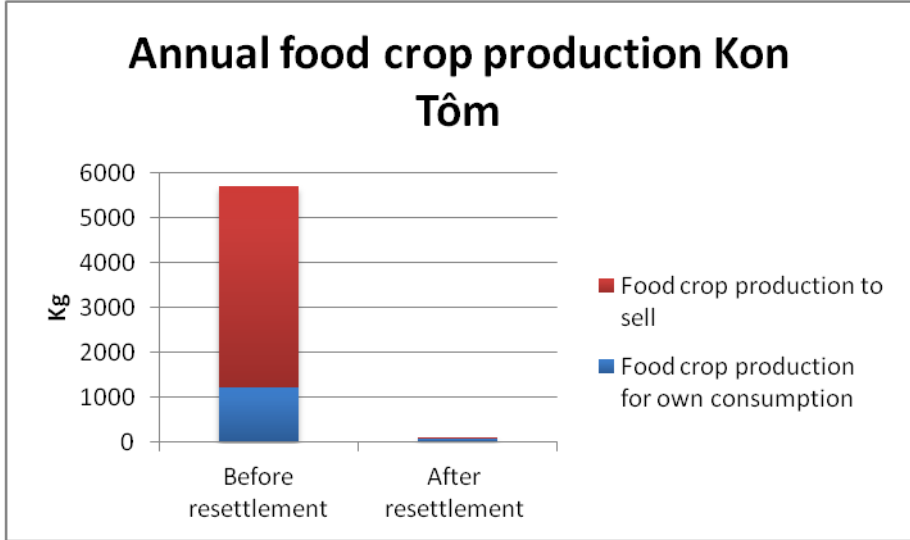
Vulnerability to food insecurity was very high in both Bo Hon and Kon Tôm after their displacement. In both villages the annual food production has significantly declined (figure 8.3 & 8.4). As an effect, the satisfaction of nutritional needs from own food production has dropped. Before resettlement, food crop production was abundant enough in order to satisfy 77,5% of the households in Bo Hon. After resettlement, more food crops were being sold in order to generate an income, which further reduced the amount of food that could have been used for own consumption. In Kon Tôm a similar situation emerged, where before 53,3% of the households produced enough food crops to satisfy their own nutritional needs. However, after resettlement this number reduced to only 5% of the households. The decline in food production was another challenge for the re-settled in Kon Tôm. Not only did they had less food for own consumption, they also had less crops in order to generate an income.

Figure 8.3: Annual food crop production before and after resettlement in Bo Hon



Source: Fieldwork, 2013

Figure 8.4: Annual food crop production before and after resettlement in Kon Tôm



Source: Fieldwork, 2013

In addition, the average food expenditure of households in Bo Hon increased and has become a significant part of the percentage of the income spend on food (56,0%) (table 8.3). Before resettlement they used almost their entire food crop production for own consumption. Even 18 households did not spend any of their income on food since their own food crop production was abundant enough. In Kon Tôm the average amount of food expenditure declined after resettlement, which implied that households in Kon Tôm had less money to spend on food. Relatively however, a similar part of a households average income (19,4 %) was spent on food after resettlement (table 8.3). This can be explained by the reduction of income after relocation. In total, 11 households were identified, that neither had income, nor any food expenditure which made them extremely vulnerable to food insecurity.

Table 8.3: Average monthly food expenditure and average percentage of income spend on food before and after resettlement in Bo Hon and Kon Tôm

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

Source: Fieldwork, 2013

#### **8.3.4 Health**

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

### 8.3.5 Loss of common property

The old village of Bo Hon was surrounded by forest and there was a river nearby. Almost all the households used these types of common property. This however changed after resettlement: only 44% of the households in Bo Hon had access to common property, compared to 97,5% before resettlement (table 8.4). This loss of access had an impact on both their income, as well as their food insecurity. Before relocation, income from common property was mainly derived from forest activities, like cutting bamboo and rattan. After resettlement however, fewer families generated income through forest activities (from 50,0% to 42,9%). Although there is a river, it does not contain much fish. Therefore they were unable to use the river as source of food. In contrast to Bo Hon, access to common property increased slightly in Kon Tôm (from 51,7% to 53,3%). It however has to be mentioned that access to the forest decreased while access to the river increased. This shift affected the income levels of some households. Before resettlement, 7 households used the forest to generate income through cutting bamboo, rattan and gathering leaves to make hats. After relocation however, 6 of these households lost the forest as a source of income. The increased access to the river made it possible to catch fish for own consumption. Other non-income generating activities on common property included gathering firewood or bathing in the river. Compared to Bo Hon, fewer households used common property to generate income and therefore, the loss of access to common property had less effect on the income levels of most households in Kon Tôm.

Table 8.4: Access to common property before and after resettlement in Bo Hon and Kon Tôm

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

Source: Fieldwork, 2013

### 8.3.6 Access to public services

In Bo Hon and Kon Tôm almost all households had access to sanitation facilities (table 8.5). However, the opinions of the households regarding these facilities were divided. In Bo Hon, households were both negative and positive, because the nature around them was used when sanitation facilities did not function properly. This was normal for these households, since sanitation facilities were absent before resettlement. For this reason, some households were not pleased with the current facilities and therefore preferred the outdoors. Most households in Kon Tôm already had access to sanitation facilities (50%) before resettlement. Nevertheless, most households were negative to very negative about the current situation. The water system was often broken, which made it very difficult for households to use their sanitation facilities. Besides this hindered people's to access clean drinking water.

Table 8.5: Access to sanitation facilities before and after resettlement in Bo Hon and Kon Tôm

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

Source: Fieldwork, 2013

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

When comparing access to medical services, there is a major difference in the situation before and after resettlement between Bo Hon and Kon Tôm. Access to medical services increased in Bo Hon, while it decreased in Kon Tôm (table 8.6). In Bo Hon the doctor was both accessible and affordable. Therefore households in Bo Hon were very positive regarding the available medical services. In contrast, households in Kon Tôm were very negative about the current situation. In the village there is a medical centre, however there were neither doctors, nor any medicines available.

Table 8.6: Access to medical services before and after resettlement in Bo Hon and Kon Tôm

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

Source: Fieldwork, 2013

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

In general, the access to and satisfaction of the public services has increased in Bo Hon. In contrast; access to almost all public services decreased in Kon Tôm after resettlement. For this

reason, households in Kon Tôm were besides other risks also more vulnerable to loss of access to public services. In the future, this could lead to educational loss and increased health issues.

#### **8.4 Comparison: adaptation strategies**

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

Households in Bo Hon have been resettled for over six years and have found various ways to cope with the above mentioned risks. Households in Bo Hon have applied adaptation strategies such as migration, working for other people, off-farm activities and land use intensification. There are various reasons as to why these households applied these strategies.

In total, 10 households used migration as an adaptation strategy in order to cope with landlessness, joblessness and food insecurity. In all these families the children migrated, with ages ranging from 12 to 25 years old in order to support their respective family with remittances. This enabled the families to buy food and pay for daily expenditures. However, these children did not go to school, which could lead to education loss in the near future.

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

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

The decrease in land size made it harder to provide enough income from agricultural activities. In addition, the soil is of poor quality to continue their traditional cultivation. Therefore the use of chemical fertilizer increased significantly.

All these strategies have been able to reduce the risk of impoverishment to a certain level. However, despite all efforts, the households did not feel they had been able to create the situation they had before resettlement.

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

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



## **8.5 Conclusion**

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

## Conclusion

This research has described the resettlement programme, resettlement process and the actual situation of the re-settled in Kon Tôm, including the prevailing risks and the adaptation strategies that have been applied by the displaced. Besides, this research has compared the case of Kon Tôm with Bo Hon in order to get a better picture of re-settlement and displacement issues in Thua Thien Hue province. Combined, these findings answer the central question:

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

Re-settled households in both Kon Tôm and Bo Hon heavily experienced the interconnected risks landlessness, joblessness, food insecurity, health issues, lack of access to common property and lack of access to public services. Although there were differences among different groups of re-settled (e.g. women-headed households, elder(s) etc.) and between both villages, almost all households became more impoverished after resettlement. This high vulnerability was caused by multiple reasons like the lack of compensation provided in order to sustain people's lives. Especially the lack of land and its bad quality after resettlement was an issue since this made it impossible to undertake traditional agricultural practices, leading to joblessness and food insecurity. Thus, people had to find other options of sustaining their livelihoods; adaptation strategies were needed. Different adaptation strategies were identified in both villages including migration, work for other people, off-farm activities and land use intensification. Most households that did implement one or more of these strategies could however not sustain their livelihoods after resettlement. Besides there were many households identified that haven't implemented any adaptation strategy. Thus, people's resilience which is necessary to transform adaptive capacity into effective adaptation strategies was low. This low resilience can be explained by the lack of adaptive capacity of the households; after all, resilience is absent when there is no adaptive capacity from which adaptation strategies can be created.

The lack of adaptive capacity of the re-settled households can be explained by using the characteristics of the Local Adaptive Capacity (LAC) framework. The characteristic 'asset base' decreased significantly after resettlement. Especially people's natural capital, financial capital and physical capital diminished due to the prevailing risks. People's existing human capital was often not sufficient to cope with the new circumstances since their skills and knowledge was mostly based on traditional agricultural practices that became unusable after resettlement. Households also lacked information/knowledge regarding the situation after resettlement (concerning land quality for example) and possible adaptation options which relates to the characteristic 'knowledge and information'. This issue is also strongly connected with the characteristic 'innovation' which can (in this context) be described as an enabling environment that stimulates the implementation of adaptation strategies in order to at least sustain people's lives. Innovation is impossible without the right knowledge/information, which not only depends on people's asset base but also on the characteristic 'institutions and entitlements'. Limited institutional aid was given in order to develop adaptation strategies. Compensation was not enough to sustain people's lives; the re-settled lost access to their capitals and assets. Also hardly no additional attempts were made to aid people with adapting to the new environment. This is however in contrast with Decree No. 69/2009/QĐ-TTg, which states that local governments and investors should implement programmes for re-settlers to shift to new income generating activities. The last characteristic "flexible forward-looking governance

and decision-making' also proved to be absent on a political level since the potential consequences of people's resettlement were not adequately dealt with despite ongoing improvements of displacement and resettlement policies in Vietnam. Besides, the forward-looking decision-making of households was also limited due to the absence of adequate means, information, knowledge and expertise.

In order to sustain people's situation after resettlement it is important that people get heard and have influence on their own resettlement. This thesis confirms the findings of Artati (2011) and McLinden Nuijen (2011): free, prior and informed consent (FPIC) was absent for both resettlement cases. People had no choice but to move. Households were persuaded to leave for the wider 'public-interest'. This is in accordance with the public-interest perspective, which justifies dam projects when it has net benefits for the population as a whole (e.g. economic development). This is still the actual situation in Vietnam (and many other places in the world) despite many policy improvements that state otherwise.

To conclude, this research has shown that dams in Thua Thien Hue province are far from sustainable. Important aspects of sustainability like inter-generational equity, social justice, poverty reduction, participation and human-centeredness were not taken into account. Thus, the question arises: how can the re-settled in Bo Hon and Kon Tôm be supported and which changes should be made to improve future displacement and resettlement?

## Recommendations

Numerous recommendations can be made in order to improve the situation of those currently displaced. One of the most important recommendations is to support households with undertaking adaptation strategies. As mentioned before, re-settled in Bo Hon and Kon Tôm were rarely supported with undertaking new activities to improve their lives. These activities are however essential since traditional agricultural activities became largely unusable after resettlement. Far more support can be provided to increase people's adaptive capacity, by providing them with the means, skills and knowledge to select and undertake the appropriate adaptation strategies.

In order to provide the right support, it is important that the re-settled get heard: one-way information transfer (e.g. from the project developer and the government to the households) is not enough. Government officials and project developers need to adapt the resettlement programme to the capacities, customs and needs of the displaced. Research (like this thesis) could play an essential role in providing this information. Besides, research is also an important source to inform the general public about the issues of the re-settled, which could increase (international) public pressure to improve the situation of the displaced. Public pressures groups play a crucial role in disseminating this information. As mentioned by Michelle (2011), the internet can be used as a tool in order to share this information. However, state control has to be taken into account when diffusing information regarding this topic.

Displacement and resettlement policies have improved over time in Vietnam. In reality however, the situation of the re-settled has not improved. When comparing Bo Hon with Kon Tôm (which was formed 5 years earlier than Kon Tôm) no improvements have been identified. In fact, the situation was even more severe in Kon Tôm. Thus, in order to improve future displacement and resettlement, it is crucial that the national displacement and resettlement policies are actually implemented. Bottlenecks that hinder the effective implementation of these policies, like corruption (as identified by Michelle, 2011) need to be tackled (through debarment, legislation, integrity pacts etc.).

By incorporating the above mentioned recommendations, risk reversal (e.g. land-based resettlement, reemployment, house reconstruction, social inclusion, improved health care, adequate nutrition, restoration of services and community assets, community rebuilding and the creation of networks) can be achieved.

Finally, it is important to emphasize that involuntary development-induced displacement should always be avoided as much as possible: free, prior informed consent will be violated no matter what since people cannot decide to stay; they do not have the freedom to shape their own lives.

## **Recommendations for further research**

This thesis has investigated to what extent displaced households were vulnerable for 6 risks (landlessness, joblessness, food insecurity, health issues, lack of access to common property and lack of access to public services). More research could be done concerning the other, uninvestigated risks (e.g. marginalization, homelessness and social disintegration). Besides, the risk 'health' could further be investigated by experts of this area. Although health issues have been identified, it remained unclear whether these issues were a direct cause of displacement. Also more research could be undertaken in Kon Tôm, concerning ethnicity differences and the situation of newly formed families in the resettlement site. Also more research is necessary over time in order to find out to what extent the re-settled households have successfully adapted to the new situation. Only then will it be possible to conclude to what extent the adaptation strategies of the households have been sustainable solutions to overcome impoverishment. Finally, more research is necessary to identify to what extent the 99 displaced households that migrated to other locations instead of Kon Tôm, have sustained or improved their livelihoods after resettlement.

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## **Interviews**

Bo Hon village leader. 28-03-2013

Dung, N.T., director of CORENARM. 28-02-2013

Hien, L., programme officer ICCO (Vietnam). 9-4-2013

Kon Tôm village leader. 19-3-2013

Nghi, T.H., director of Tropenbos. 12-03-2013

Official of A Luoi District Department of Natural Resources and Environment. 20-3-2013

Official of Binh Dien District Department of Natural Resources and Environment. 30-03-2013

Suu, L.T.T., Director of CSRD and coordinator of Vietnam River Network. 02-04-2013

Vice-chairman of Hong Thuong commune. 19-3-2013

## Appendix 1: questionnaire households

### Questionnaire information

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

### General information of respondent

**1. Village:**

- a) Bo Hon
- b) A Den

**2. Ethnicity:**

- a) Kinh
- b) Ta Oi
- c) Ka Tu
- d) Pa Co
- e) Van Kieu
- f) Other, namely

**3. Amount and type of household members:**

Type	Respondent	Age	Gender	Education	Occupancy
<b>Husband</b>					
<b>Wife</b>					
<b>Children</b>					
<b>Other household members</b>					

## 2. Resettlement process

### Part 1: Free prior and informed consent

**4. Place before resettlement:**

.....

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

.....

**6. Were you informed about the resettlement process prior to this event?**

- a) Yes
- b) No (continue with question 13)

**7. When were you informed about the resettlement process? (dd/mm/year):**

.....

**8. Information sources of the resettlement process:**

- a) Village leader
- b) Neighbor(s), friends, family
- c) Printed media
- d) People's committee
- e) Other(s), namely.....

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

.....  
.....  
.....

**9b. What was promised by these sources?**

- a) Money ..... VND
- b) Land ..... ha
- c) Training, namely .....
- d) Other(s), namely .....
- e) Nothing

**10. Did you give your consent regarding the resettlement process?**

- a) Yes
- b) No

**11. Did you participate in decision-making regarding the resettlement process?**

- a) Yes
- b) No

**12. Were your 'resettlement' wishes/needs/demands taken into account?**

- a) Completely
- b) Partly
- c) Not at all

**13. What is your opinion about the resettlement process?**

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

**Part 2: Compensation**

**14. Have you received any form of compensation?**

- a) Yes
- b) No (continue with question 17)

**15. How were you compensated? (more answers possible)**

- a) Money ..... VND
- b) Land ..... ha
- c) Training, namely .....
- d) Other(s), namely .....

**16. If applicable, for what purpose(s) has the financial compensation been used? (more answers possible)**

- a) Housing..... VND
- b) Furniture..... VND
- c) Savings..... VND
- d) Daily expenditures..... VND
- e) Land..... VND
- f) Others, namely..... VND

**Risks**

**Landlessness**

Question no.	Questions	Former Village	Current Village
17	How much land do you have?	..... ha	..... ha
18	What is the main type of land use of your land? (more answers possible)	a) Agriculture ..... ha b) Forestry ..... ha c) Garden ..... ha d) Other(s), namely.... ..... ha	a) Agriculture ..... ha b) Forestry ..... ha c) Garden ..... ha d) Other(s), namely.... ..... ha
19	What kind of crops do you plant on your agricultural land? (more answers possible)	a) Cassava b) Wet paddy c) Dry paddy d) Rubber e) Bamboo f) Acacia g) Other(s), namely..... .....	a) Cassava b) Wet paddy c) Dry paddy d) Rubber e) Bamboo f) Acacia g) Other(s), namely..... .....
20	What kind of crops do you plant in your garden? (more answers possible)	a) Fruit b) Grass c) Herb d) Other(s), namely ..... .....	a) Fruit b) Grass c) Herb d) Other(s), namely ..... .....
21	Do you sell your crops or use it for own consumption?	a) Selling crops b) Using crops for own consumption c) Both	a) Selling crops b) Using crops for own consumption c) Both
22	How is the condition of your land?	a) Very good b) Good c) Not bad/not good d) Bad e) Very bad	a) Very good b) Good c) Not bad/not good d) Bad e) Very bad
23	Do you use fertilizer for your land? If so, how much do you spent each year on average on fertilizer? (more answers possible)	a) Yes, natural fertilizer ..... VND/ha b) Yes, chemical fertilizer ..... VND/ha c) No, nothing	a) Yes, natural fertilizer ..... VND/ha b) Yes, chemical fertilizer ..... VND/ha c) No, nothing
24	Is your land registered?	a) Yes b) No	a) Yes b) No

## Joblessness

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

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

- a) Yes
- b) No

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

.....  
.....  
.....

## Food security & Health

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

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

.....  
 .....  
 .....

**Loss of common property**

Question no.	Questions	Former Village	Current Village
37	<b>Do you have access to common property?</b>	a) Yes b) No	a) Yes b) No
38	<b>What type(s) of common property do you use?</b>	a) Forest b) River c) Agricultural land d) Other(s), namely ..... .....	a) Forest b) River c) Agricultural land d) Other(s), namely ..... .....
39	<b>What kind of activities is the common property used for? (more answers possible)</b>	a) Recreation b) Education c) Income generating activities, namely ..... ..... d) Other(s), namely ..... .....	a) Recreation b) Education c) Income generating activities, namely ..... ..... d) Other(s), namely ..... .....
40	<b>How much do you earn from these activities per month (VND)?</b>	.....	.....

**41. Are you satisfied with current common property resources?**

Yes/No/Partly, because .....

.....  
 .....

**Public services**

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

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



## Appendix 2: topic-list NGOs

1. Introduction (about the NGO)

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

3. Project/research questions:

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

4. Knowledge about acacia plantations

- Acacia dependency: a good thing?
- Pros/cons of acacia

## Appendix 3: topic list political authorities

### 1. Resettlement programme: content

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

### 2. Resettlement process

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

### 3. Socio-economic data of the village prior and after resettlement

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

### 4. Projects after resettlement (incl. training, agricultural projects etc.)

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