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# **Impacts of dam developments on human security in the Mekong delta: theoretical and empirical insights**

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Masters of Science in International Relations



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**Declaration**

I, Casper Christiaan Vriese, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature.....

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## Abstract

Roughly 85% of the people in the lower Mekong basin directly depend for their livelihood on the natural resources and the health of the river. The health of the Mekong is connected to the construction of dams, and in total, 131 dams are constructed, 11 in the mainstream, of which the majority in Laos. The Mekong River Commission (MRC) has warned against the impacts of dam development in the river, but their concerns have been ignored. In a 3,600-page report in 2018, they point to the trade-offs between water, energy and food which are impacted by the dams. The potential linkages between dam development, food insecurity and social instability is not addressed in the impact assessments as it falls outside the scope of Environmental Impact Assessments. This thesis aims to address this knowledge gap, and is divided into two parts, theory and the case study. In order to address the knowledge gap, I elaborate a new framework around the concept of human security, and reflect on the usefulness of the new framework to assess and analyse the impacts. Using both qualitative and quantitative data, gathered through interviews in the field and databases, this thesis aims to answer the following objectives: firstly, it aims to develop a comprehensive understanding of the security implications of dam development in the Mekong delta and secondly, this thesis aims to explore how the local impacts on the human security dimensions have possible broader socio-political consequences on both the local and global level. In conclusion, the impacts of upstream dam developments on the environmental and food security dimensions, and the livelihoods is likely to impact the socio-political stability in the country significantly. Small-scale farmers, women and fishermen will be impacted most severely, and increased migration to urban and industrial areas is a likely mitigating strategy. Increased migration, the changes caused by the dams in environmental, food and economic security, provide many of the ingredients necessary for socio-political unrest to occur. The theoretical human security framework developed in this thesis, has contributed in highlighting the political implications of dam development, which the environmental impact assessments were unable to, and provided a more comprehensive understanding of the impacts of upstream dam developments in the Mekong river.

**Keywords:** Water-Management; Hydropower; Human Security; Food Security; International Relations; Socio-Political Stability; Mekong Delta; Vietnam

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## List of abbreviations

EIA	-	Environmental Impact Assessment
ESIA	-	Environmental and Social Impact Assessment
FAO	-	Food and Agricultural Organization
GAP	-	Good Agricultural Practices
HSAF	-	Human Security Assessment Framework
IR	-	International Relations
ITC	-	International Trade Centre
MDI	-	Mekong Delta Development Research Institute
MDP	-	Mekong Delta Plan
MEF	-	Mekong Environmental Forum
MRC	-	Mekong River Commission
NGO	-	Non-Governmental Organization
NSD	-	Norwegian Centre for Research Data
UN	-	United Nations

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## 1. Introduction

Countries all around the world are concerned with their development. Specifically, development in the form of economic growth. Vietnam has been enjoying a steep economic growth, but now the Mekong delta is falling behind (WorldBankGroup, 2005). Traditionally used as the rice basket of the country, and with its main aim to ensure food security since the American War, Vietnam now wants to focus on economic growth in the delta. Therefore, Vietnam has signed a strategic partnership agreement with the Netherlands, to create a plan for a sustainable development of the delta (DutchEmbassy, 2017). The result: The Mekong Delta Plan (MDP). The MDP has sustainable development at its core, but it mentions that it depends on another major development, just across the border. In Laos and Cambodia, large hydropower dams are being developed and constructed with the aid of the World Bank, private investors and the respective governments. This should provide Laos, in which the largest share of dams will be constructed, with additional infrastructure and energy that can be sold to neighbouring countries, such as Vietnam (InternationalRivers, 2019a). Vietnam depends on this energy, because the construction and use of industrial areas requires a lot of energy, and the industrial areas are a core component of the economic development of the delta.

However, the construction of these large hydropower dams has been contested by local communities, NGOs and above all, the Mekong River Commission (MRC). The main reason for this is that 85% of the people in the Lower Mekong Basin depend directly for their livelihoods on the wellbeing of the river, which is now threatened by the construction of dams. The impacts of the dams mainly include environmental degradation, food price spikes, migration and contracted livelihoods which impact the socio-political stability of the Lower Mekong countries (Jacobs, 2002). The MRC even published a 3,600-page report, but this has been ignored by the actors involved (Finney, 2018). This thesis therefore focuses on the security implications of dam construction, to highlight the political implications which can't be ignored. In the West, an anti-dam movement has gained a lot of ground, with their main focus to deconstruct already existing dams due to their negative impacts on the environment and direct surroundings (Nijhuis, 2015). However, in the Mekong, the construction of dams is continuing strongly. The goal of the MRC is to jointly manage shared water resources and promote sustainable development of the Mekong river (MRC, 2018). Although the countries share this desired, in practice it seems that they put their national interests above their shared commitment (Bruzelius Backer, 2007). International Rivers, an environmental watchdog and prominent NGO regarding transboundary water management, has stated that the construction of upstream dams is irresponsible, because of the fact that the magnitude of the impacts can't be predicted yet. More research is needed to see whether or not the construction of dams is a responsible decision (InternationalRivers, 2013). However, the actors involved in the construction of dams, such as the private investors, government of Laos and Cambodia, and the World Bank, seem to assume that the potential impacts can be mitigated (Jacobs, 2002).

Hydropower dams are receiving renewed attention around the world. In many developing countries and large rivers such as the Mekong, the Nile, the Tigris, the Yangtze, and the Amazon, large hydropower projects are developed and constructed and supported by the World Bank (Horner, 2017). In fact, ever since 1948, the World Bank has been granting loans for the development of various types of hydropower dams, facilitating the rapid increase around the world. After examining the online database of the World Bank, it can be concluded that the World Bank has granted a total amount of about 54,7 billion US dollar to finance the construction of hydropower dams (WorldBankDatabase, 2018). Despite concerns about hydro dams, the construction and development of new hydropower projects in developing countries is not slowing down. In the Mekong river, 131 dams are (being) constructed, despite the concerns voiced by the people, NGOs and MRC (InternationalRivers, 2017).

With this trend, a need to highlight the security implications is on the rise, especially from a non-traditional security point of view (Fawthrop, 2018). Scholars have recently focused on the connection between food and environmental security, and their relationship to socio-political stability. Although there is not a direct and causal effect that changes in the environment or food security dimensions have a direct and causal effect on the socio-political stability, there is consensus about the fact that they play an important role (Barrett, 2016b). This thesis aims to contribute to a comprehensive understanding of the security implications of dam developments, by linking their impacts on various security dimensions, to the socio-political stability in the country. By creating an understanding of how these impacts have a possible socio-political impact, this thesis aims to overcome the shortcomings of other assessment frameworks to assess the impacts of dams.

This thesis will use the concept of human security, a non-traditional security concept, to analyse and assess the impacts of upstream dam developments. The research question central in this thesis is therefore:

*“In what way do upstream dam developments in the Mekong river, impact the human security of people in the Vietnamese Mekong delta?”*

This thesis will not only have the research question as main objective, but includes other objectives. Firstly, it aims to develop a comprehensive understanding of the security implications of dam development in the Mekong delta, and secondly, this thesis aims to explore how the local impacts on the human security dimensions have possible broader socio-political consequences on both the local and global level.

This thesis is structured as follows; the second chapter will first establish a theoretical framework. Here, the various securitization debates will be highlighted, and it will position and define the concept of human security. Additionally, the chapter will also elaborate on the importance of agency and capital for people to mitigate changes, and it introduces a Human Security Assessment Framework (HSAF), specifically developed for this thesis. The HSAF will later on be used in the second part of this thesis, which is focused on the case study. The third chapter is the methodology chapter, in which it will be highlighted in what way the research has been conducted, what methods have been used, and what the ethical considerations, limits,

strength and reliability of this research are. This concludes the theoretical part of this thesis, on which it moves on to the case study part. The fourth and fifth chapters apply the HSAF which has been elaborated on in the theoretical section of the thesis, and will illustrate how it is used in the assessment and analysis of the case. The first step to this is taken in the fourth chapter, where a human security assessment is done, and the current situation is explored. The fifth chapter will revolve around the human security analysis, and will link the current situation in the delta, and the structural challenges and limitations people have, to the impacts of upstream dam developments. Finally, a discussion chapter will discuss what these findings mean, and answer the main objectives of the thesis, to end with a conclusion chapter, in which the theoretical and empirical findings will be concluded on, and show what this thesis has contributed to.

## 2. Theoretical Framework

This chapter describes the theoretical framework employed in this thesis, and gives information about the theoretical background and how the main concept will guide the analysis in a later chapter. A distinction can be made between the theory which is used, which will first be described, and the theory developed, which follows at the end. The concept which will guide the analysis is the concept of human security, which will be elaborated on and explored later on in this chapter. Human security is a broad concept, and therefore needs specifying on how it is used to guide the analysis in this thesis, and in what way a human security assessment can be beneficial to derive a more holistic understanding of the case study. However, before the concept of human security is further elaborated upon, the chapter begins with the securitization debate, and positioning itself within the human security literature. This chapter has the aim to create an understanding of where the human security debates find themselves within academia, and to what extent they are related to other academic debates involving, for example, food security and socio-political stability, or the impact of climate change on conflict.

The concepts of food security, and environmental security and their relation to respective stability and conflict will be explained briefly, because both security dimensions play an important role in the concept of human security, and the Human Security Assessment Framework (HSAF). After the securitization debates and the definition of human security, this chapter has a section devoted to the concept of agency and various forms of capitals, and their relationship to the concept of human security, and thereby also the HSAF. Lastly, the HSAF will be introduced alongside with the Environmental Impact Assessment (EIA), and the Environmental and Social Impact Assessment (ESIA). What is argued in that part of the chapter is how the HSAF lends itself to fill the shortcomings of the respective EIA and ESIA.

### 2.1 Securitization Debates

From a traditional point of view, security has always had a focus on military action and territory with the national state as central actor. The main concerns of the states were to provide security and maintain their power over their respective territory (Bubant, 2005). However, the “traditional” concept of the word “security”, is actually a result of the modern recognition that the safety of a nation is the ultimate goal for policy makers. What is understood as a traditional definition of the word security, specifically within IR, is the result of the internationalization of national security. The idea of public authorities responsible for political, economic and social security of people of the national as well as the international level is the historical usher of the concept of human security (Shinoda, 2004). The introduction of the concept of human security, is therefore the latest attempt to make policymakers and academics think about international security as more than just military interventions and power relations between countries (Paris, 2001). Human security as a concept is centred around people, and is concerned with how people live and breathe in a society, and how freely they can exercise their rights and opportunities (UNDP, 1994). When reading the literature of policymakers and academics it can be identified that human security is closely linked to several other concepts. Specifically, human security has a close connection to the concepts of state security, human development, human well-being and human rights. Although there are many points and aspects which are overlapping between these concepts, there are also clear differences.

Take state security for example, there are two main differences between state and human security, Firstly, state security largely concerns territorial units and secondly, state security also incorporates the relative power between states and territorial integrity (Alkire, 2003). This doesn't mean, however, that states don't have a role at all in human security. To the contrary, states are critical in providing opportunities to their population, creating and providing a stable environment so that livelihoods can be pursued with confidence and providing measures to protect people when livelihoods contract (Barnett & Adger, 2007). Human security focuses on the military and non-military threats to people, and are therefore, to a certain degree, a combination of state security and human development. Between human security and human development are many similarities, such as the focus on people, the multi-dimensional approach, emphasizing the broad picture and addressing chronic poverty problems. But there are also differences, such as that human security identifies and addresses threats directly (Alkire, 2003).

Due to the fact that human security positions itself between state security, human development, human rights and human well-being, it finds itself in a difficult position facing a lot of criticism and enduring several paradoxes. To illustrate this problem, for starters there are many definitions of the concept of human security, and neither policymakers nor academics are able to clearly define the concept (Paris, 2001). As Gasper (2010) illustrates in his article about human security, the definitions range from the extremely broad definition such as "the security of the human species", to the more moderate "freedom from want and fear", to a narrow "the threats to individuals through violence". Due to its many definitions, the concept of human security becomes incoherent, which is another critique from Paris (2001). Authors such as King and Murray (2002) have aimed to reshape human security with the goal to make it simple, rigorous and measurable, and have therefore defined it as: "*The number of years of future life spent outside of a state of "generalized poverty". Generalized poverty occurs when an individual fall below the threshold of any key domain of human well-being*". Here, the connection between human well-being and human security becomes clear, but they also try to combat another critique of the concept of human security. The critique referred to here, is the lack of a clear threshold to risks and insecurities. Due to the fact that the concept is so broad, it becomes a difficult task for policymakers to prioritize (Gasper, 2010).

Besides the critiques on human security, there are certain paradoxes that need to be noted before engaging further with the concept. These paradoxes relate to: firstly, security and insecurity, secondly, space, and thirdly, the multi-dimensional scope of the concept. To begin with the first paradox, security on its own is always connected to insecurity, because both concepts can't exist without the other. This means that when, for example, policies are put in place to create security, it means that simultaneously there is a threat/insecurity that needs to be secured (Bubant, 2005). Secondly, human security is also related to space and time. One cannot understand national security, without understanding the pattern of international security, in this way, security interacts with itself on different levels (Stone, 2009). Security is conceptualized and practiced differently at different places and different times. This is because security and threats are something which are both objective and subjective (Bubant, 2005). Lastly, human security is multi-dimensional, which is both a strength but also a paradox. Since human security is so broadly defined, it becomes impractical because there is no clear divide between human security

as a concept, and a certain socio-economic event changing human security. This because the socio-economic event in itself is part of what it changes, namely human security (Paris, 2001).

Considering all these critiques and paradoxes, one might ask, why chose such a concept to assess and analyse the impacts of upstream dams? The answer to that question can be summed up in a four point argumentation: Firstly, because of the fact that human security is people-centred and has a multi-dimensional focus, it emphasizes both objective and subjective threats to people (UNDP, 1994). Secondly, it specifically highlights the interaction between the economic, political, environmental, social, cultural, military and other systems which used to be seen as separate (Gasper, 2010), a change in one security dimension is likely to travel to the other security dimensions (UNDP, 1994). The third point emphasizes the importance of sudden risks and chronic problems which can threaten the human security of people, which is important because threats to human security shouldn't be defined by how sudden they are, but by the depth of the threat (Alkire, 2003). Lastly, human security, because of its focus on the subjective experience to threats, acknowledges the agency of individuals to mitigate threats if they have the capabilities. Compared to the concept of human well-being, which tends to be a passive and neutral metric that conforms to conventional policy objectives, human security also draws attention to the choices that are available to people, as well as the associated issues of agency, responsibility and rights. Agency is something which can be transformative if people have the capacity to mitigate their threats (O'Brien & Barnett, 2013).

It is precisely the individual, people-centred focus and the room for agency which have rendered the concept of human security as valuable. When examining literature on the impacts of dams it once again becomes clear why the broad definition of human security is a benefit rather than a disadvantage. Large-scale dam developments specifically in the developing world have large costs and benefits, whether potential or actual (which indicates subjectivity), to political, socio-cultural, economic and environmental systems. Changes in water resource access, quality and quantity have been noted as a key challenge to economic, political, environmental and societal stability. The use of water resources is divided between ecosystems, domestic, subsistence, municipal, agricultural, industrial, energy, cultural and commercial demands, and is often allocated according to political interests (Veilleux, 2013). To make this operational, the concept of human security has led me to develop the HSAF, but before examining the framework, a working definition of human security for this thesis needs to be established. A human security assessment can highlight the different security dimensions, how the dams impact them, and how those impacts trickle down to other security dimensions.



## 2.2 Human Security as a Concept

Now the academic debates, downsides, upsides and paradoxes related to human security have become clear, human security needs to have a working definition in this thesis. As O'Brien and Barnett (2013) state clearly, human security is people-centred, not threat-centred. To uphold human security, a proactive attitude towards the various security dimensions is necessary. Throughout the thesis I intend to remain relatively close to the initial definition from the UNDP because it is precisely the broad nature of how the UNDP defines it which I consider valuable to assess the impacts of upstream dams with. Following in this section of the chapter will be a brief introduction to the 7 security dimensions, how the UNDP defines them, and how they are used in this thesis. It is important to keep in mind that this thesis sees the relationship between security and insecurity not as a binary one, but as a fluid one.

### 2.2.1 Food Security

In order to understand the concept of food security, this thesis will introduce the four different pillars that constitute the concept of food security. However, because security has the automatic assumption that there is insecurity, the precise definition of food insecurity is also important to understand. The FAO defines the concept of food security as: *“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”* (FAO, 1996). When examining this definition more closely, it is possible to distinguish the four different food security pillars, namely; Access (*“have physical and economic access”*), Availability, (*“To sufficient, safe and nutritious food”*), Utilization (*“that meets their dietary needs and food preferences for an active and healthy life”*), Stability (*“Exists when all people at all time”*). The concept of food insecurity, not surprisingly, is rather opposite than the concept of food security. The FAO defines it as a situation where: *“people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life”* (Rudolfson, 2018). From this definition of food insecurity, there are two dimensions which are relevant to take into consideration. Firstly, on the consumer side and food price shocks, and secondly, on the side of producers, loss of agricultural income and livelihood (Buhaug, 2017).

Going back to the different pillars of food security, initially the main target to create food security focused heavily on the availability pillar. The underlying assumption was that food simply wasn't available during famines and other crises. This guided the policy at both international and national level to combat food insecurity, and derived from the World Food Conference in 1974 (FAO, 1996). However, the focus shifted in 1983 to the pillar of food access, focusing on the supply and demand side. This is why there is a renewed focus on the economic ability to access food, and why countries are focusing on increasing the income of the poor.

Food security has also become a concept with renewed interest due to its possible relationship with conflict. It is clear that conflict directly impacts the food security status of people, but now a debate is erupting around the question if food insecurity causes conflict, and what the relationship is between the two (Barrett, 2016a). This is why it is necessary to understand what it means to be food secure, and food insecure, and have a clear understanding of the two concepts. Although the debate is still ongoing, few scholars argue that there is a direct cause of food

insecurity to conflict, but that food price spikes, play a much larger role in potentially causing conflict (Buhaug, 2017). When it comes to the food price spikes around 2007/2008 and 2010/2011, along with an increase in energy prices, there were food price spikes in staple crops such as rice and wheat (Anderson, 2016). Governments have the option to implement policies to reduce price variability through quotas, to lower prices, and to restrict export of food crops, but as a consequences this can lead to international price volatility (Rosegrant, Tokgoz, & Bhandary, 2016). When some countries alter the restrictiveness of food trade to insulate their own markets from the international market, the volatility faced by other countries is amplified. This happens in two ways, the first being the thinning of the international food market, and the second through the isolation of domestic food markets from the international price. According to Anderson (2016) governments should resort to the establishment of social safety nets to ensure food security, rather than using trade restrictions to fence off the impact of the price spikes. Especially in regards to the rice market, where only 7 to 8% of the rice which is produced is sold across international borders, and few countries have a high self-sufficiency when it comes to rice. This makes the global market extremely volatile (Rosegrant, Tokgoz, & Bhandary, 2016). This problem is something which will be further elaborated on later on in the thesis.

### 2.2.2 Environmental Security

Environmental security is another key security dimension in the concept of human security. Human beings rely on a healthy physical environment, assuming that damages to the environment can always recover. In developing countries, one of the greatest environmental threats is that to water. Water scarcity is increasingly becoming a factor in ethnic strife and political tensions (UNDP, 1994). It is no surprise that the environment is changing rapidly, and although there are still people denying the role humans play in it, the changing environment does have an impact on people. The security of individuals, communities and the entire global population is currently being threatened. Although not every environmental problem will lead to a conflict, it has to be considered that the changing environment does affect our social, political, cultural, religious and economic systems. This is precisely why it is vital to address environmental problems as an important security matter (Chalecki, 2019).

One way the environment is possibly triggering insecurity which could lead to conflict is by reducing access, quality and quantity of natural resources and affect people that depend on these natural resources for their livelihoods (Barnett & Adger, 2007). Water is widely regarded as the most essential natural resource, yet freshwater systems are directly threatened by human activities and stand to be further impacted by climate change (Vorosmarty, et al., 2010). Another manner in which the environment can impact the socio-political stability in a country is through agriculture and food. Many countries still depend on agriculture as main source of economic income, and often their agriculture is rain-fed, meaning that changes in the climate, and thereby also natural resources could trigger socio-political unrest (Cane & Lee, 2016). However, the environmental security aspect in isolation won't trigger conflict or socio-political unrest, it is always a combination between changes in the environment, social and political dimensions which eventually could lead to conflict and unrest (Barnett & Adger, 2007).

### 2.2.3 Economic Security

Economic security is achieved when an assured basic income, usually from productive and remunerative work is established, or in the last resort from some publicly financed safety net. Usually, unemployment figures are used to examine economic security, but they might understate the real scale of the crisis (UNDP, 1994). People might, for example, have a job, but still not make enough money to pay for all the basic needs. Economic security is a part of the human security, and has overlap with many other security dimensions. If someone works in a factory that pollutes the water or works with heavy metals in a factory that doesn't live up to safety regulations, it could impact the health or environmental security of an individual or a community.

If there are changes in one security dimension, other dimensions can be impacted significantly. One of the major concerns for households, especially in developing countries, is to have enough money to buy food. In order to pursue food security on the household level, labour migration is a common coping strategy. Migration from rural to urban areas is a common phenomenon, and remittances earned by working in the city or industrial areas are often send back to the household on the rural side (McLeman, 2016). However, migration from rural to urban areas can contribute to increased pressure on the resources and services provided in cities, and could lead to rising political tensions (Barnett & Adger, 2007). When conducting a human security assessment, the questions should not centre around how much money a person makes, but rather on the various coping strategies and the livelihood diversification which will provide a clear view on an individual's economic security.

### 2.2.4 Political Security

A key aspect in establishing political security is the honouring in society of basic human rights (UNDP, 1994). One of these human rights is to make up our own thoughts, belief in what people want to believe in, and to be allowed to share these ideas with others (UDHR, 1948). It becomes clear that these human rights are linked to other security dimensions when examining the list of universal human rights. For example, the right to life, liberty and personal security (Article 3), or, the right to participate in cultural life of community (Article 27) are clear indications of how human rights are connected to other security dimensions. This means that when there is a change in political security it can affect the other dimensions and vice versa.

An example of how political security might become threatened is when the government tries to repress criticism from its citizens regarding other matters, such as environmental pollution, or not having social safety nets. Or, when the government responds with violence to break up demonstrations. Human rights play an important role in human security, specifically to this security dimensions.

### 2.2.5 Health Security

Health security is a security dimensions which is closely linked to food security, economic security and environmental security. Most of the deaths in developing countries are linked to poor nutrition and an unsafe environment, particularly polluted water, which contributes to nearly one billion cases of diarrhoea a year. In both developing countries and industrial countries, there are health threats which are greater for the poorest, people in the rural area, and particularly children (UNDP, 1994). Interestingly, food, economic, and environmental security find a lot of common ground in fresh water resources. Reliable fresh water resources will become increasingly scarcer in the future due to climate change, agriculture, pollution from industries, and the use of water to create energy. The shortage of this natural resource could not only trigger political instability, but also prove a great challenge for health security by affecting the production of crops negatively when there are shortages of water (Lall, 2016).

When people are undernourished, when people lose their livelihoods, or when floods occur, it directly challenges their health security. Whether it is due to the fact that more diseases like malaria are spreading after floods, or people don't have the economic capital to gain access to health care, these are all impacts on the health security of people, and examples of the interaction between security dimensions. It is therefore important to not just look at the direct impacts, but also take into consideration the indirect impacts on other security dimensions, such as health security.

### 2.2.6 Personal Security

In regards to personal security, violence is a major concern. Both violence by the state, individual or communal actors through, violent crime for example, can have a great negative impact on the personal security of people. Besides this, ethnical violence, and discrimination due to ethnicity affect not only the personal security, but could further make it more difficult for people to become economically secure (UNDP, 1994). On top of this, gender has a significant impact on the personal security dimension. Gender roles often determine how to behave not merely in the household, but also in society, and need to be taken into account when examining personal security.

Women have to take care of the household, raise the children and do unpaid work around the house, this is known as the double burden (Kinsella, 2017). On top of that, women sometimes have additional paid jobs to provide a larger income to the household (Steans, 1999). At school, they are the last to be educated and at work, they are the last to be hired and the first to be fired (UNDP, 1994). These are all examples of the struggle women face in many countries around the world, in both developing and developed countries. It becomes obvious how this unfair treatment can make women more vulnerable, and increase the challenge of establishing various types of securities for them.

### 2.2.7 Community Security

Most people derive security from their membership in a group, a family, a community, an organization, a racial or ethnic group that can provide a cultural identity and a reassuring set of values (UNDP, 1994). Community security can thereby also function as a form of social safety net, which is extra important when the government doesn't provide a social safety mechanism. Besides the fact that the ability to join a community is directly linked to political security through the universal declaration of human rights (UDHR, 1948), it is a mechanism that can help people gain social capital and a vaster social network.

However, the community is also a level of analysis which is related to their agency and capital. Human security doesn't just focus on the individual level, but is also concerned with the ability that communities have to cope with changes, both sudden as slowly over time. Human security is therefore concerned with the disruption's communities face, and how they can survive their daily practices (Paris, 2001).

## 2.3 Agency and Capital

As has been mentioned in the previous sections of this chapter, human security focuses on the ability of individuals and communities to respond to subjective and objective threats to their securities. Agency and capital are therefore important concepts to explain, because it gives an understanding of the ability of individuals to achieve their respective securities. When it comes to any kind of security dimension, it is important to keep in mind that once a security has been established, the struggle doesn't stop. Actors need to negotiate and renegotiate their respective securities over and over again, and agency and capital are important aspects in this negotiating process. When making policy or implementing large development projects actors are not passively waiting for the changes to occur, and seeing how it impacts them, but they are always actively concerned with how to survive the changes and establish temporary securities.

### 2.3.1 Agency

Agency is defined as a concept which focuses on the capacity of individuals to act and make their own choices. The concept of agency also includes three different elements related to time, which are the iteration, projectivity and the practical evaluation. These three elements represent a different time each, where the iteration is the past, the projectivity the future, and the practical evaluation represents the present. From the past, actors have certain routine actions in response to typical scenarios that sustain their identities and interaction with people. The future element focuses on possible future paths, and include hopes, fears and dreams to become possible in the future. The practical evaluation element, the present, focuses on the capacity of actors to make practical judgements based on future paths in relation to the context of the present situation (Emirbayer & Mische, 1998). Individuals are concerned with establishing securities throughout their lives, and need the capacity to do this. But what is this capacity constituted of? For this question to be answered, it needs to be understood, in which way people are able to sustain themselves in society. It can be argued that various forms and high quantities of capital, gives individuals the capability of decision making, and examining which possibility gives the best future path. It is therefore vital to understand the role capital has in increasing the resilience and

possibility to change for individuals, and in which way this allows them to establish a temporary form of security.

### 2.3.2 Capital

Bourdieu is a well-known sociological thinker who wrote about capital. His conception of capital is that capital is either materialized or embodied, and is something which requires time to accumulate, but has the potential capacity to produce profit or be reproduced in its own or expanded form (Bourdieu, 1986). This concept is an attempt to understand the many levels of practical life, and aimed to create a relationship between the concepts of agency and structure (Mahar, Harker, & Wilkes, 1990). Capital can present itself in three different forms, as economic capital, cultural capital, and social capital. The main reason why this is important to examine, is because by obtaining these various forms of capital, an individual actor, or a group of actors, can translate the accumulated capitals into social energy (Bourdieu, 1986). This social energy which is referred to, can also be known as agency.

In this thesis, understanding what the various forms of capital are, and how to obtain them, means understanding how to improve an individual's agency. This is relevant for the thesis as a whole, but especially when considering how the impact of hydro dams built upstream are going to amplify these problems. However, in this thesis, an additional form of capital, namely natural capital is added to the equation. Besides that, it needs to be noted that capitals can't just replace each other and have the exact same impact.

The accumulation of cultural capital in the embodied state demands time. Time which can only be invested by an individual. The process of going to school and getting a degree (which can be considered to be the objectification of cultural capital), is something an individual has to go through in order to accumulate the cultural capital. Cultural capital can be connected to a monetary value, as it can, give you the qualifications needed to get a certain powerful job, or a job which provides a high salary. The more skills someone has, through any type of knowledge increase, the higher one's cultural capital becomes (Bourdieu, 1986).

Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance. A good example of an institutionalized relationship in society, is the constitution of a family. Social capital provides each member of a network with credentials and an entitlement to credit, but the volume of the social capital is determined by the size of the network. The network is not something which is a given, but is something which requires endless effort in order to produce and reproduce the relationships (Bourdieu, 1986). These relationships are often reproduced by something which is called, the giving of a gift. Giving someone a physical gift, or doing someone a favour, is a manner in which a social relationship can be established and reproduced. The process of giving a gift is the first step in establishing that relationship. The process of accepting or rejecting the gift, whether materialistic or as a favour, is the acceptance or rejection of this social relationship. By returning the favour, the other reproduces the same social relationship, and in this manner social relationships which create networks can be maintained, expanded and reproduced (Sherry, 1983).



Economic capital is possibly the easiest to understand, it equates to money or something which can be directly translated into money, such as property rights. In the capitalist societies the world knows, money is important to have since everything has been reduced to the exchange of it, and implied simultaneously that everything other which is exchanged and can't be related back to monetary value is noneconomic (Bourdieu, 1986). The last form of capital to mention, which is a considerable part of economic capital is natural capital. Natural capital is the world's stock of natural resources such as geology, soils, water and living organisms. Particularly two of the ecosystem services are fundamental to society, which are: clean water, and fertile soils. When natural capital is poorly managed, it doesn't just affect the ecosystem, but it can also become a social and economic liability. The mismanagement of natural capital can make it increasingly difficult for human communities to sustain themselves and could potentially lead to starvation, conflicts over natural resources and displacement of populations (WFNC, 2019).

## 2.4 EIA, ESIA & HSAF

Why does this matter? Throughout the thesis that question will come back, specifically to reflect on how the previous section of a chapter has been relevant, and why it remains relevant throughout the thesis. What is done so far in this chapter is first to identify the debates, paradoxes, benefits and disadvantages of the concept of human security. Secondly, the working definition of human security has been elaborated upon, and the 7 security dimensions have been explained and to a certain degree linked to other academic concepts and debates. This matters because it will make it easier to understand what the HSAF is about, and how the HSAF will guide the analysis in a chapter later on in the thesis. What this section of the chapter will do is to dive deeper into the EIA and ESIA, and elaborate on why using the concept of human security is relevant to developing the HSAF.

### 2.4.1 EIA and ESIA

As mentioned above, the importance of the management of natural resources, specifically water, is important due to its direct connection to social and economic systems. The mismanagement of natural resources, and especially natural resources that are transboundary, like rivers, can significantly impact the social, political and economic circumstances countries are in. The importance of dealing with transboundary environmental impacts has been recognized in 1991, during the UN economic commission convention, 29 countries signed an agreement which indicates the concerns for the transboundary environmental consequences. Environmental Impact Assessments (EIAs), have given governments tools for decision-making, and ensuring that information also reaches the public (Petts, 2009). EIAs are the main tool for mitigating potential negative impacts of development projects. EIAs are required by governments for large projects, but have increasingly become under pressure in many countries because it would favour the economic stimulus. To give an example, in Brazil, EIAs are typically completed after the decision to undertake a development project has already been made, and experts are already hired (Gerlak, Saguier, Mills-Novoa, & Fearnside, 2019). This is the perfect illustration of how the EIA is perceived by large investors and governments, namely as a bureaucratic legal obligation, rather than an actual assessment of the wider impacts (Petts, 2009).

One could argue that a reason why the EIAs are seen as a basic legal requirement is due to the fact that for governments, it is a choice between political commitment, or economic survival. This especially applies to developing countries that often depend on the overexploitation of their natural resources (Petts, 2009). Neoliberal ideology drives this environmental governance, and side-lines questions of complex context human-environment interactions because EIAs depoliticize these complex matters through their technical language (Huber & Joshi, 2015). There is a need for an integrated definition which recognizes the complexity, and evaluates and identifies the real barriers and the political, social, economic, and technical opportunities (Petts, 2009). The Environmental and Social Impact Assessment (ESIA), is an impact assessment framework which aims to examine and identify these real barriers. Although they are conceived as neutral instruments to evaluate possible environmental and social impacts, in practice, this assessment framework is also perceived as a bureaucratic procedure, and due to its technical language has a tendency to depoliticize the development project. This is due to the fact that highly political matters, such as land use, distribution of benefits and access to natural resources, are described as technical problems. Hereby assumed that it can easily be fixed by technical solutions, rather than acknowledging the relationship to the political situation (Aguilar-Støen & Hirsch, 2015).

#### 2.4.2 The HSAF

Although both the EIA and ESIA are assessment frameworks which aim to evaluate the impacts of development projects on both the environment and communities, there are strong critiques claiming these assessment frameworks come short regarding the impacts of these development projects on the political dimension. On top of this, the language used in both assessment frameworks tend to be highly technical, only understandable for experts, and thereby indirectly excluding people which will suffer the impacts of the development projects (Aguilar-Støen & Hirsch, 2015). It is because of the lack of the acknowledgement of the complexities between the political, economic, social and environmental dimensions, that I consider it to be necessary to develop an assessment framework which includes the complex interactions between these dimensions. The concept of human security suits this necessity rather well, and is therefore chosen to be the core concept of the Human Security Assessment Framework (HSAF). Here the transition in the thesis, from theory used, to theory developed is made. Based on the literature around human security, and the limitations of EIAs, the HSAF has been developed as new theoretical tool to assess and analyse the impacts of the dams. Since there are no clear thresholds to be measured, the HSAF examines the changes in the various security dimensions and how people consider them as a potential subjective threat. Before going into the HSAF, this is what the framework looks like (see *figure 1*).



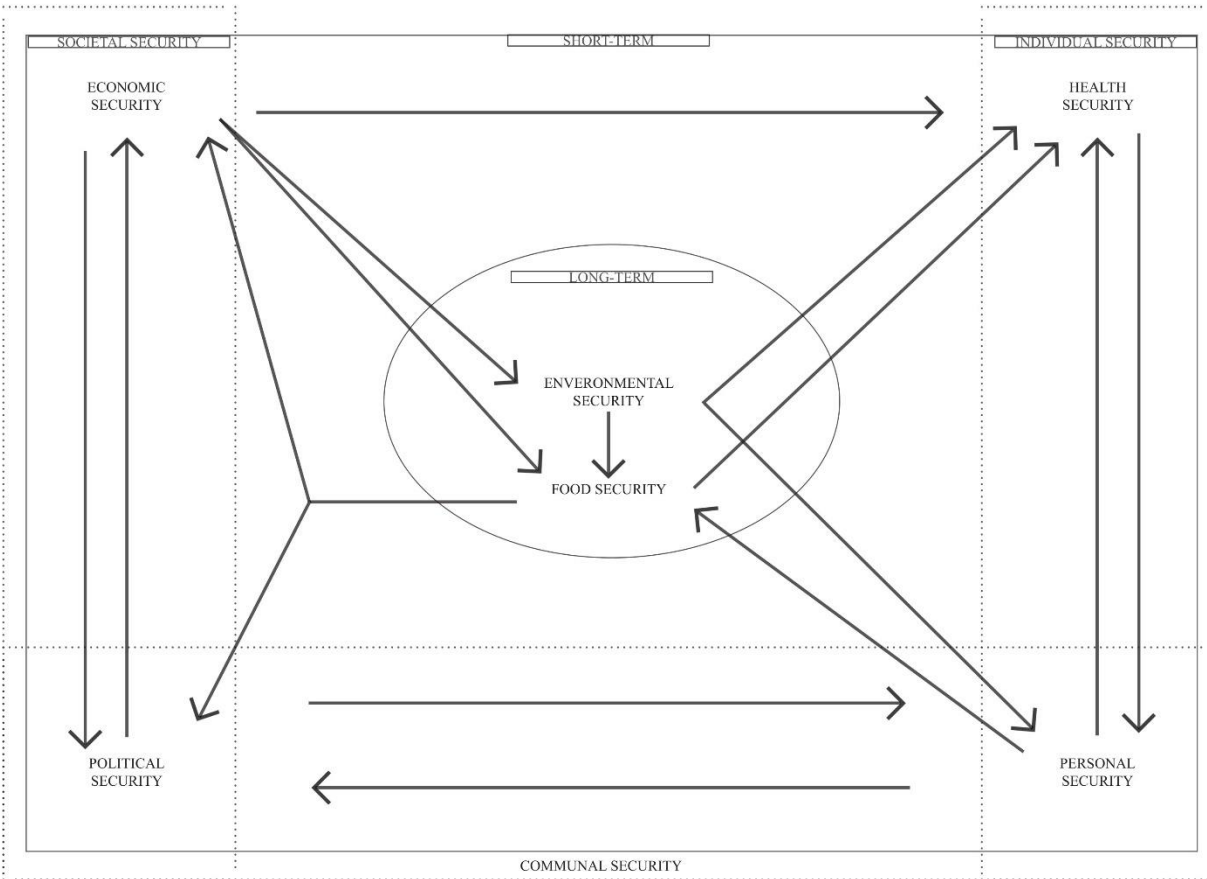


Figure 1 Human Security Assessment Framework (HSAF)

It has been mentioned briefly, but the HSAF is useful because it aims to fill the gaps that the EIA and ESIA leave behind, especially in acknowledging the interrelated complexities and the political aspects of the changes that are occurring due to a development project. This framework shows the complexity and makes several distinctions between the security dimensions and their relations. Firstly, in the middle of the framework, the long-term security dimensions of environmental security and food security can be found. Around this are the relatively short-term security dimensions of economic, political, health and personal security. This adds up to 6 different security dimensions, which means that one is still missing, which is the community security dimension. This dimension can be found back at the bottom of the framework, closely connected to the political and personal security dimensions. However, it has transformed from community security, to communal security. Another distinction can be found on the left and right side of the framework. On the left, a combination of political and economic security, forming something which I consider societal security, and on the right, the combination of health and personal security to be combined into the individual security. So why these distinctions?

To start off with the first differentiation, the one between the “short-term” and “long-term”, the logic behind it lies on the fundamentals of society. First and foremost, humans need food, fresh water to drink, and an environment which is habitable. If one of these two security dimensions would not be met, the consequences to facilitate and sustain a society would be immense. This is why the HSAF will initially have a strong focus on these two security dimensions, and how they

will be affected by certain developments. When conducting a human security assessment, both security dimensions can also be a starting point. However, as the figure shows, there are many interrelated complexities, and direct and indirect consequences that will automatically impact other security dimensions. The short-term security dimensions can be divided into three security levels, societal security, communal security and individual security.

Societal security focuses in particular on the broader impact the economic and political structures have on the various security dimensions. This doesn't mean that an individual or community can't be economically insecure, or secure, or somewhere on that spectrum, but that there is a bigger picture that shapes the structures that individuals and communities can operate in. It is often the structures in society, which impact the other security dimensions, and these structures can have a large impact on the accumulation of capitals of individuals, which is an important aspect to assess. If this sounds vague to some extent, compare it to recycling. Even if an individual wants to recycle something, for example plastic, it can only be done, if there actually is a recycling system for plastic in place. This is how the larger political and economic structures in society shape the opportunities and challenges of the individual and communities. Changes in the larger societal structures specifically focusing on the economic and political security of a country or region, will always impact the communal and individual security levels.

On the communal level, political security and personal security play an important role to establish the communal security. This mainly focuses on how the political changes in a society impact certain communities, both indirectly and directly, but also how individuals in these communities are impacted. It needs to be understood clearly, and this is something that the EIA and ESIA often fall short with, that political power struggles happen at every level, even the household level. These political interests need to be taken into account, especially when it comes to the implementation of policy. Personal security plays an important role here too, because it should indicate if all people, regardless of age, gender, sexuality, ethnicity or educational level are included or face different struggles.

This is also where the individual security level comes in, which comprises both the health security dimension as well as the personal security dimension. In the end, households and individuals are first and foremost concerned with survival. This means both in the literal sense, regarding health for example, but also in the economic sense. If someone doesn't have a livelihood strategy, he or she will struggle to survive, and there will be health consequences due to a lack of food. The individual security dimensions therefore focus on the absolute basics of facilitating life, namely health and safety. But, as is clearly showed in the figure, all security dimensions are either directly, or indirectly connected to each other. Changes due to new policy, or development projects need to be assessed adequately in order to understand the real impact on the human security of the people which will be affected. It is important to remember that the role of institutions, in all their forms, on every level (societal, communal and individual) and how they keep certain practices and shape opportunities and challenges for individuals. Safety nets, agency and various forms of capital need to be explored and understood, and the goal of the HSAF is to identify structural challenges, limitations and opportunities.

The HSAF is an attempt to grasp and include the interrelated complexities between the different security dimensions of human security, and to evaluate how certain development projects will affect the different security dimensions. Firstly, an important distinction from the concept of human security, is that the HSAF doesn't necessarily measure the level of security people have in a certain situation, but it aims to identify the potential challenges and opportunities actors have before a development project is approved and implemented. It therefore aims to explore and evaluate the current situation actors are in, and to show the direct and indirect impacts.

Now that the framework has been explained, and its difference from the EIA and ESIA and the concept of human security have been highlighted, the question of how needs to be addressed. The assessment needs to be executed by an independent organization, so that impartiality can be assured, and corruption can be avoided. This assessment needs to be done before new policy and/or projects are approved, and can also be done without a change of policy/project to be expected. The idea of the HSAF is that it allows the government, companies, NGOs and communities to get an understanding of the status of their human security, and the structural challenges and opportunities which are at hand. However, the world is not perfect, and there will be cases in which projects or policy has already been approved. In these cases, the HSAF can still be valuable, as it aims to highlight as well where the opportunities lie for empowerment of individuals and communities to cope with change. The recommendations that could be produced after the assessment can still be of great value. Another note is that no framework is ever able to completely grasp reality, as the real world is always different. This is also a strength of the HSAF because it is constructed around the concept of human security, which acknowledges the subjectivity and importance of time and space (O'Brien & Barnett, 2013).

One of the main strengths of the HSAF is that it is based on a non-traditional security concept, which allows actors to understand how changes impact real security concerns for the individuals and communities. The concept of human security, is after all a concept which is people-centred and which is concerned with the day to day struggles people face (UNDP, 1994). By acknowledging this, and by showing the direct connection to politics on each level, it also leaves room for accountability of political actors, instead of depoliticizing the changes by addressing these problems with technical solutions only. In this way, the HSAF aims to contribute to the fight against depoliticization of many development projects and policies. This thesis is to a certain degree a test case for the HSAF, and it has the possibility to prove itself as a useful tool in the assessment and analysis of the impacts of upstream dam developments in the Mekong river.

This chapter has showed how a non-traditional security concept will be used to answer the call for a non-traditional security perspective on the case. Due to its difference in nature compared to the EIAs and ESIA's, the HSAF will be experimented with, and exemplifies the possible usefulness of the framework to provide a contrasting perspective on the case.

### 3. Methodology

This section of the thesis will examine the methodology behind the thesis research. It is separated into several parts, where the research approach, the analytical framework and various methods will be discussed, and ends with a section that reflects upon the reliability, ethical concerns and limitations and strengths of the thesis. The methods mainly focus on empirical case study, although the desk research especially around the concept of human security, and various assessment frameworks have helped inspire me to develop the HSAF presented above.

#### 3.1 Research Approach and Analytical Framework

In order to conduct this research and answer the research question, a mixed method design has been used. As mentioned in the introduction, this thesis aims to get a comprehensive understanding of the consequences of upstream dams, and the impacts they have on the human security of people living in the Mekong delta. One of the main problems that appeared during desk research was that the understanding of the Mekong delta is often fragmented, and that although a lot of data is available, policy makers lack the information they actually need (WWF, 2016). It is the lack of acknowledgement, from EIAs, of the political implications and impacts of upstream dam developments which need to be recognized. This thesis aims to fill that knowledge gap, by using a non-traditional security concept to provide actors involved in the Mekong delta with concrete information regarding the upstream dam development in the Mekong river, but above all, aims to provide a deeper understanding of the complexity of the problem.

Regarding the research design, and the concurrent triangulation design, this thesis uses both quantitative and qualitative research simultaneously to gather data. This data is interpreted and leads to the findings presented in the discussion and conclusion chapter (Bryman, 2016). The data that is used in this thesis is mainly from primary and secondary sources. The qualitative data in this research has been gathered by myself and my research assistant in Vietnam, and the quantitative data sources are mainly secondary sources, from desk research and online databanks, from the World Bank, UN data, the ITC (International Trade Centre) and FAO stats.

The underlying reason to do a concurrent triangulation design, and use both qualitative and quantitative data lies in the fact that both types of data can strengthen each other and provide a more holistic view. However, there are researchers that argue that the epistemology and ontology of qualitative and quantitative research differ too much, and are therefore incompatible (Thurmond, 2001). The epistemology focuses on the theory of knowledge, emphasising methods, validity and scope of the research, while ontology is about the relation of reality (Bryman, 2016). The ontological and the epistemological standpoints in this thesis are built around social constructivism. Although the impacts of dams are very real and not socially constructed, it is the constant negotiation and re-negotiation of the different security dimensions, and the continuous perception of threat which is both socially constructed as real. Specifically, in the case study, these epistemological and ontological standpoints matter. By recognising the fact that a threat to a security dimension is both real as socially constructed (objective and subjective), it allows room for a broader understanding of how people respond to both the real impacts of the dams, as the perceived threats. This paradigm recognises the importance of the construction of meaning

and is a core belief of the qualitative case study design which will be discussed in the next section (Baxter & Jack, 2008).

The nature of the case study is descriptive and analytical, and aims to describe and thereby create a comprehensive understanding of the impacts of upstream dam developments on the Mekong delta. Corresponding to this design there are several data collection methods which will explore the case through multiple lenses (Baxter & Jack, 2008). The qualitative part of this research will mainly focus on answering questions related to opinions, meanings and interpretations in regards to the consequences of the upstream dam development. This thesis is based on mixed methods, in which both qualitative and quantitative research play an important role, the data which is provided through the use of this method is used to triangulate. Triangulation is the combination of at least two or more theoretical perspectives, methodological approaches, data sources, investigators, or data analysis methods. By using multiple methods in this thesis, the aim is to limit biases that originate from using only one method (Thurmond, 2001).

### 3.2 Methods

As mentioned above, in this thesis various research methods have been used to gather data. Desk research has been conducted in both Norway and the Netherlands, whereas fieldwork has been conducted in the Netherlands and Vietnam. First, desk research will be further explained, followed by the semi-structured interviews which have been the main method to collect qualitative data when conducting the field research. I will also elaborate on the selection of research respondents in the field and the processing and analysing of the gathered data.

#### 3.2.1 Desk Research

Desk research plays an important role in this thesis, and the goal of it is twofold. On one hand to explore the field and prepare for conducting fieldwork, and on the other hand to explore the academic concepts and debates.

The desk research started by exploring the current situation in the field. Hereby, policy documents that determine the strategic planning of the Vietnamese part of the Mekong delta have been examined to fully grasp the current and future planning of the delta. In this document several future scenarios have been outlined, and the policy document is used as a strategic framework for the future development of the delta (SPA, 2013a). Besides the policy document, desk research has also given a deeper understanding of the research environment in Vietnam. The research environment is mainly focused around positivist beliefs, mainly using surveys, questionnaires and numbers, which are often preferred over semi-structured interviews (Scott, Miller, & Lloyd, 2005). The desk research gave room to get comfortable with the key concepts used in this thesis, and gain a deeper understanding of the complexity of the academic debates around those concepts and made it clear that there is a need to look at this case from a non-traditional security perspective (Fawthrop, 2018).

Additionally, the secondary quantitative data sources have been used during the desk research, are used specifically in relation to the international impacts of the dam developments. Databases from the UN, FAO, ITC and World Bank have been used to gain a deeper understanding of the

investments in dams from an international point of view, and how the international rice market is impacted by the changes in the delta.

### 3.2.2 Semi-structured Interviews

Before being able to conduct semi-structured interviews, access to the field needed to be secured. In many countries, Vietnam not exempt, foreign researchers are required to develop official contacts, before a research permit is granted (Gould, 2006). In the case of this research, the Mekong Delta Development Research Institute (MDI) has applied for my research permit, and allowed me to get access to the field. In total, 20 interviews have been conducted during the fieldwork period with a total of 24 interviewees. Conducting interviews is a good way to collect qualitative data, especially if the goal is to get a better understanding of the expectations, opinions and concerns of actors (Willis, 2006). In every interview the participant has the option to opt out of the interview, before, during or long after the interview, this is important because the individuals need to give their consent to participate, and allow this research to use the data they provide.

Interviews come in three different forms, structured interviews, semi-structured interviews and unstructured interviews. Structured interviews follow a set of pre-made questions and are often standardised across research participants. The benefit of this is that exact questions get answered, but the downside is that it leaves limited room for follow-up questions and improvisation. Semi-structured interviews don't follow a pre-made set of questions, but topics. This allows both the researcher and the interviewee to explore and ask follow-up questions related to the topics. Unstructured interviews provide the interviewees the freedom to take the conversation wherever they want to (Willis, 2006).

The reason this research mainly uses semi-structured interviews is twofold. Firstly, on the practical level, my time in both the Netherlands and Vietnam to conduct interviews is limited. Due to this and the need to address a specific question, unstructured interviews are not a feasible option. Secondly, although heavily engaged in desk research the limited time of writing a thesis didn't allow me to be an expert on all the different facets of the topic. Especially compared to, for example, scholars who have spent many years doing research on the Mekong delta. Using topics rather than a pre-made set of questions allows me to ask follow-up questions and benefit from the expertise of the research participants, structured interviews would require me asking all the right questions, and limits the space for improvisation and follow-up questions.

### 3.2.3 Selection of Research Participants

The selection of research participants is done in several stages. Initially through extensive desk research, key stakeholder groups in the case are identified. Due to the case being complex and broad, selection of stakeholders was postponed until reaching the field, so that individuals could be identified. In this case the selection of interviewees is united both by a geographical location, namely the Vietnamese Mekong delta (Willis, 2006) or expertise knowledge on the geographical location.

This research makes use of non-probability sampling selecting participants groups through purposive sampling, and individual interviewees through snowball sampling (Bryman, 2016).



Purposive sampling has been chosen because of the research question and the geographical scope of the research. Therefore, the stakeholder groups can be separated into different categories. The groups are: international stakeholders (interviews A to D), national stakeholders (interview E to M) and local stakeholders (Interviews N to T). Hereby, international stakeholders have either worked on the Mekong delta plan, or have expertise knowledge on fish or dams. The group of national stakeholders constitute mainly of policy makers, NGOs, and scholars, that are directly involved in the Mekong delta. The last group, the local stakeholders, are mainly people whose livelihood depend on the Mekong delta. Hereby the focus mainly lies on farmers, due to the fact that the current policy in place for the Mekong delta is primarily focused on guaranteeing food security. The snowball method has been used through Minh (my assistant), who helped me identify relevant scholars at the university of Can Tho. Through my contact with Quang and his local NGO (the Mekong Environmental Forum, MEF) I was able to get access to rice farmers, aquaculture farmers, horticulture farmers, and local politicians and leaders in different regions in the Mekong delta.

After these stakeholders have been identified, international stakeholders were contacted to conduct interviews. The intent for the local stakeholder's group, specifically the farmers is to include both small-scale, and large-scale farmers, and to include both men and women. In this research, four female farmers and seven male farmers were interviewed, while their farms were mainly small-scale, three of these farmers (one woman and two men) had large-scale farms. Besides this, the Mekong delta can be separated into three different zones, the upper delta (bordering Cambodia), the middle delta, and the lower/coastal delta (SPA, 2013c).



*Figure 2 Interviewing a Local Small-scale Shrimp Farmer (own photograph)*

### 3.2.4 Field Notes

In addition to conducting semi-structured interviews, fieldnotes play an important role in the research. Besides providing additional information on how the field is experienced and perceived, it allows for reflection on how the field experiences and perceives me. In the fieldnotes, which have been written in Dutch to secure that others won't be able to read them during my time in Vietnam, I have had the possibility to write down my thoughts, observations, and concerns. This is something I render to be important, not only because I should reflect on how I perceive the field, but I should also aim to be aware of what impact I have on the field.

Besides this, writing down fieldnotes allowed me to acknowledge the feelings I have while conducting fieldwork. Often in research the importance of feelings in fieldwork is neglected, or not rendered as an important aspect. However, emotions and thinking are closely linked and are connected to reasoning and decision making (McLaughlin, 2003). Decision making is an important aspect of conducting fieldwork, because no matter how prepared you are or how good the planning is, fieldwork itself in reality is messy and unpredictable (Hansen, 2018).

### 3.2.5 Data Processing and Analysis

In this section I will mainly discuss the data processing and analysis of the primary data sources. The secondary data has been gathered by institutions and put into online databases. The primary data that has been gathered through semi-structured interviews and the fieldnotes have either been recorded on audio, or have been written down on paper. The audio recordings of interviews have been transcribed within 48 hours after the interview. All 20 interviews, with 24 research participants, have been transcribed and coded, using a coding tree (see Appendix B and C). Coding is an important aspect of the interpretation of the gathered data, and it allows the researcher to get a deeper understanding. Coding gives the opportunity for the researcher to interpret the data, and organize it in a way it makes sense. Additionally, it forces the researcher to put labels/codes onto gathered data, which allocates certain units of meaning to the textual data. When it comes to analysing qualitative data, it requires a process which continues throughout the whole research (Basit, 2003).

Another choice that needed to be made was whether or not to make a coding tree before entering the field. I specifically chose not to, on the grounds that it would allow me to make better sense of the data afterwards. The only pre-made decision regarding the coding tree, was that it will include the different sub-securities from the concept of human security. This would allow for not only a division of the data under the different securities, but also give an overview on which topics information is lacking.

## 3.3 Ethical Considerations

In order to guarantee appropriate access to the field, I applied for a research permit via the MDI, to the Vietnamese government. Part of the application process for the research permit was filing the workplan for my time in the field, which gave an overview of where I was, and with which groups I wanted to be in contact. However, upon arriving in the field, I learned that additional forms needed to be filed to local governments, which would take two to three weeks, and needed individual names of interviewees. My supervisor from the MDI helped with this, but unfortunately, due to time constraints, the local authorities could not give me permission on time,



and a different route was needed to reach the research participants. The route I took was through the network of the MEF, a local NGO which had a network throughout the delta, also including local leaders and policy makers. This didn't violate any rules or regulations in Vietnam, but simply meant that I used a different gatekeeper to access the field. The Norwegian NSD has provided approval for my time in the field.

The research was fully explained on the first days in the field to Minh, so that she had a full understanding what the research aimed to find out. Minh was assigned to me by the contact person at the Can Tho university, and she helped me get access to the right scholars at the university. Quang, from the MEF has been very important as gatekeeper to the field, both translating and driving me to the places where interviews have been conducted, and making the introductions. The benefits of having a local translator were many, not only translation, but it was an important asset to get a better understanding of the local culture. However, there should be critical reflection on what the consequences are of having a translator.

Regarding this there are four points I want to reflect upon: a double translation, power differences, filtering, and social and political beliefs. Firstly, when using a translator in the field, there is always the issue of having a double translation. In translation, valuable information can get lost, and the manner in which information is translated needs to be reflected upon. Does everything get translated literally, sentence for sentence, or is there a sum up at the end of a story. During the interviews I would ask Quang a question and he would translate that to the interviewee. He then would summarize the answer back to me, so I could ask a follow up question. Secondly, the power imbalance between the researcher and the gatekeeper need to be taken into account. On one hand, as I am unable to speak Vietnamese, Quang is important to give me access to the research participants. On the other hand, I am paying him to get access to the field, which could benefit his NGO. Before entering the field, we agreed on the amount of money I would pay him/MEF. The level of power imbalance was rather small, being that although I paid for the access to the field, Quang or his NGO weren't in dire need of extra money. Quang, being both active in his NGO, but also as a PhD student in the Netherlands, told me he wanted to help me because he knows how difficult it can be to access the field. Due to these experiences, a high level of trust has been established and his translations which were recorded were validated by Minh to ensure accurate data. Thirdly, the filtering aspect goes deeper into the way something is translated. It matters if answers are translated sentence by sentence in a literal way, or if they are translated in a summarizing manner. The filtering is to a certain degree also dependent on the 4<sup>th</sup> aspect, the social and political beliefs. Lastly, local translators can find it difficult to view their own society in an open way, and can be restricted in their views due to their social and political beliefs (Bujra, 2006).

Another aspect is the positionality of the researcher that needs to be reflected on. There are two points that need attention; the insider vs outsider perspective, and my identity. To start off with, I am clearly an outsider. Firstly, I have never been to Asia, to Vietnam, and I don't speak any Vietnamese. Quang originally comes from a village near Ca Mau (in the Southern part of the Mekong delta), and has been living in Can Tho for several years. Therefore, he has an insider perspective, which is valuable when conducting fieldwork. It is a combination of us together

conducting the interviews, therefore, both of our identities are perceived by the interviewees. It is important to remember that every type of knowledge is always situated, and it depends on how the researcher(s) and research participants relate to each other and what value they attach to specific knowledge (Ganga & Scott, 2006).

My identity can be divided into what I am, and what I do. What I am is, male, 24 years old, Caucasian with some Indonesian heritage, tall, and Dutch. These are aspects of my identity which cannot be changed, and of which the effect can only be anticipated. However, there is also a practical side of my identity, which is formed by my behaviour. Examples of this are lifestyle, attitude and body language (Apentiik & Parpart, 2006). It is important to be aware of this, because that means you can anticipate consequences, especially regarding the practical side of my identity, to anticipate what kind of behaviour is expected. Much of this revolves around expectation management, of both the expectations of the field towards me, and my expectations towards the field. By using fieldnotes I aimed to stay reflected on how the field perceives me, and to what degree I can manage this, because it is an important part of the power balance between the field and myself (Apentiik & Parpart, 2006). A good example of this is that when conducting interviews in Vietnam, Minh told me in advance that people will expect a gift as token of gratitude. Here the ethical concerns are, that firstly, I don't want people to see me as a walking ATM, but simultaneously, I don't want to be rude and show that I am sincerely grateful for their time. Therefore, I have decided to indeed give a gift at the end of each interview. Which caused a new ethical dilemma, namely, what is an appropriate gift, and does the value of the gift differ between the different research participants. Luckily, Quang had experience with this, and his local NGO took care of this for me, from the money I paid him to get access to the field. Everybody received the same amount of money, only the person that hosted the interview, and provided the lunch received a bit extra.

### 3.4 Limitations, Strengths and Reliability of the Thesis

Every research has its limitations, and this research is not exempt from that. I have identified three types of limitations in this research: translator related, insider/outsider and practical limitations. The first one has been touched upon in the ethical considerations. Although the researcher always aims to provide the golden standard, and to achieve appropriate language skills (Bujra, 2006), this was a case where this was not possible. Not being able to speak the language and having to speak with research participants who only speak Vietnamese required me to make use of a translator. Using a translator can lead to a double interpretation of what the research participants say, due to various reasons ranging from a lack of understanding on what is being said, a lack of understanding of what the research is about, filtering, summarising, or imposing certain social and political beliefs on the answers given by the research participants. It is important that the translator stays as neutral as possible, and translates as completely as he can. Due to my lack of speaking Vietnamese, and making use of only one translator, answers can be incomplete, or something can get lost in the translation process. Since the interviews have been recorded, there is an option to hire someone who has a good understanding of both Vietnamese, English and the research to verify the translation, and see if the translation is complete and accurate. This would significantly improve the validity of the answers given by the research participants, and a form of triangulation. Luckily, Quang is also an expert on the Mekong delta,

and since he grew up there he has both local knowledge as expert knowledge which came in handy. Besides that, his English was perfect, and to improve the validity of the answers, I have asked Minh to transcribe a group interview Quang and I did to verify the translation. Minh had the opportunity to listen to the recordings over and over, her translation added something extra to that interview, but it also showed that Quang did a great job summarizing answers on the spot, which is already a challenge on its own.

Secondly, a limitation is the insider/outsider perspectives. I am an outsider, and I aim to get a better understanding of the insider's perspective. Therefore, the aim of this research has been to talk to a variety of actors involved in the Mekong delta in many different ways, in different geographical locations of the delta, to assure that the image I get as an outsider is diverse. However, it will require a significantly longer time for me to actually gain a deeper understanding of the insider perspective, this will also be addressed later on. Quang is my insider connection to the field, and has added immense value to the research. Nevertheless, his own positionality needs to be reflected on because just like me, he has a certain interaction and impact to the field. Being an insider doesn't necessarily mean that the quality of the data is better, and research participants can notice subtle differences between themselves and Quang, that I can't notice due to the fact that I am an outsider, and I don't understand any Vietnamese. Another side of the outsider role is that I am not the first outsider doing research in the Mekong delta. Many government officials, NGOs, scholars and others have done research in the Mekong delta, and as a consequence people can have certain expectations that may alter the way they perceive me as a researcher and the answers they give. There is always a risk of receiving answers that they think you want to hear, or, of which they hope can inspire future action. The agency of the research participants needs to be taken into account and reflected on, although as an outsider this is rather difficult.

Thirdly, there are practical limitations to this research. My time spend in the field was rather short, having exactly a month in Vietnam to conduct my research and a very tight planning. This means that there is limited room for changes in planning, or adaptations to unexpected events. It can almost be accounted as an unwritten rule, that fieldwork is more often than not a series of changes in planning, adaptations and unexpected events. In the first week of fieldwork alone I had to change my initial planning on 6 different days. Therefore, timely limitations have been the biggest constrain. Another change that I wanted to make during my fieldwork, is the inclusion of migrants. This is because during the interviews I found out that migration to the city and industrial areas has been an important coping strategy for farmers, and the last week of my fieldwork I tried to get a better understanding of this. Time wasn't the only limiting factor, money was a significant constrain to the research. If more funds had been available, I could have increased the quality of the research, by for example hiring someone to verify all the translations that were recorded. Secondly, having multiple translators, with different identities could have also had a positive effect to certain research participants. Lastly, the interviewed farmers came from only one network, namely the network of the MEF. This means that there is a potential for a bias, and this could have been prevented, by using both the network of the MEF, but also the one provided by local authorities. However, as mention, due to time and financial limitations, this wasn't possible.

Although this research has its limitations, there are also strengths. Firstly, the collaboration between the MDI, the university of Can Tho and myself has been a fruitful one, and allowed me to get access to the field. The supervision from the university of Can Tho was helpful, because it allowed me to get a better understanding of the field, and target relevant research participants. Furthermore, by elaborating on my research to the people involved, I got valuable feedback and a local dimension to the research which significantly improved the fieldwork that was conducted. Secondly, Quang as my translator and gatekeeper to the field has been of immense value. He understands the field very well and had a good connection with it. Besides that, many research participants would not have been able to be included in the research, because of the fact that they only speak Vietnamese. Lastly, using various methods in the field, allowed for a more holistic understanding of the field, and improved the reliability of the data through method triangulation. This has had a positive effect on the validity and reliability of the research because it allowed to cross-check information and fill existing gaps in the data.

## 4. A Human Security Assessment of the Vietnamese Mekong Delta

When examining the impacts of a development project such as upstream dam construction on the human security of people in the Vietnamese Mekong delta, it is important to understand that these impacts don't stand on their own. In fact, policy effects always impact a certain situation, and that situation is never a "clean sheet". Acknowledging the history of the people and places which are impacted is the first step in understanding the broader picture. As explained in the theoretical framework chapter, human security is subjective, and also connected to places and times. This chapter is specifically devoted to developing an understanding of the current situation in the Vietnamese Mekong delta, by elaborating on the human security assessment which is conducted between November 2018 and December 2018. The chapter will dive deeper into the human security assessment and will provide the foundation for a human security analysis, where further the main research question of this thesis will be answered. Before exploring the human security assessment it is important to note a number of aspects. The first being that the human security assessment and analysis are closely linked to each other, the assessment provides the basic understanding needed for the analysis later on. Secondly, although this thesis has gone to great lengths in trying to explain that there are many interrelations between the various security dimensions, this chapter will provide an assessment on the separate security dimensions. Although this seems contradictory, and to a certain degree also is, I consider it important for the sake of structure and a clear understanding. In the human security analysis chapter, the interrelatedness of the various security dimensions will be emphasised and the structural problems, challenges and opportunities will be highlighted.

### 4.1 Introduction to the Mekong River and Delta

As mentioned, this chapter will use the HSAF (introduced in chapter 2) and apply it to the case study of this thesis, namely the impacts of upstream dam developments on the human security of the Vietnamese Mekong delta. As described in chapter 2, the working definition of human security in this thesis is a collection of different security dimensions, which together form the concept of human security. It is important to understand that although a certain aspect might "fall" under one of the security dimensions, it could nevertheless affect other security dimensions as well. This thesis examines the Vietnamese Mekong delta, which is at the end of the Mekong river and discharges into the South-Chinese sea. Policy concerning the development of the Mekong river is often bound to the territorial borders of countries, and seldom surpasses them due to the complex political collaborations that are needed to steer the management of the river in the right direction. However, the MRC has made an attempt to do just that, where the lower Mekong countries aim to collaborate and surpass their territorial borders, with the aim of a sustainable Mekong river (MRC, 2018). Although the participating countries in the MRC have this desire, the MRC does not have a mandate to act, which limits their effectiveness. In fact, the member states tend to prioritize national interests over trans-boundary cooperation (Bruzelius Backer, 2007).

In a strategic partnership agreement between the government of Vietnam and the government of the Netherlands, a future sustainable development model has been developed for the Mekong delta (SPA, 2013a). Despite of all the experience the Netherlands has regarding delta management, in the Mekong Delta Plan (MDP) little is mentioned about upstream dam

developments. In fact, all that is mentioned is that “it depends on the developments upstream” (SPA, 2013b). There is no mentioning on possible consequences of those developments, and how it shapes the entire potential of the delta. In fact, a source from the WWF that have a series of reports focusing on rivers in the economy, state that:

*“The whole Mekong delta plan, which has cost a lot of money and has been worked on for several years, can be thrown in the trash because of the decision to ignore the direct and indirect consequences of upstream dam developments in the Mekong river”* (Interview-D, 2018).

Nevertheless, the Vietnamese government has used the MDP and transformed it into resolution 120, which promotes a development based on three pillars, economic development, environmental protection, and social development. Based on these three pillars, the sustainable development of the Vietnamese Mekong delta needs to take place, with a focus on the transformation from small-scale farming to large-scale farms, and a focus on high-value agricultural products. However, resolution 120 and its impact on the people in the Mekong delta isn't the only large change in the region, the impacts of upstream dam developments play a role in the lives of people as well. This chapter is based on the gathered data from the fieldwork and will continue to describe the status in various security dimensions.

## 4.2 The Environmental Security of the Mekong Delta

### 4.2.1 Climate Change

When it comes to the aspect of climate change there has been a clear change in the attitude of farmers towards it. Several years ago, none of the farmers understood what climate change meant, and they were sceptical on how real this threat is. Nowadays, and due to improved communication from the government to the farmers, they have a higher level of awareness. Yet, when a drought or typhoon hits there are not many actions they can take (Interview-G, 2018). Another change that farmers have experienced is the change in temperature and rainfall, and the unpredictability of the rain can impact the productivity of the rice crops. The changes in both temperature and rainfall are also impacting shrimp farming, which is particularly vulnerable to temperature changes as it makes the shrimp more susceptible to epidemic diseases. As a response to this, the government has been trying to promote the sustainable development of the delta, by making farmers more aware of the crops they produce and what they need. Part of the resolution 120 is to have crops that are less dependent on fresh water, which is a way to deal with the changing rain patterns (Interview-J, 2018).

### 4.2.2 Biodiversity and Fish Migration

Fish migration is a large part of the overall biodiversity in the Mekong river and delta. Currently, the Mekong river is one of the most biodiverse rivers in the world, second only to the Amazon river. Many fish species in the river are migratory fish that feed and breed in the flooded areas, and mangrove forests provide an important feeding ground (Interview-D, 2018). However, partly due to aquaculture in the Mekong delta, the mangrove forests are disappearing and with it the feeding grounds of many fish species. So far, the fish population has been decreasing rapidly already, and this will only be exacerbated once all the dams are finished. Up to 70% of the fish populations will be gone due to the construction of the hydro dams (Interview-L, 2018).

#### 4.2.3 Deforestation, Sediment and Hydraulics of the River

There is a clear effect of deforestation on the hydraulic regime of the river. Due to deforestation, rain has a faster runoff compared to when the vegetation is still in place. Besides this, the roots of the trees hold the soil together and prevent it from breaking apart and causing erosion (Interview-C, 2018). The impact it has on the hydraulic regime of the river is also related to this. Instead of the rain settling into the ground and being held by the roots of the plants, the rain now quickly descends from soil to the river. Consequently, this leads to a much steeper distribution and larger quantities of rain water that will come down with the river, and thereby increasing the speed of the river as a whole (Interview-D, 2018). This is mainly a problem that occurs downstream, but originates upstream where the vegetation is cut. However, there is a deforestation problem in the Mekong delta as well. Mangrove forests, besides providing feeding ground and harbouring biodiversity, also play an important role in preventing erosion along the coast by trapping sediment (NOT1, 2018). Due to the changes in rainfall and the hydro-peaking practices of the dams, these floods are much less intense and frequent. An interviewed rice farmer described:

*“In my youth there were beautiful floods, and they were very rich with sediment and fish resources, but in the recent years the floods have decreased in intensity, sediment and fish resources”* (Interview-R, 2018).

Local policy makers from the island of Vinh Long also recognize this problem and can see that the amount of sediment has steeply decreased (Interview-M, 2018). On top of the steep decrease of sediment coming down from the river itself, the government also has to deal with illegal sand mining activities, and find solutions to cope with the dangers it poses. The erosion that occurs as a result of the decrease in sedimentation and sand mining, forces some of the farmers living along the river to move and find other livelihoods (Interview-L, 2018).

#### 4.2.4 Salt Intrusion, Groundwater Pumping and Soil Subsidence

The erosion and decrease in sedimentation aren't the only challenges for the people in the delta. The dams upstream withhold fresh water. This fresh water doesn't just clean the delta of its toxics, but it also pushes out the salt water which intrudes the delta from the South-Chinese sea. In 2015, during an extreme drought, the salt water penetrated the delta almost to its centre. Many rice and horticulture farmers had no idea that the water they pumped in from the river was actually salt water, which resulted in a major loss in crops and for many farmers a destruction of their livelihoods (Interview-J, 2018). Even for farmers who grow shrimp, the salinity level of the water needs to be just right, or it can affect their productivity, or increase the risks of diseases. Many intensive shrimp farmers along the coast, dilute the saline water when it is too salty, to have optimal conditions. The water they use to dilute the saline river water with is groundwater which they pump up in large quantities (NOT1, 2018). Besides shrimp farmers, the main consumers of groundwater are the cities and industrial areas, which use large quantities to produce their products (Interview-J, 2018).

However, pumping up groundwater is a complex matter, and needs strict control from the government to ensure that it is done sustainably and in the right way. If everybody decides to pump up groundwater as they please it could contaminate the fresh water pockets which are in



the delta, and make them unsuited for use in the future (Interview-D, 2018). Although it is clear that stricter regulations are needed, the government doesn't have the ability to control it 100% of the time (Interview-F, 2018). The depletion of groundwater resources is leading to soil subsidence, which means that relatively speaking, the ground goes down compared to the level of the sea. This means that salt intrusion can occur more frequently, and penetrate the delta even deeper if nothing is done to prevent soil subsidence from happening (Interview-L, 2018).

#### 4.2.5 Water Pollution

Besides the fact that fresh water is becoming scarcer due to the upstream dams and the changes in the hydraulic regime of the river, it is also threatened by pollution. The water is vital for many livelihoods, and if the quality, salinity or quantity of the water changes, it can have devastating effects like during the drought of 2015.

Due to the fact that the amount of sediment has gone down significantly, farmers need to use fertilizers to compensate for the decrease in fertility of the flooded lands. Many farmers, especially rice farmers, rely on traditional knowledge when it comes to their farming practices. With this they mean that the knowledge they have about rice farming has been passed on from one generation to the next. As a result of this, they often use too much fertilizers which result in pollution. The farmers need to use even more chemicals and fertilizers to assure that their productivity isn't impacted negatively by this pollution, leading to even more water pollution (Interview-R, 2018). Rice farmers aren't the only source of water pollution in the delta. Intensive shrimp and fish farming also play a significant role in adding chemicals and antibiotics to the ecosystem. It isn't because they are shrimp or fish farmers, but because of the way they produce the fish and shrimp (Interview-B, 2018).

Another major polluter of fresh water resources are the cities and industrial areas, that often don't have a wastewater management system, and dump their water directly into the river (Interview-K, 2018). The wastewater of cities and industrial zones also include plastic pollution. Plastic pollution is plentiful in the Mekong delta, and the government has started to realise that it can become a big problem (Interview-K, 2018). Once plastic is in the water it slowly breaks down from the bottle or bag, into smaller pieces of plastic, to micro-plastic particles to nano-plastic particles. These small particles of plastic have a chemical build-up to attract a lot of heavy metals, and through bioaccumulation become a part of the ecosystem as a whole. This means for example that the larger predator fish can have quite some plastic inside, and when the fish is caught and sold on the local market, this plastic can end up inside of the people living in the delta (Interview-B, 2018).



*Figure 3 Plastic pollution in the Mekong Delta (own photograph)*



#### 4.2.6 The Spatial Environmental Dimension

In the second chapter human security is connected to both space and time, and in this section the spatial importance of the environmental security dimension will be highlighted. This is mainly due to the fact that the changes in the environmental security aren't the same throughout the whole delta. As mentioned earlier in the thesis, the delta is divided in several spaces, namely the upper delta, the middle delta and the coastal delta (SPA, 2013c). These zones are determined due to their environmental characteristics, and taken into account in the various policy documents produced by the Vietnamese government. This spatial separation is made on the grounds of environmental differences, and therefore, it also needs to be taken into account when it comes to assessing the environmental security dimension.

To give an example, soil subsidence is happening on a large scale in the coastal zone, but also around the larger cities in the delta such as Can Tho. The reason for this is because of the groundwater that is extracted. In the city this is mainly done for drinking water, but in the coastal areas this happens primarily due to intensive shrimp farmers that dilute the salt water. While the soil is going down, salt water intrusion can go further inland (NOT1c, 2018).

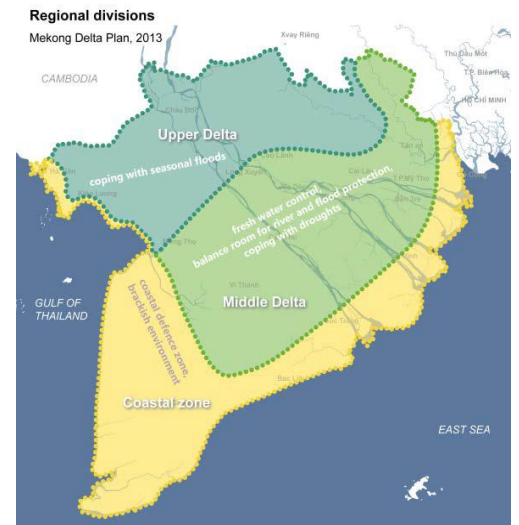


Figure 4 Regional Divisions of the Delta (SPA, 2013c)

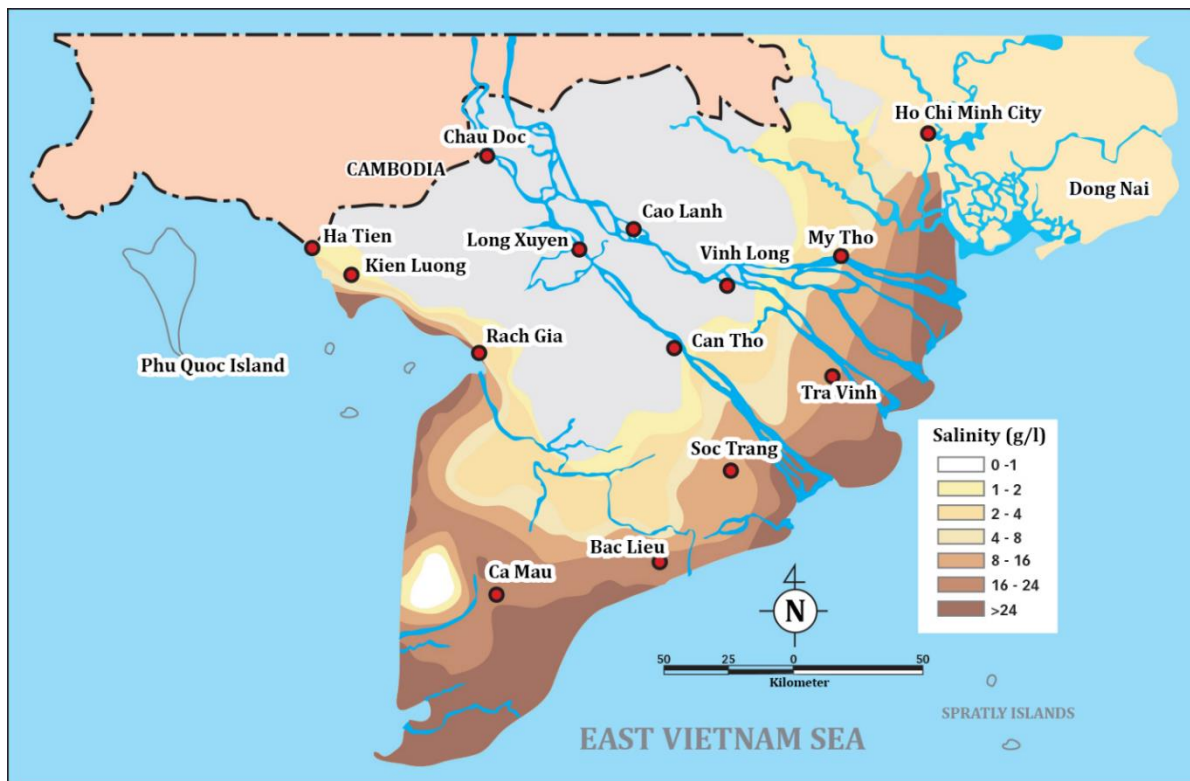


Figure 5 Salt Intrusion in the Delta (TTN, 2019)

This is the beginning of a downwards spiral, since the salt water intrudes the delta even further, meaning that more farmers will be in an acute need to get access to fresh water, or to face the consequences to their livelihood. Farmers will then resort to groundwater, which causes wider soil subsidence, which will allow salt water to intrude the delta deeper. This problem, as can be seen in the figure above, is specifically in the coastal zone. Another environmental security threat is the erosion of the coast, which is specifically a problem due to the fact that the mangrove forests which used to be there, have been cut down for various reasons. This is why in both resolution 120 and the MDP the restoration of these forests to combat erosion is advocated (SPA, 2013d).

### 4.3 The Food Security of the Mekong Delta

#### 4.3.1 The Rice Policy of the Delta

In many articles about the Mekong delta, there is often mention of how the Mekong delta represents the rice basket of Vietnam. Vietnam is one of the largest exporters of rice in the world, and this is mainly due to the policy change after the American war (Interview-C, 2018). After the war, the national government wanted farmers to produce three rice crops during a year, focusing mainly on the intensification of farming practices rather than sustainability or what the market price is (Interview-K, 2018).

*“Clearly, this choice has been extremely successful, as it provided food security, and made Vietnam a global player in the rice market. However, due to the fact that the focus was solely on the intensification and quantity of rice production, the quality of the rice was not high compared to for example rice from Thailand”* (Interview-C, 2018).

If all farmers in the Mekong delta would produce one crop of rice, and the other part of the year crops they want, the delta has produced enough rice to feed the country for a year (Interview-G, 2018). Regarding the four dimensions of food security (see chapter 2), the focus of the policy was mainly on the availability of food, specifically rice. According to an interviewed horticulture farmer (Interview-Q, 2018) who was food insecure herself, she explained that her family was food insecure because the orchard wasn't developing fruits, she has three small children and they don't make enough money. Therefore, they get a certificate, and use this to get free rice from the government to ensure they have enough food.

However, there is a difference in the price of food, and the money farmers receive for producing food. This is something which will be broader discussed in the section of economic security. Nevertheless, it is impossible to ignore the direct relationship between economic security and food security. The Vietnamese government also realised this relationship, and because of this the focus shifted to increasing the income of farmers in order to assure financial access to food (Interview-G, 2018). Rice farmers interviewed for this research illustrate the problem:

*“The price we receive for the rice is very low, and we need to find other source of income. That is why some of us have shifted to gardening, but it takes a very long time before we receive revenue of it. But some of us also keep hope that the price we receive for the rice will go up in the future”* (Interview-R, 2018).

Almost all farmers in the delta have a garden for domestic use, where they produce various vegetables, and around the houses they keep different types of livestock in order to provide an extra income, or to use for consumption (NOT1h, 2018). Besides this strategy, the government is actively stimulating small-scale farmers to sell their land to others, and aim to facilitate the process of creating large farms that can be more efficient and provide a better income for the farmers. In the economic security section, this policy decision will be discussed extensively.

#### 4.3.2 Fish as a Protein Source

Before examining the large-farm policy, I want to shed some light on the other food security dimensions that still need to be discussed. Food availability and accessibility are important components of food security, but so are the stability of food, and the utilisation, and how nutritious it is (see chapter 2). People need a certain amount of protein, and this needs to come from something. Only eating rice will simply not be enough, and therefore, the people in the delta resort to fish as a protein source (Interview-E, 2018). As mentioned in the environmental security section, the future of the wild-fish population doesn't look bright, and a steep decrease of wild-fish is already occurring. This means that a source of important nutrients and protein for people in the delta is under threat and alternatives need to be found which are not too expensive, since that could prohibit food security through the access aspect.

If the nutrients and proteins have to come from agriculture, that means that large amount of lands will need to be transformed in order to facilitate this, which inevitably has an impact on the biodiversity in the delta. Aquaculture could be a feasible alternative, however it also comes with it up and downsides (Interview-D, 2018). As for now, there is still enough wild-fish in the river to provide the people with the needed nutrients and protein, but when the fish population goes down, aquaculture will step into the gap it leaves behind. In fact, it is already doing so (Interview-E, 2018). Currently, the fish on the market produced from aquaculture is cheaper than the more scarcely wild-caught fish. Still, people do prefer the wild-caught fish as they think it is healthier, but also because they know that aquaculture is often environmentally unfriendly (Interview-F, 2018). With the steep decrease of wild-fish being available for the fishermen to catch and sell on local markets, and with the steep increase of aquaculture to take its place, the Mekong delta is not only the rice basket of the country, but is well underway to becoming the fish basket, for both local markets in Vietnam, and for many countries around the world.

### 4.4 The Economic Security of the Mekong Delta

#### 4.4.1 The Structure of the Delta

##### *4.4.1.1 The Geographical Structure of the Delta*

The upper delta has a main focus on rice production, and often farmers still produce three rice crops a year. The reason why the upper delta is best suited for rice farming is because it has a lot of fresh water, and doesn't face salt intrusion. The middle delta is a combination of rice farming in the wet season, and shrimp farming in the dry season, as salt intrusion is a larger threat during that season. However, there is also a lot of horticulture farming in the middle delta, especially in the areas near to Saigon. The coastal area has the main focus on aquaculture, specifically shrimp farming on the coast in combination with mangrove forests (Interview-E, 2018).

The policy impacts on structuring the delta can mainly be seen after the American War. After the war when the national government reunited the north and the south with each other, the government focused on a food security policy that forced farmers to produce enough rice (Interview-L, 2018). The main focus of the government was not on the quality of the rice, it was only focused on the quantity. To increase the quantity of rice produced in the delta, it pushed farmers to use intensive farming techniques. Ever since establishing food security in the country and making Vietnam into one of the largest rice exporters in the world, there is now a change in attitude of the government. The focus is now changing from intensive farming practices, to sustainable farming (Interview-K, 2018). Therefore, the government provides training to the farmers, not only to help them deal with the changes in the climate (Interview-G, 2018), but more specifically to promote Good Agricultural Practices (GAP). The idea behind it is that by certifying farmers that have GAPs, the farmers can benefit from it because it will be easier for them to access international markets and get better prices for their products. However, in order for this to succeed, farmers are dependent on the community as a whole to make the change and become certified farmers (Interview-J, 2018).

#### *4.4.1.2 The Energy Structure of the Delta*

Besides the geographical and environmental structures of the delta, the government also aims to attract foreign investors to create high value-chains for raw agricultural products. Therefore, the government has made industrial zones throughout the delta, but these industrial zones have a high demand for energy. In order for the government to provide this energy, it can try to produce the energy required for the industrial zones, however between 2025 and 2030 there will be a power shortage because the energy production doesn't develop as fast as the industrial zones (Interview-J, 2018). Therefore, Vietnam has started the energy transition, of which solar energy and wind parks can be viable alternative energy resources. However, in order for wind parks to be build, the government will need to stimulate businesses to invest in this (Interview-A, 2018). Although the transition should be well underway, there is still a large dependency on hydropower, and the government is also considering to construct an additional 14 thermal power plants to the one thermal power plant which is already operating in the delta (Interview-L, 2018).

#### *4.4.2 Value-Chains and Industrial Zones*

Around the city of Can Tho, the Song Hau industrial zone has been created by the government. This is in the heart of the delta, where, before the zone was built, many farmers used to have their orchards. After the government had decided to construct the industrial zone, they had to leave (NOT1a, 2018). Each provincial government has control over the industrial zones that are in their province. This also means that the provincial government is responsible for the environmental impact assessment. Nevertheless, in the past the provincial governments haven't been strict regarding the environmental impact assessments, because they were more concerned about making sure a foreign investor settles in their province instead of other provinces (Interview-E, 2018).



The industrial zones can be a good opportunity for farmers and people living in cities to provide an income. The purpose of these industrial zones was mainly so that farmers could sell their crops to the companies in the zones, that would use the raw agricultural products to turn them into products with a higher value. A good example of a successful value-chain is the coconut industry around Can Tho, where coconuts are transformed to candy, wine, and soap (Interview-C, 2018). However, these value-chains should not have too many middlemen, otherwise it could become problematic for the farmers. The main risk is that there is a disconnect between the farmers in the delta, and the companies that settle in the industrial zones. Even if the international companies want to buy directly from the farmers, there can be barriers such as language or simply not knowing where to look, and in the case for farmers, a limited social capital that prevents them from contacting the companies. Therefore, middlemen play an important role (Interview-K, 2018).



Figure 6 Locally Produced Coconut Wine Sold in the Store (own photograph)

#### 4.4.3 Farming Practices

##### 4.4.3.1 Rice Farming

*“The delta, which is known for its rice production will see a decrease of rice production in the future. The main reason for this is the impact of climate change and the impacts of the upstream dams on the production. There are only a few places in the delta that can sustain the production of rice throughout the year”* (Interview-I, 2018). This is because of the natural conditions that are suboptimal for the middle and coastal delta areas after the wet season. The first rice crop is the best and the yield is the highest because it is grown during the wet season, and a lot of fresh water is available to the farmers (Interview-G, 2018). However, rice farmers are often poor, and to switch their livelihood to for example horticulture farming or aquaculture, they require financial capital that is often not available. Therefore, many rice farmers need to produce three crops to have enough money to sustain themselves and buy enough food (Interview-E, 2018).

Rice farmers need ways to diversify their income. Some farmers interviewed in the research became part of the local communist party and got a governmental salary. Besides this, many farmers have a garden for domestic use to decrease the amount of money spend on the markets to buy food, but when it comes to their income from rice farming, the farmers are dependent on the price the market offers, and specifically the middlemen (Interview-J, 2018). A certain downward spiral can be detected when examining the livelihood of rice farmers. The middlemen often offer a low price for the rice, and the rice farmers have limited financial capital available. However, due to changes in the climate, epidemic diseases and pollution, the rice farmers need to use more fertilizers and chemicals in order to maintain the level of productivity on the farm. Due to the limited financial capital, the farmers lend money from the agricultural banks, to buy fertilizers and chemicals. Due to the fact that the knowledge of rice farmers is passed on from one

generation to the next, they tend to overuse fertilizers and chemicals which then results in polluted water. This polluted water is again used for rice farming, but because it is polluted, farmers need to use more chemicals and fertilizers to ensure the productivity (Interview-R, 2018). This downward spiral is difficult to break, and the local government also recognizes this problem and encourages farmers to sell their land to create large farms.

*“Large farms can be transformed into agri-businesses and new, more efficient technologies can be applied much easier. Another benefit is that large farms can be connected to the international companies, and assure a higher price for the rice farmers”* (Interview-R, 2018).

Despite the fact that Vietnam is a large rice exporter, the quality of rice which is exported is rather low compared to other large rice exporters in the region like for example Thailand (Interview-E, 2018). Through the use of GAP certificates, the government now attempts to improve the quality of rice, while still maintaining approximately the same quantity of rice produced in the delta. This could be an interesting change as the main importers of rice from Vietnam are countries that purposely buy rice that is cheaper and therefore also lower in quality. Vietnam now exports their rice to several countries in the region, but increasingly to countries in the Middle-East and Africa (Interview-J, 2018). This means that these countries either have to start paying a higher price, or that they have to find a new exporter of cheaper rice.

*“Luckily for the international rice market, these changes won’t happen overnight, and the change will be more gradually”* (Interview-K, 2018).

However, the impact of this change cannot be underestimated, as the rice market is very volatile and often importers and exporters don’t have a clear overview over how much rice is sold internationally.

#### *4.4.3.2 Aquaculture Farming*

Similar to rice, aquacultural products are becoming a main export product of the Vietnamese Mekong delta. As described in the environmental security dimension, this is partly out of necessity, partly because of change in agricultural strategy. Due to the steep decrease in wild-caught fish on the local market, aquaculture has become an alternative provider of the protein and nutrients people need to be food secure. Yet, for farmers it is also a deliberate livelihood strategy, because aquaculture farming can be a financially better option compared to rice farming.

The transition from rice farming to aquaculture can be one with challenges related to financial capital and technical knowledge. Some farmers get assistance in acquiring this capital and knowledge through the local government, and some have family members that can provide with the technical knowledge (Interview-O, 2018). If the transformation from rice farming to aquaculture is successful it means a significant increase in income for the farmer. Many organisations, from NGOs to research institutes, are concerned with transforming farmers intensive farming practices, to more sustainable ones. With shrimp farming it is especially important to make this shift to limit the negative impact on the environment (Interview-L, 2018).

#### 4.4.3.3 Horticulture Farming

Many of the rice farmers may have switched to aquaculture and faced difficulties with financial capital and a lack of technical knowledge. There are also challenges when it comes to the transition from rice farming to horticulture farming. Here again two challenges arise; the lack of technical knowledge (matters especially for women), and relates to the knowledge in regards to chemicals, irrigation systems and fertilizers, and the second; financial capital. Regarding the financial capital it is specifically that it takes a couple of years before an orchard or garden starts to provide a real income to the farmers (NOT1d, 2018). To ensure a more stable income once the orchard begins to provide, farmers grow different fruits to not be dependent on the price of one of the crops (NOT1a, 2018).

*“In general orchards have a relative low labour intensity, which means that even I, as an older woman without a husband, can work an entire orchard by myself and have a stable income. I do however get help with harvesting the fruit, luckily the middleman does that for me for free”* (Interview-P, 2018).

Besides the fact that it takes a couple of years before an orchard starts to provide a stable income for the farmers, they are rather vulnerable to the effects of climate change. The irregularity of rainfall, salt water intrusion in the delta, changes in temperature, and extreme weather events can all affect the productivity of the orchards and prevent the trees from developing fruits. This is already becoming a problem, and it forces farmers to find alternative sources of income. An example is collecting snails in the middle of the night, to sell them on the local market the next day (Interview-Q, 2018).

#### 4.4.6 Alternative Livelihoods and Safety Nets

##### 4.4.6.1 Safety Nets

Many farms, especially near Can Tho and Saigon, are trying to benefit from the increased amount of tourism as an alternative source of income. In that way, tour guides often function as gatekeepers that connect the wandering tourists to the farms they should visit. Even if tourists don't pay for a complete tour, there is a big chance that the tour guide will still do the normal “full” tour, because the guide has certain agreements with the farmers (NOT1e, 2018). Besides tourism as alternative source of income, it is possible to distinguish two regulated forms of safety nets; namely the safety nets organized by the government and by individual actors.

To start with the latter, there are many banks and agricultural funds that give farmers the opportunity to lend money or equipment so that the farmers can make investments in their land or have enough financial capital to buy the inputs needed to produce their crop. The system is organized so the farmers can pay the money back after they have harvested their crop, which creates a certain insecurity. Namely if the crop fails, the farmer will have a substantial debt (Interview-F, 2018). The government also provides certain safety nets, of which one specifically focusses to improve the position of women in society, both in urban and rural areas. The women's union, which is part of the communist party of the government,



*Figure 7 Selling Cold Drinks to Tourists at the Floating Market in Can Tho (own photograph)*

provides financial help to women, and aims to integrate them better into society (Interview-G, 2018). However, according to some farmers:

*“Not all the money from the women’s union is spend in the right way, and marginalised female farmers without many social contacts can still be left out if the women’s union doesn’t reach out”* (Interview-T, 2018).

An example was how on the island of Vinh Long, a former member of the local women’s union was included in their activities, but her neighbour who was receiving free rice from the government wasn’t approached by the women’s union for support (Interview-Q, 2018). Besides the women’s union, the government provides financial support to farmers after extreme weather events like typhoons and droughts, or in case of heavy pollution caused by foreign investors. In that case, the government sends an official to the area which has suffered from these problems to assess how much financial compensation the farmers are entitled to (Interview-G, 2018).

Lastly, the church or wealthy individuals in a village can play a role when it comes to providing unstructured safety nets. Giving away money is a sign of having a lot of wealth, and therefore is seen as something positive and of high status.

*“But this happens perhaps once a year and to the farmer who is the “biggest loser” of the harvesting season”* (Interview-G, 2018).

There is one safety net which is very important to all farmers, family. Family is also a way of diversifying income, and many of the children move away from the farms to cities to get education. After finishing their education, they find jobs and send money back home whenever necessary. It aren’t only the children that migrate to the cities, but also many other family members move to the city to have a stable income and send the remittances back home (Interview-C, 2018).

#### *4.4.6.2 Migration*

There are a lot of people in the delta who migrate from rural areas to urban areas. When people migrate, it is either for the purpose of pursuing education, or better livelihood alternatives. It is currently occurring on such a wide scale that every province of the delta, besides the province of Anh Giang, has a higher out-migration than in-migration. The government is trying to attract young people to the industrial zones, and in an attempt to spread people evenly over the delta, has created the industrial zones in many different provinces. Regardless of this attempt by the government, and the high costs of living in big cities like Saigon, and the low wage migrants receive for their job in the city, the migration numbers remain high (Interview-E, 2018). As a consequence of this, in the next decade, the delta will face a shortage of labour. Not only in the next decade, but also in the long term, since people that are migrating are mainly young people, causing the average age of people in the delta to go up significantly (Interview-L, 2018).

The biggest advantage for the migrants is that in comparison to a life in the rural areas, where the farmers receive an income after they have harvested their crops, in the urban areas, they get a monthly salary. This economic stability is enough reason to migrate to big cities or work in industrial areas, and blue-collar jobs are easy to find for people from the delta (Interview-N,



2018). The migration from the delta to the cities isn't just another livelihood strategy, it can also lead to increasing tensions between people from the city, and people from the delta. This is because there is a clear difference in educational level, salary, and overall beliefs between the migrants from the delta and people in the city (NOT1f, 2018).

#### 4.5 Political Security of the Mekong Delta

So far, this chapter has examined three of the seven security dimensions, highlighting the environmental, food and economic security of people in the delta. Already some of the connections between the different dimensions have become clear out of the interviews, but it is essential to understand that the different security dimensions are always related to politics and to a certain degree also political security. Depending on the way society is structured (democratic, authoritarian, or dictatorial) people in the country are to a larger or lesser extent able to express their political concerns without having to fear for the government or other actor in society prosecuting them because of it. In the Mekong delta there is a clear spatial difference in political and social engagement of people. These differences aren't just related to location, but likewise to gender, age, educational level and income. Urban areas are for example more politically and socially engaged, and educated people are often more critical to the government than lesser educated people (Interview-E, 2018). Out of the interviews it became clear that in the rural areas of the Mekong delta people tend to be more traditional and less politically engaged, although the rich farmers are the most assertive when it comes to stressing their concerns. This is also because compared to poor(er) farmers, rich farmers have the luxury to focus on political matters, because they have to worry less about sustaining their livelihoods (Interview-H, 2018).

The current state of the environment and its problems regarding pollution has triggered protests throughout the country. There is a lot of dissatisfaction towards the government in regards to how they (mis)managed the environmental pollution caused by foreign investors. The major spill of Formosa, which will be elaborated on later, caused a whole river being filled with dead fish and is an example of the mismanagement that angers the people. Although the government promised to fix it, little has happened so far, and the trust in the government is very low. The protests even escalated into violence, and government buildings have been set on fire (Interview-L, 2018). A young woman I met in Saigon elaborated on these protests:

*“During the protests, the government responded with violence, beating protesters and presumably even kidnapped and killed someone who was spreading information against the communist party. Due to the government responding with violence, especially a lot of young people are afraid to protest against the government, or they have the feeling that it is all pointless anyway, because they can't change anything”* (NOT1b, 2018).

Another important aspect to consider is that the government controls the media, meaning that these kind of stories have a hard time reaching the surface (NOT1g, 2018), and the media can also be used to cover stories up, as for example the environmental disaster with Formosa.

This is why it is important that NGOs get more political space. Around the world, NGOs and other forms of social organization play an important part in shaping policy and governance (Interview-D, 2018). The MEF is an example of such an NGO which aims to highlight the importance of environmental security to the policy makers and other local leaders who can impact the environmental security status. Another goal of the MEF is to represent the actors that are unable to engage in the political debate, such as marginalized farmers (Interview-L, 2018). Since there already is a lot of focus on the environmental security, and this has escalated to protests and even violent conflict, it is going to be interesting to see the impacts of the hydro dams and how the government manages them. The scarcity of fresh water sources has already caused tensions and around the world has led to many wars. Besides this, other environmental issues, such as the steep decrease in fish population (and thereby protein sources) and sedimentation are going to become political problems both in and between countries (Interview-D, 2018).

#### 4.6 Health Security in the Mekong Delta

Environmental security doesn't just impact the economic security of the people in the delta, and it isn't just a trigger for political unrest either. It also has a direct impact on the health security of people in the Mekong delta. Four significant threats can be identified, namely: a lack of fresh water, air pollution, water pollution and bioaccumulation.

Air pollution is especially a big problem in cities and around industrial areas. In cities, mainly the many motorbikes and cars pollute the air directly and can impact the health of people. Around the industrial areas the factories are the main cause of air pollution (Interview-A, 2018). It has become so bad, that the department of Environment and Natural Resources is now trying to locate the sources of both the air pollution and the water pollution, so that the government can be stricter when it comes to making regulations and punishing the polluters (Interview-K, 2018).

However, not only the factories of foreign investors in industrial zones are polluting the water. Farmers likewise play a role, specifically when they produce their crops through intensive farming with a lot of fertilizers and chemicals. A rice farmer illustrated how bad it has become;

*“As a child I could drink the water straight from the river, and nothing would happen. But now, I can't even use it for showering because when I do, the water is so polluted that it creates irritations on my skin”* (Interview-R, 2018).

This illustrates to what degree the river is polluted, both because of the farming practices, but also because of the industries that directly dump their wastewater in the surface-water of the river. For farmers and people in the city, this is why groundwater is used for domestic use. They need to have an alternative for using water from the river (Interview-T, 2018). If it isn't the pollution from the factories or the farmers that limits the amount of safe and fresh water available, it can also be the saltwater intrusions. In 2015, when an extreme drought hit, besides the fact that many people saw their crops getting destroyed by the salt water, it left entire villages along the coast without access to safe drinking water. Therefore, the government shipped in fresh water from other areas in the delta, to make sure the people had some access to it (Interview-F, 2018).

Besides air pollution, water pollution and a lack of fresh water, there is another health risk that needs to be taken into account. Namely the bioaccumulation of toxic particles in the ecosystem. In this case, the toxic particles can be everything from chemicals in the water (either from the industries or farming), heavy metals, plastic and other pollutants. These particles enter the river, and are accumulated by the ecosystem and slowly move upward in the food chain. Large fish species and predators often have higher concentrations of pollutants in their bodies, because they are higher up the food chain (Interview-B, 2018). Plastic pollution has become a hot topic recently under both academics and policy makers as it is becoming clear how large the plastic problem truly is, and how much plastic people consume through, for example, fish. Plastic pollution in the delta is widespread, and the government aims to combat it through campaigns, but little has changed so far (Interview-K, 2018). Plastic never truly disappears either, but it simply becomes smaller and smaller, until it is micro or even nano-plastic particles. Due to their chemical build-up, they attract other pollutants like heavy metals, and the health risks of this need to be considered (Interview-B, 2018).

#### 4.7 Personal Security and the Mekong Delta

Besides the health risks, gender also provides an important perspective on the vulnerabilities of people in the delta. As mentioned earlier, the women's union is a part of the government, and it aims to represent the problems women face in the political arena. The main focus of the union lies on the empowerment of women and combatting domestic violence.

*“Unfortunately, engagement hasn't been very high and especially in rural areas women are difficult to reach. In rural areas, Confucianism is still very strong and shapes the gendered relations in family and relationships. Women prefer to stay at home and inside instead of engaging politically and socially”* (Interview-G, 2018).

In the household, women play an important role. Not only do they take care of the kids, and do chores around and in the house, but on top of that, they also play an important role in diversifying the household's income through various activities. Men, on the other hand, are mainly the one who bring in the larger amounts of money (Interview-E, 2018).

However, there is a change occurring. Despite limited social and political engagement, women are attending meetings and workshops much more often. However, there are still many scenarios in which women remain particularly vulnerable. One which is relevant is the process of migration, which often has a gendered pattern attached to it. The first to leave is the husband, to migrate to the city or industrial zone to find a job, leaving the woman and children behind in the rural areas. When the woman is left alone to work on the farm, or if the husband has died or they divorce, women face several structural problems. Many of these problems relate to technical farming aspects, such as irrigation systems, electricity, fertilizers and chemicals, which can provide single women with challenges they need to overcome (Interview-P, 2018). Other problems relate to finances, such as getting access to funding, but also safety. Especially regarding shrimp farming, safety can be an issue, as there are many instances where thieves steal shrimp out of the ponds, knowing that single women are easy targets that can be overpowered easily if necessary (Interview-T, 2018).

If the migration of the husband is successful, the woman will migrate to the city herself, leaving the children in the care of the grandparents. After assuring that the woman also has a job, and if the financial situation is stable enough, the children then join the parents in the city (Interview-I, 2018). The migration to urban and industrial areas, additionally comes with an increase in crime. Many of the people that resort to crime are people with a low salary, and a lower level of education. These are two known characteristics for many of the people who migrate from the Mekong delta to the city (Interview-N, 2018).

#### 4.8 Societal, Communal and Individual Security Levels

Instead of analysing the community security in this part of the chapter, this is where the theory in the theoretical framework chapter will be employed more directly onto the empirical data. So far, the theory has helped to gain a more comprehensive understanding of the security dimensions, and here the HSAF has transformed the community security dimension into three broader security levels. The separation between the societal security, communal security and individual security levels is based on the various combination of security dimensions. In regards to, societal security, the HSAF assesses how the economic and political structures in society shape the opportunities, challenges and problems people face. In the communal security level, a combination of the political and personal security dimensions illustrate how people can alter the potential societal structures, and also emphasises the imbalances between certain groups. The individual security level focuses on the combination of personal security, and health security, thereby focusing on the very basic of human survival, namely a good health and physical safety.

##### 4.8.1 Societal Security

Vietnam is a country which is developing rather quickly. The Mekong delta is important because of its role in food security, and is falling behind on economic growth compared to the rest of the country. This is why the government has decided to make certain policy changes, to ensure that the Mekong delta catches up with the rest of the country in terms of economic development. Changes in policy didn't just occur due to a desire to attain a higher economic growth rate, but also due to an environmental component. Farmers near the coast at Ca Mau ensured me that the government told them to switch from rice farming to shrimp farming about 20 years ago, because the water was increasingly becoming saltier (Interview-T, 2018). Another policy change occurred because of a renewed perspective on food security. Initially, producing rice was the answer from the government in ensuring food security in the country, and they have succeeded rather well. Now, the government has realised that it isn't about the quantity of food available, but the income of the people which allows them to become food secure. This is why the focus now has shifted on increasing the income of the people (Interview-G, 2018). Besides working on the farm, and producing crops, the government is now stimulating farmers to come work in the industrial zones which they have specifically set up to attract foreign investors, to create high-value chains for the agricultural products produced in the Mekong delta. Although this is a diversifying strategy for the farmers in the delta, and simultaneously serves as a purpose to combat outmigration, the foreign investors also come with downsides.

For example, many Chinese and Taiwanese companies ended up settling in industrial zones all over the country. Man and Lee, a large Chinese paper factory has settled in the delta, and to provide them with energy a thermal powerplant has been constructed next to the factory (NOT1b, 2018). However, due to the weak environmental impact assessments by the provincial governments, many of the foreign investors dumped their wastewater directly into the surface-water of the river. A big scandal occurred with Formosa, a Taiwanese company that due to their pollution caused a massive fish mortality which left fishermen without a source for their livelihood. The government, instead of protecting the fishermen, sided with Formosa, and tried to cover up this disaster, but eventually it became known and led to many protests in the country (Interview-L, 2018).

The choice of the government to attract foreign investors has other downsides besides environmental pollution which occurs on a large scale. Besides the fact that this pollution enraged many people throughout the country, the industrial zones also require a lot of energy. Vietnam is unable to produce this amount of energy, and therefore imports it from neighbouring country Laos, that produce the electricity through their new hydro dams in the Mekong river (Interview-I, 2018). In fact, the energy crisis in the country is going to become so grave, that for the next three to five decades, Vietnam will depend on the energy produced by the hydro dams for its own energy needs (Interview-E, 2018).

#### 4.8.2 Communal Security

Within the Mekong delta there are many differences between groups, both based on a spatial dimension, and on farm size and gender. To start off, as mentioned earlier in the thesis, the delta is divided into several zones. Specific types of farmers can also be found back in the different zones, due to the environmental characteristics of each zone. Generally speaking, the rice farmers are quite poor, because the price of rice is relatively low. Compare this to aquaculture farmers (whether shrimp or fish), who are relatively rich and able to sustain themselves due to the better price they get from the fish or shrimp. However, it isn't necessarily the type of crop produced that determines the ability of farmers, but the size of their land. A clear differentiation can be made between poor and rich farmers, where poor farmers have smaller plots of land (around 1 ha), while rich farmers have larger farms (over 10 ha) (Interview-G, 2018). Rich farmers have more capabilities to try out new technologies, but can also concern themselves more with the political situation. Therefore, rich(er) farmers are significantly more politically active, and loud about their concerns towards the government, while poor(er) farmers follow the rich farmers (Interview-H, 2018). Another spatial dimension is the urban/rural one, where clear differences in political engagement can be traced back. In the rural areas, only the rich farmers are voicing their concerns to the government regarding issues they find important, while in the urban areas it is much easier for people to engage in political protests (Interview-L, 2018).

The last distinction which needs highlighting is gender, which is also related to the spatial division of the urban and the rural. In the rural areas, many women still identify their roles to Confucianism ideas, and therefore rarely are out of the house, let alone politically engaged. In the urban areas, the Confucian ideas are less strongly present, and women are, much more politically active and able to voice their concerns (Interview-L, 2018).

Small-scale farmers arguably experience the highest insecurity due to the changing delta since their capitals are rather limited due to the low income they receive from their farming activities. With the introduction of the various industrial zones another livelihood option has arisen. However, due to the water pollution coming from these industrial zones, both large and small are impacted negatively, and need more investments to produce their crops (Interview-G, 2018). Large-scale farmers can bear these costs, but for small-scale farmers this can be rather problematic, and the start of many loans with banks they struggle to pay off (Interview-R, 2018).

#### 4.8.3 Individual Security

Regarding the individual security of people, two aspects that need to be taken into account. The first being environmental pollution which can be a direct threat to the health security of many people in the delta, and secondly, the personal security aspect. To begin with the latter, as explained in the communal security level, women specifically in rural areas aren't very politically engaged. Due to their relatively isolated life indoors women are increasingly more vulnerable (Interview-G, 2018). Women become even more vulnerable when migration is added to the equation. As mentioned in the communal security section, migration to the city or industrial areas, is a mitigating strategy specifically for poor farmers to ensure their income. Yet, migration is also a gendered phenomenon. In this particular situation, the woman has to fend for herself, as well as the children, and is dependent on the husband to send money back home. If he doesn't, or he finds another woman to start a family with, the women are vulnerable to any kind of shocks (Interview-I, 2018).

Besides the migration aspect, women are also vulnerable in other ways, especially when they have to run a farm by themselves. During this research, interviews have been conducted with several women who were in that situation, either due to divorce or the death of the husband. A reoccurring problem for women who have to manage a farm by themselves are the lack of knowledge regarding the technical aspects, but also getting access to capital needed for investments in the farm (Interview-P, 2018). On top of that, women who live alone are more vulnerable for crime. An 80-year old woman who lived her life as a shrimp farmer illustrated this for us:

*“Shrimp farmers need to protect their shrimp at night as well for thieves. These thieves come in the night and steal the shrimp to add to their own ponds, and they can be your neighbours or other people living in the village. If you face the thieves in the night when it is dark, they can attack you or even kill you”* (Interview-T, 2018).

This is a clear threat to her personal security, and is a threat because she is specifically targeted because she is a woman who lives by herself.

Lastly, environmental pollution and a shortage of fresh water can be a direct threat to the health security of people living in the delta. Main problems in regards to the environmental pollution are the effects of air pollution in cities, and around the industrial areas, and water pollution from the river. To illustrate how dire the situation regarding the environmental pollution and its impact on human life has become, a scholar from the university of Can Tho described it quite clearly:

*“The environmental pollution is known with the government, and specifically for residents around big farms or industrial areas it is the worst. If nothing is done then those people will be dying at some point due to all the pollution. That is also why the government is working very hard to identify the polluters. So there will be changes happening, otherwise we can’t stay here”* (Interview-K, 2018).

This chapter has taken the first step in the HSAF, and laid out the current situation in the Mekong delta. The various security dimensions have been elaborated, and in the next chapter, the impacts of the upstream dam developments will be connected to the described assessment of the human security in the Mekong delta.



## 5. The Human Security Analysis

The second part of the HSAF is the analysis. The previous chapter has successfully described the situation through the experience of the interviewees, and elaborated on what situation the upstream dam developments take place in, and grant us a more holistic understanding. While the assessment chapter has identified and described detailed information of a complex situation, the human security analysis will break this complex case further down, and relate it back to the initial question posed in this research:

*“In what way do upstream dam developments in the Mekong river, impact the human security of people in the Vietnamese Mekong delta?”.*

To break this complex case down, and to answer the research question posed in this thesis, this chapter will continue by first elaborating on the direct impacts of upstream dam developments, and relate them to the various human security dimensions. However, it is not enough to examine just the direct impacts. The indirect impacts also need to be described and taken into account when conducting a human security analysis. After the direct and indirect impacts of upstream dam developments have been analysed, it will be linked to their consequences. After all, the question is not necessarily *“What is happening?”*, which would be descriptive, but the real question is *“What does this mean?”*. These impacts and their consequences will be linked to the structural challenges they create or add on to, and how agency and capital plays a role for the people in the delta to mitigate these impacts which threaten their human security. Finally, considering the fact that the Vietnamese Mekong delta is such an important area for rice production, and considering the fact that Vietnam is a large rice exporter, the links and impacts to the global level will also be elaborated on.

### 5.1 Direct and Indirect Impacts of Upstream Dam Developments

When it comes to the direct impacts of upstream dam developments, there is a question that needs answering. Namely, what does direct mean? Answering this question, I argue that direct impacts are the impacts caused by the physical construction and presence of a large hydro dam, as there are many of them in the Mekong river. To relate it back to the subjective and objective security threats, it is clear that there is nothing hypothetical or subjective about a large dam constructed. Here I present 5 different direct impacts of upstream dam developments, mainly touching upon the environmental security dimension, and the political security dimension, and following are the indirect impacts and consequences.

#### 5.1.1 Fish Migration and Biodiversity

As has been described in the human security assessment chapter, fish migration is a large part of the biodiversity of the Mekong river, and specifically migratory fish make up for 70% of the fish population in the river (Interview-L, 2018). To begin with the objective threat posed by the physical being of a hydro dam, it needs to be noted that there are many different types of dams, ranging from run-of-the-river types, to large dams with a reservoir. The size and height of dams also play an important role, in their impact on the ability for fish to migrate and the ecosystem to remain connected. Some of these dams can be over 100 meters in height, making it an impossible obstacle for fish to pass. As a consequence of these large dams being constructed with a reservoir, the ecosystem changes and becomes compartmentalised.



*“The compartmentalisation of the ecosystem is altering the conditions for fish species. Due to the fact that the river is changing from a fast flowing river to a river which has reservoirs in it, it means that fish species that thrive better in stagnant water will be more plentiful”* (Interview-B, 2018).

With the construction of hydro dams in the mainstream and the tributary streams, the ecosystem becomes more compartmentalised and isolated from each other, which is specifically problematic for migratory fish species that migrate back to their breeding grounds, or that want to migrate out of the river to reach maturity at sea (Interview-B, 2018). A consequence of this blockade for the migratory fish is that by the year 2040 the hydro dams will have eliminated migratory fish in large part of the Mekong. Between 2020 and 2040, no migratory fish species will be able to survive in the reservoirs of the dams (MRC, 2019).

Just because there are large dams in the river, doesn't mean that the water comes to an absolute standstill. The water keeps on flowing to a certain degree, depending on how the dams are operated. The hydro dams are operated in a way which is called hydro-peaking. This means that the dam releases water and thereby generates electricity when the price for electricity is at its highest price. This means that once or twice a day the spill-ways open to release water and generate electricity (Interview-B, 2018). These spill-ways are often installed at the bottom core of the dams, which can result in certain threats to the fish. There are 5 different impacts that hydro dams have on fish populations besides the blockade of migration. The first one is the temperature differences in the water. The dams constructed in the Mekong river are up to 100 meters in height, meaning there is a large temperature difference at the bottom of a reservoir and the surface of the water. The spill-ways of the dams are at the bottom of the dam where temperature is the lowest. The second aspect that can cause significant damage to fish is a phenomenon which is called barotrauma, which is caused by differences in atmospheric pressure. This occurs when large dams open their spill-ways, and the fish suddenly move from the bottom of the water, to being at the surface. Every 10 meters represents 1 atmospheric pressure, the bladder of fishes can only withstand a sudden difference of about 0,5 atmospheric pressure, let alone if a dam of 100 meters high opens their spill-ways. Besides the temperature and barotrauma, there are three other main causes of fish deaths. Namely sheer, turbulence and being hit in the turbine. The last one is quite obvious, when a fish gets sucked through a turbine when a dam release its water either of the three possibilities occur. Either the fish gets hit by a blade of the turbine and suffers the consequences, or the fish gets stuck in two different streams of water which rips the fish apart. If neither of these two possibilities occurs, the fish always suffers from turbulence which means that after the fish comes out on the other end, it will be disoriented and an easy prey for predators who are waiting on the other side of the dam (Interview-B, 2018).

It is all of these different factors, and the fact that the majority of fish species in the Mekong river are migratory fish species, that will lead to a serious decrease in wild-fish in the river. This means that the overall biodiversity will decrease substantially once all the dams have finished their construction.

In regards to the indirect impacts of the hydro dams on the biodiversity and fish migration, the ecosystem is compartmentalised. The future for migratory fish is very limited, resulting in the biodiversity in the Mekong river dropping dramatically, and some kind of “mono”-culture of fish species remaining in the river. These fish species will mainly be species which aren’t too critical of their direct environment, and thrive better in the newly created conditions (Interview-B, 2018). These have all been impacts on the environmental security, but there are also consequences on the economic security of a specific group, namely fishermen. With fish stocks decreasing significantly in diversity and in quantity, the future for many fishermen seem very bleak. Due to the impacts of the dams, the total biomass of fish will be reduced by 35 to 40% around 2020, and by 40 to 80% by 2040 (MRC, 2019). This means that the livelihood of fishermen is at stake, and that they will have to find another form of livelihood to sustain themselves and their families.

However, the decrease of wild-fish in the Mekong river, isn’t just a threat for the fishermen whose livelihood depends on the fish. It is also a threat to the general food security of people living in the Mekong delta, as the fish provide important nutrients to the general population (Interview-E, 2018). The price of wild-fish on the local markets is increasing steeply, and as described in the previous chapter, when it comes to food security it is the access (specifically the financial access), which allows people to become food secure. Fish farms might provide the solution to this problem, as the fish sold on local markets produced by fish farmers tends to be cheaper compared to the wild-fish (Interview-F, 2018). The fish produced by fish farms is already cheaper, and the difference in price will only increase over time as wild-fish will become scarcer, but the people in the delta have concerns about the consequences for their health. The fish produced in fish farms are often produced in an intensive manner, with lots of chemicals and antibiotics. The dilemma for the people, is that the wild-fish swim in a river which is often heavily polluted by both the industrial areas and the large farms (Interview-F, 2018). This means that both types of fish, could have consequences for the health security of the people. This is a clear example of how a direct impact of upstream dams, don’t just impact the environmental security, but has a trickle-down effect towards other security dimensions.

### 5.1.2 Sedimentation

Another aspect of the environmental security dimension which will be impacted greatly is the sedimentation coming from the river. Sediment in every river has a lot of different purposes, in combination with floods it enriches the soil along the riverbeds and make them significantly more fertile, but sedimentation also play an important part in the ecosystem as a whole, providing nutrients for smaller aquatic species, and thereby feeding the bottom of the food chain (MRC, 2019).

*“The majority of the sediment in the Mekong river comes from the north of Laos, and will therefore experience great hinderance from the dams constructed in the river”* (Interview-D, 2018).

Sediment plays a role in supplying food to the ecosystem and making the land more fertile, as well as in water quality, and preventing erosion. Erosion is a problem which is occurring everywhere along the river, both because of deforestation, but also due to sand mining

(Interview-L, 2018). Erosion can swallow the property of farmers living along the river or coast, and this problem is only going to increase in the near future. This is because the hydro dams in the river block the sediment from going further downstream (Interview-A, 2018). The sediment settles at the bottom of the dam, and every time the spill-ways are opened it shoots out along with the water (Interview-B, 2018). However, due to the speed of the water (something which will be discussed in the next section), the sediment doesn't settle down. Research from different institutions under which the MRC, has shown that the dams will be responsible for a decrease in sediment by 97% (Interview-A, 2018). This means that erosion, especially along the river beds and banks is set to increase substantially, due to the steep decrease in the amount of sediment coming down from the river (MRC, 2019).

When it comes to the consequences of the changes in sedimentation levels, the first objective threat to the farmers living along the river beds and banks is that their property, including land and home, might be swallowed by the river if erosion continues. The floods will bring less sedimentation, resulting in the land not being as fertile as it used to be when sedimentation levels were still higher. This means that to compensate, farmers have to invest more to maintain their productivity, which directly impacts their economic security. Especially for small-scale farmers, additional costs can have large consequences to their overall food security, but also for the continuation of their livelihood.

The decrease in productivity means a lower income, and a larger dependency on potential other sources of income. However, many actions tend to have unintended side effects, and after conducting interviews the downward spiral regarding the use of fertilizers and chemicals has become clear. As the interviewed rice farmers described, because they don't have the right knowledge about fertilizer and chemical use, the water used for rice farming gets polluted (hereby impacting the environmental security). Yet, as described in the previous chapter, this also has health implications, and the polluted water can't be used for domestic use like in the past (Interview-R, 2018).

### 5.1.3 Hydraulic Regime and Floods

The hydraulic regime of the river and its floods are also impacted by the dams. The reservoirs around the dams, and the dams in general change the speed with which the water is moving downstream. When hydro-peaking occurs, the water is released with a lot of speed, until the next dam slows it down again. This changes the normal hydraulic regime of the river. In the normal regime, floods occur frequently, and with purpose. The flooded areas provide feeding and breeding ground for many aquatic animal species, but they also provide a cleaning service. The floods swap away all toxics, acids and other polluting particles, and provide the flooded lands with sediment which increases the fertility of the land substantially (Interview-J, 2018). Due to the changes in the floods, this is different, and the toxics stay on the land. This forces farmers to buy more chemicals and fertilizers, to maintain their productivity.

As described in the human security assessment chapter by an interviewed rice farmer, the floods that are occurring now, are much less intense, and bring less sediment (Interview-R, 2018). The changing speed of the water due to the dams also play in the hand of increased erosion along the river beds and banks, and prevent the sedimentation to sink to the bottom of the river (MRC,

2019). The changes in the hydraulic regime caused by the dams have an ecosystem impact, the temperature of the water, the oxygen levels, the chemical composition of the water, and the floods all change. The floods are important because they are triggers for many migratory fish to begin their migration (InternationalRivers, 2019). Due to the changes in the hydraulic regime, and the river becoming increasingly more calm, different fish species thrive, and it contributes to a more mono-culture like diversity of fish (Interview-B, 2018). However, the changes in speed of the water when it is released from the dam, have another negative side impact. Namely that the fresh water coming down from the river, reaches the South-Chinese Sea significantly faster, leaving farmers with less time to benefit from the precious fresh water which is crucial to the existence of their livelihood.

#### 5.1.4 Fresh Water

The dams constructed in the river aren't run-of-the-river type of dams, but large dams with reservoirs, meaning they keep large quantities of water upstream. This is the same fresh water which used to reach the Mekong delta in a more continuous fashion, but due to the dams and their hydro-peaking, it has changed. The direct impact of the dams, of withholding fresh water upstream has two significant indirect impacts. The first being that farmers have to find a different source of fresh water to use for their crops, and the second is that salt water from the South-Chinese Sea can intrude the delta much further, because there is no fresh water pushing it back (Interview-L, 2018).

Due to this change, the salt water from the sea intrudes the delta further, reaching places it normally doesn't reach. Especially during El Nino, this has proven to be problematic. In 2015, during an extreme drought, the fresh water levels in the delta were very low, and the salt water intruded the delta further than normal. This caused a destruction of many livelihoods from specifically rice and horticulture farms, and left them without an income to buy food (Interview-J, 2018). This is a clear exemplification of how a change in environment directly impacted the economic, food and health security dimensions. It wasn't just because it was a drought during El Nino, there are still people who are dependent for their food security on food sockets, in the dry season.

*“Food security as a whole should keep the interest of the government, especially with the construction of the dams in upstream areas. This is because once the dams are all constructed the price of food will increase again mainly due to the impacts of the dams on the fresh water supply, but also because of the increase in pollution in the delta”* (Interview-L, 2018).

Due to a shortage of fresh water, farmers need to adapt. There are several projects in the delta on smart farming, and how to farm with crops that are less dependent on fresh water, but many farmers still depend on fresh water from the river to water their crops. If they can't get it from the river, due to its salinity, many farmers get it from the ground. Groundwater, pumped up with the pumps on the farms, is an alternative to the fresh water from the river. However, this practice, which is indirectly caused by the dams, has large side effects. The first is that due to the fact that the groundwater pumping is regulated unsuccessfully by the government, there is a real chance of contaminating the groundwater pockets, risking making the groundwater unsuitable for future use (Interview-D, 2018). The second is that due to the pumping of groundwater, soil

subsidence occurs. This means that relatively speaking, the soil goes down, while the level of the sea-water goes up. This creates a situation where salt intrusion in the delta can reach even further, making more farmers dependent on fresh water from the ground instead of the river, which creates a downward spiral. If farmers can't get access to other sources of fresh water, or if the salt water destroys their livelihood, or affects their productivity, it can have a large impact on especially the small-scale farmers.

A typical mitigating strategy for them is to diversify their income, in which women play an important role, and to migrate to the city or industrial areas and send money back home. However, this has led to a large-scale migration to big cities and industrial areas, especially towards Saigon. Due to the fact that many of the people migrating from the rural areas have low levels of education, the jobs they can get are mainly blue-collar jobs. The migrants from the delta also bring a different, more traditional, culture with them to the big city, which can clash with the norms and values of the people living in the city already. Interviews with people in Saigon have showed that this difference can sometimes lead to tensions, and that often the people committing crimes are the people with lower educational levels (Interview-N, 2018).

#### 5.1.5 Protests and Displacement

Throughout the region of South-East Asia, protests have erupted against dam construction in the Mekong river. Especially in countries where the dams are being constructed (mainly Laos and some in Cambodia), people have also been displaced and moved away from their livelihoods. These are once again the direct impacts of the dams and the reservoirs that are created around them. Only four months prior to the field research, one of the dams in Laos collapsed, killing 36 people, 98 still missing, and over 6600 people being displaced (Business-Standard, 2018).

However, the dams additionally cause migration through their indirect impacts on the livelihood of people, forcing small-scale farmers and fishermen to find another livelihood in the urban areas or industrial zones. Due to the fact that many of these industrial zones have a polluting impact on the already scarce fresh water from the river, protests erupted in the delta, to which the government responded with violence (NOT1b, 2018). The trust in the government to manage environmental pollution has remained very low, and the government seems unable to make a real change (Interview-L, 2018).

## 5.2 Mitigating Subjective and Objective Threats

### 5.2.1 Structural Challenges

The Human Security Assessment chapter has indicated several structural problems and challenges that people in the delta have to face, both related to the direct or indirect impacts of upstream dam developments, but also general challenges and problems originating in the delta itself. It is important to take the second one into account, because this helps create an understanding to what degree people in the delta are able to mitigate the impacts of upstream dam developments.

Several structural challenges regarding the environmental security dimension can be identified; the lack of fresh water for farming, salt water intrusion in the delta, decrease in sediment, groundwater use and soil subsidence, and water pollution. As described in the section above, due to a lack of fresh water, farmers have to resort to other sources (groundwater), to get access to fresh water. However, this impacts the other structural problems such as salt water intrusion and soil subsidence.

The main environmental problem originating in the delta is water pollution. Here, three polluting sources can be identified: pollution from industrial areas, plastic pollution and pollution from agriculture. To begin with the pollution from industrial areas, the wastewater is directly discarded into the surface-water of the river and hereby polluting it with heavy metals and other chemicals (Interview-T, 2018). These heavy metals are incorporated into the ecosystem, and eventually in the top predator species in the food chain (Interview-B, 2018). Plastic pollution is receiving more attention nowadays. Throughout the delta plastic pollution is becoming an increasingly bigger problem and the Mekong delta isn't just facing its own plastic, but also the plastic from upstream countries. The plastic can get stuck in motors of boats, and will eventually enter the oceans. The Mekong river is now included in one of the 10 rivers transporting most plastic from land to the oceans (WEF, 2018). Plastic never truly disappears, but it slowly breaks down into micro-plastic and even nano-plastic. These small particles, just like the heavy metals, are incorporated into the ecosystem, and end up in top predator species which are eaten by the people in the delta (Interview-B, 2018). Lastly, the pollution from agriculture, specifically the high amounts of fertilizers and chemicals, pollute the water when farmers empty their lands to harvest the crops, washing all the fertilizers and chemicals into the ecosystem. Due to the water being so polluted, farmers need to use more fertilizers, and more chemicals to ensure the high productivity which is needed to have a secure income (Interview-R, 2018).

Other structural problems in the delta relate to specifically the economic security dimension, and the personal security dimension. The personal security dimension is specifically included, because women in the delta struggle more than men with the same structural economic challenges. Firstly, these structural challenges include: the low-price farmers receive from the middlemen, secondly, the ability to adapt their livelihoods, third, a lack of knowledge regarding fertilizers, chemicals and technical skills, fourth, getting loans from banks, and lastly, social inclusion for women in rural areas. A structural problem, and one which is difficult to cope with, is the many middlemen farmers sell their crops to. Often these middlemen provide a low price, especially compared to international markets (Interview-R, 2018). This means that the income of the farmers is restricted. It is difficult for farmers to directly connect to international companies, due to their limited social network, but also because of language limitations between companies and farmers (Interview-I, 2018).

The second structural challenge is the adaptation of livelihoods. This is something which requires various forms of capital, both in terms of knowledge (cultural capital), and money (economic capital). Due to the changes in the delta, the limitation in fresh water and policy changes, farmers need to switch to crops that are less water dependent, and have to change their agricultural practices to become GAP certified. However, this is not something that all farmers can do, and it depends on their capitals whether or not they are able to.

The third challenge directly corresponds with the cultural capital of people in the delta. Many farmers have learned from the previous generations how to farm, and how much fertilizer and chemicals are needed to ensure high productivity. This has led to a lot of pollution, which then again requires more fertilizers and chemicals. This structural problem can be overcome by teaching farmers about fertilizers and chemicals. However, this is a process that takes time and effort from the government, and still not all farmers want to risk their livelihoods by using less chemicals and fertilizers, and risk to lose in productivity (Interview-H, 2018). To help farmers get access to economic capital, banks give out loans that farmers can pay back after harvesting their crops. But in a changing delta, this is a risky undertaking. If the crop succeeds, the farmer can pay of his/her debt, however, if it doesn't the farmer is in debt. This worry has led many farmers to sell their crops to whatever price, even for a low price they get offered by the middlemen. If at the end, they still don't have enough money to pay of their debts, even family jewels are sold to pay it off (Interview-R, 2018).

Lastly, the social inclusion of women in rural areas remains rather small. They become dependent on the husband for their survival, and if the husband dies, divorces, or migrates to the city and doesn't send remittances back home, they are incredibly vulnerable. Women also have a disadvantage when it comes to the know-how of the technical side of farming, as usually the men do these jobs. Besides the lack of technical knowledge, women also have a harder time getting access to loans from banks, and participating in workshops and other social gatherings (Interview-G, 2018).

### 5.2.2 Capital

The ability for people to overcome these structural challenges, both caused by upstream dam developments, and by policy (or the lack thereof) from the government, is based on the agency people have. The agency is to a certain degree constructed by the various capitals people have access to, and possess. In the chapter of the theoretical framework the various forms of capital; cultural, social, economic and natural were presented, and in this chapter, the thesis will analyse the various capitals people in the delta have access to. The cultural capital of many people in the delta is rather limited, and much of the knowledge people have is based on traditional knowledge gathered over the generations. When it comes to rich/large-scale farmers in the delta, it becomes apparent that they are much more adaptable to implementing new knowledge regarding farming practices. A local scholar interviewed during the research described the process:

*“The rich farmers are much more concerned with sustainable practices, and because they have a lot of land they dedicate a smaller plot of their land to implement new technology or practices to see if they work. If they don't, than there is no threat to the continuation of their livelihood, and if it does work, it is implemented on the rest of the farm”* (Interview-G, 2018).



Vulnerable groups regarding cultural capital are specifically women and poor/small-scale farmers. When it comes to women, specifically in rural areas, they tend to stay indoors, and have limited educational options. Therefore, the knowledge about farming, and specifically the technical side involving fertilizers, chemicals, irrigation and other aspects remains limited. For poor farmers, new knowledge can be useful, but to take the risk to implement new knowledge themselves and risk their livelihood is something which doesn't often happen. Poor farmers often don't have the economic capital to implement new technology, and even if they did, it is a large risk due to the fact that new technology will be implemented on all their land, since it is so small. Poor farmers don't want to risk that, and tend to wait and see how rich farmers thrive with new technologies (Interview-G, 2018).

Lastly, the cultural capital of the youth is significantly more promising than for many farmers. They tend to move towards the cities, or urban areas to get some kind of education, either vocational training or university degrees. Upon finishing, try to look for jobs in the city that don't involve farming. However, the ones that do return are concerned about the state the delta is in, and because they have received education, and sometimes even studied abroad, they tend to be more vocal and more critical towards the government and how they manage problems like environmental pollution (NOT1b, 2018). In conclusion, it can be said that the cultural capital of the people in the delta is important when it comes to their ability to mitigate changes in the delta, and to adapt their livelihood to the changing circumstances. The ability to change, also depends on the knowledge of farming practices, and there are significant differences between different groups in the delta.

Social capital plays a vital role as an alternative to a lack of cultural capital, and in general to mitigate threats people face. To first describe the link to cultural capital a farmer described how important family is.

*“I used to have a garden and do horticulture farming, but as the first one in this area, I switched to fish farming. I didn't face a lot of difficulty, because I had an uncle from the city who helped me with the technical aspects, because it is very different and much more complicated than horticulture farming, but because of him, I had no problems”* (Interview-O, 2018).

Due to this social relationship, between an uncle and his nephew, the farmer was able to overcome the technical challenges and his lack in cultural capital. Family, or having a large extended network is also important to facilitate migration, and find a job. Many families in the delta, have a family member who moved to a big city, and who could help them with migration if needed (Interview-N, 2018). A large social network can also help in regards to getting a better price for a produced crop. Knowing more influential middlemen that offer a better price, is a big advantage for farmers to have. Unfortunately, not all farmers have a large extended network, and besides their family and neighbours in the village, their network often only extends to other neighbouring villages (Interview-R, 2018). Again, rural women are in a marginalised position. Since the culture is still connected to Confucianism, they tend to stay indoors a lot, and therefore have an even more limited social network than men in the same areas. This is problematic, especially when a woman has to fend for herself and her children (Interview-I, 2018). To conclude, social capital can provide an alternative to cultural capital and enable farmers to



mitigate changes and challenges. Above all, social capital creates an alternative, unofficial safety net for people, and in regards to this especially family plays a vital role.

Lastly, the economic capital of people in the delta needs to be considered. As described earlier, there are large differences between rich and poor farmers in their ability to implement new technologies, and to mitigate the changes in the delta. Rich farmers, as described in the human security assessment chapter, also have the “luxury” to protest and speak out against the government if they disagree with policy, or if they are concerned (Interview-H, 2018). A lack of economic capital can become a structural problem, if loans from banks are taken, and the harvest fails. Again, for women it is significantly more difficult to get access to funding from banks, and therefore the Women’s union plays an important role. However, not everybody is pleased with the spending of the Women’s union, saying that the money doesn’t truly go to the families that need it (Interview-Q, 2018). The most valuable natural capitals people need access to, but are becoming increasingly scarce in the near future is the access to fresh water sources and sedimentation. The lack hereof will pose significant threats for the people, and will be a direct threat for the continuation of their livelihoods, specifically for the small-scale farmers and women in the delta.

### 5.2.3 Agency

The combined capitals shape an individual’s agency and thereby mitigating capacity. However, it aren’t just the various capitals that shape the agency of people, but also the economic and political structures. An example of how political structures shape agency can be found on the island of Vinh Long, in the middle of the Mekong river in the delta, where the local government disallowed farmers to switch to fish farming due to increased environmental pollution (Interview-M, 2018). Another change can be seen in the attitudes of farmers, where in the past they used to listen closely to the government, but now dare to look at the market and make decisions based on how the market changes (Interview-J, 2018).

The size of the farms plays an important role in shaping the agency of farmers. Large farms are often owned by rich farmers, and small farms often have poorer owners. Rich farmers tend to focus more on sustainability whilst the poorer farmers use their small farms for intensive farming and produce a large quantity rather than high quality products (Interview-K, 2018). This is something that the national government also realized, and therefore it made a policy change. After the American war, the national government forbid farms to grow past a certain size because they were afraid that the large farmers became too powerful, and challenge the rule of the North over the South. Recently the government lifted this size limitation, and now even promotes small farmers to sell their land, so that there can be an increase in the number of large farms in the delta (Interview-J, 2018). This is part of a larger policy plan of the government, where the government wants to see rich farmers change into agri-businesses so that raw agricultural products are processed in value-chain to increase the economic income of the delta as a whole (Interview-H, 2018).

The agency for the rich farmers is vast, and because of the size of their land they can test new technologies that can be more resilient in a changing delta. However, the delta is also filled with marginalized groups, such as small-scale farmers, fishermen and women, who often have limited capitals, and thereby also limited agency to actively address subjective and objective threats. These groups of people are most at risk due to the changes in the delta caused by the upstream dams, and they will be the first to be in need for help to mitigate the effects, and sustain some form of livelihood. If they fail to adapt to the changes in the delta, the consequences for their human security can be grave.

### 5.3 International Impacts

It has become evident that the upstream dam developments will have a serious impact on the human security of people residing in the Mekong delta. This chapter has so far focused on the Vietnamese Mekong delta, and the direct and indirect impacts the dams will have on the people, and how they are able, or unable, to mitigate these changes. However, there is another aspect that needs to be considered, because of the geographical location these changes are occurring in. As stated throughout the thesis, the Mekong delta is known for its rice production, having the nickname as the rice basket of the country (SPA, 2013a). Vietnam is one of the world's largest exporters of rice, and because rice is a crop dependent on increasingly scarcer fresh water resources, the impact on the international rice market has to be taken into account as well. The following sections will show that although the construction of the dams in the Mekong river, is something "local", they have regional and global consequences.

### 5.3.1 The International Rice Market

When it comes to the staple crops of the world (wheat, maize and rice), rice is significantly different than wheat and maize. Firstly, rice is by far the most important food crop for people in low and lower-middle income countries, and especially important to the poorest people. Besides that, the consumption of rice around the world is on the rise, specifically in Africa (sub-Saharan Africa) and Latin American countries (CGIAR, 2019). Secondly, rice is a crop which only has a small number of countries (5 to be precise), that export large quantities of rice on the world market. Around the world, only 7 to 8 % of the rice crosses an international border at the world price. These 5 countries, Thailand, India, Vietnam, the US and Pakistan provide about 80% of the available rice supplies (Timmer, 2016). Due to the fact that only 5 countries are responsible for 80% of the available rice supplies on the international market, the market suffers from something called “thinness” that can result in highly volatile markets (Rosegrant, Tokgoz, & Bhandary, 2016). When observing the rice export in USD on the international market, it becomes clear which actors are the most important (see figure 8).

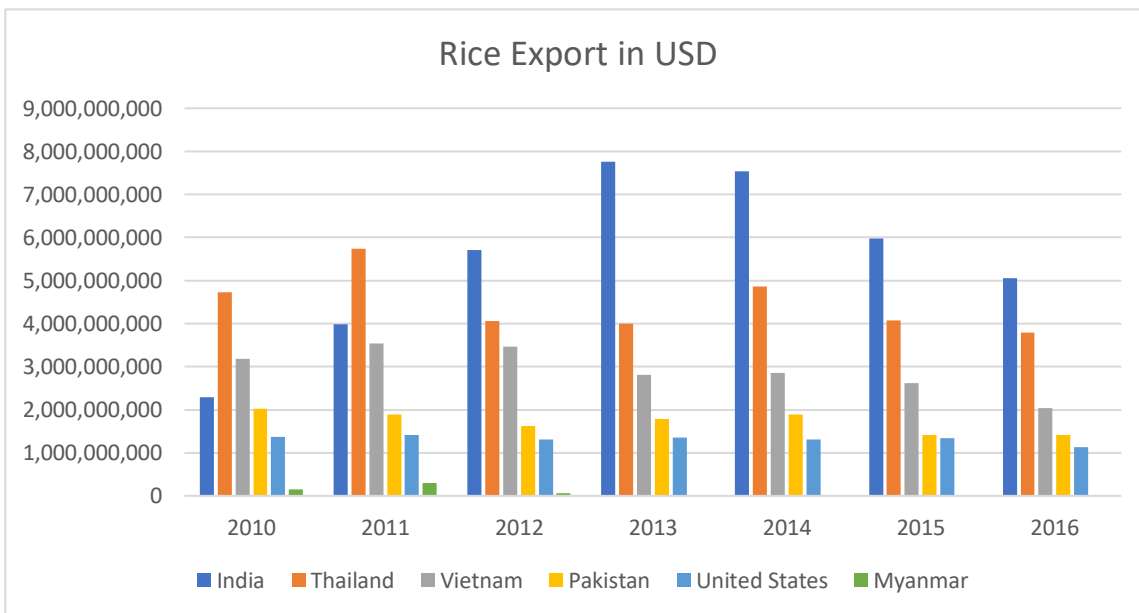


Figure 8 Overview of Large Rice Exporting Countries (UNdata, 2019)

However, out of interviews conducted during the fieldwork another important aspect came to the front. When it comes to the international rice trade, it isn't just about the amount of money spend on the rice, but specifically about the quality and quantity of the rice.

*“Here in Vietnam, we mainly produce with a very low price, but also a very low quality. The rice produced here doesn't go to the wealthy countries, like the Netherlands or the UK, but a lot of other countries”* (Interview-K, 2018).

When examining the export of rice in quantity on the world market, it becomes clear how important Vietnam is as a global exporter of cheap rice (see figure 9 and 10).

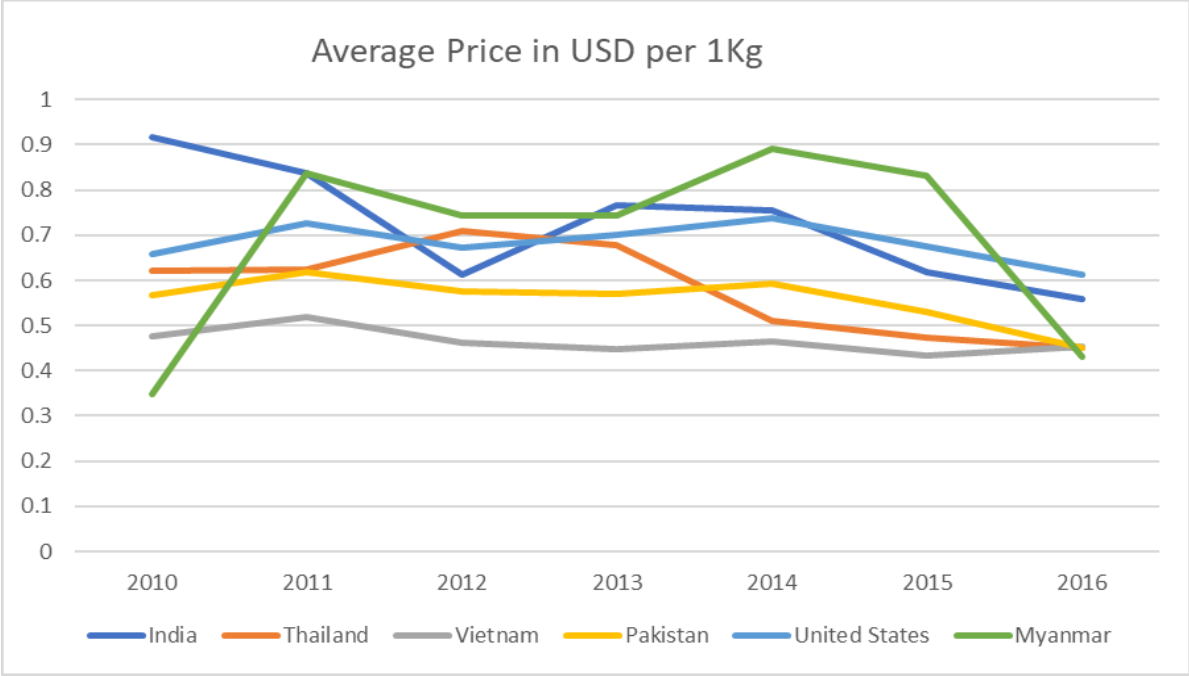


Figure 9 Rice Export in Quantity by Large Exporters (UNdata, 2019)

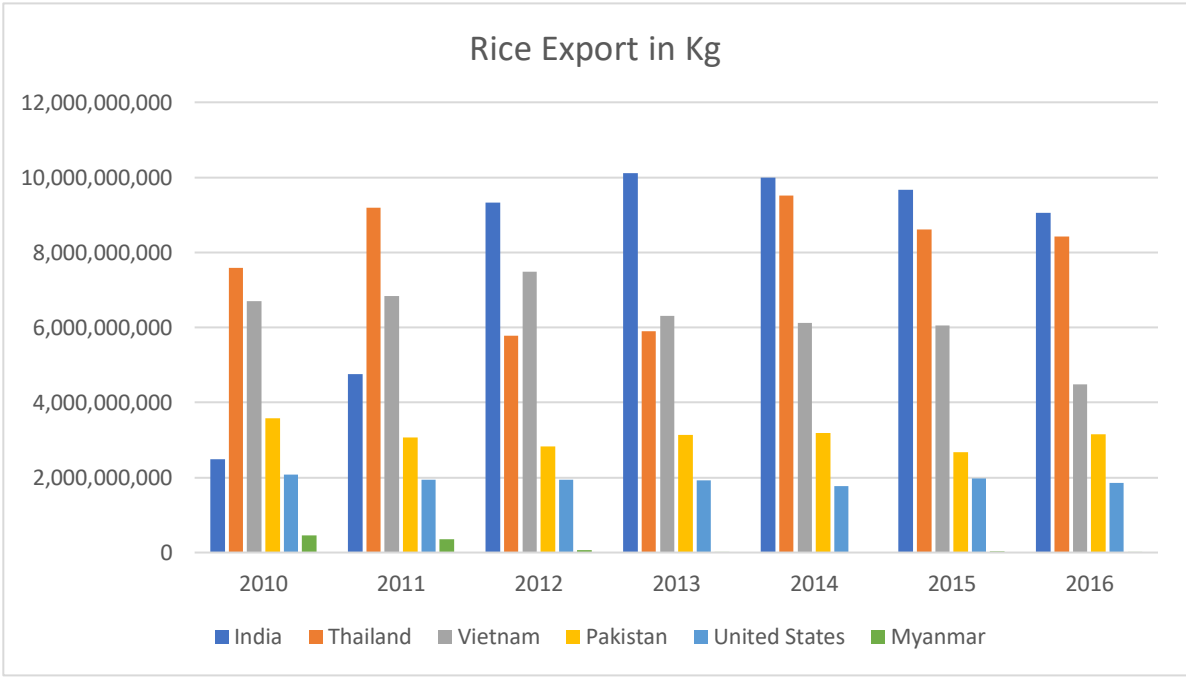


Figure 10 Average Price in USD per Kg (UNdata, 2019)

There are few exporting countries that are so important, therefore, small changes in policy in relation to the production and trade of rice can have a big impact on the global price of rice. This occurred during the price rise crisis in 2007 and 2009 when a large purchase by the Philippines greatly impacted the world price of rice (CGIAR, 2019a). Due to the fact that the rice market is considered rather thin, only having a couple major exporting countries, rice is a political crop. As

of late, much attention has been given to the connection between food security (specifically food price rises), and socio-political stability. Although still contested about the precise nature of the link, Timmer (2016) claims that if there is a causal link between political unrest and food security, rice price shocks will cause shocks to the global food economy.

Countries that consume rice try to keep their domestic rice market stable, and respond to the international rice market on time. During the last food price crisis many importing countries realized that they were too dependent on foreign supplies to ensure domestic food security (Timmer, 2016). This is because higher international prices, drive the domestic price up as well. This means that poor people, who already spend significant amount of money on food, have to pay even more to ensure food security (Rosegrant, Tokgoz, & Bhandary, 2016). To isolate the domestic market from the international market, some countries use trade restrictions to make sure that the price of rice remains stable, but by doing so they amplify the shock effect to other countries, only creating a more volatile international market (Anderson, 2016).

When it comes to countries that import the cheaper lower quality rice from Vietnam, the Philippines, Indonesia, China, Malaysia and Ghana have been the main importers. China, Indonesia and the Philippines are the largest importers, and will be impacted when changes occur in the Vietnamese rice export (ITC, 2019). However, considering the current increase in rice consumption in African countries and Latin American countries, and with further area expansions for rice production being unlikely, global rice yields must rise faster to stabilize at an affordable level (CGIAR, 2019). In the case of the Mekong delta, due to the changes both in policy, but also caused by the upstream dam developments, a different future is described:

*“The Vietnamese government is facilitating a change towards better farming practices, to produce higher quality rice, but less quantity. On top of that, due to climate change, changing rainfall, sea level rise and the upstream dams, the limited fresh water available will cause troubles for the Vietnamese rice continuation, therefore the production of rice will go down.”* (Interview-K, 2018).

Considering the fact that Vietnam is one of the most important rice exporters, the consequences of this on the global level need to be taken into account as well. Especially considering the fact that many countries depend on the lower quality of rice, because it is cheaper (Interview-J, 2018). In this manner, the dam developments in the Mekong river, do not only have a local or regional impact. It is due to the fact that Vietnam is such a big player in rice export, it will also trickle down to the international level, and most likely will impact the global food economy. Depending on the future of rice production, and how heavily it will be impacted in Vietnam, it could be a factor that plays a role in triggering a price spike, due to the fact that the international rice market is highly volatile.

## 6. Discussion

This thesis aims to provide a non-traditional security assessment of the situation around upstream dam development in the Mekong river. This discussion chapter will reflect on various points, firstly, it will reflect on the question why this thesis is needed, and in what way international actors have ignored previous warnings from the MRC about the impacts of dam development, and how a non-traditional security assessment could provide a different angle to show the importance of understanding the complexity of the problem. The HSAF, which has been developed to provide a non-traditional security perspective, will be discussed, and the framework will be reflected upon. It will be discussed to what degree the HSAF has proven to be useful when conducting a non-traditional security assessment. Secondly, the consequences of upstream dam developments on the human security of people in the Vietnamese Mekong delta will be highlighted again, and by using the gathered data from the fieldwork, it will be discussed what these consequences mean for the people in the delta, and other actors involved.

### 6.1 Damming International Actors

In this section I aim to reflect upon the need for this thesis. International structures and actors play an important role when it comes to influencing policy. Especially in the last 10 to 20 years climate change has been a major concern for the UN, World Bank, and other big international institutions, and there has been an increase in attention for energy sources that aren't based on fossil fuels (Veilleux, 2013).

Many countries, specifically developing countries, have been investing in projects focusing on hydropower as a green alternative to fossil fuels. These investments in hydropower have been supported by international institutions such as the World Bank, who have been an important actor regarding the granting of loans for the development and construction of these dams (WorldBankDatabase, 2018). The World Bank sees hydro dams as a good green alternative, and to ensure that the dams don't have negative side effects, they have embraced environmental concerns when they assess the impacts of the projects they finance (Castaneda, 1992). Regarding the construction and impacts of the dams, it is assumed that the negative impacts can be mitigated and that this would provide adequate safeguarding of the ecosystems. However, some impacts of hydro dams can simply not be mitigated (Fawthrop, 2016). The reason these dams are still constructed is because for Laos this will provide free infrastructure, but more importantly, there will be a major energy deficit in Vietnam, meaning that they will be dependent on the electricity produced by the dams (Interview-E, 2018).

*“According to the Mekong River Commission it would be irresponsible to construct large hydro dams in the Mekong river, because they can simply not predict how large the negative impacts will be”* (Interview-D, 2018).

Nevertheless, the World Bank, the Laotian government and private investors still went about with the construction of the dams (InternationalRivers, 2013). But why were the concerns from the MRC ignored? This could be boiled down to two reasons, the first one being that the MRC has a limited capability and effectiveness in decision-making processes, and secondly that there is a bias to build when these actors meet with each other. The signatories of the MRC aim to cooperate on the basis of sovereign equality and territorial integrity in the utilization and

protection of the water resources of the Mekong River Basin, but the MRC itself has no mandate to act in any fashion that has not been approved by the member countries (Bruzelius Backer, 2007). Besides the inability of the MRC to act, there is a bias to build:

*“A typical consortium when it comes to these large projects includes the government, a project developer, and private investors. All of them have a benefit to the construction of these dams, and there is no one that says let’s examine the complete impacts of this project”* (Interview-D, 2018).

Although the MRC has made it clear that it is irresponsible to construct dams in the Mekong river (Finney, 2018), and although the World Bank does have EIAs, for some reason (in the name of economic development), the construction of these dams still went along. According to Jacobs (2002) it is the relative good health of the Mekong river, which has so far contributed in the damping of potential conflicts. But it is the same health, which is now threatened by the dams. Therefore, these dams should be considered a non-traditional security issue, one that causes social and political instabilities and should be considered by the international community as such (Fawthrop, 2018). It is this last statement, that shows why this thesis is relevant, because it contributes to the comprehensive understanding of the security implications of the upstream dam developments.

## 6.2 A Non-Traditional Security Assessment

The need for a non-traditional security perspective on the construction and development of upstream dams in the Mekong river has inspired me to develop the Human Security Assessment Framework (HSAF). This thesis has therefore aimed to explore whether or not the HSAF could be a helpful tool to facilitate a comprehensive understanding from a non-traditional security perspective. Although the HSAF has been proven useful in guiding the assessment and analysis when conducting fieldwork, there are always flaws that need consideration. First, a framework can never truly capture the complexity of the real world. The real world is too messy to be captured in a framework, but that doesn’t mean that frameworks can’t be useful to create a better understanding. Second of all, the word “security” needs to be reflected upon. Since the framework is a human security framework, and based around that concept, the word “security” brings up several assumptions for people, and especially in the field of IR it can be easily assumed that there is a direct link to national/homeland security. However, the HSAF aims to explore the objective and subjective threats that are perceived by people, as the concept of human security is one which is people-centred instead of state-centred. By highlighting the impacts of upstream dams on specifically the environmental, food and economic security dimensions, this thesis illustrates how these threats are perceived by the people interviewed in this research, and how this can impact the socio-political stability of the country. The HSAF includes both food and environmental security, and as the case study shows, the threats to the environmental security of people in the delta, have already led to violent protests. Further, the HSAF incorporates the importance of capitals and agency for people to mitigate subjective and objective threats, which is important because people don’t wait passively for changes that are a threat to the continuation of their livelihood.

Thirdly, the necessity to develop the HSAF is also an answer to the shortcomings of the EIA and ESIA, since in the case of the Mekong river, they haven't proven to be significant enough to seriously impact decision-making processes. The biggest advantage of the HSAF is that it shows the interrelatedness between the various security dimensions, and doesn't provide technical solutions with a depoliticizing effect. Instead it provides an understanding of the structural challenges, opportunities and mitigating strategies people have to their subjective and objective threats, and how a change in one of the security dimensions can trickle down to others. The HSAF shows how various security dimensions are connected to each other, and this has been an important asset when conducting the interviews in the field. This doesn't mean however that it can be used as some kind of checklist, or that it necessarily will make a bigger impact than the EIA or ESIA, but it does provide a different perspective. The HSAF should be used as a guideline to remember that the impacts could trickle down to other security dimensions, and in that way have an impact on the socio-political stability in the country. The arrows in the framework can also be somewhat deceiving. They indicate that there can be a connection from one security dimension to the other. This does not mean that there is a direct and causal relationship between one and another security dimension.

Lastly, the HSAF doesn't aim to measure anything. The goal of the framework is not to provide a certain numeric value to a security dimension, which shows that it is safe or not to start a certain development project. The HSAF aims to create a comprehensive understanding and to guide assessments and analysis. The conclusion to whether or not a project should be implemented still remains with the actors involved. But, as mentioned in the theoretical framework chapter, in an ideal world the HSAF would be conducted by an independent organization. The independent organization could then, based on the structural challenges and the mitigating strategies and capacities of the people, advice whether or not a development project will large implications.

### 6.3 Consequences of Dam Development

As described in the Human Security Analysis chapter and based on the empirical data gathered during the fieldwork, the direct impacts of the dam developments are mainly in the environmental security dimension. Impacts on fish migration, biodiversity, sedimentation, and fresh water reaching downstream areas will be most significant, and have many indirect impacts. This section of the discussion chapter will go deeper into what it means.

These direct impacts of upstream dam developments will also have an impact on the rice production in the Mekong delta. Considering the fact that Vietnam is a major rice exporter, and the Vietnamese Mekong delta is the rice basket, where the far majority of the exported rice is produced, it is important to understand what the upstream dam developments mean to the future of rice export from Vietnam. Due to the thinness of the global rice market, the consequences of upstream dam developments, and the decline in future rice production in the Mekong delta, it could have an impact on the global food market. As described in the last section of the Human Security analysis chapter, already when one main importer decided to import more rice than normally, it had an impact on the price of rice on the global market.



Another aspect which is important to consider is that the main actors who will be able to mitigate the changes caused by the upstream dam developments will be the large-scale/rich farmers. Due to their elaborate forms of capital, they are more likely to be able to mitigate the changes, without facing major disruptions to their livelihood. For small-scale/poor farmers, women, fishermen and people with limited education, the impacts of upstream dam developments will be difficult to mitigate, and directly threaten the continuation of the livelihoods of many people. Out of the interviews, it became clear that for those people, migration to urban and industrial areas has proven to be a main mitigating strategy. Due to their limited cultural capital, tensions between the migrants arriving in the industrial or urban areas, and the people already residing there, could and most likely will increase.

Additionally, and especially in regards to the industrial areas, environmental pollution in the delta will increase and the government will become increasingly more dependent on foreign investors settling in the industrial zones in the delta for the country's economic development and economic growth. Considering the fact that the industrial areas dump their wastewater directly into the surface-water of the river, the potential risks to overall environmental security, economic security and health security, will be increasing over time.

As scholars have been discussing, changes in environmental security could trigger social unrest and could lead to socio-political instability. Although there isn't a direct causal link between the two, and it doesn't in any way mean that environmental insecurity equals socio-political instability, signs of the connection become apparent in the case study as well. Specifically, in relation to the frustrations of the people about the mismanagement of the environmental pollution caused by foreign investors. When the government took the side of the foreign company, and when protests occurred, it eventually led to a violent response from the government and protesters. Regardless of this, there is an increasing focus on food security and its relationship to socio-political stability. The main consensus so far within academia is that it isn't specifically the food security, but rather the food price spikes that cause socio-political unrest to occur, specifically among the urban poor and middle-class. Looking back at how the upstream dam developments can impact the global rice market, it could have an indirect impact on the global food economy, hereby showing that the local, affects the global. In addition, an increased scarcity of wild-fish in the delta will make wild-fish as a commodity more expensive. Aquaculturally produced fish will fill this gap, and is already well underway to do so, but people are concerned about the impact those fish will have on their health, and still prefer the wild-fish over the aquaculturally produced fish. This means that the price of wild-fish will remain high, and that people could be spending a significant part of their income on establishing food security.

Both the changes in environmental and food security, in combination with the steep increase in migration from people from the delta to industrial and urban areas, provide a lot of the ingredients which are needed for a scenario in which socio-political unrest and instability could occur. Especially considering the fact that when food price spikes occur, it is mainly the urban poor and lower-middle class which are impacted most severely, and who will start to protest when this happens. Due to the migration from the delta to the urban and industrial areas, these social groups will continue to grow in numbers in and around the Vietnamese Mekong delta.

## 7. Conclusion

This thesis has two main objectives: firstly, it aims to develop a comprehensive understanding of the security implications of dam development in the Mekong delta, and secondly, this thesis aims to explore how the local impacts on the human security dimensions have possible broader socio-political consequences on both the local and global level.

The need for this thesis can be traced back to the limited acknowledgement of the socio-political implications upstream dam developments have, and how the concerns of the MRC in regards to the impacts of dams were cast aside despite of a 3,600-page report. It is because international institutions such as the World Bank see hydro dams as a good alternative to fossil fuels, and because of the drive from countries for economic development and to develop industrial areas that are in need of energy, that the dam developments continued. This, in spite of the fact that in the West an anti-dam movement has erupted that is deconstructing dams due to their negative impacts.

Although the HSAF is far from perfect, this thesis does exemplify that the HSAF could be a useful tool to help guide assessments and analysis but above all highlight the political implications. The HSAF can be seen as the main theoretical contribution that this thesis provides. The HSAF aimed to show the complexity of the impacts and its consequences, in a way that the EIAs and ESIA are unable to. It has become apparent that the dams create direct and indirect threats to the human security of the people in the Mekong delta. Threats that can mainly be mitigated by large-scale farmers, while many other actors in the delta, such as small-scale farmers, fishermen and women are unable to. Migration to urban and industrial areas will be the main coping mechanism for the actors that are unable to mitigate the direct and indirect impacts of the dams, with all its consequences. This migration flow to urban and industrial areas, creates an increase in tensions between various groups in the delta, and causes an increase in the urban poor, and lower-middle class.

Within academia, increased amount of interest has been placed upon the relationship between socio-political stability and food and environmental security. This then provides a clear reason why the HSAF on such cases can be rather valuable. It shows how it leaves room, unlike the EIA or ESIA, to highlight the political consequences caused by the direct and indirect impacts of upstream dam developments, and link the changes in the various security dimensions to the socio-political stability.

By employing the theory, and using the HSAF on the gathered data from the fieldwork, this thesis provides a comprehensive understanding of not only the impacts of dams on the people in the delta, but has also linked this to what socio-political situation this is occurring in. The empirical data gathered during the fieldwork doesn't merely show how the upstream dam developments impact various human security dimensions, but it also shows what its consequences are. The people in the delta elaborated on their mitigating strategies if their livelihoods are threatened, and migration turned out to be the number one mitigating strategy. The largest changes caused by upstream dam development will be on the environmental security, food prices and migration, combine this with the fact that there is already a frustration towards the government in regards to their management of the environmental threats, and many of the

ingredients for socio-political instability are present. On top of this, due to the fact that migration is the main mitigating strategy of many people in the delta that are unable to mitigate the changes caused by the dams, it leads to a growth in urban poor and lower-middle class. When examining the literature on food security and its link to socio-political stability, it is the urban poor and lower-middle class which are the groups that engage in protests. Due to the employment of the HSAF on the impacts of upstream dam developments, the impact on the rice production in the delta has been highlighted as well, and specifically, what this means on a global level. The impacts of the dams could trickle down to the main importers of Vietnamese rice, and play a role in potential socio-political instability. It is precisely these inherently political consequences which haven't been acknowledged adequately in EIAs or ESIA's, and are often dealt with by providing technical apolitical solutions.

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## Appendices

### A: Interview Guides

The introduction in every interview with the various stakeholder groups was the same, however, the depth and topics of the interviews differed between the different stakeholders.

#### **Introduction**

- Elaborate on who I am, and what the master thesis research is about
- Selected interviewees because of their expertise knowledge and geographical location
- All the answers will be confidential and anonymized
- The interview will last between 30 minutes and an hour
- If it is okay, I would like to record the interview so I can have all my attention on you, and don't have to write and listen at the same time. If you don't want me to record you, it is no problem for me to write on paper
- If you don't want to answer questions, or if you change your mind about participating in the research, you can let me know at any time.

#### **International Stakeholders, interview topics**

- 1) Mekong Delta Plan (MDP)
- 2) Fresh Water Sources
- 3) Upstream Dam Development
- 4) Fish Migration
- 5) Sedimentation
- 6) Hydraulic Regime of the River
- 7) Biodiversity
- 8) Groundwater Management
- 9) Role of the Government
- 10) Food Security
- 11) Energy Sources in the Delta

### **National Stakeholders, interview topics**

- 1) Sustainable Development
- 2) Livelihood Strategies
  - a. Rice Farmers
  - b. Aquaculture Farmers
  - c. Horticulture Farmers
- 3) Fishermen
- 4) Safety Nets
- 5) Food Security
- 6) Environmental Concerns
- 7) Role of the Government
- 8) Challenges for the Delta
- 9) Industrial Areas
- 10) Migration in the Delta
- 11) Upstream Dam Development
- 12) Gender differences

### **Local Stakeholders, interview topics**

- 1) Sustainable Development
- 2) Livelihood Strategies
- 3) Fresh Water Sources
- 4) Rural and Urban Migration
- 5) Value-Chains and Middlemen
- 6) Environmental Situation in the Delta
- 7) Food Security
- 8) Policy from the Government
- 9) Gendered Challenges

## B: Coding Format

As has been described in the thesis research, the concept of human security has guided the research, and also the coding. The only new two additional codes are the methodology code, and the government policy code.

<b>Type</b>	<b>Explanation</b>
Government Policy	The Government Policy code focuses specifically on all forms of policy made by the local, provincial or national government. The political and economic decisions shape the ability of farmers to act and mitigate challenges.
Methodology	The Methodology code is used specifically to indicate reflections on methodology, planning, feelings and concerns and thoughts while conducting fieldwork. They can mainly, if not exclusively be found back in the fieldnotes.
Community Security	Community Security was focused on the traditional practices in the delta, and what the people were used to.
Personal Security	Personal Security was mainly focused on the gender related aspects. However, violence and physical safety were also included.
Health Security	Health Security focused specifically on the threats to the health of the people. Water pollution, air pollution and nutritional income were the main focuses
Political Security	Political Security focused specifically on the NGOs in the delta, the engagement of people in politics, and the political concerns people had in regards to the state of the delta
Economic Security	Economic Security focused on the livelihoods of people. Their sources of income and the various mitigating strategies and safety nets.
Food Security	Food Security focused on the availability, accessibility, utilization and stability of the various food sources.
Environmental Security	Environmental Security focused on the environmental state of the delta, sources of pollution, and important natural capitals such as water.

## C: Coding Tree

Coding Tree			
Concept	Category	Code_Subcode_Number_Date	Explanation
Format			
*Maincode_subcode_respondentnumber_date			
**Colourcoding			
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Government	Mekong Delta Plan	GoP_MDP_Number_Dd	The Mekong delta plan designed by the Dutch government for sustainable development of the delta
	National Government	GoP_NG_Number_Dd	National Government Policy
	Provincial Government	GoP_PG_Number_Dd	Provincial Government Policy
	District Government	GoP_DG_Number_Dd	District Government Policy
	Local Government	GoP_LG_Number_Dd	Local Government Policy
	Resolution 120	GoP_Res_Number_Dd	Resolution 120 is a core resolution for the sustainable development of the delta presented by the Vietnamese government
	3 Pillar Strategy	GoP_3PS_Number_Dd	The 3 pillar strategy is the overall sustainable development approach, economic development, environmental protection and social development
	Mekong River Commission	GoP_MRC_Number_Dd	The Mekong river commission aims to focus on the collaboration between the different riparian states
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Methodol	Feelings	Met_Fee_Number_Dd	Feelings have a direct impact on the research quality and need reflection
	Planning	Met_Pla_Number_Dd	The Planning plays an important part of conducting of research
	Thoughts and Concerns	Met-TaC_Number_Dd	Thoughts and Concerns in the field
	Scientific Methods	Met_SM_Number_Dd	Methodological Choices needed to be made, reflected upon and changed in the field
	Social Interactions	Met_SI_Number_Dd	Social interactions with people
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Communi	Rice and Shrimp Farming	Com_RSF_Number_Dd	This type of farming is a traditional diversifying strategy
	Floating Markets	Com_FM_Number_Dd	Floating markets used to be the centre of trade in the Mekong delta
	Nomadic Lifestyle	Com_NL_Number_Dd	The Nomadic life is traditional for many fisherfolk
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Personal S	Physical Violence	Per_PV_Number_Dd	If someone is physically unsafe it impacts their personal security
	Crime	Per_Cri_Number_Dd	Crime threatens someone's personal security in both a physical, psychological and materialistic manner
	Domestic Violence	Per_DV_Number_Dd	Domestic violence prevents the home from being a safe space
	Violent Conflict	Per_VC_Number_Dd	Violent conflict impacts the Personal security of a person
	Insecurities	Per_Ins_Number_Dd	People are constantly trying to create securities, insecurities can affect someone's personal security
	Gender	Per_Gen_Number_Dd	The gender you have determines a lot of your opportunities however is something set to your identity
	Generation	Per_Age_Number_Dd	Generational differences can also play an important role in decision making
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Health Sec	Health Care	Hea_HC_Number_Dd	Health Care is crucial in receiving treatment on time and dealing with diseases
	Air Pollution	Hea_AP_Number_Dd	Air Pollution can directly affect someone's health
	Water Pollution	Hea_WP_Number_Dd	Water Pollution can directly affect someone's health
	Nutritional Intake	Hea_NI_Number_Dd	Nutritional Intake determines if someone consumes enough nutrients
	Water Security	Hea_WS_Number_Dd	Clean and accessible water for living
	Sanitation	Hea_San_Number_Dd	Sanitation available for people
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Political Se	Social Unrest	Pol_SU_Number_Dd	Social Unrest plays a key role in Political Security
	Political Conflict	Pol_PC_Number_Dd	Political Conflict in neighbouring areas, can impact the political security in another
	Tensions between Provinces	Pol_TbP_Number_Dd	Rivalry could lead to political conflict in the delta
	Rural/Urban Tensions	Pol_RUT_Number_Dd	Migration from rural to urban areas can cause tensions
	NGO Participation	Pol_NGO_Number_Dd	NGOs play an important role in establishing political stability
	Corruption	Pol_Cor_Number_Dd	Corruption can lead to frustrations that can cause political instability
	Political Participation	Pol_PP_Number_Dd	Participating in politics without being afraid of being prosecuted
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Economic	Income	Eco_Inc_Number_Dd	The income of a family or person is important in their economic security
	Market	Eco_Mar_Number_Dd	Participating in the market to sell goods is a way of earning money
	Value-Chain	Eco_VC_Number_Dd	Value-chains should be the drive of the economic development of the delta
	Safety Net	Eco_SN_Number_Dd	Safety nets are important in generating economic security
	Livelihood	Eco_Liv_Number_Dd	A livelihood strategy can determine the economic possibilities
	Rice Farming	Eco_RF_Number_Dd	Rice farming is a common livelihood strategy
	Aquaculture Farming	Eco_AF_Number_Dd	Aquaculture farming is a common livelihood strategy
	Horticulture Farming	Eco_HF_Number_Dd	Horticulture farming is a common livelihood strategy
	Migration	Eco_Mig_Number_Dd	Migration is used to send remittances home, or find a job somewhere else
	Industrialisation	Eco_Ind_Number_Dd	Industrialisation and industrial parks are part of the economic development strategy of Vietnam
	Energy	Eco_Ene_Number_Dd	Energy consumption and production are core aspects of the broader problems
	Foreign Investors	Eco_FI_Number_Dd	Foreign investors play an important role in the economic development strategy
	Fishermen	Eco_Fish_Number_Dd	Fishermen are an important actor in the delta
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Food Secu	Access to Food	FoS_Acc_Number_Dd	Access to Food in the physical and economical way
	Availability to Food	FoS_Ava_Number_Dd	The Availability of Food
	Utilization of Food	FoS_Uti_Number_Dd	The Utilization of Food
	Stability of Food	FoS_Sta_Number_Dd	The Stability of Food
	Nutrient Intake	FoS_Nut_Number_Dd	The Nutrient of intake of people
	Rice	FoS_Rice_Number_Dd	The Rice production and consumption
	Fish	FoS_Fish_Number_Dd	The Fish production and consumption
	Fresh Water	FoS_FW_Number_Dd	The Fresh of water for people
	Horticulture	FoS_Hor_Number_Dd	Eating Fruit and Vegetables
<b>Concept</b>	<b>Category</b>	<b>Code_Subcode_Number_Date</b>	<b>Explanation</b>
Environm	Salination	Env_Sal_Number_Dd	River Sedimentation
	Biodiversity	Env_Bio_Number_Dd	The biodiversity of the ecosystem in the Mekong delta
	Floods	Env_Flo_Number_Dd	Floods in and around the delta and their consequences
	Hydrology	Env_Hyd_Number_Dd	The hydrologic system of the Mekong river
	Sedimentation	Env_Sed_Number_Dd	The changes in sedimentation in the delta and the river
	Ground Water	Env_GW_Number_Dd	Clean water from the ground
	Water Pollution	Env_WP_Number_Dd	Pollution of water in the delta
	Soil Subsidence	Env_SS_Number_Dd	Impacts of soil subsidence
	Extreme Weather	Env_EW_Number_Dd	Extreme weather conditions affecting the delta
	Fish Migration	Env_FM_Number_Dd	Fish migration in the Mekong River
	Sand Mining	Env_SM_Number_Dd	Sand mining used for construction affects the delta
	Plastic	Env_Pla_Number_Dd	Plastic pollution in the river
	Air pollution	Env_AP_Number_Dd	air pollution around the cities and factories

## D: Anonymization

In order to adhere to the promised privacy protection, all respondents in the research have been anonymized. Hereunder you can find which research responded falls under which category within the fieldwork. It can be helpful to understand the role which a certain interviewee has when reading the research.

<b>Role in the Fieldwork</b>		<b>Anonymization Code</b>	<b>Gender</b>	
<b>International Stakeholders</b>		Interview-A, Interview-B, Interview-C, Interview-D	Male	4
			Female	0
<b>National Stakeholders</b>	<b>Scholars</b>	Interview-F, Interview-G, Interview-H, Interview-I, Interview-J, Interview-K, Interview-L	Male	5
			Female	2
<b>National Stakeholders</b>	<b>NGO</b>	Interview-E	Male	1
			Female	0
<b>National Stakeholders</b>	<b>Policy-makers</b>	Interview-M	Male	1
			Female	0
<b>Local Stakeholders</b>	<b>Farmers</b>	Interview-O, Interview-P, Interview-Q, Interview-R (group interview), Interview-S, Interview-T	Male	7
			Female	3
<b>Local Stakeholders</b>	<b>Migrants</b>	Interview-N	Male	0
			Female	1