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Linkages between flooding, migration and resettlement: Viet Nam case study report for EACH-FOR Project

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Abstract

This report provides the results of an investigation into the linkages between flooding and migration/population displacement in the Mekong Delta of Viet Nam as part of the Environmental Change and Forced Migration Scenarios (EACH-FOR) project. Viet Nam was selected as a country for examining the relationship between environmental change and migration because it is a country prone to water or water-related disasters (Sternin 2003), some of which are thought to be increasing due to the influence of climate change (IPCC 2007, Carew-Reid 2007). Moreover, a large portion of the country's population is based in rural areas and is directly dependent on the environment for their livelihood (Adger et al. 2001).

Additionally, in terms of migration, over the past twenty years the patterns and volume of rural out-migration flows in Viet Nam have been undergoing significant transformation (GSO/UNFPA 2006). This has primarily been due to the new opportunities generated by Viet Nam's switch from a centrally planned economy to a more market-oriented economy with the introduction of the Doi Moi policy in 1986 (GSO/UNFPA 2006). Given these factors, this study hopes to shed some light as to how environmental change can interact.

Keywords

linkages, flooding, migration, resettlement, viet, nam, case, study, report, each, project, between

Disciplines

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Viet Nam Case Study Report

“Linkages between flooding, migration and resettlement”

Olivia Dun¹

1. INTRODUCTION

This report provides the results of an investigation into the linkages between flooding and migration/population displacement in the Mekong Delta of Viet Nam as part of the Environmental Change and Forced Migration Scenarios (EACH-FOR) project. Viet Nam was selected as a country for examining the relationship between environmental change and migration because it is a country prone to water or water-related disasters (Sternin 2003), some of which are thought to be increasing due to the influence of climate change (IPCC 2007, Carew-Reid 2007). Moreover, a large portion of the country’s population is based in rural areas and is directly dependent on the environment for their livelihood (Adger *et al.* 2001).

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with other factors as a trigger for population relocation. It is important to understand the different dimensions, complexities and potential for population displacement linked to flooding given that leading scholars on climate change adaptation and resilience state that, “migration may be one response of people whose livelihoods are undermined by climate change. However, climate is unlikely to be the sole, or even the most important ‘push’ factor in migration decisions” (Barnett and Adger 2007:643).

1.1. Synthesis of context

1.1.1. An Overview of the Mekong Delta

The Mekong Delta is one of the most densely populated areas on earth (MRC 2005) and stretches southwards from Kratie in south-eastern Cambodia into southern Viet Nam. The Delta drains the 4400km long main stream of the Mekong River, which originates mainly from snow-melt in the Tanghla Mountains on the Tibetan Plateau in China and passes through Burma, Lao PDR, Thailand and Cambodia before finally draining out into the South China Sea through nine channels located in Viet Nam (see Figure A). The entire Delta covers a total area of 49,520km² with the flood plains in Viet Nam accounting for three quarters of this total area (White 2002).

Eighteen million people (22% of the total population) live in the thirteen provinces² of the Vietnamese portion of the Mekong Delta (see Figure B) (Be *et al.* 2007, UNDP/AusAID 2004). The elevation of these thirteen provinces ranges between 0.5–3 metres above sea-level with the exception of a small mountainous area in the northern part of the Delta (Be *et al.* 2007, White 2002). The Mekong River creates an important breeding habitat for fish and distributes valuable upstream sediments and soils in the delta environment. As a consequence, this enriched flood plain constitutes approximately 40 percent% of the cultivated land in Viet Nam and is known as the ‘rice bowl’ (see Figure C) of the country because it produces more than 50% of the country’s staple food and 60% of the fish-shrimp production (Be *et al.* 2007; MRC 2001). Slow and regular flooding of the Mekong River is therefore considered an integral part of the livelihoods of the Vietnamese population living in the Delta (Be *et al.* 2007).

Currently, Viet Nam is striving to move out of its low development status with a goal of becoming a modern industrialised country by the year 2020 (Government of Viet Nam 2006). Already, over the past three decades, Viet Nam has experienced significantly rapid social, cultural, economic, environmental, political, technological and demographic change, more so than nearly any other country around the globe (Lindskog *et al.* 2005). These changes were brought about largely by a process of transition known as *Doi Moi*, introduced in 1986, which involved the transformation of Viet Nam from a state-led planned economy to a more market oriented one (Lindskog *et al.* 2005, Adger *et al.* 2001). The Mekong Delta, as the ‘rice bowl’ of the country,

² Until recently there were 12 provinces, but in 2004 Can Tho Province was split and Hau Giang Province was formed.

plays a crucial role in aiding Viet Nam to meet its development goals (Nguyen *et al.* 2007).

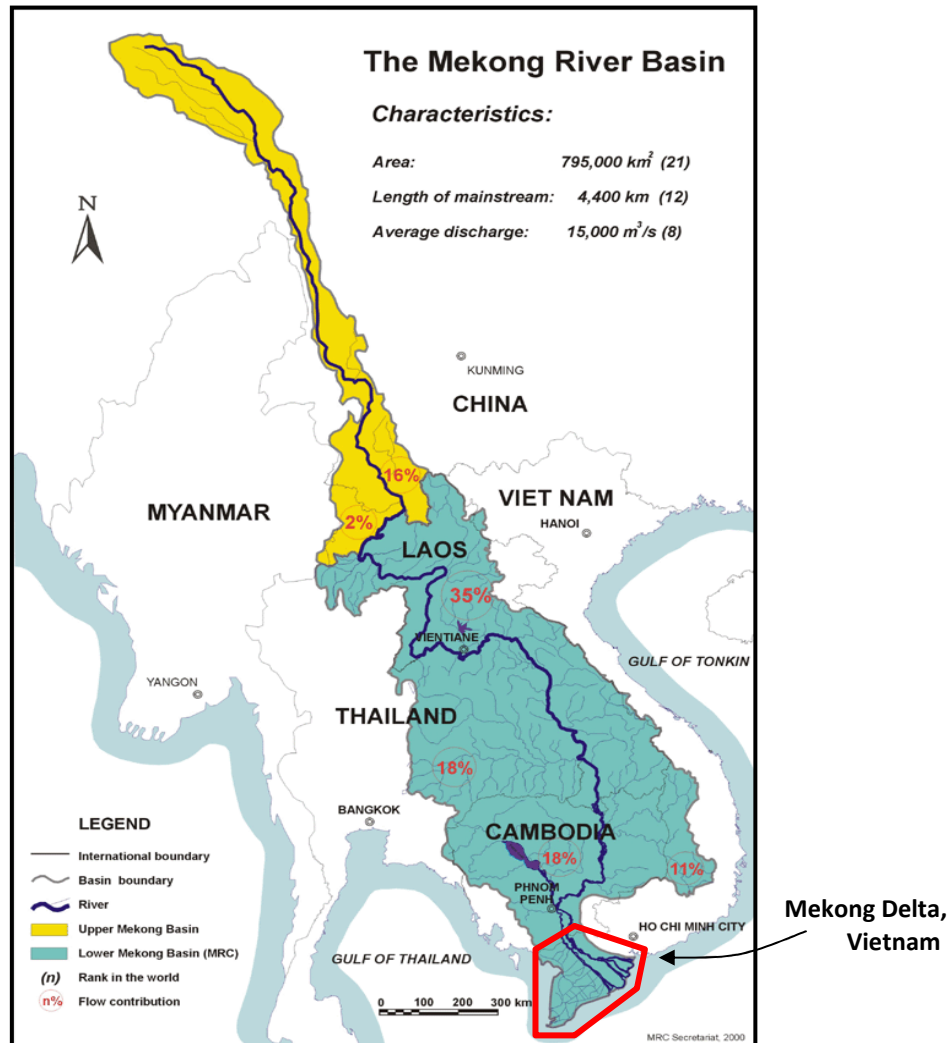


Figure A. The Mekong River Basin Catchment Area (Source: Vietnamese National Mekong Committee 2005)

Many of the advances in recent years as Viet Nam strives to meet its development goals have been due to rapid intensification of agricultural land as well as the development of industry, for example in the Mekong River Delta. While the pursuit of economic development has seen positive impacts in terms of socio-economic trends and reduction of the national poverty level, there are concerns that the rapid rate of development is unsustainable in terms of the demands it places on the environment and that there is a greater need to focus on environmental protection (e.g. Pham *et al.* 1995, Adger *et al.* 2001, Nguyen *et al.* 2007).

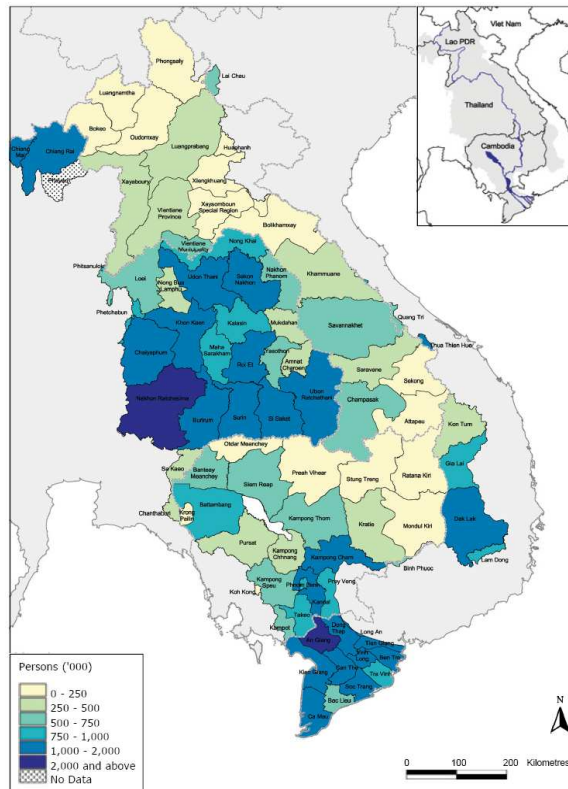


Figure B. Population Density in the Lower Mekong Basin (Source: Hook *et al.* 2003, p24)

1.1.2. Flooding in the Mekong Delta

Regular flooding of the Mekong River occurs annually between July and November and affects 40-50% of the land area (approximately 16000 km²) across nine provinces³ (Pham⁴ 2007 pers. comm.). The peak flood period is between late September and the beginning of October. The flood depth in the Delta during the regular flooding season ranges between 0.5 to 4.0 metres, and is known as the ‘low’ or ‘nice’ flood. Flood levels reaching between 4.0 to 4.5 metres are considered ‘moderate’ floods and those reaching 4.5 metres or higher are considered to be ‘high’ or ‘disaster’ floods (Be *et al.* 2007, Pham⁵ 2007



Figure C. Environmental Satellite (Envisat) image highlighting rice fields of the Mekong Delta, 6 February 2007 (Source: ESA 2007)

³ An Giang, Ben Tre, Can Tho, Dong Thap, Hau Giang, Kien Giang, Long An, Tien Giang and Vinh Long

⁴ Pham Anh Du, Lecturer, Faculty of Environment and Labor Protection, Ton Duc Thang University, Ho Chi Minh City

⁵ Pham Anh Du, Lecturer, Faculty of Environment and Labor Protection, Ton Duc Thang University, Ho Chi Minh City

pers. comm.). According to Be *et al.* (2007), high floods occur when three factors occur simultaneously: firstly, large water volumes affected by typhoons or tropical low pressure systems are received from upstream; secondly, long and heavy rainfall occurs in the Mekong Delta itself; and thirdly, high tides produce high water levels in the delta canals and river channels reducing their drainage capacity. Figure D shows the duration and extent of major floods in the Lower Mekong Basin “based on the maximum extent of inundation during a major flood, (a 1 in 20 year event) as well as the estimated duration of inundation during a medium intensity flood (a 1 in 5 year event)” (Hook *et al.* 2003: 133).

Over the past four decades the frequency of major 1 in 50 year floods of the Mekong River has been a major concern (Lettenmaier 2000 in White 2002: 11) while flood patterns for the Mekong Delta show a worsening trend (Be *et al.* 2007). This is a concern since among their several findings, the Intergovernmental Panel on Climate Change (IPCC) predicts it is very likely that extreme weather events will occur more frequently in the future and the number of people affected will be highest in the low-lying deltas of Asia and Africa. Indeed, officers in the Southern Region Hydro-Meteorological Centre in Ho Chi Minh City state they have made observations that typhoons impacting Viet Nam are increasing in frequency, magnitude, intensity as well as unpredictability in terms of the track that the typhoons follow (Le⁶ 2007 pers. comm.). Typhoons impacting the southeastern coastline of Viet Nam influence the amount of precipitation in the Mekong River catchment area, and can influence flooding levels in the Mekong Delta.

Furthermore, according to the results of a World Bank study released in February 2007, Viet Nam will be one of the countries that is most severely impacted due to potential sea-level rise (Dasgupta *et al.* 2007). It is predicted that for a one metre sea-level rise, Viet Nam will be the worst impacted developing country in terms of percentage of population affected (10.8%), percentage of GDP affected (approx 10%), urban extent affected (approx 10%), and percentage of wetlands inundated (approx 28%) based on current statistics for these factors. These impacts would be mostly felt in the Mekong River delta and Red River delta with Viet Nam ranking second worst impacted developing country for the percentage of land area inundated (approx 5%)

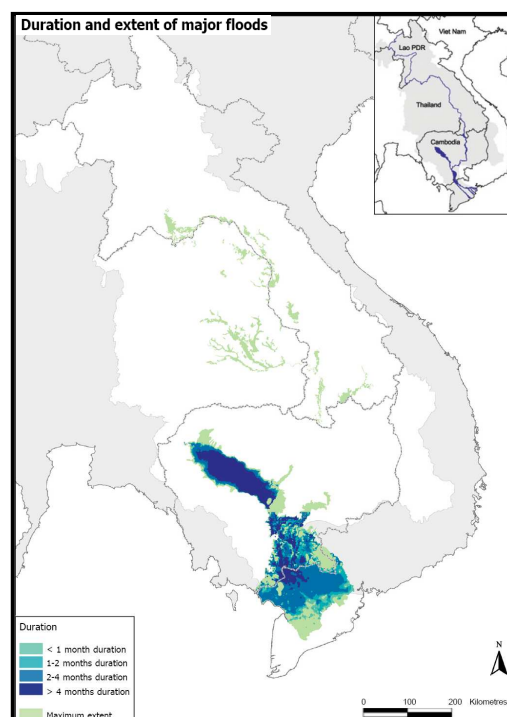


Figure D. Duration and extents of major floods in the Lower Mekong Basin (Source: Hook *et al.* 2003, p132).

⁶ Le Thi Xuan Lan, Deputy Chief, Hydrometeorological Service (HMS) Tong Cuc Thuy Van; Southern Regional Hydro-meteorological Center (SRHMC) Dai Khi Tuong Thuy Van Nam Bo; Hydro-meteorological Forecast Division Du Bao Thuy Van, Ho Chi Minh City

and agricultural extent affected (approx 7%) by a one metre sea-level rise (Dasgupta *et al.* 2007).

In particular, the UN Country Team in Viet Nam highlight that estimates of a one metre sea level rise indicate 12.2% of the country's most fertile land would be lost with 40000km² of the plain and 17 km² coastal areas in the Mekong Delta subject to unprecedented flooding (UN Country Team Viet Nam 2007). This damage would lead the country to face losses totalling US\$17billion per year (UN Country Team Viet Nam 2007). Figure E indicates the areas of Viet Nam and the provinces of the Mekong Delta which are predicted to experience inundation under a one metre sea-level rise scenario based on the current socio-economic and environmental conditions (Carew-Reid 2007).

Bearing in mind that the results of the above-mentioned World Bank study were only released in 2007 and that it was only in 2007 that human-induced climate change was acknowledged and accepted at a global scale for the first time, it is not possible to currently identify people making migration decisions or attribute population displacement in Viet Nam to the influence of climate change. However, Carew-Reid (2007) has attempted to map the population which would be directly affected by sea level rise and thus those that might have to migrate or relocate (see Figure F).

In terms of government strategies to deal with climate change, the Director of the Southern Institute for Water Resources Planning in Viet Nam has released a summary paper outlining that Viet Nam needs to develop a comprehensive National Adaptation Programme of Action (NAPA) under the provision of the United Nations Framework Convention on Climate Change (UNFCCC), so that plans are in place to deal with the impacts of sea level rise. This paper states that developing the NAPA "includes planning for relocation of the affected population and identifying alternative sources of food and income if agricultural lands are lost" (To 2007: 2).

In addition, apart from the influences of altering natural cycles and climatic processes on flooding patterns in the Mekong Delta, there are a number of more localised human-induced changes that contribute to altering the flooding regime of the Mekong River. At a regional level, activities of upstream countries including extraction of water for irrigation and industrial purposes, the construction of hydro-power dams on the Mekong mainstream and tributaries, and drainage of waterways into the Mekong River can all influence the pattern of flooding in the Delta area of Viet Nam (Hirsch 2006). At the local and national level, farming activities, sand extraction and flood mitigation measures, in particular the building of engineered structures such as dykes, can increase flow velocities in rivers and canals leading to increased river bank erosion (Le *et. al.* 2007, Hirsch 2006), as well as contribute to changes in river flooding processes.

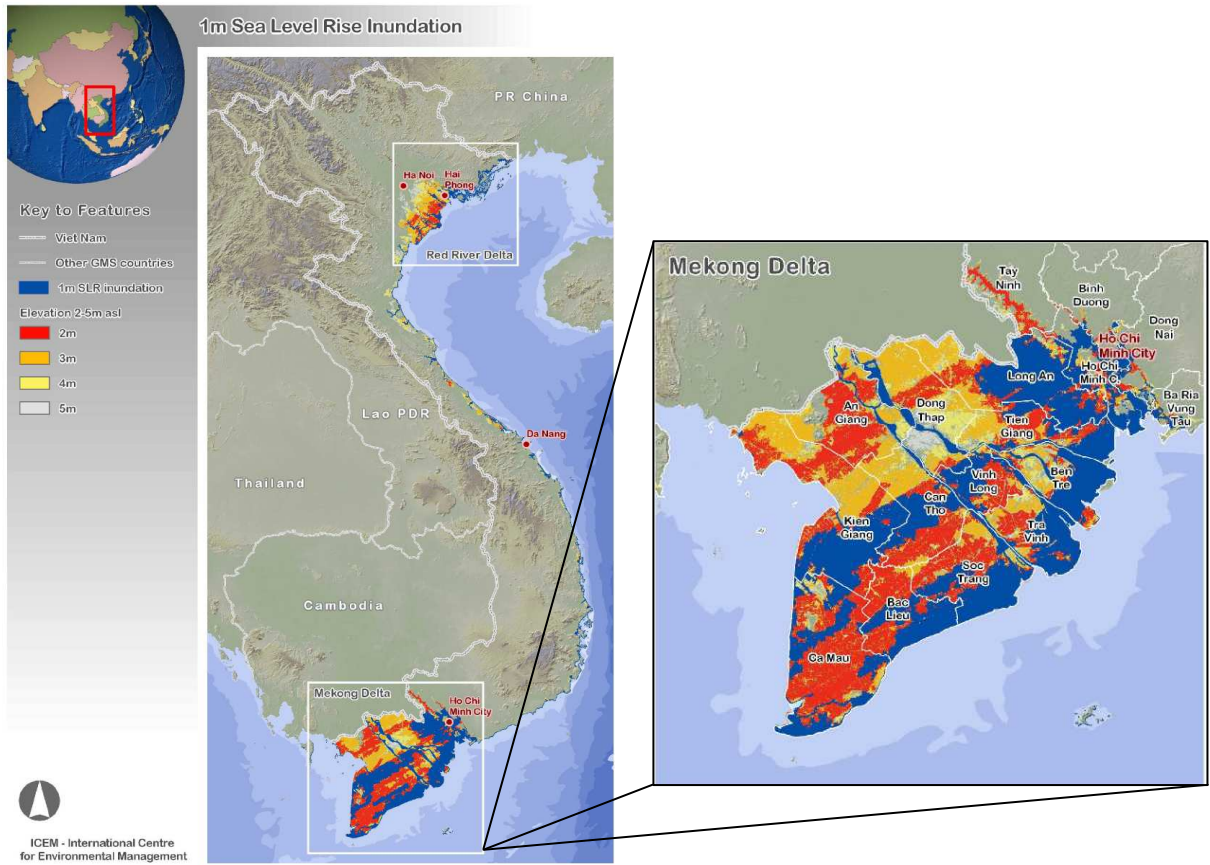


Figure E. Maps indicating areas of Viet Nam which would be inundated under a 1 metre sea-level rise scenario based on current socio-economic and environmental conditions in Viet Nam (Source: Carew-Reid 2007, pp17-18 (modified))

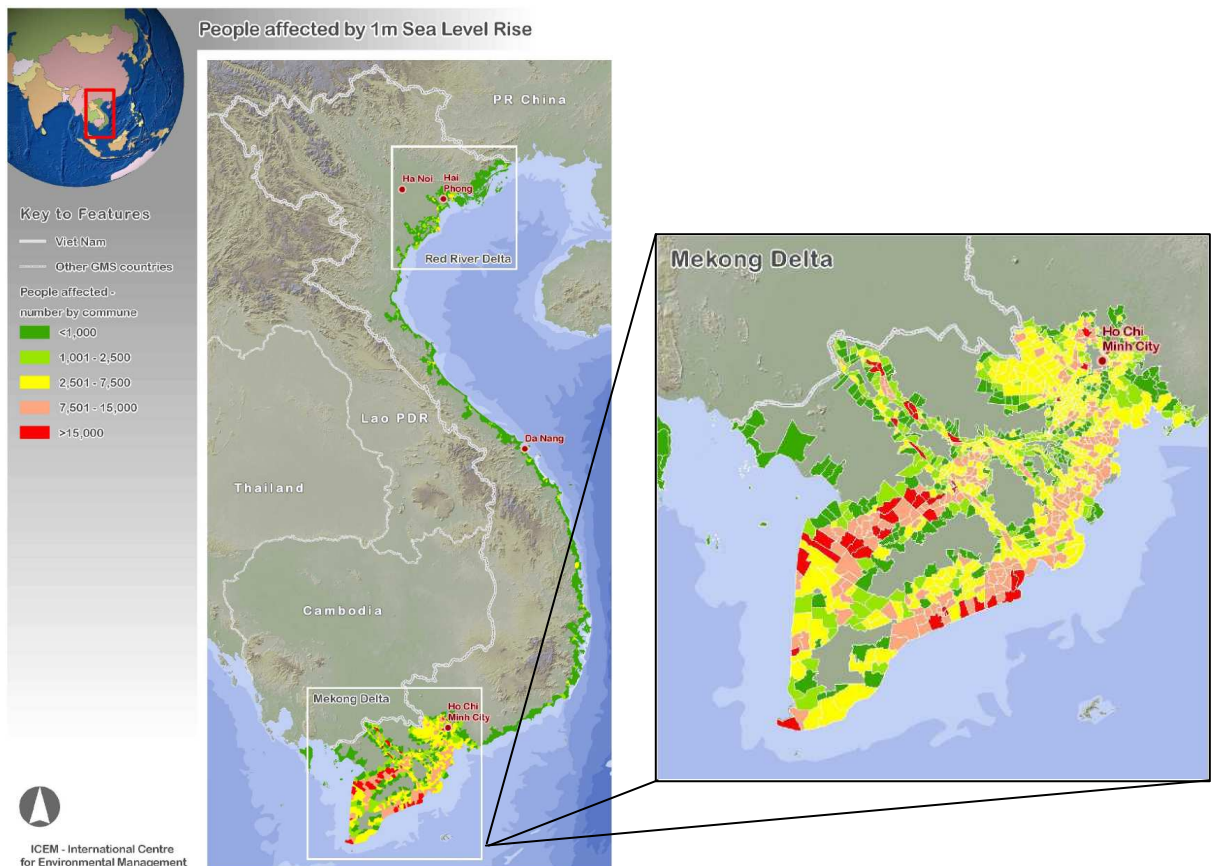


Figure F. Maps indicating number of people affected (and potentially displaced) under a 1 metre sea-level rise scenario based on current socio-economic and environmental conditions in Viet Nam (Source: Carew-Reid 2007, pp27-28 (modified))

1.3 Brief Overview of Migration Processes: Migration Trends and the Mekong Delta

Given the fertile land of the Mekong Delta and various periods of territorial expansion and defence, Viet Nam has a history of government-initiated settlement and spontaneous migration towards the area. The French colonial period (pre-1954) was characterised by the southward movement of Viet (*Kinh*) peasants from the Red River Delta in the north of Viet Nam to the Mekong Delta in the south (Zhang *et al.* 2006). These peasants tended to settle permanently in the south as tenants or landless labourers. In part, this movement south was motivated by environmental and demographic pressures as individuals and communities sought strategies in response to acute population pressure on arable land in the north (Zhang *et al.* 2006).

During the period of war which followed the French colonial period up until the removal of US forces in 1975, the migration patterns in southern Viet Nam were mainly rural to urban, which resulted in an overall trend of population movement away from the Mekong Delta. People were escaping armed conflict in the country side, there were military strategies encouraging people to move to fortified villages and the presence of the US army in Saigon created economic and business opportunities for rural farmers (Zhang *et al.* 2006).

Following the removal of US forces, the country was reunified in 1975 and the population redistribution policies that had been initiated in the north of Viet Nam were continued and also implemented in the south (Zhang *et al.* 2006). Therefore the period from 1975 to 1985 was marked by national scale policies of de-urbanisation and the resettlement of the Vietnamese population in New Economic Zones (NEZs). This entailed an overall pattern of movement and organised population resettlement into the Mekong Delta, especially as many war refugees, migrants and urban middle class people living in major southern Vietnamese cities were repatriated to their native villages or designated NEZs (Zhang *et al.* 2006).

More recently, there has once more been a reversal of this trend and a promotion of rural labour out migration, with the period since 1986 marked by increased urbanisation and rural to rural migration mainly due to agricultural decollectivisation and commercialisation, land tenure changes and changes to household registration regulations (Zhang *et al.* 2006, GSO/UNFPA 2006). Income and employment are cited as the primary factors motivating migration in Viet Nam. In particular under-employment and unemployment in rural areas as well as a lack of higher level education institutions and manufacturing work can serve as push factors for internal migration (GSO/UNFPA 2006). A high population to land ratio in the delta areas has also played a role in triggering migration.

Trends continue to show movement of migrants from the rural Mekong Delta towards urban centres, industrial parks and rapidly developing high-growth provinces in the Southeast and Central Highlands of Viet Nam. The majority of migrants moving out of the region leave on a seasonal or more long-term basis in pursuit of work (UNDP/AusAID 2004). Some end up in low-skill jobs

such as house-keeping or construction work (UNDP/AusAID 2004) while others find jobs in factories or companies, especially in the textiles, apparel and shoes industries in industrial zones (Le 2006). Moreover, many young people in the Mekong Delta are moving to larger urban centres such as Can Tho city or Ho Chi Minh City for education purposes.

In addition to outward migration, there is a large amount of seasonal migration within the Mekong Delta region. Many poor agriculture-based households seek to work as hired labourers during harvest seasons (UNDP/AusAID 2004). Overall, the Mekong Delta is witnessing a net outflow of migrants from the region (UNDP/AusAID 2004). Trends show that migration, both within and outside of the Delta, is driven by economic and/or social factors.

2. METHODS

2.1. Justification of the selection

The research for this case study was conducted in four research sites: An Giang province, Ho Chi Minh City and Hanoi within Viet Nam as well as Phnom Penh, Cambodia (see shaded regions in Figure G). Expert interviews were conducted in all four locations, while interviews and questionnaires with migrants and non-migrants took place in An Giang province, Ho Chi Minh City province and Phnom Penh only. An Giang province was selected as the site of possible migrant origin within the Mekong Delta because it is the province which experiences the highest level of flooding during the annual wet season. Ho Chi Minh Province and Phnom Penh, as major urban centres, were selected as destination locations of migrants from the Mekong Delta.

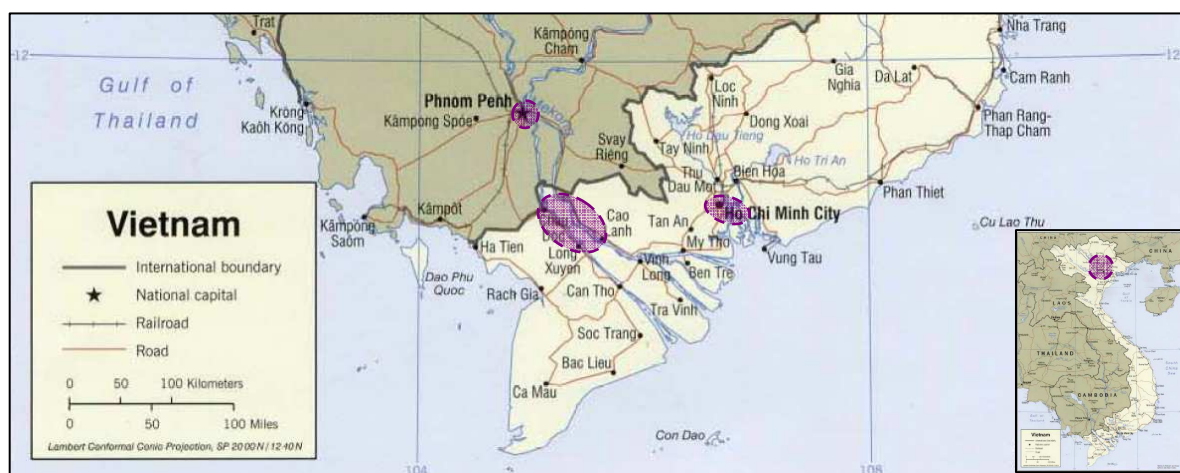


Figure G. Map of southern Viet Nam indicating field research sites (shaded areas). (Source: Central Intelligence Agency (2001): Vietnam (Political) 2001 <http://www.lib.utexas.edu/maps/middle_east_and_asia/vietnam_pol01.pdf>, 4 November 2008 (modified).

Between October and December 2007, the author, in partnership with the International Organization for Migration (IOM) office in Viet Nam, conducted field research examining the influence of environmental change (principally flooding) on migration in the Mekong Delta of Viet Nam. In total 45 expert interviews were carried out in Ho Chi Minh City (HCMC), Ha Noi, the Mekong Delta and Phnom Penh. Experts included government officials, representatives from international organisations, academics and NGO representatives working on migration, environment, development, social welfare or disaster relief issues. The 45 interviewees also included individual experts such as lawyers and doctors who have knowledge of how migrants' lives are affected or influenced.

Research was also conducted directly with migrants from the Mekong Delta now living in Can Gio district of Ho Chi Minh City province, people who currently live along the river banks in An Giang province of the Mekong Delta and resettled households within An Giang province. People living along the river banks or canals in An Giang province face regular flooding during the wet season and their houses and surrounding land are subject to river bank collapse. The government, through the provincial level Department of Agricultural and Rural Development (DARD), organises the resettlement of these households into nearby residential clusters. Semi-structured interviews with the above-mentioned migrants, non-migrants and resettled households were facilitated by and took place in the presence of DARD government staff in An Giang and HCMC provinces.

In addition to the above-mentioned semi-structured interviews with migrants from the Mekong Delta, 32 EACH-FOR questionnaires were completed by Vietnamese migrants in Phnom Penh, Cambodia. The distribution of the questionnaire was coordinated by a Vietnamese medical doctor living in Phnom Penh operating two private medical clinics and who is connected with the Vietnamese community of Phnom Penh. Migrants who completed the questionnaires had migrated from the Vietnamese Mekong Delta region to Cambodia during the previous decade and a half.

The results from these migrant and non-migrant interviews and questionnaires provide at most, focused anecdotal evidence of the linkages between flooding and migration or population displacement. This is because time and budget constraints resulted in the research in Viet Nam only being an initial scoping exercise (as opposed to a systematically thorough scientific study) examining in which way environmental change may displace individuals or households. Nevertheless, while no broad-based, far-reaching conclusions can be drawn from this field research about the overall situation in the Mekong Delta, the findings certainly serve to illustrate some initial patterns and important issues about the linkages between flooding and population movement, as well as associated challenges that are worthy of highlighting and warrant further in-depth examination and consideration.

3. FIELD WORK FINDINGS & ANALYSIS

3.1. *Expert Interviews*

Overall, experts explained that in Viet Nam, migration is mainly internal with the general trend being migration from rural to urban areas. The majority of experts considered the current main drivers of migration to be economic and social reasons with people in search of work or a better life. Much of the internal migration was viewed as temporary, with people (mainly poorer people) migrating seasonally for periods of work up to 4-6 months or more longer term, for periods of 1-3 years, to carry out mainly low-skilled work. They generally held opinion concerning students was that they migrate to urban areas, especially those from the Mekong Delta, to improve their education, and would eventually stay permanently in the urban areas or seek out possible opportunities for migration internationally. It was generally considered that once students had obtained certain skills, they would want the chance to work in their field of expertise and generally not want to return to their former rural lives. It was recognised that during the flooding season in the Mekong Delta, people undertake seasonal labor migration and movement towards urban centers to bolster livelihoods.

In questioning various experts about their knowledge and views in terms of the environmental causes for migration in Viet Nam, the majority of respondents did not consider that environmental factors were a major cause for migration in Viet Nam. However perceptions among experts varied depending on their particular field of expertise or work specialty and how they come into contact with migrants and those vulnerable to environmental change.

Experts in the environmental field such as academic experts, government staff working on water management planning or in the field of hydro-meteorological studies were more prepared to acknowledge the notion that people might be displaced or driven to migrate due to environmental factors. This is in contrast to experts with migration backgrounds who were willing to entertain the idea of potential migration due to environmental drivers in the future but firmly believed that migration would most always primarily be driven by economic and social factors. This difference can be accounted for due to disciplinary knowledge and ways of thinking. Due to their disciplinary field, those working in the environmental sector are aware of the state of the environment in Viet Nam and current threats to its sustainable development and protection being posed by the current rapid rate of socio-economic development and the upstream Mekong River Basin countries. In addition, they are also aware of and have a more in-depth understanding of the potential physical impacts of climate change. On the other hand, those in the migration field have more in-depth knowledge of the complex patterns and factors that make up a migration decision. There were also skeptical experts with environmental backgrounds who thought that rapid socio-economic change in Viet Nam and the development of industrial estates will continue to be the major pull factor for migration in the future as opposed to environmental change being a major push factor.

Interestingly, those that worked in the humanitarian sectors e.g. social welfare workers or aid/disaster relief workers also had diverging views on the question of whether or not people were displaced by environmental factors. Those in the disaster relief field were of the opinion that people did not move permanently due to natural disasters. They explained that during a natural disaster such as a flooding event or typhoon, people rather choose to stay in their homes or on their boats risking their lives in order to protect their property from both the physical impact of the disaster and theft. Of course during the immediate disaster period many people are evacuated temporarily to higher ground and safer structures, however, this is often only for a short period of 1-2 days until the disaster passes.

Social welfare workers in Ho Chi Minh City and one doctor in Phnom Penh on the other hand spontaneously suggested a linkage between flooding events and migration decisions. Both noted that after the regular flooding season in the Mekong Delta, there was often an influx of people to these city areas. For example, one coordinator of several child care shelters in Ho Chi Minh City said that they always expected an influx of children a few months after each annual flooding season. The coordinator said that sometimes children came on their own to the city or with their families who would then place their children in the shelter for protection. Often such children and families would arrive one or two months after the flooding season as they would initially remain in the Delta living off any disaster relief aid provided. Once this aid relief was no longer available to them, they would move to the cities where there were more opportunities to seek work and protection.

A Vietnamese medical doctor interviewed in Phnom Penh indicated that many Vietnamese families come to Phnom Penh because the flooding in the Mekong Delta places too much strain on their livelihoods. A large portion of the findings from the 32 questionnaire results conducted with Vietnamese families who had migrated to Cambodia from the Mekong Delta supported this statement. These are discussed in more depth below. This doctor spoke of some families who would sell their young daughters into the sex industry in Cambodia in order to make some money for survival. As an anecdotal indicator, this highlights that in some cases individuals may become vulnerable to human trafficking as a result of water-related or livelihood stressors.

The difference in opinion between the aid relief workers and social workers/doctor can be explained by the temporal gap as to when each of these experts deals with victims of disasters or migrants. Those in the emergency and aid relief sector tend to deal with victims or people vulnerable to natural disasters in the period leading up to, during and after the disaster. Often their work is focused around disaster preparedness and building resilience of communities before, during and immediately after the disaster when the focus also becomes about rehabilitation of livelihoods. The aim of their work is to strengthen coping strategies in order to avoid death, injury or permanent migration/displacement from disasters. Social workers and doctors come across the victims of such disasters often in the longer term period following the disaster, when perhaps these people have not been able to

regain a satisfactory livelihood, are suffering the effects of the disaster or have migrated away from the disaster affected area for various social or economic reasons. At such a point in time, victims may no longer attract the attention of disaster emergency relief workers. In any case, the conclusion to draw here about the diverging opinions about the linkage between flooding and migration, is to bridge gaps and create networks so dialogue can be initiated between experts from different disciplinary backgrounds (e.g. those experts working on environmental or water management issues with those working on migration and disaster relief issues) who will have to work together to manage a possible growing common problem in the future as Viet Nam prepares to adapt to the impacts of climate change.

3.2. Semi-structured interviews with migrant and non-migrants

Semi-structured interviews conducted with migrants and non-migrants fall into two categories. Firstly, interviews were conducted with people who had voluntarily migrated away from the Mekong Delta to Can Gio district, Ho Chi Minh City province. Secondly, interviews were conducted with people who had been resettled or were planned for resettlement by the Vietnamese government within 1-2km of their former residence within Cho Moi district, An Giang province. These semi-structured interviews revealed a range of reasons as to why people migrate or move.

The semi-structured interviews conducted with migrants living in Can Gio district, Ho Chi Minh City province, were people who had originally lived in the Mekong Delta. The majority of those interviewed had moved to Can Gio district out of their own accord more than a decade earlier and then had subsequently been relocated within Can Gio district by the Vietnamese government through the local office of the Department of Agriculture and Rural Development (DARD). The reason for this subsequent relocation by the government was due to the fact that many of the migrants had settled in dangerous locations along the coast in Can Gio district, where households were subject to coastal storms. The government relocation initiative was to resettle these households to safer locations inland, away from vulnerable locations along the coast. While this resettlement is induced by environmental factors, the focus of the interviews with these resettled migrants was on their original decision to move from Mekong Delta to Can Gio district.

Analysis of these interviews revealed that the majority had migrated from the Delta to HCMC province for economic and social reasons e.g. they had moved due to opportunities for working as fishers for sea-food products, had family members living in Can Gio, members of their family had died or they had married a person from Can Gio. There was little evidence of environmental factors underlying their decisions to move away from the Mekong Delta. Only one former farmer from Long An province mentioned he had moved in the late 1990s because he lost his rice crop on more than one occasion due to flooding and saline water intrusion. This migrant stated he lived in an area of Long An province which was outside the area protected by dykes. Another mobile fruit seller who had lived permanently with his wife and children on a boat in different locations around the Mekong Delta had decided

to move to Can Gio district when the family's boat broke and they lost their main asset that supported their livelihood. They could not afford to repair the boat as it was old and therefore moved to Can Gio to seek work fishing off the coast of Viet Nam. Since moving from the Delta, the migrants had either continued their livelihoods as fishers or changed their livelihoods completely adopting new trades such as becoming a salt producer, dress maker, carpenter or toy seller. Due to the resettlement scheme of the government, these migrants were now living under relatively stable conditions, as the costs for resettlement had been entirely covered by the HCMC provincial government.

The second category of migrants and non-migrants interviewed were those being resettled by the government as part of a flood management and environmental sanitation strategy for people living in vulnerable zones along river banks in Cho Moi district, An Giang province. It is important here to recognise that in relation to the government program of resettling people within the Mekong Delta, the policy of resettlement has not arisen due to floods occurring more often and intensively in recent decades. Rather, the policy of resettling people in residential clusters (often within 1-2km of their former residence) is part of a broader policy on 'living with floods' (see Be *et al.* 2007). For example, the current resettlement occurring in An Giang Province of the Mekong Delta is part of a broader program to relocate people due to a mixture of reasons, most of which are linked to environmental factors (The Peoples Committee of An Giang Province 2006). These reasons include:

- environmental sanitation
- risk of natural calamities (e.g. flooding, landslides)
- risk of river bank erosion
- loss of household land and/or production land due to erosion or landslides
- protection of special use/protected forest areas
- shortage of land and access to clean water
- national defence
- stabilization of nomadic households residing on lagoons and floating fishing villages
- construction of infrastructure facilities such as reservoirs, roads and industrial parks

As part of this resettlement program, in An Giang province 19,690 households are marked for relocation up until 2020 based on the following priority listing:

1. Houses built on rivers, canals and arroyos at risk of collapse from erosion
2. Houses built on rivers, canals and arroyos with heavy pollution
3. Houses detrimental to local landscape and waterways
4. Houses built on the regions which have been planned for socio-economic development facilities.

Brief interviews with households living along river banks marked for resettlement but who had not yet been relocated to residential clusters

revealed that the residents were afraid of the river bank collapsing. Local officials and the people living along the river banks emphasised that the collapse of the river banks has become more severe in the Mekong Delta during the last decade. The intense extraction of sand for construction from the bottom of the Mekong River was cited, by one district staff officer in An Giang, as one of the reasons for increased river bank collapse.

Despite being fearful of potential river bank collapse, the majority of people interviewed preferred to stay living along the river banks in order to continue their livelihoods which were directly dependent on the river for activities such as fishing or collecting water plants and vegetables. In addition to having established social networks, many of the interviewees stated their ancestors had lived in the same area for several generations and these also constituted reasons why people did not want to relocate despite the risk posed by the environmental conditions.

Many of those living along the river banks are poor and often landless and it is these people that are marked for resettlement as they have nowhere else to move to if their houses collapse and often they can not afford to move to urban areas. Being landless, the majority of the poor living along the river banks are often dependent on day to day employment as wage labourers. In this sense, social networks of these households are crucial to insure their daily income. People interviewed feared that when they move to the residential clusters, their social networks would be destroyed and they would not be able to secure a daily income. This constituted their major fear because when poorer communities are relocated together, there can also be increased competition amongst them for employment. One problem of relocation is that those relocated tend to be the poorest and landless people and they may be moved further away from the wealthier inhabitants and landowners of the district who may have employed them or loaned them money.

In order to move to the residential clusters, people are required to buy a plot of land in the resettlement area. The government provides a 5 year interest-free loan to poor households to enable them to purchase a housing plot and a basic house frame structure. Often then, households require a further loan in order to build a house around the housing frame provided. As a result of resettlement, people can fall further into debt, face the risk of unemployment, face lack of access to infrastructure such as waste water treatment facilities, health and schooling and lose the support of their social networks. Residential clusters are also designed as a semi-urban area so people who formerly lived in comparatively dispersed households along the river bank edges were now living on side-by-side plots in the resettlement areas. In order to avoid increasing vulnerability of people as a result of resettlement processes and possibly creating a reason for further migration, it would be helpful if the resettlement process was more participatory and included suggestions for alternative and sustainable livelihoods for those households or individuals who are resettled.

3.3. Questionnaire Findings

In the EACH-FOR project questionnaire completed by 32 Vietnamese migrants who had independently migrated to Phnom Penh, Cambodia, approximately three quarters of respondents stated that environmental problems (like floods or pollution) affected their decision to move at some point in their life. When asked at what point in their migration history environmental problems affected their decision to move, more than half of the respondents stated they moved from their original home with the environment affecting their initial decision to become a migrant. Box 1 contains descriptions of reasons why respondents had migrated in part due to environmental problems.

When respondents were asked whether they expected environmental problems in the future to make them or their family want to migrate to a different place, two fifths of respondents stated 'yes', while just over half of the respondents stated 'no.' When respondents were asked if they planned to move away from their current place of residence, two thirds of respondents indicated they would.

Box 1. Environmental reasons for migration decisions: Quotes from questionnaire respondents who moved from the Mekong Delta, Vietnam to Phnom Penh, Cambodia:

"People were poor and hungry because of the flooding every year"

"In the wet season every year there is flooding, I could not work in the field"

"Flooding occurs every year at my former living place. I could not grow and harvest crops. Life therefore was very miserable. Besides, my family did not know what else we could do other than grow rice and fish. Flooding sometimes threatened our lives. So we came here to find another livelihood."

"My family had crop fields but in recent years, floods occurred very often so the crop was not stable. In addition, the price of fertiliser increased very fast, the diseases of the rice plant are too much so the crop yield was nothing. Even sometimes the yield was not enough to cover the amount required for living."

"At the former place, floods were very often (yearly), so my business was not stable. Income was very low, not enough for daily expenses. My husband was unemployed and drinking all the time, so the family life was more miserable."

"Disasters occurred so often - my family lost the crop, my family had to borrow money to spend. Now, my family is not able to pay off the loan so I have to come here to work to help my family to pay the loan."

"At my former place, there was yearly flooding. Our lives were menaced by the floods. In the flood season we could not grow enough crops for our family. Life was difficult."

"Floods and storms were permanent at my former place. Our life was very difficult. The crop yield was bad, our children could not go to school, our life was risky."

"My family was very poor because we had to sharecrop with the landowner. But the floods and the storms occurred all the time, we decided to migrate to earn a living."

"In my hometown, I worked for people. Life was so difficult, jobs were unstable, plus the floods. And I often suffered the unemployment and could not feed my elderly parents and my younger brothers and sisters. I decided to migrate to Cambodia hoping to change the situation."

"Because I lost the crop every year, I did not have enough income to live. I had to leave for another livelihood."

4. CONCLUSIONS AND FUTURE RESEARCH

Annual cyclical flooding in the Mekong Delta of Viet Nam is a regular event and essential to the livelihoods of those people living in the region. However natural hazards, in combination with the stress placed on the environment due to rapid socio economic development within Viet Nam and upstream South-east Asian countries, overlaid with the threats posed to Viet Nam by climate change, places Viet Nam's environment and those who depend directly upon it for their livelihood in a precarious position. In the face of environmental stress, people in the Mekong Delta will adapt in various ways. One type of coping mechanism may be migration (mainly seasonal or internal migration), particularly in light of the rapid socio-economic changes that Viet Nam is currently experiencing which will create stronger pull factors towards urban environments.

While no broad-based, far-reaching conclusions can be drawn from this field research about the overall situation in the Mekong Delta, the findings certainly serve to illustrate some initial patterns and important issues about the linkages between flooding and population movement, as well as associated challenges that are worthy of highlighting and warrant further in-depth examination and consideration. The following linkages between flooding and migration were found from this short research study:

- During the flooding season, people undertake seasonal labor migration and movement towards urban centers to bolster livelihoods.
- For those directly dependent on agriculture for their livelihood (usually rice farmers), successive flooding events leading to destruction of crops on more than one occasion can drive people to migrate elsewhere in search of an alternative livelihood.
- As an extreme coping mechanism, anecdotal indicators point to human trafficking into neighboring areas as one strategy adopted by families who have suffered from water-related stressors.
- Some child care shelters in Ho Chi Minh City expect influxes of children a few months after each annual flooding season once disaster relief aid is no longer available.
- The government as part of a flood management and environmental sanitation strategy is currently undertaking planned resettlement of people living in vulnerable zones along river banks

Therefore, overall, results from this study show that the impacts of regular flooding of the Mekong Delta can trigger independent household/individual migration decisions and are a cause for government-initiated resettlement of households. This paper has offered a case study which highlights that environmental factors can lead to migration. However, other than in the case where the Vietnamese government is directly resettling households due to specific environmental factors such as river bank erosion or risk of flooding, this case study has not shown that the environment is a direct cause for

migration. Rather, environmental change (flooding in this case study) is shown to be a trigger for independent migration decisions when livelihoods are negatively affected e.g. crops are lost, generally on more than one occasion. In such cases, livelihood stress is the direct cause for migration and environmental factors act as the trigger. This supports the argument put forward by Black (2001) and Kibreab (1997) that migration is multi-faceted.

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