



**Climate Change and Rural Institutions  
in Central Viet Nam**

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## **ABSTRACT**

This working paper presents an overview of initial findings regarding the factors influencing how meso level institutions in Central Viet Nam are responding to climate change and extreme climate events. Findings focus on the challenges affecting coastal zones, particularly areas which are impacted by a combination of environmental change and the introduction of new livelihood opportunities, including rapidly expanding aquacultural production. The working paper describes emerging policies and trends in institutional response to climate change, with emphasis on the convergence of this response with disaster risk management and broader development efforts. The working paper highlights a fundamental contrast between structures related to the current concrete manifestations of climate change, primarily flood and storm control, and the future scenarios of climate change.

## I. INTRODUCTION

This working paper presents an overview of initial findings regarding the factors influencing how meso-level institutions in Central Viet Nam are responding to climate change and extreme climate events. The findings here summarise some of the initial work of the Climate Change and Rural Institutions (CCRI) research programme in Viet Nam. For more information about CCRI see <http://diis.dk/sw113176.asp> This research is focused on the Central Vietnamese provinces of Quang Binh and Thua Thien Hue, as the examples presented reflect data collected in these two provinces. The research included here emphasises the factors affecting the coastal zones of these provinces, particularly areas which are impacted by a combination of environmental change and the introduction of new livelihood opportunities, including rapidly expanding aquacultural production.

Section two of the working paper reviews the impact of climate change in Vietnam. Section three describes the institutions that are directly or indirectly involved in (or affected by) climate change and extreme climate events, while Section four analyses the policies, plans and institutional mandates regarding climate change. Section five presents the main conclusions of the paper.

Viet Nam is often characterised as being a strong developmental state (Gainsborough 2010) in terms of acting decisively to promote a given path to development and intervening in markets in order to do so. It is in the nature of this drive to development that the struggle to address climate change and extreme climate events can be best understood. This working paper considers the nature of Viet Nam as a developmental state, primarily focusing on how this is reflected in the changing roles of meso-level (provincial,

district and commune) government in managing climate risks.

As part of its perceived role in leading development, the national government has, since the fight against colonialism began in the 1940s, made its own decisions and staked out its own course. The earlier post-colonial years were characterised by political isolation. Starting in the late 1980s, Viet Nam shifted to a different development path, which has combined a developmental perspective with keeping a very open attitude toward learning from the international community. At local level this manifests itself as authorities explore ways to continue to lead and promote economic and social development, while they are also experimenting with (and are being drawn into) a range of new decentralised relationships. Meso-level governance is being driven by local factors related to markets, demographic trends and environmental change. The leadership of the central government, combined with these autonomous tendencies at sub-national levels, suggests that the common assumptions about developmental states having a (central) statist bias may be misleading as a conceptual framework for understanding what is happening in Viet Nam (Gainsborough 2010).

These seemingly divergent tendencies of local autonomy and centrally led development efforts frame how Viet Nam has recognised and assumed its own agenda in responding to climate change. This agenda reflects a long history of struggling with natural hazards and a strong social contract between the state (both nationally and at sub-national levels) and the citizenry to ensure basic security in times of crisis.

With a population of over 90 million, Viet Nam is the second most populous country in Southeast Asia after Indonesia. It is located in the centre of Southeast Asia, comprising the

eastern boundary of the Indochinese Peninsula, with a surface area of approximately 333,000 km. The country borders China to the north and Laos and Cambodia to the west. Viet Nam lies completely within the tropical belt of the Northern Hemisphere, extending over 15° of latitude. The country measures 50 kilometres wide at its narrowest point in the north central coast and 600 kilometres at its widest point between Mong Cai and the Viet Nam-Laos border. What makes Viet Nam's geography exceptional in relation to climatic variation and geographic diversity is its 3,260 km long S-shaped coastline from Mong Cai at the border with China to Ha Tien.

The difficulties in governing a country encompassing these great distances have characterised the history of the country (Wescott 2003) and contribute to the contradictory pressures for centralisation and decentralisation which have characterised Vietnamese history and which will be analysed further below.

The Vietnamese economy remains largely rural, but has undergone a radical process of urbanisation and diversification over the past two decades since liberalisation of the economy began. Although rural incomes have improved, the gap between urban and rural incomes has widened. Small urban centres and provincial capitals have grown rapidly, especially in relatively accessible areas and where investment has been high. Household incomes have become diversified as youth in particular obtain urban employment. Education levels are high, and education has historically been highly valued as a way to expand livelihoods beyond agriculture.

Agriculture makes up 20 percent of GDP and provides employment for over half of the workforce. Agriculture and those dependent on agriculture-based livelihoods have borne the brunt of the effects of extreme climate

events and gradual climate change. Despite increasing urbanisation, rural forms of vulnerability are projected to endure (DARA and the Climate Vulnerable Forum 2012).

Rice is the main staple, and Viet Nam experienced phenomenal production growth after the liberalisation of the economy at the end of the 1980s. As national food security has been achieved (attaining and surpassing national food security targets), the past 20 years have seen a cautious and gradual readiness within the government to encourage diversification. Farmers themselves have also gradually recognised the advantages of diversified production, at first primarily in the highly fertile Mekong Delta. Climate change has to some extent encouraged this trend. In some areas affected by salinity and other factors the former rice-based economy has reached a tipping point. Aquaculture has expanded enormously as an alternative to rice production in increasingly saline conditions and as a response to new market-led opportunities.

In 2010 Viet Nam was the single largest recipient of international climate adaptation funding, mostly in the form of concessional loans, but the USD 200 million received for a population of over 90 million constitutes less than 0.1 percent of GDP (DARA and the Climate Vulnerable Forum 2012). Even highly vulnerable parts of the country are still not receiving significant international climate investment. Viet Nam has shown a readiness to invest its own resources in climate change adaptation as well, but the eventual roles of international and domestic finance are not yet clearly defined. This creates uncertainties at local levels where authorities are increasingly recognising threats related to climate change, particularly in the form of extreme climate events, but are unsure who will pay for what in relation to climate adaptation.

## 2. THE IMPACT OF CLIMATE CHANGE IN VIET NAM

### 2.1 Changes in temperature, precipitation and sea levels

Viet Nam is likely to be among the countries hardest hit by climate change, mainly through rising sea levels and changes in rainfall and temperatures (Bingxin et al. 2010:v), though as described below, projected scenarios vary greatly. Studies for the Southeast Asian region show that climate change and its related impacts could lower agricultural productivity by 2-15 percent by 2080 in Viet Nam (Zhai and Zhuang 2009:4-5).

Mean annual temperature in the country has increased with 0.4°C since 1960, a rate of approximately 0.09°C per decade. Warming has been more rapid in the southern parts of Viet Nam than in the central and northern parts of the country. The frequency of cold days and nights annually has decreased significantly since the 1960s, whereas the number of hot days and nights has increased signifi-

cantly in the same time period, in every season (McSweeney et al. 2008:1-2). According to Viet Nam's official climate change and sea level rise report from the Ministry of Natural Resources and the Environment (MONRE), the annual average temperature increased with 0.5 to 0.7°C between 1958 and 2007 (MONRE 2009:4), which is above McSweeney's calculations. The total picture, however, shows a temperature increase in Viet Nam in the last 50 years.

In the future, the mean annual temperature is projected to increase with 0.8 to 2.7°C by the 2060s and 1.4 to 4.2°C by the 2090s. The range of projections for 2090 under any one emissions scenario is around 1.5-2.0°C (McSweeney et al. 2008:2). MONRE reports that temperatures in winter can increase faster than those in summer for all climate zones. Temperatures in the northern climate zones may also increase faster than those in southern climate zones. Combining low, medium and high emission scenarios for both the northern and southern climatic zones presented in

Table 1. Changes in annual mean temperature relative to period of 1980-1999, medium emissions scenario

Climatic region	Decades in the 21 Century								
	2020	2030	2040	2050	2060	2070	2080	2090	2100
North West	0.5	0.7	1.0	1.3	1.6	1.9	2.1	2.4	2.6
North East	0.5	0.7	1.0	1.2	1.6	1.8	2.1	2.3	2.5
North Delta	0.5	0.7	0.9	1.2	1.5	1.8	2.0	2.2	2.4
North Central	0.5	0.8	1.1	1.5	1.8	2.1	2.4	2.6	2.8
South Central	0.4	0.5	0.7	0.9	1.2	1.4	1.6	1.8	1.9
Central Highlands	0.3	0.5	0.6	0.8	1.0	1.2	1.4	1.5	1.6
South	0.4	0.6	0.8	1.0	1.3	1.6	1.8	1.9	2.0

Source: MONRE 2009:12

the MONRE report, Viet Nam will by 2060 have an annual mean temperature increase of 0.9-1.8°C and by 2090, 1.1-3.1°C (MONRE 2009:11-13). However, the McSweeney report projects a higher annual mean temperature increase for Viet Nam than the MONRE 2009 report.

Impacts from a temperature increase are many. For Vietnamese agriculture, a 1°C increase in minimum temperature could lead to a 10 percent reduction in rice yields. Fish and shrimp species develop more favourably in a water temperature in the range of 20° to 25°C. Aquaculture yields may therefore decline at water temperatures much above 30°C (Tuan 2010:7).

The MONRE 2009 report shows that rainfall in Viet Nam over the past 50 years (1958-2007) has decreased by about 2 percent (MONRE 2009:5). This is contradictory to what McSweeney et al. conclude in their country report, which instead states that mean rainfall over Viet Nam does not show any consistent increase or decrease since 1960 (McSweeney et al. 2008:2). In addition, the authors conclude that neither the proportion of rainfall that occurs in heavy events, nor the magnitude of maximum one and five day events have altered significantly or consistently over the observed period (McSweeney et al. 2008:2).

However, future projections for mean annual rainfall in Viet Nam consistently indicate increases in rainfall. This increase is mainly due to projected increases in August, September and October, but is partially offset by projected decreases in February, March and April (McSweeney 2008:3). The MONRE report projects total overall annual and rainy season rainfall to increase, while dry season rainfall will decrease, especially in the southern climate zones (MONRE 2009:12). The MONRE report gives a detailed overview of

projected rainfall increases over the different climatic regions. Under a medium emission scenario, the report projects that by the end of the current century, annual rainfall will increase, relative to the period of 1980-1999, by about 7-8 percent in the northern parts of the country and about 2-3 percent in the south and central zones. Rainfall in the middle of the dry season in the south, however, will decrease up to 10-15 percent, while northern parts will experience a decrease of about 4-10 percent. During the rainy season, rainfall will increase by 10-15 percent in the northern and south central parts (MONRE 2009:13). The proportion of total rainfall that falls in heavy events is projected to increase by an additional 2 to 14 percent by the 2090s (McSweeney et al. 2008:3).

A World Bank Policy Paper stated in 2007 that Viet Nam will suffer greatly from sea level rise in the future. The vulnerability of the coastal zone of Viet Nam could be attributed to its lowlying character, since coastal areas at or below one metre of elevation constitute much of Viet Nam's coastline. However, sea level rise is only part of the picture as rapid population growth in low coastal areas also contributes to coastal vulnerability. Much of Viet Nam's coastline is extremely lowlying, making sea level rise a high-priority issue for the country (Boateng 2012:26, Hanh and Furukawa 2007:52).

Sea levels in Viet Nam have increased by 5 cm in the past 30 years (Hanh and Furukawa 2007:51). Sea level rises measuring between 1.75 and 2.56 mm per year have been identified at four Vietnamese stations – Hon Dau, Da Nang, Qui Nhon and Vung Tau. The greatest changes were observed in the northern and the southern parts of the country.

Estimations for expected future sea level rise in Viet Nam range from 0.28-0.33 metre in 2050 under high, medium and low



Table 2. Sea Level Rise (cm) relative to period of 1980 - 1999

Scenarios	Decades in the 21 Century								
	2020	2030	2040	2050	2060	2070	2080	2090	2100
Low emission scenario (B1)	11	17	23	<b>28</b>	35	42	50	57	<b>65</b>
Medium emission scenario (B2)	12	17	23	<b>20</b>	37	46	54	64	<b>75</b>
High emission scenario (A1FI)	12	17	24	<b>33</b>	44	57	71	86	<b>100</b>

Source: MONRE 2009:15

emission scenarios to 0.65-1.0 metre by 2100 (MONRE 2009:15).

The Red River Delta in the north and the Mekong River Delta in the south are particularly vulnerable to sea level rise (Dasgupta et al. 2007:28, Boateng 2012:26-28, Hanh and Furukawa 2007:52). In addition, most of Viet Nam's land area southwest of Ho Chi Minh City would be severely impacted by a sea level rise (Dasgupta et al. 2007:28). Most of Viet Nam's population and economic activity are located in the two river deltas. If the sea were to rise by one metre, almost 11 percent of Viet Nam's population would be impacted, and 35 percent would be impacted by a 5 metre sea level rise (Dasgupta et al. 2007:28). Viet Nam's agricultural production would be the most severely impacted in East Asia; a one metre sea level rise would impact 6-7 percent of the agricultural sector (Dasgupta et al. 2007:32-33). Carew-Reid assesses that by 2100, 14,528 sq kilometres, or 4.4 percent of Viet Nam's land area could be permanently inundated (Carew-Reid 2008:2). Coastal and estuary mangrove forest wetlands and other submerged aquatic vegetation, which provide habits and nutrient sources for fish, would also be severely affected by sea level rise (Tuan 2010:7).

Saline water intrusion into estuaries is caused by draining and opening up of del-

tas and also reduced dry season river flows resulting from reduced water retention upstream and reduced dry season rainfall. There is also significant pressure due to sea level rise. In a case study on the Lower Mekong River Delta, Le Anh Tuan found that decreased water flow from the upstream of the Mekong River in the dry seasons, combined with sea level rise, may lead to increasingly serious saltwater intrusion into the Lower Mekong River Delta, threatening agriculture and aquaculture production in the area (Tuan 2010:4; 6). Saline intrusion is thus a serious problem for coastal agriculture (Hanh and Furukawa 2007:56). According to a study by the International Food Policy Research Institute (IFPRI), the sea level rise projected by MONRE in their 2009 report will profoundly affect the level of salinisation and rice production around the Mekong River Delta. The report assesses that in the rainy season, the areas inundated with water deeper than 0.5 metre would increase by 276,000 hectares, and in the dry season areas affected by salinity intrusion with a concentration greater than 4 grams per litre would increase by 420,000 hectares. The report calculates that if 70 percent of the affected areas are paddy rice area, 193,000 hectares of paddy rice area could be lost due to inundation, and 294,000

**Box 1. Increasing salinity, tipping point or trigger for market innovation?**

Salinity intrusion is among the major climate change impacts faced by farmers in coastal areas of Quang Binh and Thua Thien Hue provinces. Rice productivity has been declining over time. In response to this district and provincial authorities have planned to convert rice lands affected by salinity intrusion to aquaculture production. This is seen as a way to both adapt to climate change and also generate more income for farmers since aquaculture has been expected to provide higher profits for farmers than rice. However, aquaculture is far more capital intensive than rice cultivation, particularly for stabilising and building dykes around ponds, purchase of feed and other infrastructure. These investments are greatest for monoculture production of tiger shrimp. Poor households cannot afford these investments and are often selling their land where this conversion is underway.

More wealthy households that can afford these investments also purchase land from poor households, but even these better off households may not be able to manage the risks inherent in these new production systems. Numerous households in coastal areas where CCRI research is underway have gone bankrupt as a result of losses due to disease, difficulties in controlling salinity levels and other factors. In addition, some poor people have not received full payment after they have sold their land, because the companies or households who purchased their lands for aquaculture have run into difficulties.

As a response, many aquacultural lands are being converted to polyculture production of a combination of shrimp, crabs, fish, etc. These systems involve lower investments and somewhat lower production risks, but may still be affected by unseasonal rains. Potential profits are also lower. More radical innovations are thus being supplanted by lower-risk alternatives as farmers try to optimise their responses to climate and market signals.

**Box 2. 2010 Flood in Quang Binh Province**

From 1st to 5th October 2010, Quang Binh suffered widespread and continuous heavy rainfall, in most areas totaling over 1000 mm. Although local people and authorities had received forecasts and had prepared for flooding, they did not expect such heavy precipitation. Within only five days, rainfall amounted to approximately half the average annual rainfall in the province. The water levels caused widespread flooding in Quang Binh. Rivers in Quang Binh rose very quickly. Previous record flood levels were surpassed. Six of seven districts of the province were inundated, in many areas flood levels reached the roofs of the houses. Floods isolated many localities and residential areas causing great damage to property and seriously affecting people's livelihoods. The floods killed 42 people and resulted in damages estimated at 1.3 billion dong (Quang Binh Department of Flood and Storm Control, 2012). Locally, this disaster came to be called "flood heaped upon flood".

After this historical flood, Quang Binh Province engaged in significant institutional strengthening and awareness-raising activities to enhance its disaster management and response capacity. The Provincial People's Committee (PPC) issued new 5 decisions to enhance the organization and structure of Committees for Flood and Storm Control at all levels. They implemented training courses on disaster management and mitigation for hundreds of commune leaders and Red Cross members, and provided courses, guidebooks and newsletters for communities. The PPC also increased funding and prioritization for infrastructure for disaster risk reduction.

hectares could be lost due to salinity intrusion by 2050. This loss of rice area will lead to a rice production decline of about 2.7 million metric tons per year (based on 2007 rice yields), 0.9 million tons in rainy season due to inundation and 1.8 million tons in dry season due to salinity intrusion. This is an equivalent of about 13 percent of the 2007 total rice harvest in the Mekong River Delta (Bingxin et al.2010:8). In Viet Nam, 50 percent of national rice production comes from the Mekong Delta (Hanh and Furukawa 2007:56).

Coastal erosion is also a key concern in the country. Caused by a variety of factors, coastal erosion typically falls into two categories: sand migration along the shore, causing some areas to erode and others to expand, and rising sea levels causing shores to erode. Currently, 243 coastal sites in Viet Nam, covering 469 kilometres of coastline, have eroded at a rate of 5-10 metres per year; 96 of the sites have lost more than one kilometre of coastline to erosion. Some 36 kilometres of coastline have been eroding at a rate of 30-50 metres/year for the last century (Hanh and Furukawa 2007:53).

## 2.2 Disasters triggered by extreme climate events

Viet Nam suffers from many kinds of disasters related to floods, storms, tropical depressions, storm surges, inundations, whirlwinds, flash floods, hail, rain, drought, landslides and forest fires. Storms and flooding are the most frequent hazards (Asean Inter-Parliamentary Assembly Viet Nam Report 2011:1). Such events have had a formative impact on government institutions, as evidenced from the extreme flooding of 1999.

Smaller but nonetheless severe floods occur every year. Only in 2010, Viet Nam was affected by six storms and four extreme

### Box 3. 1999 flood in Thua Thien Hue Province

During the period of 2nd to 11th November, 1999 an extreme flood affected Thua Thien Hue Province. Floods of this magnitude are referred to in Viet Nam as “historical floods”. Flooding was severe throughout the coastal areas, including Hue City. An excess of 1,000 mm precipitation per day was recorded for some days. This raised the water level of major rivers in the central region to an unprecedented height. Perfume River flood levels reached nearly 6 metres above average – about 0.46 metres higher than the water level in the last historical flood in 1953. At almost 1.4 metres, rainfall in Hue City on November 2 in Hue was the second heaviest recorded rainfall in the world. In this historical flood, 352 people died; over 25 thousand houses collapsed or were washed away; over one thousand schools collapsed, and 160,000 cattle and close to 900,000 poultry were killed. The total damage was approximately 1761.82 billion VND (Nguyen Ty Nien, 2012).

All CCRI research informants describe this flood as being an event that led to major changes in both attitudes and institutional systems. It revealed to all levels of government that existing state institutions responsible for flood and storm control had deteriorated and were in urgent need of renewal and strengthening. It was clear that this event, together with massive floods in the Mekong Delta in 1999 and 2000, stimulated the central government to mandate the creation of many of the strengthened disaster response systems that exist in Viet Nam today.

floods, resulting in damages to over 300,000 hectares of farm production. One of the areas affected in 2010 was Quang Binh Province, which exemplifies the impact of less “historical”, but nonetheless serious climate events.

Central Viet Nam has historically been seen as being highly prone to two major types of

climatic risk, storms and floods. In the past typhoons have wreaked considerable havoc due to winds that have destroyed coastal and near-coastal homes and infrastructure, as well as resulting in considerable loss of life.

Interviews with both rural residents and local officials in Central Viet Nam reveal a strong perception that such storms are fewer and less intensive than they were in the past. The last typhoon that had an extreme impact in Thua Thien Hue occurred in 1985. Primary concerns have shifted to flooding that people attribute to extremely heavy monsoon rains in coastal areas and in nearby mountainous areas, which in turn causes flooding when these waters reach the coast.

Central Viet Nam is the area of the country that has always been most affected by major storms. The Mekong Delta is largely outside of the path of seasonal typhoons. Some

typhoons affect Northern Viet Nam, but the impacts tend to be more related to intense rainfall when the storms move further inland. The hurricane season lasts from June or July to October or November. The number of storms affecting Central Viet Nam increased in the 1970s and 1980s with an average of 0.86 storms per year, but from the 1990s until now there has been a downward trend with about 0.6 per year (Hydrometeorological Data Center 2012).

In Central Viet Nam floods stemming from intense rainfall in the coastal areas and also in the nearby hills and mountains, are not unusual and in most years do not constitute a “disaster”. Indeed, a degree of flooding is essential for rice production in the areas and to ensure a flow of water to reduce risks of aquaculture diseases and provide nutrients from higher in the watersheds for crops and

#### **Box 4. Farmers’ losses due to unseasonal rains**

Unseasonal rainfall has become increasingly problematic for farmers in recent years, sometimes leading to substantial aquacultural and agricultural losses. Aquaculturalists in the coastal areas of Quang Binh and Thua Thien Hue provinces struggle with variations in salinity caused by increasingly intermittent rainfall; hot, dry spells (typically in May and June) result in high salinity levels, followed by unseasonal/ sudden and heavy rain. These hazards lead to sharp increases and decreases in salinity in brackish ponds. Such changes have been seriously affecting brackish aquaculture in the two provinces. Aquaculturalists in Quang Phong commune, Quang Trach district and Phu Xuan commune, Phu Vang district expressed that in the last 6 years, particularly in 2010, 2012 and 2013, rains were unseasonal, and sudden, heavy rains during summer (June and July) caused serious production losses. In 2010 and 2012, heavy rain in July caused a 30%-50% loss for many households in Phu Dien and Phu Xuan communes. Farmers had to harvest early when shrimp and fish were still small. This led not only to reduced productivity, but also significantly reduced prices as most shrimp and fish died before harvesting. In Quang Phong commune, Quang Trach district, aquaculturalists faced similar problems, which contributed to a virtual total loss of production in 2013.

Agriculturalists are also experiencing losses due to unseasonably early rainfall, which threatens rice harvests; in 2004 in Quang Dien District, Quang Phuoc Province, early rains prevented the harvest of 360 hectares of rice. As a result of early floods the rice germinated before harvesting, reducing its quality and value. District agricultural extensionists have introduced new measures in response. Officials in Quang Dien and Quang Trach districts have begun to adapt the cultivation calendar annually to the year’s forecast, and Quang Trach district officials have promoted short-maturation varieties of rice, even though these often provide lower yields.

fish. Floods become disaster risks in the study areas when they are:

- *Unseasonal*: when they come before the rice has been harvested and dried;
- *Extremely heavy*: when floods completely inundate farms, homes and businesses; and
- *Damage aquaculture and fisheries*: when they suddenly raise levels of freshwater in brackish agro-ecological zones (again, if floods are unseasonal, the first floods can have severe impacts on some aspects of aquaculture production).

It is important to note that floods are a normal seasonal phenomena in Quang Binh and Thua Thien Hue. The factors that turn this hazard into a potential disaster relate to the interplay between climatic factors and socio-economic change, and also between gradual climate change and the occurrence of severe events. There are two main aspects of the society and economy in the CCRI research sites that make the local population increasingly vulnerable to flood hazards. Shifts to aquaculture, driven by demographic pressures on land and capture fisheries, and increasing salinisation of rice fields, are factors that increase reliance on a source of income that is dependent on relatively stable levels of salinity. Also, urbanisation and increasing construction of roads and other infrastructure are reducing the area that in the past was available for drainage and runoff.

### 2.3 Gradual environmental change leading to potential tipping points

As described above, Viet Nam is extremely prone to coastal salinisation, and many scenarios pointing towards “tipping points” in agro-ecosystems focus on hazards related to salinisation. This is even a problem in some

#### Box 5. Goal conflicts in salinity management

There are goal conflicts arising in efforts to address salinity problems. For example, a dam (Thao Long dam) has been constructed in Phu Vang to protect the Hue City water system from salinisation, which in the past was a major problem. The dam has proven effective in ensuring that these water supplies remain potable. However, the dam has also affected the flow of water into neighbouring rural districts and has created new problems for aquaculture producers in the estuary near the dam. The dam blocks the water circulation and impacts seriously on water quality in the lagoon by trapping too much fresh water in the rainy season. In 2009, more than 150 hectares of shrimp and fish production areas in Huong Phong Commune were severely affected due to lower salinity levels. According to the chairmen of Thuan An and Phu Xuan communes, in 2011 and 2012, due to the Thao Long dam, the lagoon environment around the two communes changed significantly, and several fish species did not come to spawn as before. Therefore, the main source of fingerlings for aquaculture was negatively affected. People had to buy fingerlings from other areas for aquaculture.

inland areas due to tidal inflows during increasingly severe dry seasons. During the months of June-August, extreme dry weather leads to increasing salinity due to inflows from the sea into rivers and estuaries. In the Mekong Delta this is an increasingly severe hazard with salinity problems in 2009 arising as far inland as An Giang Province, 70 kilometres from the sea, on the border with Cambodia (Thanh and Toan 2010).

In interviews in Central Viet Nam, these dry season problems are mentioned by CCRI informants as a problem, but variability and uncertainty are of greater concern. Interviewees mention that sudden and increasing

seasonal rainfall is causing a larger problem in aquaculture production and even natural fisheries, as the periodic influx of large quantities of fresh water into normally brackish lagoons results in heavy losses of cultivated shrimp and even wild crayfish and other species.

It should be stressed, however, that water quality issues affecting aquaculture are by no means only related to climatic factors contributing to potential tipping points. As with the extreme flooding described above, demographic pressures driving urbanisation and land use change are also major contributing factors (it is not possible to quantify the relative importance of these factors). Urban sprawl from the capitals of the provinces where CCRI research is underway (Hue City and Dong Hoi) is reducing the areas of paddy land and marginal swampy areas where runoff can be absorbed and dissipated. Infrastructure to protect urban drinking water supplies from the influx of saline water in the dry season may also affect water flows. Other construction, especially new roads, further restricts and alters water flows. Shifts from capture fisheries to aquaculture due to demographic pressures and the settlement of “sampan people”, who formerly depended on capture fisheries, also restrict the flow of water and create environments that are conducive to the spread of shrimp disease.

In addition to salinity, another gradual change is that of erosion and subsequent landslides along beaches and river banks. These appear to be caused by intense storms (in beach areas), intense rainfall (along river banks) and changing water currents due to a variety of factors (both areas). This erosion affects some aquaculture and aquaculture, as well as homes and in some areas tourism. Infrastructure (especially roads) is also affected. Sea level rise, storms and heavy rainfall have led to frequent landslides, particularly

along the coast in Thua Thien Hue (Nguyen Viet 2006). Currently, there are more than 30 km of coastline affected by erosion in Thua Thien Hue. Erosion is destabilising the natural conditions of Tam Giang-Cau Hai Lagoon (Southeast Asia’s largest lagoon) and threatening infrastructure and socio-economic development of the coastal areas of the province (Nguyen Viet 2006).

#### **Box 6. Tipping points in aquaculture production**

As described above, aquaculture systems in Central Viet Nam have begun a shift from a former focus on monoculture shrimp production to polyculture production of a variety of shrimp, crab and fish species. This shift has occurred as a reaction to two factors. First, it is due to repeated disease outbreaks in the years 2003-2005, primarily affecting monoculture shrimp production systems. A causal factor can be assumed to be the increasing density of production leading to disease transmission between production areas. Second, increasing occurrence of freshwater inflows due to heavy rains has affected aquaculture and even capture fisheries, but here again, primarily monoculture shrimp production as these systems are highly sensitive to changes in salinity. This can be perceived to constitute a “tipping point” that is stimulating a shift from monoculture shrimp production to polyculture.

Aquaculture is probably the greatest potential opportunity for livelihoods and economic development in the districts surrounding the Tam Giang-Cau Hai Lagoon in Thua Thien Hue Province. To exploit its comparative advantages, Phu Vang District has searched for ways to develop aquaculture in a sustainable manner in the recent years. According to Thuan and Minh (2011), in 2010, the Phu Vang district government decided to encourage farmers to reduce monoculture shrimp production and increase the area of polyculture aquaculture production because of the losses from disease, water pollution and environmental changes.

### 3. CLIMATE CHANGE AND INSTITUTIONS IN VIET NAM

#### 3.1 The institutional landscape

##### 3.1.1 *The developmental state*

As noted in the introduction, Viet Nam is a state with a clear developmental character and has often been characterised as a ‘developmental state’ due to its role in promoting a given development path and guiding markets (Gainsborough 2010). The historical relationship between the state and the citizenry, where trust underpins the developmental process, was forged most strongly during the wars against the French colonial forces, after that the United States and most recently with China in 1979. The state is widely perceived to be accountable for providing basic security for its citizens – not just political security but also food security and protection from natural hazards and other threats. Viet Nam has, for example, taken a strong and indeed exemplary approach to addressing the spread of Avian Influenza (Burgos et al. 2008). The state is also proactive in investing considerable resources of its own, at both national and local levels, and in both urban and rural areas, in chosen development paths.

Economic performance and poverty reduction have been extraordinary since reforms began at the end of the 1980s. Recently, the positive trajectory in the Vietnamese economy has slowed considerably due partly to domestic policies. These difficulties have arisen at the same time as popular expectations have grown enormously due to the rapid growth achieved over the past two decades. There are thus particular pressures on the government to maintain and reinforce its role in leading national development.

In relation to international development cooperation, Viet Nam is known for assum-

ing a strong stance in relation to the donor community. Viet Nam makes clear its development priorities, while at the same time maintaining an open and constructive dialogue with international partners on many issues. The government in many instances provides high levels of co-financing for donor-supported programming. At the meso level, funding is typically directed towards approved, but as yet unfunded, projects included in the province or district’s socio-economic development plan.

Recently, many development partners (particularly European countries) have concluded that Viet Nam is well on its way to becoming a middle-income country and have therefore begun phasing out development cooperation. In recognition that Viet Nam is one of the countries that will be most affected by climate change, aid has continued for climate change adaptation and is likely to increase significantly in the future. Some observers note that the government has responded to this by shifting a large proportion of its focus in donor relations from development to climate funding windows.

##### 3.1.2 *Decentralisation and the social contract*

Viet Nam is divided into 63 provinces and Ha Noi, the capital, 698 districts and 11,112 communes. With regard to decentralisation and public administration reforms, Viet Nam has gone through a long and complex process whereby the state has attempted to empower these meso-level institutions while retaining a firm central grip on overall policy. The desire of central government to retain control over a diverse country and the desire of local authorities to retain their autonomy is reflected in the oft cited Vietnamese saying that “the rule of the emperor stops at the village gate”. The geographic distances, divisions during

the precolonial and colonial periods and the need for devolved decision making during the course of the war all created centrifugal pressures, but at the same time generated a commitment by the state after the war to reassume centralised control, which in some cases led to disastrous economic policies.

The reforms that began in the late 1980s were not initiated by central-level decrees, but rather by allowing provinces to engage in “fence-breaking” to test new approaches that deviated from national policies (Fforde 1993). Centre-periphery relations in Viet Nam thus do not fall into the neat categories that characterise many prevailing assumptions about decentralisation. These seemingly contradictory phenomena of growing local autonomy in a state that strives to maintain central authority have been noted as existing simultaneously (Malesky 2004).

The process of moving towards decentralisation in Viet Nam has moved “in fits and starts” (Wescott 2003:24), but has picked up speed over the past decade. Acceptance of the need to formalise and even encourage decentralisation has been enshrined in new policies related to public administration reforms. In 2003, a new policy decentralised many functions to the district level (Decree No.79/2003/NĐ-CP). In 2005, new regulations on decentralisation from central government to local authorities were promulgated and applied, along with efforts to improve the competence and responsibility of local government. The links and the responsibility of local government to the population were more explicitly defined and reinforced as well.

The extent and nature of decentralisation varies in different parts of Viet Nam, depending on historical factors, prevailing capacities and the priorities of local leadership (Fforde 2003). It has been suggested that existing regional disparities may be aggravated

as stronger provinces are able to benefit from decentralisation, whereas unrealistic demands are being placed on weaker provinces and districts (Fritzen 2006), a trend that may become particularly notable in dealing with a complex and challenging issue such as climate change.

In reflection of the prevailing social contract, disaster preparedness is clearly perceived by the public and the government as a public good and therefore a responsibility of the state at both national and sub-national levels. Even though financing for some public goods has declined in recent decades, the government still allocates significant public financial resources to address disaster risks. Scott’s analysis of the “moral economy” of Viet Nam’s peasantry relates various examples of how the justness of the state is perceived as being related to the extent to which the state responds (or fails to respond) to floods and other natural hazards (1976). In relation to natural disasters, there is a particularly strong social contract between the state and the citizens in Central and North-central Viet Nam. A correlation can be noted between the large number of leaders of the revolutionary struggle and the high degree of vulnerability of these areas to storms and floods.

This social contract in relation to climate threats is increasingly evident as climate impacts are felt. Meso-level institutions have begun to redeploy administrative resources and adapt procedures, evidenced for instance in shifting land use procedures. Officials interviewed in one district have begun to permanently move citizens displaced by climate threats, postponing lengthy administrative procedures to immediately grant them new land. This has become their new operating procedure in such circumstances and reflects a growing perceived responsibility to assist citizens facing climate threats. The social



contract has also increasingly extended into the political arena, as the Communist Party has heightened its attention to disaster preparedness and response issues. This is primarily apparent in the Party's self-appointed and expanding role in monitoring and demanding accountability from local officials' responsible for disaster management.

The primary focus of both flood and storm control efforts and longer-term climate adaptation is on construction of sea and river dykes (where these are feasible) to protect homes and agricultural/aquacultural land from flooding. These large infrastructural investments are ultimately the responsibility of national government. Prior to the extreme floods that occurred in Central Viet Nam and the Mekong Delta in 1999 and 2000, it was suggested that the decline of central planning and associated collective institutions led to declining investments in maintaining this system of dykes (Adger 1999), but this seems to have changed after these extreme events and with growing national awareness of climate change. Many interviewees noted increased prioritisation of and funding for infrastructure from the central government in the aftermath of the 1999 flood.

### ***3.1.3 The changing roles of markets and civil society***

The roles of markets and private sector development are central to understanding the dynamics of how urbanisation, industrialisation and new investments in agriculture and natural resource management affect opportunities and pitfalls in climate adaptation. Since the decollectivisation of agriculture in the late 1980s, the space for the private sector has increased rapidly and enormously, even if reforms of formal institutional structures for private ownership lagged, par-

ticularly before 2000 (Steer and Sen 2010). The decentralisation reforms over the past decade have also increasingly transferred responsibilities for tasks and services which do not need to be undertaken by state agencies, to non-governmental organisations and enterprises (a process referred to in Viet Nam as "socialisation"). The aforementioned phenomenon of "fence-breaking" has been partially characterised by a process whereby the emerging domestic and newly arriving international investors, provincial and district governments, and state-owned enterprises have explored new ways of working with one another in ways that have at times not (yet) been fully sanctioned in the legal and policy structure. The bargaining power of provincial governments has been central to the rapid but often uneven spread of new market relations (Malesky 2004). It has been suggested that the uneven use of legal sanctions to prosecute high profile corruption cases is a way in which the central authorities try to re-exert their power where decentralisation has shifted decision making too far into the realm of local market relations (Gainsborough 2003).

Over the past 20 years, private investment in high-potential rural areas has been huge and has transformed the landscape through both industrialisation and in some cases tourism, agriculture and aquaculture. In other areas investment has been minimal. The regional disparities noted above regarding decentralisation may also impact on ability to compete for investment where desperately poor provinces compete by "breaking fences" in terms of disregarding national policies and even legal regulations in pursuit of investment (Anh et al. 2007). Central government has given provinces the leeway to determine what they see fit in terms of finding new ways of working with the pri-

vate sector, which has resulted in a diversity of different relationships throughout the country (Schmitz et al. 2012).

Public and private investments merge in rural areas, with a range of joint ventures being undertaken. In many cases, this does not consist of formal agreements and contractual relations, but rather of proactive relationships between local government authorities and private investors (Schmitz et al. 2012). It has been suggested that decentralisation in Viet Nam should not just be seen as a product of deliberate policy reform, but also an outcome of increasingly market-driven relationships (Painter 2008).

Despite reported successes in terms of general private sector support, the Vietnamese state has not dismantled former support for state owned enterprises. Massive and misplaced public investments in these businesses, some of which have problems of poor management and corruption, are major reasons for the current slowdown of the economy, as the government has overextended its financial resources. As a result, major projects that were intended to bring industrial and extractive natural resource investments to rural areas have recently been delayed or shelved (Bland 2012, Economist 2012).

The volatility, informality and uncertainty emanating from the processes described above constrain the prospects for implementing a grand climate agenda. National policies will inevitably confront complex and dynamic webs of relationships among government officials, private investors and property owners. One central aspect of this is that trust in formal institutions that regulate property rights and enforcement of contracts remains very low in Viet Nam, with consequent investment risks (both for private investors and rural households), though informal mechanisms and relationships reduce these risks considerably. However, the strength of formal institutions is beginning to improve (Steer and Sen 2010).

In agriculture, due to the very small number of large farms, investment has primarily been in production by smallholders. In higher-potential areas, first in the Mekong Delta and later elsewhere, farmers have been supported and encouraged to try a range of new crops, as well as to increase their investment in rice. Some of these campaigns and schemes have proven effective, while others have flooded weak markets or otherwise failed. More recent policies have been put in place that continue to provide subsidies (part-

#### **Box 7. Contracting out of climate change adaptation services?**

New Public Management policies have begun to be extended to new areas with significant implications for new constellations of public and private actors in responding to climate change. With regard to infrastructure, contracting has become the norm. In other areas, such as agricultural extension, contracting mechanisms are still not widespread. In 2011, a new decree stated that provinces would compete by bidding for central government funds for extension activities. No province submitted a bid during the first year, and some are said to have responded by laying off staff as they assume that the private sector would have an advantage in this competition, or perhaps due to lack of experience in bidding for tasks that they had formerly assumed to be their responsibilities alone. It is uncertain whether the creation of a pluralistic market for agricultural extension services has been enhanced as a result of these public sector reforms.

ly in conjunction with “demonstrations”) for poorer smallholders while providing technical advice, market linkages and market information for more commercial farmers.

Viet Nam has gradually moved toward New Public Management systems by contracting out a range of services to private companies, and in some cases civil society, in the process of ‘socialisation’. Virtually all infrastructure, including sea and river dykes, is constructed by private entities. It is unclear if or how this may influence public responsibilities for maintaining this infrastructure.

In publicly provided services, particularly health and education, fees are increasingly being introduced (Painter 2008). Health services have been characterised as being “increasingly delivered by a public ‘shell’ filled by ‘private service providers’” (Wescott 2003:25). Recent agricultural extension policy reforms include provisions for charging of fees for commercial farmers, though it does not appear that this is widespread. These changes have implications for how the role of the state is perceived.

International development and humanitarian agencies primarily channel climate change and disaster risk reduction resources through state agencies and quasi-governmental organisations such as the Viet Nam Red Cross and the Women’s Union. In the past, this was partly due to the fact that there were no alternative channels. As small non-governmental organisations (NGOs) are beginning to get established in rural areas (they have existed longer and are much stronger in the major cities) this is beginning to change, but these organisations still have limited capacity and the state and quasi-governmental institutions are generally seen as more reliable. This is in contrast to other countries, such as neighbouring Cambodia, where civil society and international NGOs play a much more central role.

#### **Box 8. Public-private partnerships in disaster management**

Public-private partnerships are being encouraged in the telecommunications sector for disaster response. In Thua Thien Hue Province, there is an annual meeting (normally in August) of government flood response agencies with private telecommunication service providers before the flooding season to ensure coordinated response. The meeting aims also to strengthen coordination by distributing tasks and responsibilities among different partners. The telecommunication group, including Viettel, Vinaphone and Mobilephone, has their own Committee for Flood and Storm Control. The representatives of the committee attend the annual meeting to report on their activities, achievements, lessons learnt regarding disaster risk management in the last year, and to plan for the next year. Activities of the telecommunication group regarding disaster risk reduction include: (i) improving infrastructure (communication offices and cables), (ii) improving facilities for information transformation, and (iii) capacity building for their staff on disaster risk management through training to enhance capacity of staff to ensure information transmission during disasters.

Independent civil society began to become established in the mid 1990s in Viet Nam, after having been severely restricted in the past. These organisations first emerged often as small consulting firms that subcontracted implementation of activities on behalf of international NGOs. Since then, some have gradually turned into what can be recognised as local NGOs, though their base in local membership and genuine civil society is still limited.

The Fatherland Front is the term used for the quasi-governmental organisations mentioned above (Women’s Union, Youth Union, Farmers’ Federation, Veterans’ Association).

These organisations have had a degree of independence and accountability to their membership and have played an important role in maintaining a non-critical form of civil society in Viet Nam.

At a very local level, some new forms of farmers’ organisations and cooperatives have emerged over the past decade to replace the often bankrupt and distrusted state-led cooperatives of the past. These organisations are varied and appear to undertake different roles related to member priorities and local perceptions regarding the space for civil society. It is

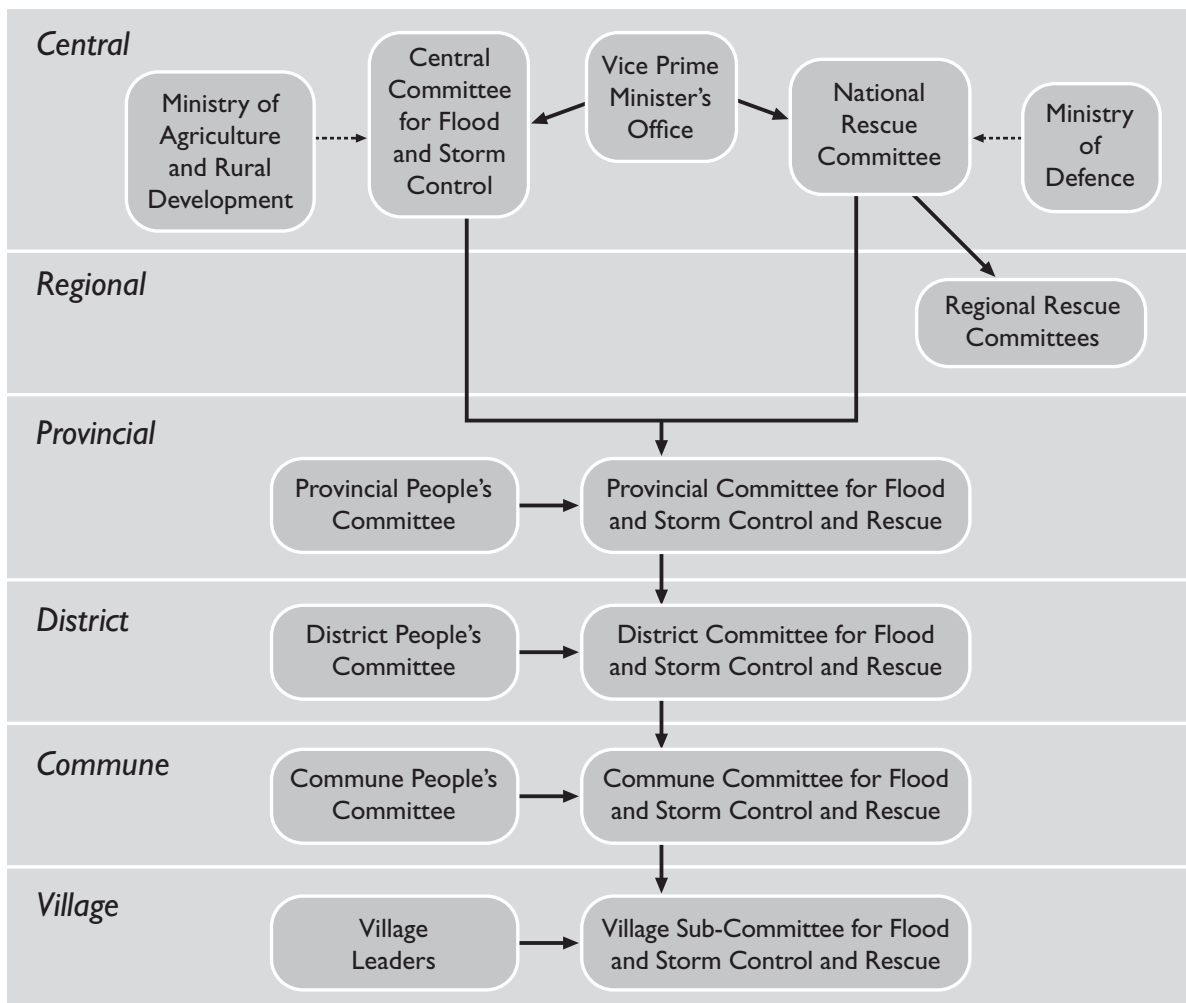
difficult to gain an overview of the nature of these organisations.

### 3.2 Institutional structures for response to climate change

#### 3.2.1 Roles in flood and storm response

Institutional roles in responding to climate hazards and risk can be roughly categorised as being related to two inter-related streams with very different institutional relationships. The first relates to responding to existing

Figure 1. Structure of Flood and Storm Control at different levels (structure in Thua Thien Hue Province, some variation exists elsewhere)



hazards and risks, and the second involves responding to climate change more generally and in relation to future scenarios. Flood and storm control related efforts focusing on existing hazards and risks currently dominate. The Ministry of Agriculture and Rural Development (MARD) leads on most of these activities. The Minister of MARD is the chair of the National Flood and Storm Control Committee (NFSCC) – Ban Chỉ đạo Phòng Chống Lụt Bão Quốc Gia. Institutional structures related to the immediate climate response are well established at all levels, from central government to commune, and have a clear base in legislation, regulation and procedural guidelines. These structures are largely similar throughout the country, with some differences according to the types of hazards affecting each province.

The Central Committee for Flood and Storm Control (CCFSC) is the national standing agency for disaster risk management. It is composed of representatives from relevant ministries (MARD, Ministry of Planning and Investment, Ministry of Finance, Ministry of Education and Training, Ministry of Natural Resources and Environment, Ministry of Information and Communications), mass organisations (Viet Nam Red Cross), media agencies (Viet Nam Television and Voice of Vietnam Radio) and some technical agencies (Global Physics Institute, the Hydrometeorological Services). It meets once a year to review the disaster risk management issues of the past year and to plan for the coming year. The Deputy Prime Minister is the overall national leader for disaster risk management, with responsibilities including approving legal documents, initiating response, calling for support, mobilising the military and police, etc. The CCFSC has a standing office located in MARD, which is chaired by the Director of the Directorate of Water Resources of

MARD. At national level each ministry and sector has a Committee for Flood and Storm Control.

Provincial Flood and Storm Control Committees (PFSCCs) have overall responsibilities for guidance and mobilising investments in disaster preparedness. Actual actions include development of evacuation plans, prepositioning of supplies and equipment and training. These are undertaken by District Flood and Storm Control Committees (DFSCCs) and Commune Flood and Storm Control Committees (CFSCCs). From interviews it appears that these responsibilities are considered a very high priority. The official duties and responsibilities at provincial and district levels are as follows:

- a) To annually review and evaluate, to draw experiences on preparedness, risk reduction and response in relation to the consequences of floods and storms in the previous year as a basis for planning for the following year to be effective; ensure coordination from province to district and communal levels, especially in sensitive flooding/typhoon areas.
- b) To strengthen the Flood and Storm Control Committees at different levels and sectors, i.e., to train and demonstrate scenarios for flood, storm and natural disaster control and preparedness. In districts or communes where floods and storms frequently occur, the chair of the District/Commune People Committee is the chair of the Flood and Storm Control Committee.
- c) To establish and implement a system of preparedness by prepositioning supplies and logistical means and ensuring that human resources are also on standby at local level to respond immediately to hazards, referred to as “Four on spot” (4 tại chỗ).

Government agencies at different levels are to closely coordinate with local people, directly and comprehensively providing guidance in order to promote synergy and actively retain awareness of and deal with the most vulnerable areas when floods, typhoons/storms and natural disasters occur, to reduce losses of human life and material resources.

- d) To establish and undertake responsibilities in relation to communication networks and smooth functioning of warning and forecast systems in emergencies and during flood and storm seasons.
- e) To report regularly on how duties have been undertaken to the CCFSC. To coordinate actively and act according to allocated duties/tasks when floods and storms occur. To report any incidents outside of normal procedures directly to the office of the Prime Minister.

When a flood occurs, Flood and Storm Control Committees are quickly mobilised with district and commune staff deployed to the affected areas. Evacuation from high-risk areas is a major priority, as is information (spread largely through loudspeakers) about impending floods.

The Viet Nam Red Cross (VNRC) is also active in response in terms of working with Flood and Storm Control Committees and also mobilising outside assistance for purchase of relief items. Provincial and district offices of the VNRC act as auxiliaries to the government and in some instances receive international support for Community Based Disaster Risk Management activities, including training and awareness raising. It does not appear that public authorities consistently give high priority to community based programming, though this may vary. VNRC is primarily perceived as the first responder

after a disaster. It often provides essential commodities such as food, potable water, clothing and blankets to households affected by disasters.

Besides the VNRC and local government authorities who have formal responsibilities for disaster response, associations of former local residents, now living in other provinces or abroad, enterprises, charity organisations from Buddhist pagodas, large universities and small charitable groups also provide support to people affected by storms and floods. The assistance they provide is generally in the form of short-term relief directly after a disaster. Needless to say, households themselves also respond by leaving their homes and moving their foodstocks and property to safe locations.

### 3.2.2 Roles in climate change adaptation

The second institutional stream relates specifically to climate change adaptation in relation to both current risks and future scenarios. Policies and national action plans exist, but interviews show that the local implications of these plans are still perceived as uncertain. In overall long-term climate response, the Ministry of Natural Resources and Environment (MONRE) is designated by the Government as the lead agency. The Department of Hydro-Meteorological and Climate Change is the management agency for climate change issues, and the National Hydro-Meteorology Agency is a technical agency in charge of weather forecasting and sea level rise and hydrological information. MONRE has developed the National Target Program to Respond to Climate Change (NTPRCC), to be implemented within the Government's Resolution No. 60/2007/NQ-CP in 2008, and also developed the Scenarios for Climate Change and Sea Level Rise in Vietnam in 2009 and

2011. In 2011, the Prime Minister approved the National Strategy on Climate Change (NSCC) based on Decision No. 2139/QDD-TTg. Institutional structures related to the NTPRCC are in the process of being established between national and provincial levels. They are not clearly regulated and in the short term will effectively rely on pre-existing flood and storm control structures for implementation at sub-provincial levels, to the extent that they link with those levels at all. These institutions vary considerably from province to province.

In terms of longer-term climate change adaptation efforts, MARD is designated as the leading agency dealing with climate change in the agricultural sector, and has an Action Plan Framework for Adaptation and Mitigation of Climate Change of the Agriculture and Rural Development Sector Period 2008-2020 (Decision No. 2730/QĐ-BNN-KHCN dated September 5th, 2008 by Minister of Agriculture and Rural Development). The implications of this plan at sub-national level are as yet unclear.

MARD and MONRE are the main two ministries with structures relating to (or expected to be related to) climate change adaptation and response to extreme climate events at provincial, district and commune levels. In addition to these structures there are four other ministries with major responsibilities:

- a) The Ministry of Planning and Investment (MPI) is the lead agency for programme planning and resource (funding) mobilisation and allocation for climate change programmes. MPI's Department of Science, Education and Natural Resources and Environment handles policy formulation and fund management on climate change.
- b) The Department of Public Finance of the Ministry of Finance (MoF) is in charge of

policy formulation and management of funds and projects on climate change.

- c) The Department of Student Affairs of the Ministry of Education and Training (MoET) is designated to lead the effort to integrate climate change education in schools. This department cooperates with other technical departments of MoET to develop curriculum and conduct training for teachers and students.
- d) The Ministry of Information and Communications (MoIC) is in charge of public awareness raising, communication and information dissemination. It plays a relatively technical role in communications.

The influence of the longer-term climate response structures associated with the NTPRCC and NSCC at provincial level varies greatly in the two provinces where CCRI research is being undertaken. In Thua Thien Hue, the provincial government and its advisors possess impressive analytical capacities. There appears to be a political recognition that climate change related investments are important and likely to materialise, and therefore it is worth investing in and debating over detailed adaptation plans (mitigation efforts receive lesser attention). The Action Plan Framework for Adaptation and Mitigation of Climate Change in Thua Thien Hue was highly contested and an elaborate plan was adopted after considerable debate.

By contrast, in Quang Binh a much more modest Action Plan Framework for Adaptation and Mitigation of Climate Change was quickly produced by the Department of Natural Resources and Environment (DONRE) in accordance with demands from the NTPRCC and NSCC and approved by the Provincial People's Committee. When interviewed, the vice-head of DONRE did not appear to expect that the plan would lead to

significant changes in overall development trends, but basically hoped it would generate access to some funding (presumably international) for sea and river dyke construction in the future.

There are expectations that MONRE will soon decree that all provinces shall establish a Committee for Response to Climate Change (CRCC). Given that the structures for climate change response are still not firmly in place in either province and not at all on sub-provincial levels, the discussion below overwhelmingly emphasises flood and storm control. Finally, it is important to highlight that a significant proportion of the actual activities undertaken are the same for both flood and storm control and for climate change more generally, above all with regard to infrastructure.

### 3.2.2 Roles in risk reduction

Large infrastructural investments, such as sea and river dykes, are ultimately the responsibility of national government, either directly or, primarily in the case of the NTPRCC and NSCC, by mobilising international resources on behalf of the provinces. Provincial People's Committees prioritise potential infrastructural investments based on advice from (in apparent order of importance) (1) Provincial Departments of Agriculture and Rural Development (DARDs); (2) Provincial DONREs; and (3) the PFSCC. District Departments of Agriculture and Natural Resources petition and submit proposals to provincial authorities. Commune authorities petition both district and provincial authorities with information about their needs.

#### Box 9. Infrastructure and “softer” approaches to risk reduction

Vietnamese efforts to protect the population from extreme climate events are dominated by the construction of sea and river dykes. Due to its Viet Nam's location and geography, sea dykes are very important for Viet Nam to protect resources and the population from hazards, especially flooding. As early as the Ly dynasty (1009-1225) sea dykes were built along the banks of the Red river, Ma river and Lam river in the north of Viet Nam. Since that time, the construction and repairing of dykes has been a major priority in disaster risk reduction efforts of the country. Over the centuries, the building of dyke systems has been so central to protecting the population as to come to be associated with the culture and economy of the nation (Nguyen Nguyen Hoai 200115).

The majority of dykes in Viet Nam are made from earth, therefore, dykes are constantly being eroded and need to be maintained, repaired and upgraded on a regular basis. Scientists have recommended “softer” measures such as planting mangroves to protect sea dykes and for other aspects of environmental protection. In the early 1980s mangrove planting and rehabilitation projects were begun with the support of different international organisations such as the Red Cross societies of Denmark and Japan. More than 20,000 hectares of mangroves were planted and rehabilitated in northern provinces of Viet Nam (Trung Hieu and Huong Ly, 2010). Efforts for mangrove afforestation, protection, rehabilitation and dyke construction are underway in many coastal areas. According to Nguyen Xuan Dieu, director of the National Department for Dyke Management and Flood and Storm Prevention, mangrove forests play an important role in protecting sea dykes. To maintain and develop the mangrove forests, the Department has a strategy stretching to 2020. Plans include rehabilitating 324,000 hectares of mangrove forest; protecting and restoring 20,000 hectares of existing forest; and planting and managing 124,000 hectares of new mangrove forest areas. In addition, they the aim is to develop mangrove forest conservation in ways that are congruent with improving the means of subsistence for local people in the forest areas.



As the NTPRCC begins to be implemented at meso level, it is also reflected in project prioritisation. As described above, provinces are drafting Action Plan Frameworks for Adaptation and Mitigation of Climate Change, which delineate the adaptation actions the province will take, expressed in a list of relevant projects. The Action Plan Framework for Adaptation and Mitigation of Climate Change increases the visibility of adaptation at the provincial level by requiring the consideration of climate change adaptation scenarios and issues, necessitating the specification of relevant projects and offering a clear path for funding. The degree to which climate change adaptation is integrated into wider provincial activities and socio-economic development goals, however, is up to provincial officials; in the case study provinces, interviews indicate that climate change adaptation is not yet perceived as a goal in itself and awareness of future scenarios is very limited.

Advice, information and promotion of alternative agricultural/aquacultural methods to support household efforts to manage risk are primarily led by District Departments of Agriculture and Extension Offices. They receive a modest degree of technical support and financial assistance for subsidising new technologies from provincial and occasionally national levels. As noted earlier, extension advice such as this is starting to be contracted out to other actors. In Thua Thien Hue Province, national resources are starting to be used to outsource this technical advice from university and private service providers rather than just using provincial technical staff. Primarily, however, district government extension staff respond directly to farmers, commune-level extension officers (a quasi-volunteer position) and producer organisations where the latter exist. Farmers also directly access new knowledge about risk re-

duction approaches from wherever they have relations, including nearby universities. The spread of information through such relations appears to be uneven.

District agricultural authorities primarily promote risk reduction through two approaches. First, changes are encouraged in the cropping and aquaculture calendar to ensure earlier harvest of rice and aquaculture production through shorter-term rice varieties (which also have lower productivity), changes in timing of aquaculture production systems and advice regarding the trade-offs between early harvest of shellfish at lower prices versus later harvest with greater profits, but also higher risk of a total loss if there are floods. The second major risk reduction approach, noted earlier, is the promotion of a shift from highly productive but highly sensitive monoculture aquaculture of shrimp to polyculture systems with different but hardier species.

In addition to the two major thrusts, there are also relatively modest efforts underway to preserve and expand mangrove and coastal forests to protect sea and river dykes, reduce erosion of beaches and riverbanks and preserve natural fish stocks. In the CCRI research sites there is a growing awareness among local authorities and communities of the importance of mangroves in reducing disaster risks, and increasing emphasis is placed on planting and protecting mangroves and coastal forests. However, due to lack of appropriate management mechanisms, mangrove areas are still limited and generally of low density. In Quang Trach and Quang Ninh districts, there is a government mangrove planting programme being implemented by district DARDs. Planting occurs sporadically, whenever there is funding available, and the survival rate is very low (less than 60 percent) because the seedlings are not always of good quality and the responsibility to tend them

is unclear. In Phu Vang district, where the land area appropriate for mangrove planting is limited, coastal pine forests are the focus. Large areas of pine forest have been planted to reduce coastal erosion and stabilise sand dunes. These forests are protected, with local people responsible for planting trees and tending the forest.

### 3.2.4 Roles in supporting recovery/resilience

Compared with the comprehensive structures in place for preparing for and immediate response to disasters, there is a notable dearth of institutional responsibilities related to re-

covery and supporting household resilience. Primarily, households must mobilise recovery investments themselves with whatever resources they have available.

In some areas, households are investing in rooftop platforms where they can escape floodwaters and save some of their belongings. Households with sufficient resources also invest in raised houses and second stories for their homes. There are some limited subsidies available for these investments. In general it was reported that people are building significantly stronger raised concrete houses than in the past. It is impossible to assess how much this is due to increased disaster awareness or related to overall increased prosperity.

Technical assistance and production materials (seeds, livestock and fertilizer) are sometimes distributed to support early recovery. Drawing on funds from different sources, some credit programmes for those affected by disasters exist, often managed by the mass organisations, such as the Women's Union (WU), Farmer Association (FA) or informal village Rotating Saving Credit Associations (ROSCAs). Credit channels through the mass organisations generally provide loans with preferential interest rates (equivalent to half the interest rate of commercial banks), but these loans are small amounts and of short duration. Application procedures are complicated and time consuming. Moreover, these institutions give loans only to their members, therefore, credit for resilience is not accessible for all households. The Vietnam Bank for Social Policies (VBSP) and Vietnam Bank for Agriculture and Rural Development (VBARD) also have credit programmes to help people rebuild houses and re-establish their income-generating activities. The banks disburse these loans directly via their branches or indirectly through local mass organisations such as WUs, FAs, Veteran Associations

#### **Box 10. Insurance for recovery**

Insurance is a form of financial service to support recovery that is beginning to be tested in Viet Nam. A Pilot Program on Agriculture Insurance for the period 2011-2013 was established by the Decision 315/QĐ-TTg dated March 1st, 2011. This pilot programme aims at supporting farmers to actively recover and compensate for financial losses caused by natural disasters and diseases, contributing to the stability of social security in rural areas and promoting agricultural production. The programme has been piloted for crops, livestock and aquaculture products in 21 selected provinces, not including Quang Binh or Thua Thien Hue. The programme targets farmers with different subsidies for insurance premiums. The State will provide (i) 100% of the insurance premium for poor farmers and households; (ii) 80% of the premium for near-poor farmers and near poor-households; (iii) 60% of the premium for non-poor farmers and non-poor households; and (iv) 20% of the premium for formal and informal farmer organisations. The natural hazards covered by insurance include floods, damaging cold, frost and epidemics like blue-ear pig disease as well as foot and mouth disease.

(VAs) and Youth's Unions (YUs). The people who get credit from this channel are usually organised into joint liability groups, this being commonly a condition for obtaining loans from the banks. Among the mass organisations, the WU is the institution that manages the largest credit portfolio.

#### **4. POLICIES, PLANS AND MANDATES AFFECTING CLIMATE CHANGE ADAPTATION**

##### **4.1 National climate change policies**

With regard to emerging policies and programming related to climate change adaptation, it is too early to fully assess the implications of these at meso level since, as noted above, these are not yet fully in place. At national level, climate change adaptation is encompassed within the NTPRCC and the National Strategy on Climate Change.

In 2008, the NTPRCC was produced by MONRE and issued by the Government in Decision No.158/2008/QĐ-TTg dated December 2nd, 2008. The NTPRCC generally aims to assess climate change impacts on sectors and regions in specific periods and to develop feasible action plans to effectively respond to climate change in the short and long term to ensure sustainable development, to move towards a low-carbon economy and to join the international community's efforts in mitigating climate change and protecting the climatic system.

The specific objectives of the NTPRCC are:

a) To identify climate change features in Viet Nam due to global climate change; assess climate change impacts (including climate variability, sea level rise and climatic extremes) on every sector, area and locality;

- b) To identify measures to respond to climate change;
- c) To promote scientific and technological activities to establish scientific and practical foundations for climate change responding measures;
- d) To enhance organisational structure, institutional capacity and the development and implementation of policies on climate change;
- e) To enhance public awareness, responsibility and participation as well as human resource development to respond to climate change;
- f) To expand international cooperation to obtain external supports in response to climate change and join the international community's effort to protect the climatic system;
- g) To integrate climate change issues into socio-economic development strategies and strategies of sectoral and local development;
- h) To develop an action plan for all ministries/sectors and localities to respond to climate change; to implement pilot projects to respond to climate change.

The implementation of the NTPRCC involves strengthening the application of science, technology and international cooperation. NTPRCC guidelines suggest the integration of climate change factors into socio-economic development to mainstream climate change in the socio-economic development strategies and plans within different localities.

In parallel, the National Strategy on Climate Change (NSCC) issued by the Government by Decision No.2139/QĐ-TTg dated December 5th, 2011, aims to develop the capabilities of the whole country to simultaneously carry out efforts to adapt to the effects of climate change and mitigate greenhouse gas emissions while safeguarding livelihoods. This includes strengthening the adaptive capacity, developing a low-carbon economy, and ensuring security and national sustainable development in

the context of global climate change. Efforts will include raising stakeholders' awareness, responsibility and capacity to cope with climate change; developing scientific and technological potentials and the quality of human resources; improving institutions and policies; and developing and effectively using financial resources to improve the competitiveness of the economy and position of Viet Nam. The intention is to contribute positively to the international community's response to climate change and increase international cooperation activities in Viet Nam to effectively cope with the effects of climate change.

Both NTPRCC and NSCC are to be deployed at the same time. This synchronisation will help the two policies support and complement each other. Therefore, the results of implementation of each policy will be a basis for implementation of the other policy, thus taking effective advantage of existing resources.

Climate change affects each sector and province differently; therefore, the intention is to delegate responsibilities to implement the NTPRCC to the ministries, sectors and provinces. Chairs of Provincial People's Committees are responsible for (i) Developing and implementing the action plans for coping with climate change in their provinces and cities; (ii) Organising implementation of the related activities approved in the NTPRCC; (iii) Ensuring appropriateness and efficiency in using the funds allocated from the NTPRCC and anti-corruption in use of programme funds; (iv) Mobilising additional resources and combining all related activities of other programmes within provinces/cities to achieve the objectives in the NTPRCC; (v) Ensuring and following the monitoring and evaluation principles defined in the NTPRCC; and (vi) Preparing periodical reports on the implementation progress of the NTPRCC objectives and tasks at the provin-

cial level. Provincial authorities are perceived to have a role in translating district (and sometimes commune) level requests, as well as proposals from sectoral departments and academic institutions, into project proposals that can be presented to international organisations. As described below, one of the main outcomes of the NTPRCC and NSCC has thus far been the consolidation of the process of collecting and prioritising requests from different levels into provincial Action Plan Frameworks for Adaptation and Mitigation of Climate Change.

Climate change adaptation efforts undertaken thus far can be categorised as primarily consisting of large infrastructural investments (primarily sea and river dykes, as well as some irrigation and drainage investments), and much smaller pilot efforts, such as the VNRC community based disaster reduction programming noted above. At province and district level there is a recognition that small pilot projects, often led by NGOs, have potentially valuable lessons for adaptation and disaster risk reduction. But there is also a view that these lessons can very rarely be applied in scaled-up programming due to the demands for staff with different and greater skills sets than those present at meso level. This includes a recognition that there may be a potential for tapping considerably more funds if such projects can be multiplied or scaled-up, but a lack of human resources is the main obstacle to accessing greater financial resources. Interviewees mention the importance of training in proposal writing (but there may be deficiencies in skills related to project management as well).

It should be stressed again, however, that climate change programmes and provincial-level plans have yet to have a discernable impact on district and commune-level planning and programming. Thus far, climate change adaptation policies from cen-

### **Box 11. Thua Thien Hue Action Plan Framework for Adaptation and Mitigation of Climate Change**

In analysing the Thua Thien Hue Action Plan Framework for Adaptation and Mitigation of Climate Change it can be observed that the plan is ostensibly based on scenarios for future climate change extrapolated from existing trends. Most of the data upon which these assumptions are based is fairly recent (since the 1970s) and as such, of questionable validity in drawing such long-term conclusions. The lessons of extreme events are duly noted, while the effects of smaller disasters are also stressed. Analyses point out how climate change is a multiplier of other risks emanating from, above all, population increase. The loss of agricultural land and areas of drainage to industry and urban sprawl is highlighted. However, some trends in environmental change are attributed to climate factors when other causal factors may be highly significant. For example, coastal erosion is attributed to sea level rise and storms, while it almost certainly also (or primarily) stems from building of infrastructure on beaches, quarrying of sand for construction, etc.

Although there is recognition of the potential negative effects of economic development on vulnerability to climate related hazards, this recognition does not mean that overall development goals and targets for the province are questioned. Some of these targets, such as those related to the continued rapid expansion of aquaculture, fisheries and industrialisation, are accepted as inevitable. Economic development clearly has priority over climate change adaptation. At best, climate change efforts are expected to contribute to reducing the risks associated with economic development. At worst, these risks are ignored in prioritisation of climate change investments.

The lists of projects to be implemented are in many respects the most substantial aspect of the plan, since it is the expression of where efforts will be directed. There are two lists, the first of which has 65 projects totalling VND 4,562 billion. A second, and presumably more important, list of “priority” projects consists of 12 projects with a total budget of VND 1,611 billion. A set of criteria are presented for these latter “priority” projects which can be assumed to be the most valid expression in the rather long document of what is expected to be the focus of climate change efforts in the future. The following observations can be made regarding these criteria:

- a) The Plan is entirely focused on adaptation, without mention of mitigation.
- b) The first priority is to protect agriculture and farmers.
- c) The second priority is to protect livelihoods and also lives during disasters.
- d) The third priority is poverty reduction.
- e) Taken together, these priorities can be interpreted as representing a focus on “climate proofing” of the existing overall development plan for the province.
- f) One of the other criteria is “urgency”. This and the other points suggest that the focus is strongly on the current effects of environmental change, rather than future scenarios.
- g) Passing mention is made of health, biodiversity and other issues in a list of other priority sectors and “zones”, but these priorities are not mentioned in the list of projects to be implemented, with the possible exception of potential positive externalities related to biodiversity in conjunction with mangrove planting.

With respect to the actual projects proposed, over 90% of the funds are to be allocated under the heading “Projects to build, apply and deploy applications of science and technology in order to reduce disaster risk and climate change”. Of this, all but one of the projects is are focused on infrastructure. The remaining project is for procurement of equipment for disaster response. The priorities emphasise the need to coordinate efforts horizontally among different public agencies at provincial level. It is effectively recognised that climate investments are unlikely to be driven by climate change concerns alone, but will be dependent on a convergence of goals and efforts among other sectors at provincial level. Little attention is paid to vertical

coordination with district and commune authorities. This seems to reflect the infrastructural bias of the plans, where procurement of contractors will inevitably require an administrative structure to manage large projects. There may also be economies of scale in coordinating these investments.

It should also be noted that some of the activities, such as public awareness, planting mangroves, promoting forestry and establishing multipurpose buildings for evacuation and other uses at commune level are likely to impinge on what would normally be the responsibility of district and communal authorities.

These findings suggest that district and commune authorities are unlikely to have direct ownership of these projects, even if the projects would have significant impact on the economic development of their communities. Some of the non-infrastructure projects in particular will not be viable without engagement from district and communal authorities. There is no strategy in the AP action plan for mobilising such engagement. It should be recognised that mobilising and channelling of investments is always seen as a responsibility of the provinces, in coordination with national authorities that may be directing the international investments upon which the implementation of the Plan will eventually depend.

tral levels are largely perceived to be a potential (but as yet unrealised) window for accessing funds for investments in sea and river dykes. This does not mean that district authorities are not involved in other measures to deal with climate hazards (as noted above regarding changes in varieties and production methods and enhanced disaster risk management measures), but rather that these efforts are largely perceived as part of the normal responsibilities of agricultural and flood and storm control authorities. They are not seen to be directly related to climate change policies.

#### **4.2 Policies related to decentralisation and public administration reform**

Climate change policies and directives are perceived and implemented by local government within broader structures that determine their roles and responsibilities. This includes policies for decentralisation and public administration reform (PAR) and policies related to food security, land allocation and rural development. In interviews at

provincial and district levels there are clear indications that local authorities are struggling to understand how they can respond to new climate demands within broader efforts to achieve economic development targets. They also stress, and indeed are proud of, their efforts to take strong steps to respond to the needs of their constituents. Extreme climate events and threats to livelihoods in the form of climate-related tipping points are areas where they see a particularly pressing need to find ways to address these needs within their formal range of responsibilities and with the financial and human resources at their disposal. Therefore it is important to consider the policies that have indirect but profound influence on meso-level decision making. These policies create incentives for giving priority to certain realms of adaptation, just as they may block other potential types of response.

The policy reforms that began in the 1980s with an emphasis on the economy have gradually also come to encompass reform of political and governance structures. PAR has been a core component of reforms since 1995 and was reinforced in 2001 with the promulgation

and subsequent implementation of the PAR Master Program (PAR MP) 2001-2010. The PAR MP was approved by the Prime Minister's Decision 136/2001/QĐ-TTg, September 17th, 2001, and focused on four strategic areas: institutional reform, organisational restructuring, civil service reform and public finance management.

These PAR efforts reflect historical concerns and relations between national and local authorities. CCRI Vietnam Institutional Mapping. The reforms over the past decade have increasingly transferred responsibilities for tasks and services which do not need to be undertaken by state administrative agencies directly to mass organisations, NGOs and enterprises (Resolution No. 08/2004/NQ-CP). The Resolution of the Fifth Plenum of the Central Committee also emphasised the reform of the commune administration by clarifying functions including the budgetary process, land administration, household registration, management of investment projects and tax collection. Over the past two decades, a series of decrees have been issued that adjust and clarify the position of the commune-level administration. Government Decree No.93/ND-CP includes measures related to decentralisation in the areas of zonal planning and socio-economic development planning, land and housing management. These decrees exemplify how Viet Nam has gone through a long and complex process whereby the state has attempted to both empower meso-level institutions while retaining a firm central grip on overall policy, which coincided (but was not necessarily aligned) with the rolling out of the flood and storm control guidelines and policies described above.

Public financial reform has also been an important aspect of decentralisation as provinces, districts and communes are being given more discretion to make decisions on

budgetary allocations. MPI has also delegated decision making on basic infrastructure investments to the provincial level. Within the local government structure, the Chair of the Provincial People's Committee gives the District-level People's Committee the authority to allocate funds and determine investment projects within local budgets if expenditure is less than five billion VND, and the Commune-level People's Committee is given the authority to determine investment projects with a value of less than three billion VND (Decree No. 16/2005/ND-CP dated February 7th, 2005).

### **4.3 Policies for agriculture and rural development**

Agricultural and rural development policies have, over the past 25 years, gradually shifted from a narrow focus on maximising rice yields to an increasing focus on reducing risk (through optimised production methods) and increased profitability for farmers. The extent to which awareness and measures to address risk supersede this former focus on maximising production has a major bearing on the extent to which climate change adaptation is likely to become a core aspect of rural development. In the past, government directives and incentives in agriculture and rural development were largely designed to meet ambitious production targets "at all costs". There is an emerging recognition that there are trade-offs between such targets and measures to help farmers optimise production and livelihood strategies by taking into consideration the likelihood of, e.g., unseasonal and unexpected rainfall or dry spells.

Regarding the different goals of maximising production versus reducing risk, the Social and Economic Development Plan (SEPD) of Thua Thien Hue Province 2011

(No.125/BC-UBND dated December 6th, 2010) is a clear example of the different goals of maximising production versus managing risk. The SEPD highlighted that "... in 2011 one of the investment foci of the province will be to increase crop productivity, restructuring of crop and animal production patterns, promoting application of advance production techniques, special focus on new technologies such as tissue culture, crossbreeds...". However, many agricultural officers interviewed expressed concerns that the new, advanced techniques may increase risks for production because they have less tolerance for climatic extremes than the local varieties, especially in animal production. For example, they noted that crossbreed cattle and Yorkshire pigs are less tolerant of the climate condition variations than landraces such as Vietnamese yellow cattle or Mong cai pigs. As noted above, farmers and local officials in some of the study sites are also looking for ways to move away from monoculture aquacultural production methods that maximise output to instead use polyculture to reduce risks.

The extent to which meso-level actors are able to interpret policies in such a way as to

temper the past maximisation bias is important. As such, there are apparent synergies between decentralisation and "climatizing" other policies for increasing agricultural profitability. In interviews, district-level authorities are forthright in stating that they have the central role in ensuring that policies are implemented in ways that reflect the risks facing the farmers that they serve. This role, however, is sometimes complicated by the activities of private companies concerned with short-term profits, which increasingly shape the landscape of risk experienced by local farmers.

This suggests that agricultural extension (at district level in particular) is a major actor in mitigating flood risk and addressing emerging "tipping points". Therefore, policy reforms related to extension have major implications for how these services respond to climate change. Trends toward empowerment of district authorities can be traced back to an overall process of creating and reforming extension services that began in 1993 when a decision was made to reconstruct a major part of provincial and district agricultural bureaucracies from being institutions mandated to instruct farmers what they should plant, to

### **Box 12. Goal conflicts: Risk reduction versus maximising production**

The ways that goals may conflict can be seen in the case of a discussion between the Quang Binh Provincial DARD and representatives of district people's committees and district agricultural departments to discuss an emerging practice where farmers leave self-germinating rice in the fields after harvesting as a low investment (and therefore low risk) way of obtaining a small second crop instead of two main rice crops a year. The province had urged conventional replanting to maximise production, whereas the districts pointed out that the low-risk methods were preferable due to the uncertainties about whether weather conditions would allow a second crop. They also noted that these methods are more profitable for farmers, even if the total average rice production in the province would be likely to be lower. The district level officials prevailed and the province accepted these arguments. This is a notable change from past roles, where it was highly unlikely that district officials would question production targets set at higher levels of government.



instead advise them on a range of agricultural issues.

Another aspect of how past policies are being modified to reflect the need to spread risk is in the shift that has occurred from agricultural policies to an awareness of the importance of more multifunctional perspectives on rural development, and with that support to livelihood diversification. In light of climate uncertainty and variability, as well as demographic change, it has been recognised that farming alone is not a sufficient or stable enough basis for rural livelihoods, especially among the poor. Over the past 25 years, Viet Nam has achieved significant successes forming a stable base for development of the country through rural development, including ensuring enhanced food security, reducing malnutrition and poverty rates, and remarkably improving rural living conditions and infrastructure. Nevertheless, recently the growth of agricultural production has slowed. Agricultural land is being commoditised, and labour and input costs are increasing, leading to a steady rise in agricultural production costs. A shift is underway in Viet Nam's strategic orientation for rural development to reflect accelerating industrialisation, urbanisation and globalisation. New strategies for rural development emphasise diversification of livelihoods and adjustment of the rural economic structure towards non-agriculture activities and a close linkage between agriculture and the urban economy, industry and services.

A major part of the new strategic orientation towards rural development has been a focus on strengthening rural organisations, including the creation of legal frameworks to support the establishment, empowerment and capacity development of groups of farmers and rural people. The intention is that these organisations will be involved in vertical

### **Box 13. Shrinking areas for agricultural production**

According to the MARD (2009) between 2003 and 2008 land transformation affected the lives of 2.5 million people throughout the country. During the period 2000-2008 approximately 70,000 thousand hectares agricultural land were lost per year, resulting on the disappearance more than 100,000 thousand jobs in agriculture. Urbanisation and industrialisation in Viet Nam are mostly concentrated in the most fertile land (Hoang Thi Van Anh 2009). For example, in the lowland rice producing Van Lam district of Hung Yen province a total of 928.52 hectares of land were converted, displacing 14,260 farm households, with losses of 736.50 hectares of rice paddy (Nguyen Thi Hong Hanh et al. 2013). Also during the period 2000-2010, more than 20,000 thousand households in Da Nang lost their agricultural land, which consisted of over 1,900 hectares (Centre for Nature and People Reconciliation, 2008) for the enlargement of the city and for the development of an industrial zone. These processes are set to continue, as large areas on the outskirts of many urban centres today are criss-crossed with new four lane thoroughfares, with new residences and factories gradually displacing the rice paddies that remain in these suburban grids.

Partially as a response to the displacement caused by urbanisation and industrialisation, but also due to increasing pressures on land in general, there have been a series of reforms to land laws. The classification and zoning of land is a highly contentious issue as it is in many respects where objectives related to food security, expansion of plantation farming (especially perennial crops such as rubber), industrialisation and environmental conservation converge and often come into conflict. The outcomes of these goal conflicts will have major implications for food security in the future.

market linkages (e.g., commodity associations linking production and processing enterprises), in horizontal linkages (e.g., cooperatives, business associations, farmer associations), in community linkages (e.g., rural development boards, resource management boards). The contours of these new organisations are still not clear, but given that the state itself is generally moving towards greater delegation of responsibilities to non-state actors, these new organisations may play a significant role in future climate adaptation efforts.

Increasing off-farm livelihoods has been another focus, with attention being given to attracting investment to craft-producing households and enterprises, thereby creating favourable conditions for entrepreneurial linkages between the rural and urban economy (e.g., satellite processing networks, strengthening marketing and distribution channels, creating zones for processing industries) to create jobs and raise income for rural people.

This diversification process has wide implications for land use planning and other areas with major implications for if and how new economic investments are “climate proofed”. This includes defining areas for economic-environment balance such as minimum areas for rice production, forestry coverage and designation of new areas for industry and urban residential expansion. Response to climate-related risks will be dependent on these zonal and sectoral decisions. In addition to the effects on livelihoods, these radical changes in land use are impacting on flood runoff and drainage, maintenance of biodiversity and other factors impinging on climate change adaptation.

It is important to stress that overall rural development policy accepts and even calls for a massive demographic shift in the coming years from agriculture to services and industry, and with that probable urbanisation. This

policy has significant implications for the changing landscape of risk in the future.

## 5. CONCLUSIONS

This working paper has highlighted a fundamental contrast between structures related to the current concrete manifestations of climate change, primarily flood and storm control, and the future scenarios of climate change.

Particularly with regard to flood and storm control, there are explicit policies, regulations, roles and task assignments in place at all levels. Public sector actors are thus held accountable for preparing for and responding to potential disasters. The prevailing social contract means that the government of Viet Nam would not consider delaying any response to a disaster or delaying creation of appropriate institutional structures while waiting for outside assistance.

It could be assumed that this readiness is due to the nature of disaster response, demanding clear-cut chains of command and predetermined allocation of roles and responsibilities. This may indeed be a factor, but this does not appear to be the only basis for accountability. Even with respect to more gradual environmental change, the roles of agricultural authorities in advising farmers how to adapt to the risks that they currently face are not in question. These types of responses reflect a trend over the past 20 years moving away from central planning and towards demand-driven (accountable) agricultural services. District-level extension agents interviewed were very clear about how their role was to help their clients manage current manifestations of climatic risk. This is in stark contrast to the past focus on achievement

of production targets. With decentralisation and the dismantling of the former narrow emphasis on maximising production, a new social contract is emerging at meso level in relation to adaptation.

By contrast, longer-term climate change response is not (yet) locked into clear structures of accountability. The emphasis is on developing scenarios and the design and prioritisation of responses. It is widely assumed that the majority of resources for these investments will come from international rather than domestic resources. The social contract regarding longer-term adaptation is much weaker than that for addressing known, current risks. The roles of different institutions are also not equally clear as with flood and storm control. There are initial indications that longer-term climate adaptation is reliant on “coalitions of the willing”, which in turn consist of those who recognise these long-term trends and who also perhaps are aware of the likelihood of significant international investment in these activities in the near future.

The relative balance of these two types of institutional response structures is also related to the capacities at provincial level. In a small province such as Quang Binh, where contact with international agencies and national research institutions is limited, the abstract nature of climate change adaptation has meant that the topic has not yet gained significant prominence. This is not to say that capacities are weak in general, but rather that these new issues have not stimulated a “coalition of the willing” that can drive a major institutional rethink and break path dependencies. In Thua Thien Hue, there are a large number of provincial officials, academics and others with extensive experience with international cooperation who together have the capacities to start such a process of change.

Nonetheless, even in Thua Thien Hue this process is only starting to reach the districts and communes. Even here, climate change adaptation remains largely focused on the provincial planning level as the districts and communes focus much more on flood and storm control and responding to the current hazards facing farmers by adapting agricultural systems. They are not held accountable for broader climate change adaptation, partly because significant funding has not begun to trickle down to the meso level.

In describing how best to understand decentralisation in Viet Nam, Painter (2008:81) states that “policies are likely to be as much *post hoc* as *ex ante*, signalling the state of play in the political process of centre-periphery conflict”. Particularly when analysing the emergent climate change agenda, is it important to recognise that these policy formation processes are only just starting. It is too early to draw conclusions regarding how the climate adaptation policies of MONRE and the disaster risk management policies of MARD will come together in the decisions being made at provincial and district levels. The dominant role of international aid could seem to indicate a centrally led response, but the emerging sub-national social contract might also suggest that meso-level relations between government, aid and non-state actors will shape these initiatives to a large extent. The ambitious, but somewhat amorphous goals of the NTPCC and NSCC can be interpreted as an indication of a desire by central government to lead these processes, combined with a recognition that local actors will implement these policies in different ways.

Vietnamese history indicates that generalisations would be inappropriate. Even in the limited geographical area covered by CCRI research, there are great variations between the two provinces and among the different

districts. Rather than trying to arrive at general conclusions, it will be more important to seek to understand the processes of how public and private sector actors themselves are determining how to respond to public demands to deal with the current/acute and future impacts of climate change. The history of Viet Nam creates pressures to preserve the social contract, while the “power scattering” that has resulted from economic and political reforms (Painter 2008) is likely to provide insight into the *bricolage* of meso-level change.

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