



VIET NAM

Climate Change, Adaptation
and Poor People

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Abbreviations

CC	Climate Change
CCFSC	Central Committee for Flood and Storm Control
DOST	Department of Science and Technology
DARD	Department of Agriculture and Rural Development
DFID	Department for International Development
GEF	Global Environmental Facility
GHG	Greenhouse Gas
IMHEN	Institute of Meteorology, Hydrology and Environment
IPCC	Inter-governmental Panel on Climate Change
MARD	Ministry of Agriculture and Rural Development
MDG	Millennium Development Goal
MONRE	Ministry of Natural Resources and Environment
NGOs	Non-Governmental Organisations
NTP	National Target Program
OCHA	Office for the Coordination of Humanitarian Affairs
OHK	Oxfam Hong Kong
SEDPS	Socio-Economic Development Plans
SLR	Sea Level Rise
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary



Viet Nam is one of the most vulnerable countries in the world to climate change. The government's impressive achievements in pulling millions of people out of poverty are seriously jeopardised by the likely increase in extreme weather events such as severe rainfall and drought, and by slow climate changes like sea level rises and warming temperatures. Poor men and women are particularly at risk. A team of Oxfam researchers travelled to the two provinces of Ben Tre and Quang Tri in May 2008 to take a snapshot of how poor families are experiencing the changing climate, and how they might deal with this in the future. The main findings and recommendations of this report are:

Main findings:

- Poor men and women in Ben Tre and Quang Tri are already experiencing the consequences of the climate changing, and in many cases are ill-equipped to reduce, or adapt to, the consequences. They will be particularly vulnerable as the number of extreme weather events increases in intensity and/or frequency.
- In many villages women are hit the hardest by natural disasters. They often cannot swim, have fewer assets to turn to for alternative livelihoods when crops are destroyed, and have fewer employment opportunities away from the home.
- The perception of many villagers and local leaders is that the climate is already changing. In particular, they talk of the unpredictability of the weather and the intensity of weather events compared to previous years.
- The particular impacts of weather events vary from province to province, and from district to district. In the case of Ben Tre, the main problems were typhoons, unpredictable weather, and the threat of salt water intrusion from sea level rise and other factors. In Quang Tri, it was more a question of unpredictable and concentrated rainfall causing more flooding than usual or flooding at unusual times of the year.
- The example of low-income prawn farmers in Ben Tre shows the close link between sus-



Rescue drill for local communities is one of the disaster risk reduction activities

tainable livelihoods and people's capacity to cope with, and recover from, extreme weather events. Sudden reductions in income due to poor yields have led to more families becoming vulnerable.

- Disaster risk reduction saves lives and livelihoods. Villagers in Quang Tri have shown that getting involved in local level disaster risk management programmes can significantly reduce their vulnerability to frequent or heavy flooding. This is confirmed by Oxfam's wider experience in Viet Nam of working with communities to reduce their vulnerability to the impact of weather extremes.
- Adaptation works. Adaptation to climate change by poor communities is at an early

stage, but there are positive examples of farmers already changing their crop cycles or planting different crops.

- Awareness of climate change and its causes varies significantly between districts, communities, villages and individual households. But in general awareness is restricted to a few experts, some local authorities and Non-Governmental Organisations (NGOs).

Recommendations:

- **Poor women's and men's needs and interests must be at the heart of national and local research and policy planning on adaptation.** The social and economic impact of climate change on poor men and women should be at the forefront of any research and policy formulation. Any climate change planning needs to take into consideration livelihood resilience strategies, socially disaggregated vulnerability assessments and capacities for disaster risk management – all at the local level.
- **Community-based planning is the starting point for scaling up provincial and national responses.** One of the best ways of reducing the risk from climate change is to draw on people's own experience and perceptions at the commune and village level, and to use that as an integral ingredient of policy responses. Their local efforts at adaptation and disaster risk reduction measures should be strengthened, and where possible 'scaled up' to the provincial and national level. Women should be at the centre of community-level responses as they are already very

effective in some communities at mobilising local involvement and implementation.

- **Integrate climate planning across government departments.** Climate change concerns should not be isolated under the remit of any single ministry but systematically integrated across all major development sectors.
- **Integrate adaptation into national development planning.** Climate change adaptation policies need to be integrated into long-term planning for sustainable development



and poverty alleviation policies. In particular, climate change needs to be incorporated into the next round of provincial Socio-Economic Development Plans (SEDPs) (2011 – 2020). The 'mainstreaming' of adaptation measures requires a comprehensive and integrated assessment of vulnerability, and how to address this through risk management.

- **More climate change-specific research is needed.** There is a pressing need for a much greater knowledge base of the possibilities of salt-resistant, flood-resistant or drought-resistant crops, which should be developed



with the active involvement of smallholders on their plots. In particular, national support needs to be increased for the transition to alternative crops and provision of local climate forecast information to farmers to assist with farm planning efforts.

- **Awareness and capacity building should be stepped up.** There is an urgent need to step up public awareness campaigns and capacity building amongst key stakeholders and key leaders at district, commune and village level.
- **The international community will have to play a major role** in supporting the government of Viet Nam's efforts to adapt to climate change, because the amounts of investment needed are beyond its budgetary capacity. International adaptation finance will be needed to enable a wide range of measures, from community-led initiatives and disaster-risk reduction strategies to long-term national planning and social protection in the face of unavoidable impacts.



Poor men and women in Viet Nam are particularly vulnerable to the effects of the climate changing.

Introduction: ‘The climate is changing and so are our lives’



Several recent studies have concurred that Viet Nam will be one of most vulnerable countries to climate change in the world. Gradual changes such as sea level rises and higher temperatures, more extremes of weather such as drought, and more intense typhoons are all on the horizon and will have a potentially devastating impact on the country's people and economy. This is particularly worrying as Viet Nam has enjoyed one of the best development records in recent years of any country in the world. It is one of the few countries on track to meet most of its Millennium Development Goals by 2015. It reduced its poverty rate from about 58 per cent of the population in 1993 to 18 per cent in 2006.¹ Such impressive achievements are now at risk.

The Government of Viet Nam is taking the issue of climate change very seriously and should be applauded for its efforts. However, as the 2007 IPCC (Inter-governmental Panel on Climate Change) reports stressed, it is poor people within developing countries who are most at risk from climate change. Despite the economic boom of recent years, there are still significant numbers of poor men and women living in areas of Viet Nam particularly vulnerable to the effects of the climate changing.

Oxfam is particularly concerned about the deep injustice of these poor communities in Viet Nam

having to pay a high price for a situation for which they have little or no historical responsibility. Most of the current global warming has been caused by greenhouse gases (GHG) from the coal, oil and gas that drove the industrial revolutions in Europe and America from the middle of the 19th century onwards. In 2000 Viet Nam was responsible for just 0.35 per cent of world GHG emissions, one of the lowest percentages in the world. Yet it frequently figures amongst the top ten countries in the world to be affected by the predicted climate changes. As Oxfam has argued elsewhere, rich countries, which are primarily responsible for creating the problem,

¹ Asian Development Bank (ADB), Asian Development Outlook 2007.

have to provide the bulk of the financing for developing countries to adapt.²

This report gives a snap shot of two areas in Viet Nam where climate change is forecast to be a major threat: Ben Tre is a southern coastal province with significant pockets of poverty situated in the Mekong Delta, which is predicted to be a region very vulnerable to sea level rises. Quang Tri is also a coastal province, but situated in central Viet Nam. It is already very prone to extreme flooding. Interviews carried out in May 2008 put the human face on poor families there already suffering from the effects of extreme weather. Testimony after testimony revealed the widespread perception from ordinary villagers that the climate was already changing, particularly in its unpredictability compared to 20 or 30 years ago, and for the extremes it can reach. People in Ben Tre speak with dread of a possible repeat of the fierce typhoon – unprecedented in recent times in that area – which caused widespread devastation in December 2006. Villagers in Quang Tri complain bitterly of the unusual frequency of the flooding in October 2007 and the unusually long cold snap in February this year which ruined half of their rice crop.

It is not possible to assert for sure that these recent changes in the weather are a result of human-caused global warming. Viet Nam's climate is affected significantly by the El Niño and La Niña weather phenomena, which are a result of changing temperatures in the Pacific Ocean. Many experts say the recent changes are the result of the current La Niña year, which is associated with tropical low-pressure systems, increased

rainfall and lower temperatures. Climate change impacts on the El Niño/La Niña cycles are not well enough understood to be able to make any predictions with confidence, although there is some evidence that warming will increase the intensity or frequency of these phenomena. But the key point is that most climate modelling for this part of the world predicts that such weather extremes, including typhoons, drought and heavy rainfall, will become more common place or more intense as a result of climate change. It is hard not to imagine that these testimonies from Ben Tre and Quang Tri are a foretaste of what it is to come. Global warming will add an additional layer of vulnerability to these villagers, for whom climate variability is already one of the causes of their poverty.

It is Oxfam's experience that poor families – and women in particular due to their roles in providing water, food, fuel and care – are the most vulnerable to the effects of weather extremes. The same people are critical agents for doing something about it. A recent Oxfam study of Ninh Thuan province showed that farmers were experiencing more droughts because the rain now comes in intense, concentrated bursts.³ But communities in the province were very active in seeking new ways of adapting to the changing climate. Most importantly, the study concluded that rising temperatures need not result in disaster if local governments and organisations took the appropriate measures. Top of the list of priorities was involving both women and men from the communities in decision making and hearing their needs and suggestions.

² Oxfam Briefing Note, Financing adaptation: why the UN's Bali climate conference must mandate the search for new funds, Oxfam International, 4 December 2007, available at http://www.oxfam.org.uk/resources/policy/trade/downloads/bn_wdr2008.pdf.



Some local farmers are adapting by harvesting their rice before the main flooding season.

A similar story can be told in Quang Tri province. Oxfam and other organisations have been working there with local communities to reduce their vulnerability to the impact of flooding and try to adapt to it. Villagers are making preparations for sudden water level rises by building platforms in their homes, organising rescue teams and boats, developing early warning systems and ensuring enough food is stored for the period of the flooding. Local officials in the Hai Lang district point out that in 1999, the last year of very extensive flooding, 29 people died. But last year, which was another bad year for flooding, the death toll was two. One of the main reasons was much better preparation. A similar story occurred in the

Phuong My village in the nearby central province of Ha Tinh when nobody died last year despite heavy flooding which reached 3 to 4 metres in depth. In addition, some local rice farmers are adapting to the climate changing by harvesting their rice before the main flooding season, or growing a rice variety with a shorter cycle.

This report draws on the testimonies from the two provinces and on Oxfam's general experience of working in Viet Nam with vulnerable communities to make a series of recommendations designed to support the government's implementation of the national plan to adapt to the climate change at central as well as local level.

³ People's Committee of Ninh Thuan, Oxfam-Vietnam and the Graduate School of Global Environmental Studies of Kyoto University, Drought Management Considerations for Climate Change Adaptation: Focus on the Mekong Region, mimeo, 2007.



The coastal poor are particularly vulnerable to weather extremes every year

Poverty and climate change in Viet Nam



Between 1993 and 2006 a staggering 34 million Vietnamese people out of a total population of 85 million were pulled out of poverty mainly as a result of strong economic growth, pro-poor development policies particularly in the agriculture sector and a strong government commitment. Poverty reduction is one of the six Millennium Development Goals (MDGs) already achieved by the Government of Viet Nam.⁴ However, international organisations have recently warned of the remaining challenges ahead, which are being exacerbated by climate change.⁵

In 2004, 16 million people were still classified as poor (equivalent to more than the population of neighbouring Cambodia) and another 28 million lived just above the official poverty line.⁶ It would not take much to push them back into poverty. Although the highest percentage of poor men and women is concentrated amongst ethnic minorities in the highland areas, in absolute terms the greatest numbers of poor people live in the coastal areas, including the Red River and Mekong River deltas. Many of these rely largely on agricultural activities, but are vulnerable to increasing land scarcity, low paid off-

farm employment and uncertain access to basic services.⁷ Others are poor fishing communities who are becoming more at risk to the vagaries of the weather.

The coastal poor are particularly vulnerable to weather extremes every year. The 3,000kms of Viet Nam's eastern coastal seaboard is one of the most vulnerable spots in the world for typhoons, as graphically illustrated by the chart made by the UN's Office for the Coordination of Humanitarian Affairs (OCHA) of tropical storms from 1956-2006.

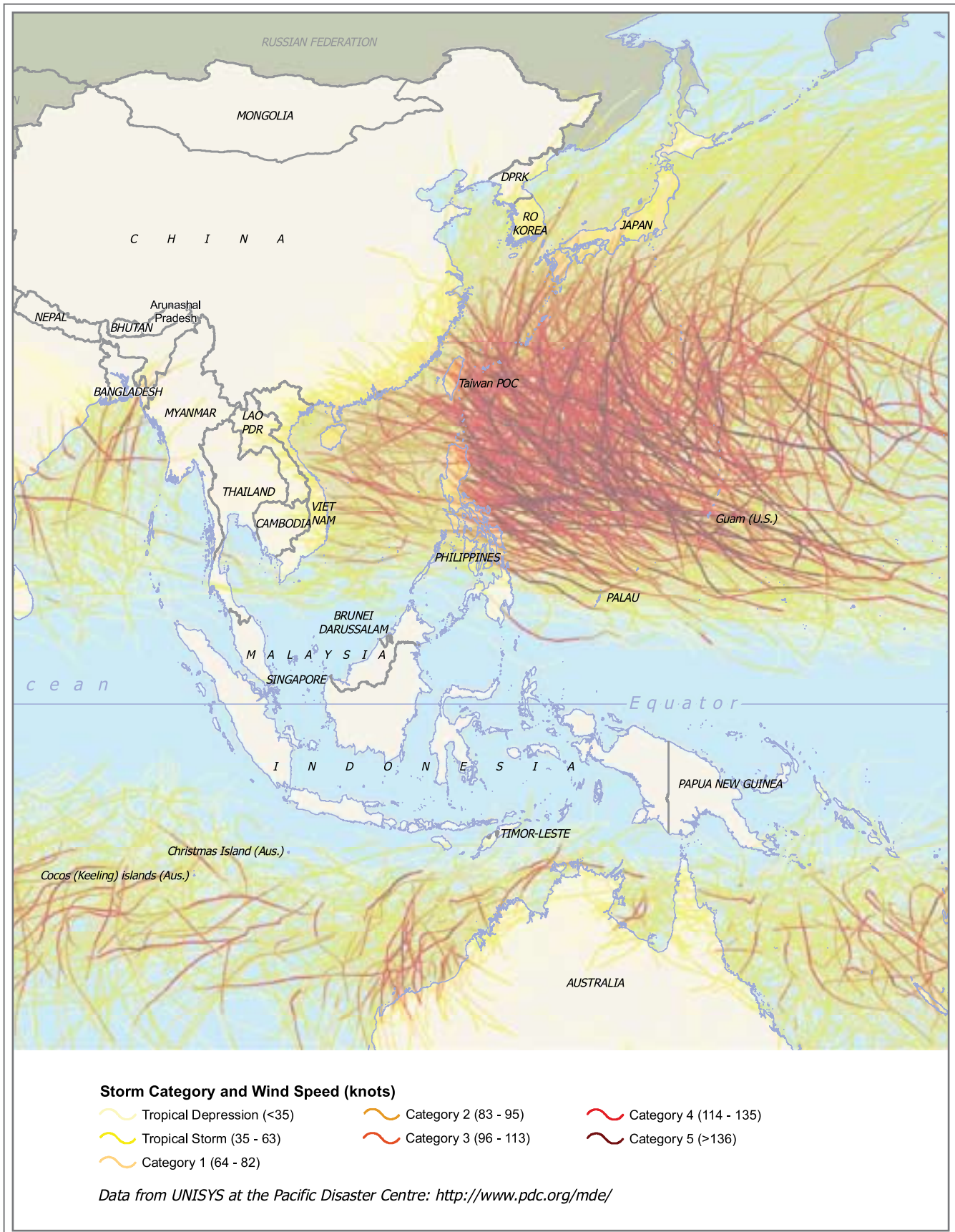
⁴ Department for International Development (DFID), Vietnam: Country Assistance Plan, February 2008, p.5.

⁵ UNDP, Terms of Reference for Technical Assistance to conduct the eleventh PEP Case-study: Linkage of Poverty and Climate Change, Hanoi, mimeo, December 2007; VARG, Linking Climate Change Adaptation and Disaster Risk Management for Sustainable Poverty Reduction, Viet Nam Country Study, November 2006.

⁶ The official poverty figure for 2006 was 19 per cent, which works out roughly at 16 million people.

⁷ DFID, Viet Nam Country Assistance Plan, pp. 6-7.

Fifty years of Tropical Storms in Asia Pacific



Source: United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

Viet Nam is one of the most vulnerable spots in the world for typhoons

Viet Nam has an admirable history of coping with natural disasters and reducing their effects, but the economic and human costs can still be huge. In the decade between 1991 and 2000 for example, official estimates are that 8,000 people lost their lives as a result of storms, floods, and land slides. Economic losses amounted to nearly US\$3 billion.⁸ According to the World Bank's 2008 Global Monitoring Report, Viet Nam ranks eighth in the ten most vulnerable countries in East Asia to weather extremes.⁹ A staggering 70 per cent of the country's population live in areas subject to water-related natural disasters.¹⁰

For a whole variety of reasons poor men and women are more vulnerable to these shocks. They are more likely to live in areas vulnerable to flooding and other natural disasters, and less likely to live in more robust permanent homes. The impact of flooding, storms or drought is usually greater on poor people as they have fewer resources to recover. Inability to pay off debt or take out new loans, increases in local food prices, and illness due to water-borne diseases can all disproportionately affect the poor.

Women and men are also affected differently by climate change because of the different roles they play in the household economy. They have different resources with which to perform these



A staggering 70 per cent of the country's population live in areas subject to water-related natural disasters

roles, including different levels of education, access to power, social norms, access to credit, and ownership of land and other goods. Testimonies from BenTre and Quang Tri showed that women are often playing the multiple roles of farming crops as well as being primarily responsible for providing food, water and fuel for the family, and caring for the sick. All these roles are made more onerous by the impacts of climate change.

⁸ Peter Chaudhry and Greet Ruyschaert, *Climate Change and Human Development in Viet Nam*, UNDP Occasional Paper, 2007, p. 2.

⁹ World Bank, *Global Monitoring Report 2008*, p. 213

¹⁰ Huu Ninh Nguyen, *Flooding in Mekong River Delta, Viet Nam*, UNDP Occasional Paper, 2007, p. 3.



The multiple roles women play in the family are made more onerous by the impacts of climate change.

Climate change - past, present and future



There is evidence that over the last forty years there has been an increase in the number of disaster events. This is just one of the changes monitored by climate scientists in Viet Nam.¹¹ The others are:

- There has been an annual temperature rise of 0.1 degrees C per decade between 1931 and 2000, and of between 0.4 and 0.8 degrees C in the country's three main cities from 1991 to 2000.
- Wide regional variations in rainfall have been recorded, but the annual volume has remained largely stable. However, the localised intensity and unpredictability of the rainfall has increased, causing severe floods.
- There have been more droughts in the south in recent years, which have tended to last longer.
- The sea level has risen between 2.5 to 3.0cms per decade in the last 50 years, but with regional variations.
- Typhoons have reduced in number in the last

four decades, but they have become more intense and are tracking southwards.

- El Niño/La Niña weather events have become more intense in the last 50 years, causing more typhoons, floods and droughts.

Just in the last twelve months, there have been unusual weather patterns including storms, floods, and drought affecting tens of thousands of people across the country. In the central provinces, local people pointed to the heavier rainfall in the main flooding season at the end of 2007. In the south of the country, Ho Chi Minh City was hit in November 2007 by the worst high tides in 48 years, which destroyed some 40 sections of the dyke around the city.¹² Hundreds of school children were unable to go to school, and houses, businesses and farms were all badly damaged. And in northern Viet Nam, the National Hydrometeorological Forecasting Centre reported that a sustained cold spell in early 2008 lasted for an unprecedented 38 days, beating the previous record of 31 days set in 1989. Temperatures dropped to below 10 degrees C, and reached -2 degrees C in two localities – a rarity in Viet Nam.¹³

¹¹ Interviews with Vietnamese climate scientists; MONRE, National Target Program to respond to Climate Change, Hanoi, mimeo, March 2008; Chaudhry and Ruyschaert, *ibid*, pp. 3-6

¹² Vietnam News, 27 November 2007

¹³ Vietnam News, 19 February 2008

The cold weather killed more than 60,000 cattle, destroyed at least 100,000 hectares of rice, and caused economic losses of US\$30m.¹⁴

Vietnamese climate scientists blamed much of the recent unusual weather on the La Niña phenomenon. La Niña is the opposite meteorologically of the better known El Niño, and usually is associated with a drop in sea surface temperatures in the eastern and central Pacific Ocean by 1.5-2.0 degrees below the average. The latest La Niña period which started in the third quarter of 2007 and was due to last until July 2008, was particularly intense and was linked to weather extremes as far apart as Australia, China and Chile.

Climate scientists in Viet Nam interviewed for this report say El Niño and La Niña weather events will become more intense as a result of global warming. Many scientists agree, but others point out that different computer climate models come up with different results: some models have suggested that an increase in GHG in the atmosphere will increase the frequency and intensity of El Niño/La Niñas. However, other models predict little or no change in how they occur.

There is much less doubt that global warming is very likely to bring an increased risk of disasters to Viet Nam. There will be an increase in the intensity and/or frequency of extreme weather events such as typhoons, flooding and drought, whilst other changes will be more gradual like sea level rises, salt water intrusion and warming temperatures. All could have a very damaging

effect on poor men and women. There are different predictions but there is broad consensus that, if there is no major international effort to reduce global greenhouse gas emissions, then:¹⁵

- Average temperature is expected to increase by between 1 to 2 degrees C (over pre-industrial levels) by 2050, and by 2 to 3 degrees by 2100.
- Rainfall patterns will vary from region to region, but rainfall and droughts are likely to increase both in intensity and in area of impact. Rainfall is likely to be less predictable.
- Typhoons are expected to increase in intensity and be subject to more unpredictability. They may also continue the trend of also affecting the south of the country. Storm surge heights are expected to increase on the coasts.
- The sea level may rise between 30-35cms by 2050, 40-50cms by 2070 and 60-70cms by 2100.
- By 2070 the flow of the country's two main rivers, the Red River and Mekong River, in the flood season is expected to rise by between 7 and 15 per cent, leading to more severe flooding, and to decline in the dry season by between 2 and 15 per cent.

Such changes are bound to have a major affect on virtually all sectors of the economy, but particularly agriculture. They will also affect different parts of the country differently.

¹⁴ Vietnam News, 26 February 2008

¹⁵ Same sources as in note 11

Map of Viet Nam showing likely impacts of climate change this century



Viet Nam's senior government figures are known to be most worried about sea level rises (SLR). This is not surprising when a widely-quoted World Bank study in February 2007 estimated that Viet Nam would be one of the top two countries in the world most at risk from a one metre rise in sea level by 2100, and the most at risk in East Asia.¹⁶ This is because of the high percentage of its population and economic activity located in the low-lying Mekong and Red River deltas. (see box on Mekong Delta) Assuming no adaptation, nearly 11 percent of its population would be affected (nine million people), the highest percentage in the world. The World Bank also calculated that a one-metre SLR would impact 5 per cent of Viet Nam's surface area and 10 per cent of its GDP. This would also have an impact on a higher percentage of its urban areas than any other East Asian country, a higher percentage of its wetland areas and a higher percentage of agricultural land. The projections for a 3 and 5-metre SLR are described as 'potentially catastrophic'.

¹⁶ Susmita Dasgupta et al., The Impact of Sea Level Rise on Developing Countries: A comparative analysis, World Bank Policy Research Working Paper 4136, February 2007.

Inundation zone of Viet Nam for a one-metre SLR



Source: World Bank, February 2007

The official SLR predictions for Viet Nam are roughly in line with the IPCC's 2007 projections for world-wide rises. But as the IPCC clearly states, their estimates for SLR are a result of thermal expansion only, and do not include the potential rise from melting ice sheets. Reports in the last twelve months of the unprecedented melting of the ice sheets in the Arctic and Western Antarctica have strengthened the views of those scientists who think that SLR will be at least a metre by 2100.¹⁷ A full melting of Greenland and West Antarctic ice sheets would raise sea levels by many metres, but if it happened, it would most likely take centuries.

¹⁷ See for example, Richard Black, 'Forecast for big sea level rise', BBC News Website, 15 April 2008.

The Mekong Delta

The Mekong Delta has been highlighted by recent IPCC, UN and World Bank reports as an area of particular concern because of the potentially devastating effects climate change could bring in the coming decades.¹⁸ Stretching from the Gulf of Thailand in the south to the Cambodian border in the west, it is one of the most densely populated areas of Viet Nam and home to more than 17 million people in its 16 provinces. It produces more than half of the country's rice, and 90 per cent of its rice exports helping to turn Viet Nam into the world's second largest rice exporter in the world. It accounts for an even larger share of national fish and fruit production, much of which is now exported to China. Despite impressive growth figures for the region, four million people are still classified as living in poverty. Many lack basic health protection and school drop-out rates are high. Only a quarter of classrooms are solidly built.

It is a region already prone to frequent and large-scale flooding, sea water intrusion and contaminated soil. For example, it is the area most affected by saline intrusion in Viet Nam with an estimated 1.8 million hectares of salinised land. Typhoons have recently begun to be a problem. As recently ago as 1994, a report by the Asian Development Bank on climate change was able to state categorically that the Mekong Delta was free of typhoons.¹⁹ Just 15 years on, that is clearly no longer the case.

As shown by the May 2008 Cyclone Nargis in Myanmar (Burma), river deltas are particularly vulnerable to weather extremes. They are lowlands formed out of sediment settling where rivers meet the sea. Most are sinking naturally, but in many cases the subsidence is accelerated by human activities like building upriver dams. Soil erosion is often hastened by the destruction of mangrove forest.



In the particular case of the Mekong Delta, the threats are:

- Sea level rise could be anywhere between 30cms and 1 metre by 2100, although the upper end is more likely. If it does reach 1 metre, 90 per cent of the Delta would be inundated every year.
- Even by 2030, the sea level rise could expose around 45 per cent of the Delta's land area to extreme salinisation and crop damage through flooding.
- The dry season flow of the Mekong River is projected to drop by between 2.0 to 4.0 per cent by 2070, which would be another factor aiding salinisation and water shortages.
- Declining crop productivity would particularly affect the spring rice crop, which is expected to fall by 8 per cent by 2070.

¹⁸ The sources for the information in this box are UNDP, Human Development Report 2007/8, Fighting Climate Change: Human solidarity in a divided world, Palgrave MacMillan, New York 2007. IPCC, Fourth Assessment Report, Working Group II report, Impacts, Adaptation and Vulnerability, March 2007, ch. 10. Huu Ninh Nguyen, *ibid*, and S. Dasgupta et al., *ibid*.

¹⁹ Asian Development Bank, Climate Change in Asia: Vietnam Country Report, July 1994, p. 27.



Ben Tre is particularly vulnerable to sea water intrusion

Ben Tre - on the frontline of climate change



The southern province of Ben Tre is particularly vulnerable to climate change. It is an island surrounded by rivers and the sea and criss-crossed by two other rivers, canals and irrigation channels. As the map shows, virtually the whole province lies less than 1.5 metres above sea level.

It is one of the provinces of the Mekong Delta which funnels the 4,800km-long Mekong River out into the South China Sea through the so-called 'nine dragons'. It forms part of the huge rice basket of the delta which has played a major role in pulling many Vietnamese people out of poverty and turning Viet Nam into the world's second-largest rice exporter. Ben Tre is also an area rich in fruit trees and coconuts, boasting the largest area of nurseries in the country producing 25 million plants per year. Prawn farming has recently become a major income earner.

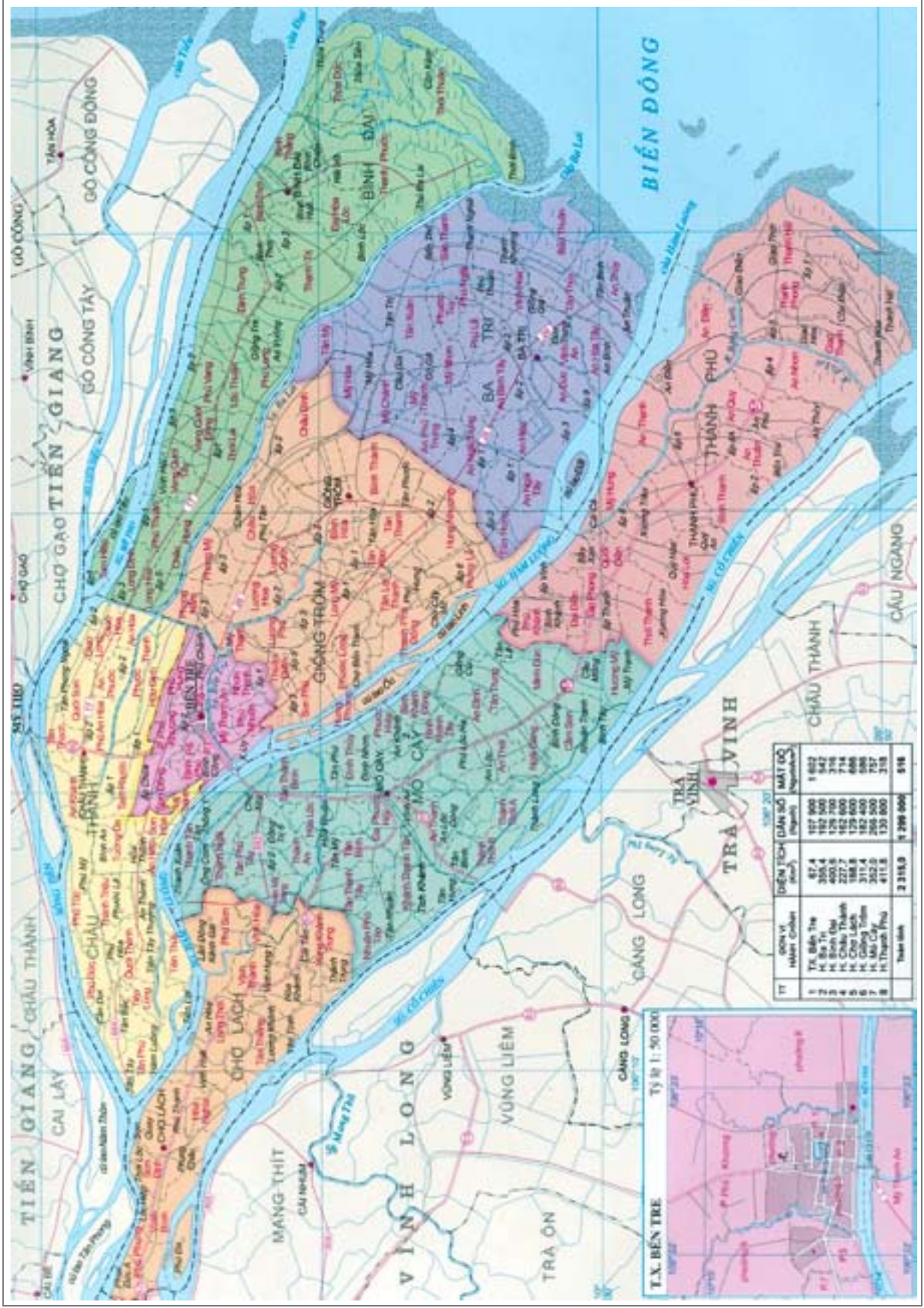
Although the majority of Ben Tre's inhabitants are no longer officially defined as poor, significant pockets of poverty remain. It has the highest absolute number of poor people of any province in the Mekong Delta: more than 245,000 people, equivalent to about 17.5 per cent of its population of about 1.4 million.

It is particularly vulnerable to sea water intrusion as it is very low-lying and four rivers run through or by it. A recent study said the province would be the one most harmed by a one metre rise in sea level by 2100.²⁰ According to the study:

- More than 50 per cent of the land area of the province would be affected, equivalent to an area of 1,130 sq. kms.
- More than 750,000 people in the province would be affected, equivalent to 55 per cent of the population.
- Many more poor people throughout Ben Tre and the delta would be exposed to increasingly worsening conditions.
- The number of villagers affected rises steeply if storm surge is also taken into account.

²⁰ Jeremy Carew-Reid, Rapid Assessment of the Extent and Impact of Sea Level Rise in Viet Nam, International Centre for Environmental Management, mimeo (no date)

Map of Ben Tre



Interviews conducted in May 2008 with villagers, commune leaders, provincial authorities and local scientists and experts confirmed the view that Ben Tre and poor men and women who live there are particularly vulnerable to the changing climate:

1. The province used to be a place without natural disasters, but local people are saying this is no longer true. Since the late 1990s, typhoons have become more commonplace. But unlike many other provinces where Vietnamese people have a long history of coping with disasters, Ben Tre has little experience to draw on.
2. Sea level rise will have far-reaching impacts on the economy and people's livelihoods as the province is already suffering from a rapid increase in salt water intrusion. In a few parts of the province near the coast, the concentration of salt in the water has already reached 30 parts per thousand (ppt) which makes growing most agricultural products virtually impossible (the Pacific Ocean for example averages between 32 and 35ppt).
3. Villagers and scientists say the climate is changing in other ways too. In particular, unpredictability of the weather, the unusual timing of the seasons, and the intensity of weather events is already making farming activities difficult and in many cases reducing agricultural productivity.
4. In the particular case of the Binh Dai district of Ben Tre, many farmers have recently turned to prawn farming. But the very poor yields in the last two years have drastically reduced their income, and made them less



Poor yields from prawn farming make many less able to cope with the changing climate

able to adapt to the changing weather and to bounce back from the weather extremes that have taken place.

Typhoons

Ben Tre is not accustomed to typhoons. Local officials at the Department of Agriculture and Rural Development (DARD) say this began to change in 1997-8, when Ben Tre started to be buffeted by them after a gap of nearly 100 years. It is thought that the last serious one to affect the province took place as far back as 1904. But in 1997, a typhoon called 'Storm No 5' in Viet Nam hit several south-western provinces, in-



80 to 90 per cent of families in Binh Dai can not afford to build houses with proper walls and roofing.

cluding Ben Tre. The storm swooped by the near-shore waters and mainly damaged fishing boats still working at sea.

'Storm No 9', also known internationally as Typhoon Durian, was much more destructive. It directly hit mainland areas of Ben Tre province and others along the southern coast on the night of 5 December 2006 and the following morning. Typhoon Durian was highly unusual both for its intensity and for how far south it had landed. Many of the villagers were simply not prepared for the typhoon as unlike many other parts of Viet Nam, they were simply not used to them.

Binh Dai was one of the worst hit districts of Ben Tre, which was one of the worst hit provinces in the Mekong Delta. Just in the commune of Dai Hoa Loc, nearly 900 houses were totally destroyed and another 1,000 lost their roofs. Fortunately, the typhoon was not accompanied by

lasting flooding as the rivers carried the water out to sea, or the damage would have been more widespread.

For the whole of the province, 18 people lost their lives and nearly 700 were injured. Out of a total household population of about 280,000, more than 40 per cent (120,000 households) either lost their homes completely or lost their roofs. The damage to prawn farms, sugar cane, orchards and coconut trees was extensive. Nearly 90 school classrooms collapsed and more than 50 health clinics were destroyed. In all, the total damage amounted to US\$200 million, a figure equivalent to about two-thirds of the province's total exports from 2001-2005.²¹

The testimony of Mrs. Xoan (page 26) shows how the typhoon can affect women disproportionately. She is a widow living with her daughter and three grandchildren. The main family income

²¹ Figures for the destruction in Binh Dai were provided by local officials.

comes from her daughter's husband who works as a fisherman in another commune. After the typhoon, they had to live under a makeshift roof of water coconut leaves for longer than other families, waiting for her son-in-law to rebuild the house. Because of her limited assets, she cannot raise any credit or capital to improve her income and diversify from sugar cane. Her only income this year has been as a casual labourer cutting grass at US\$2 a day. She is very concerned that she does not have the resources to build a concrete house or a concrete shelter for when the next typhoon hits the area.

In May 2008 Mrs. Xoan and other villagers in the Binh Dai district were still talking fearfully of storm No 9, and were very worried that it may be repeated soon. It is still, in the words of several of the villagers and village leaders, 'very much on our minds'. Some householders say they are better prepared as they put sandbags on the roof or tie the roof down when there is a warning of typhoons. But many, like Mrs. Xoan, are not. They say only 10 to 20 per cent of the houses in the villages are made of concrete, and complain that the failure of the prawn farming makes it even more difficult to afford proper walls and roofing. Several villagers showed considerable resourcefulness in coping with Storm No 9, including one family finding protection behind a low-walled pigsty for several days (sheltering behind a higher concrete wall would have been more dangerous as it may have collapsed on them). However, most of the families interviewed said they still did not have adequate protection and had not received training in preparing for typhoons.



The low-walled pigsty became a safe shelter for Mr. Dao Van Thuong, 63, and his family during Storm No 9, 2006

Scientists from the Ministry of Natural Resources and Environment (MONRE) and the Institute of Meteorology, Hydrology and Environment (INMHE) say they are concerned about the increased possibility of more intense typhoons hitting Viet Nam in the future, and of their moving further southwards. The Government's National Target Program warns specifically of this danger and the increased risk to local communities in coastal areas.²²

The local commune authorities say they are making preparations for more typhoons by building local evacuation centres for poorer families and encouraging better-resourced individual families to build their own shelters. However, both they and local Red Cross officials say much more needs to be done in awareness raising, capacity building and preparing for typhoons in a province which does not have a history of adaptation and disaster risk reduction measures.

²² MONRE, National Target Program to Respond to Climate Change, p. 10.

“We are very scared the typhoon will happen again”

Mrs. Nguyen Thi Xoan, 59, Binh Phu village, Thanh Tri commune, Binh Dai district

“It was 6 o’ clock in the morning. We were all asleep. The wind was getting stronger and stronger every minute. My grandchildren and I quickly ran to the back of the house and took shelter between four concrete water containers. After two hours the wind died down. When I opened my eyes, I could not believe what I was seeing. My house and all the houses in the entire village had totally collapsed. I saw everyone crying and I also cried.



Even now whenever my six-year-old grandson hears the sound of the rain, he runs inside the house and manages to put all his clothes in a bag. He really wants us to leave the house perhaps because he can never forget the day the typhoon hit in 2006. We all got soaked, we felt extremely cold and he was so frightened.

Most of our furniture was broken. On the day we were only able to take the TV with us because it is the most valuable thing we had in the house.

We were informed about the typhoon from the radio and the loud speakers. In fact every year we had typhoons but we did not expect the big typhoon like the one in 2006, so the preparation for that typhoon was not good enough. To be honest, I have never seen any big typhoon like that before. Even my father who was then 85 years old had never witnessed the huge typhoon like that.

Each household was given emergency food and 5 million dong (US\$310) by the local authorities for rebuilding the house. However, we spent only 2 million dong on ours, because we were able to use most of the materials that we already had. It took us 20 days to complete because there is only one man in the family, my son-in law, so we had to wait for him to finish the rebuilding work that he did for his parents’ house. During that time we lived outside. We set up four bamboo poles and put up a cover made of water coconut leaves to live there temporarily. Every household in this village lived in the same conditions.

We are very, very scared the typhoon will happen again. Like most of the houses in the village, ours is not made of concrete. We need a typhoon shelter like the ones I have seen on television. But we do not have enough money for one.”

Salt water intrusion: destroying livelihoods

Scientists at Ben Tre's two main government departments dealing with climate change, Department of Science and Technology (DOST) and DARD, are extremely concerned about the significant increase in the amount of salt getting into the rivers, canals and other water systems in recent years. There is no agreement as to how large a role rising sea levels is playing in this process of salinisation. However, whatever the exact balance of causes, the key points are that local leaders and villagers are already very worried about the effect higher concentrations of salt are having on their livelihoods, and secondly, with the sort of predictions for SLR in the coming years, extreme salinisation particularly in the coastal areas of the Mekong Delta will become an even greater problem, and especially for poorer families who have less resources and options to be able to adapt.

Officials at the DARD say that the combination of more drought in the dry season (usually from December to April in Ben Tre) and the sea water travelling higher up the rivers has combined both to increase the amount of salt in the water and to carry the salted water into areas not previously affected by salinisation. Official figures show that from 2002-5, the saline content in three rivers (Cua Dai, Ham Luong and Co Chien) increased significantly in the three months from February to April as measured at five stations throughout the province. For the month of May, it had dropped slightly in four of the five stations and increased at one. DARD officials say that at the end of the dry season in May 2007 the salty water covered about two-thirds of the province



Many families have to buy fresh water due to increased salinisation

and had travelled about 60kms up the rivers from the sea – a rise of 10 kms in the last five years.

They also say the concentration of salt in the rivers has increased to 4ppt in some parts, the point at which rice cannot survive. In other areas not previously affected, it has reached 1 or 2ppt which seriously affects orchards and nurseries. Official DARD figures for economic losses as a result of increased salinisation are alarming: in 2003 salt water intrusion caused 12 billion dong's worth of damage (US\$750,000) in the province, and 16,000 households had no fresh water. By 2005 that figure had risen to 570 billion

dong (US\$37m), mainly due to loss of productivity from rice fields, fruit trees, coconut trees and sugar cane. The number of households without fresh water that year had increased to 110,000 out of a total number in Ben Tre of about 280,000.

Press reports in national and international media in early 2008 confirm that the problem is not confined to Ben Tre province. The nearby provinces of Tien Giang, Ca Mau and Kien Giang all reported rice fields and aquaculture ponds being affected by salt water intrusion, causing millions of dong of damage. In the orchard area of Ben Tre, high levels of salt water had also threatened 12,300ha of fruit trees in the Cho Lach District.²³ A local coconut farmer in the town of Phuoc Long more than 40kms from the sea on the Ham Luong tributary in the north-west of Ben Tre said in April that the sea water was getting higher and higher every year, threatening his livelihood. The sea water had reached Phuoc Long as early as December just after the rainy season. *'The river is changing, we are sure,'* he said. *'Its salt water is stealing our land. Every year it comes higher and higher.'*²⁴

In some communities in Ben Tre, they now have to use salt water to do their washing so that they have enough fresh water left for drinking. One villager in the Binh Dai district said the salt water now remained for as long as eight months of the year. *"Before, we had six months of saline water and six months of fresh water."* said Luong Van Huynh, 57, Binh Loc Commune, Binh Dai District, Ben Tre.

"Now there are eight months of salt water and only four months fresh water, but the water also tastes saltier during the fresh water season."

Another said she could no longer grow grass to feed the cows because of the salt content. *"There is too much salt in the land here for grass to grow."* said Hoang My Le, 50, Hamlet 1, Binh Thanh 1, Thanh Tri Commune, Binh Dai District, Ben Tre. *"I wish there was somewhere I could go to grow grass to raise cows..."*

The increased salinity is causing widespread problems for the Dai Hoa Loc commune as explained by the vice-chairman of the People's Committee, Ha Minh Ho:

"The issue of increased salinity is a real problem for our commune. This year at one point there were 30 parts per thousand (ppt) of salt in the water compared to 11-12 ppt five years ago. When it reaches 30 ppt, there is very little you can do except wait for the rainy season to come and take the salt water back down again to the sea."

We are not sure of the reason, but it may be to do with the strong winds blowing the sea water higher up the rivers. The sea water also remains for longer. For example there is not enough time for some vegetables to grow, because the period when there is no salt is shorter."

The unpredictability of the salt content also makes prawn farming more difficult. You need to regulate the salt content – about 15 ppt for baby prawns,

²³ Vietnam News Agency, Salt water threatens farms in Mekong Delta, 12 March 2008.

²⁴ Greg Torode, 'Sinking Feeling: As sea levels rise, salt water is threatening to devastate crops and livelihoods in the Mekong Delta', South China Morning Post, 8 April 2008.

then 10 ppt for more mature prawns, but it is difficult to do this when the saline content is high.

For the last three to five years, we have also had to buy drinking water. The wells are much saltier since the typhoon in 2006.

Most experts think the main reason for the rapid increase in salinisation in the area was due to the freshwater not coming down the rivers in sufficient quantities, particularly in the rainy season, to wash the salty water back down the estuaries into the sea. Deforestation, widespread upstream irrigation, increased land use and hydroelectric dams are most likely to be the main causes. But one government scientist at MONRE said sea level rise is already one important factor. He pointed out that the general sea level rise for Viet Nam was measured at between 2.5 to 3.0cms per decade in the last fifty years (a total of between 12.5 and 15cms), and that one station had measured a rise of as much as 20cms in the last forty years.

Changes in the weather: testimony from the community

Every single person interviewed in Ben Tre in May 2008 said local weather patterns were changing. Different interviewees stressed different aspects of these changes, but all concurred that in the last few years the weather was becoming less easy to predict and more prone to extremes. The most obvious example was the unusual typhoon in December 2006, but there were other examples cited:

- An increase in the period of drought
- An increase in the intensity of rainfall when it rains
- An increase in the unpredictability of the rainy season, and particularly an earlier start to the season, making the timing of planting more difficult.

The effects of the climate changing on the lives of poor men and women in Binh Dai district are various. In particular, prawn farmers testified that the unpredictability of the weather made it more



“ *“ I don’t know why the weather is changing...” said Luong Van Huynh, 57, Binh Loc Commune, Binh Dai District, Ben Tre. “It seems more unpredictable: it rains less and when it rains it keeps going for two weeks; when it is hot it seems to last longer as well.”* ”

difficult both to regulate the salt content in the ponds and to know when to introduce the baby prawns into the ponds. Others farmers spoke of declining rice productivity due to longer periods of drought. Their ability to cope depended on a whole array of factors, but many had been forced to seek off-farm employment as labourers. Poorer families clearly had fewer options to adapt to the effects of the weather changes.

The perceptions of poor villagers living in the Binh Dai district are supported to some extent by official figures. Usually Ben Tre has a rainy season roughly from May to November, followed by a dry season from December to April the following year. But local data for rainfall in Binh Dai show that in 2005-6 for example, the dry season and the rainy season did start unusually early - in November and March respectively. Indeed, nearly 80mm of rain fell in March 2006, a record for the period 1987-2006 and four times as much as the next highest figure recorded in 1991. However, the data also show that the monthly rainfall during the rainy season of 2006 was about the same as the 20-year average. But the data cannot show the intensity of the rainfall

within each month so the villagers' perceptions may still be correct.

DOST officials say that for the whole of the province of Ben Tre there has recently been more rainfall in the rainy season and more drought in the dry season, the seasons have been starting earlier, and the rainfall is becoming less predictable. Official figures show that for 2005-6, the dry season did start unusually earlier (in November) as did the rainy season (in March). The rainfall for each month from June to September was very high (a record for each month for the period 1988-2006), and the yearly total of 2,518 mm was the second highest recorded over the same period.

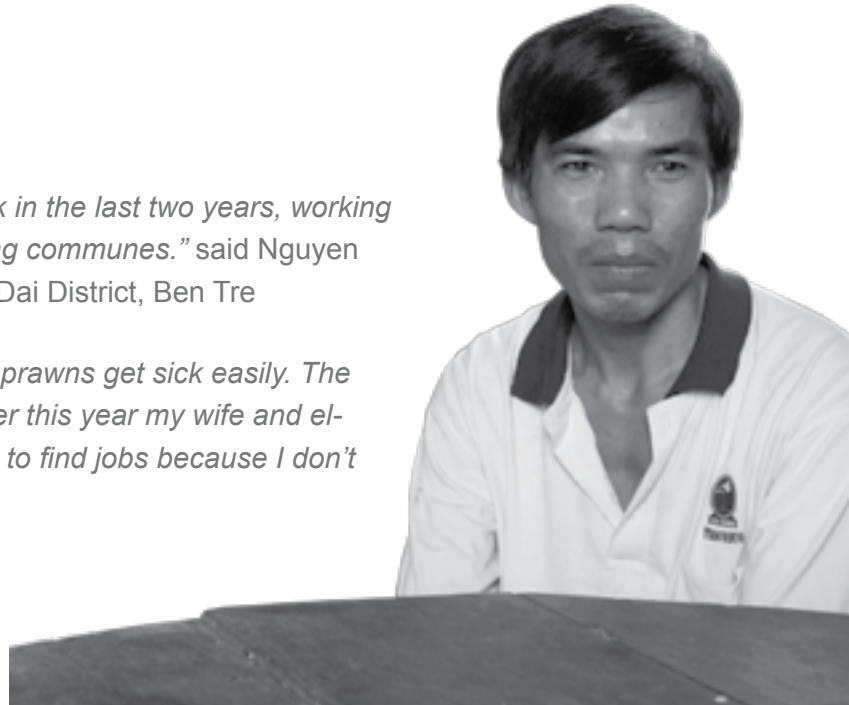
DOST officials also say that more rainfall in the rainy season is causing a rise in the water levels in the province. In the last five years the greater volume of river water combined with the high tide has resulted in a rise in the water level of about 15cm-20cm above the average level compared to previous years. According to the DARD, this alone causes on average damages of about 100 billion dong (US\$6m) a year.



“Usually, it flooded once a year around November time. This year, it has flooded four to five times already.” said Hoang My Le, 50, Hamlet 1, Binh Thanh 1, Thanh Tri Commune, Binh Dai District, Ben Tre.

“It has been more difficult for me to find work in the last two years, working as a prawn farming keeper in the surrounding communes.” said Nguyen Thanh Nhan, 39, Binh Loc Commune, Binh Dai District, Ben Tre

“Too much rain and too much sun make the prawns get sick easily. The owner lost the prawns so I lost my job. Earlier this year my wife and eldest daughter had to go to Ho Chi Minh City to find jobs because I don’t get a regular income.”



As already discussed, it is not yet possible to say if these individual weather extremes are due to global warming. They are more likely to be linked to the cycle of El Niño and La Niña weather patterns. However, whatever the causes, the recent changes in the weather give a foretaste of what is likely to happen in the years to come as a result of climate change, and they show the devastating effect it has on poor families.

Prawn farming: a living now at risk

The Binh Dai district is seen as a particularly suitable area for prawn farming with the combination of fresh, brackish and sea water within its boundaries. In the Dai Hoa Loc commune for example, out of total area of 2,300 hectares, by 2005 nearly 1,300 hectares of it were dedicated to prawn farming. According to the commune’s

vice-chairman, five years ago 80 per cent of the villagers were rice farmers, but by 2008 the same percentage were now prawn farmers or involved as labourers in the different types of prawn farming.²⁵

The main reason for the rapid switch was the boom in international demand for prawns, particularly in European and US markets. Villagers said the profits from prawn farming were about ten times those of rice farming, while one recent study put the figure higher. It calculated that the average rice crop gave a profit of about US\$190 per hectare, whilst for prawn farming it could reach between US\$6,200 and US\$9,400.²⁶ Another reason many small farmers changed from rice to prawn farming has been the increasingly brackish quality to the water, which is good for breeding prawns but not for rice.

²⁵ There are different models of prawn farming in Binh Dai, including intensive, semi-intensive, semi-industrial and integrated shrimp and rice farms.

²⁶ Center for Development and Integration, Trade Liberalisation and shrimp farming of the poor in Ben Tre province, mimeo, Hanoi, May 2006, p.7.



Losses from prawn farming have made poorer families less able to cope with extreme weather events

In the early years, the dramatic increase in income helped to lift many people out of poverty in the district. In Dai Hoa Loc commune, the poverty rate was reduced to about 14 per cent, whilst the nearby commune of Thanh Phuoc became the richest commune in the district.

However, by May 2008 many of the villagers were facing a very significant drop in income in the last two years and were probably back to being classified as poor. Of the ten prawn farmers interviewed, only one was coping with the downturn and that was because he had a greater pond area, and two ponds instead of the usual one. The common story was of drastic losses which had left the farmers deeply in debt, seeking off-farm activities and in some cases keen to move out of prawn farming.

47-year-old Nguyen Chi Cong from the Thanh Tri commune was typical. He said he had made a profit of about US\$3,000 a year for the first two years but had made a loss for the last three years. He was still managing to cope by living off the profits of the first two years. He still wanted to persevere with prawn farming because of the possibility of high profits, but other farmers interviewed wanted either to switch to fish farming or move back to rice. One of the obstacles was that it is very difficult to revert to rice because prawn farming has raised the saline content in the ground. Experts believe that it can make many years for rice to be able to be cultivated again.

Villagers in the two communes of Dai Hoa Loc and Thanh Tri said only about one in ten of prawn farming households were not making a loss. They blamed a series of factors for the poor yields, including the unpredictability of the weather, diseases affecting the prawns, polluted water, and other environmental changes. They also pointed out that with abandonment of rice farming (which often produced enough to feed them for about six months of the year), they now had to find the income to buy rice for twelve months of the year.

The experience of poorer families in Binh Dai would seem to support the conclusions of various studies of prawn farming in Viet Nam and other parts of the world that poorly resourced farmers can often end up worse off.²⁷ Prawn farming requires significant investments of capi-

²⁷ Centre for Development and Integration, *ibid.* See also for example the Lampung declaration of 6 September 2007 against Industrial Shrimp Aquaculture, signed by local communities and NGOs from 17 different countries, which included widening income gaps and ecological damage amongst its criticism of shrimp farming. Available at: http://www.forestpeoples.org/documents/prv_sector/shrimp_fms/lampung_decl_sept07_eng.shtml

tal, careful technical and feed management controls, constant dredging, and ideally three ponds – one for the prawns, one for waste and one for sediment deposition. Most of the poorer farmers interviewed only had one pond of less than one hectare. They also often have to sell their prawns at a lower price to traders, whilst the better-off can sell straight to the processing companies. Borrowing money is particularly risky as there will be no money to pay off the loans in the event of crop failure.

The impact of the downturn was widespread. Mr Dang Van Vong from the Binh Loc Commune had been forced to sell off most of his 13-hectare plot of land to be able to pay off the bank loan he had taken out for prawn breeding. Another interviewee, Mr Le Van Thien, had lost about 10 million dong (US\$625) a year for the last three years from prawn farming, and was coping by borrowing money from friends. Mrs Pham Thi

Hoa had ‘lost everything’ in the last two years of prawn farming, but was surviving from the income of her two sons who were delivering coconut shells and ice cubes in the neighbourhood.

What has the plight of poor prawn farmers in Ben Tre to do with climate change? Firstly, the changing climate and its unpredictability make poorer families particularly susceptible to income loss from already risky livelihoods like prawn farming. Secondly, the losses from prawn farming have made poorer families less able to cope with extreme weather events. As one farmer complained, the fact that he had been losing money prior to the December 2006 typhoon left him unable to build a stronger house with concrete walls for when the next typhoon came along. And finally and most importantly, the example of prawn farming shows that planning for adapting to the effects of climate change needs a combined policy approach which includes



“I had to sell 10 hectares of my 13-hectare plot recently to pay back part of the loan I had borrowed from the bank. I am in debt because prawn farming in the last few years has not brought me any profit.” said Dang Van Vong, 54, Binh Loc Commune, Binh Dai District, Ben Tre.

“Bad weather is among the reasons why I am losing money. The rainy season came early this year. The unusual changes from sunny to rainy made the pond’s temperature change from hot and cold suddenly. Three days like that and the prawns are badly affected.”

both a sustainable livelihoods programme and disaster risk management.

Adaptation and creating climate resilience

National and local authorities in the Mekong Delta are beginning to integrate climate resilient policies into wider programmes of coastal zone management. In some areas of the delta dykes are being strengthened or heightened, mangroves are being planted to improve protection from storm surges, and some homes are being built on bamboo stilts. In some cases women and children are learning to swim and life jackets are being issued.²⁸

Even though collective building and maintenance of sea dykes has now been replaced by a tax for coastal protection, the infrastructure for sea defences has improved in recent years. However, poorer households lack the ability of individual better-off families to cope with disasters and absorb risks.²⁹

Studies of rice farming in other areas of the Mekong Delta show that small-scale farmers have been adopting a series of measures in part to adapt to climate risks.³⁰ These measures are usually taken by individual farmers rather than at the community or national level, especially where there is no community or provincial planning. They include the construction and maintenance

of small-scale irrigation systems or embankments to protect their farmland from floods, and the use of alternative crops or rice seed varieties. For example, they often plant a shorter-cycle rice seed variety in response to climate forecasts.

However, in Ben Tre creating climate resilience seemed to be at a very early stage. With the help of financing from the Global Environment Facility (GEF), some initial steps are being taken to enhance the awareness of local communities and improve their capacity to adapt to climate changes.³¹ Different types of coconuts and fruit trees more resistant to saline intrusion are being developed, and some dykes are being increased in height. But its scope is at present limited: it has a budget of just US\$30,000, and directly or indirectly involves about 2,000 members of one commune.

Local government officials and scientists are the first to say there is still a long way to go in terms of increasing the limited awareness and understanding of climate change impacts in the province, improving the scientific data base and climate modelling, and working with local communities to understand the adaptation options. As one local Red Cross official expressed it, 'Everyone here in Ben Tre needs to know more about climate change – the authorities, government departments, the communes, the villages, the NGOs and the media. This is not someone else's problem in another part of the world. It is ours and all of Viet Nam's.'

²⁸ UNDP, *Fighting climate change*, pp. 165ff.

²⁹ Chaudhry and Ruysschaert, *ibid*, p. 6-7.

³⁰ Suppakorn Chinvanno et al, *Climate risks and rice farming in the lower Mekong countries*, AIACC Working Paper no. 40, 2006.

³¹ The GEF programme is VN/05/009, funded by GTZ.

Quang Tri - Living with Floods



The central coastal province of Quang Tri is one of the most vulnerable to flooding in the whole of Viet Nam, and Hai Lang district is the most vulnerable within the province. Villagers have a long history of working with local government and mass organisations to cope with the flooding, reducing its impact and changing their production cycles to adapt to it. However, many of the poorer men and women in the district are still very vulnerable to the extremes and vagaries of the weather which they say have become more pronounced in recent years.

Like many provinces, Quang Tri has enjoyed high economic growth rates in recent years and the number of poor people has declined significantly as a result, at an average rate of 2 per cent a year.³² However, the poverty rate for the province is still one of the highest in Viet Nam. Infant mortality in 2006 for example was 36 per 1,000, the fourth highest in the country, while life expectancy in 2004 was the sixth lowest at 66 years of age.

The province is also environmentally fragile. It is not just flooding and drought. A hot and dry strong wind known as the Lao wind blows through the province from late April to mid September setting the temperature above 37 degree Celcius some days. The wind dries up trees,

plants, ponds and lakes, increasing the risks of fire. Deforestation, saline intrusion and regular typhoons compound the fragility.

Moreover, Quang Tri is unusual in having the highest rate of ordnance and toxic chemicals left over by the US military. The 17th parallel, which divided Viet Nam between 1956 and 1975, runs through the province. Quang Tri was devastated during the war. Forests were destroyed and toxic chemicals which remain in the soil have left a terrible legacy of illnesses which were still affecting livelihoods in May 2008.

Hai Lang district is in the south-eastern part of the province. Just over 100,000 people live there, spread throughout 21 communes, more than

³² Poverty Task Force, Quang Tri: Participatory Poverty Assessment 2003, Hanoi, January 2004, p. 3.

Map of Quang Tri



Source: Cartographic Publishing House - Viet Nam

half of which are below sea level. Poverty is widespread at about 22 per cent of the population. The district is a mixture of low land areas, fishing communities and upland or hill land areas. Nearly twenty household interviews were carried out in three different villages to represent the different types of location: in Tram Son (upland) and Luong Dien (low land) both belonging to the Hai Son commune, and in My Thuy (coastal) of the Hai An commune.

The main economic activity of My Thuy is fishing; for Luong Dien it is paddy (wet rice cultivation) and for Tram Son it is more diverse with some paddy, more vegetable crops and forestry activities. The changing climate has had different impacts on the different communities, but the message was clear: the flooding and storms were coming at different times of the year and were far less easy to predict, and the dry season (usually May to August) was getting hotter.

The lowland area is highly exposed to the flooding during the heavy rain period (known as the main floods), which takes place historically from August/September until November in this part of Viet Nam. People are used to this type of flooding, which is part of the production cycle and has the positive consequence of providing sediment with high nutrient content. In the 1990s many families started to grow two crops of rice per year, the first one roughly from January to early May, and the second from early June to early September before the autumn storms and floods.

However, the production cycle is very tight, and changes in the arrival time of the rains or extended drought often causes reduced output



The changing climate makes it difficult for fishermen to predict when it is safe to go to sea

or even no production at all. For those families dependent on rice farming, the recent changes in the rain patterns had caused extreme hardship. Rain coming 'at the wrong time' in the last two to three years was the common complaint. Many farmers said twenty or thirty years ago, for example, light early flood known as tieu man came regularly in May-June. But in 2006, there had been early flooding in February; in 2007 the flooding came in April, and then again in April in 2008.

For example, Ho Si Thuan and his wife Nguyen Thi Theo from the lowland village of Luong Dien lost their spring rice crop in February this year due to the cold period, replanted the rice seedlings but then lost the crop again when the summer rains came early in April. The local authorities in Hai Lang say about 50-60 per cent of the rice crop and other crops had been lost this year in the whole of the district due to the cold spell followed by the early tieu man. Moreover, both they and local villagers say that last year during

“We don’t know why the weather is changing”

46-year-old Ho Si Thuan and his wife Nguyen Thi Theo live in the lowland village of Luong Dien in the Hai Son commune. They have a rice paddy, but they also work a second rice paddy for another family and grow some vegetables. They have five sons. All their sons can swim. Thuan can swim, because he says that if you live in Luong Dien and don’t know how to swim, you may die. Theo cannot swim as she says she is too scared to get into the water to learn.



‘The frequency of the flooding is worse compared to ten years ago. 1999 was the worst year, but last year was pretty bad. In October we had water up to our knees for four days. It used to only flood twice a year, but now it is four times a year. It is starting earlier in the year too.

Last year we made sure we harvested the rice before the main flooding season, but we lost our cassava, sweet potatoes and beans.

It was so cold in February that we lost our rice crop, then we planted again but it rained heavily in April so we lost it again.

When the flooding comes, we put everything up on the platform – food, things to cook with, even the pigs and chicken we put in cages up there. Unfortunately last year we lost the cage with the chickens in it to the floods.

The children were very frightened especially as the wind and the rain were so strong. Someone from the rescue team came with a boat and took them to the school, which is stronger and made of concrete.

We have training every year for the floods. The trainer is from the commune. We take enough food for seven days. We know we have to prepare well for the floods. But we could do with more boats and life jackets. We cannot move from the area because it is too expensive to buy land elsewhere.

We don’t know why the weather is changing. We don’t know why our farming is being so badly affected. We are very worried about losing our home, about losing our crops, about going hungry.’

the main flooding, there were six incidences of flooding in the district compared to the usual two or three.

Poor men and women in the upland village of Tram Son were also badly affected by the changing weather, even though most of them do not rely on rice farming to the same extent as the lowland communities. In their case, the unpredictability of the weather, and in particular the cold spell in February this year and the early arrival of the floods, has devastated their garden crops like peanuts, cassava or peppers. As they live higher up, it is often flash floods causing landslides that are their main problem. The leader of the Hai Son commune said the declining productivity over the last three years had caused the vast majority of upland villagers to rely more on forestry activities. Some were even going back to trying to find scrap metal left over by the Americans 30 years ago, even though they had to walk several kilometres further into the forest and there was much less metal around.

58-year-old Le Thi Nay lives with her family in the upland village of Tram Son, which belongs to the Hai Son commune. She has lived all her life in the village, and cannot remember worse weather than in the last three years. Like many villagers, she and her family have had to resort to switching crops from rice or seeking off-farm income in order to compensate for the loss of income from agriculture caused by the vagaries and extremes of the weather. Most of the villagers in Tram Son are now relying on forestry activities, such as collecting bundles of firewood, forest stewardship schemes, making wooden brooms, or using metal detectors to find military hardware left over by the Americans more than 30 years ago.

'Twenty years ago, being a farmer seemed extremely easy as the weather was predictable – it wasn't so hot in the dry season and there was less flooding. Last year our first crop rice was affected by early flooding. We could only harvest about 200kgs, and it was poor quality so we had to feed it to the pigs. This year, it was very cold and the rice seedlings died.

Part of the year we now plant sweet potatoes in the field where we were growing rice. There are several reasons for this: we can eat half of them and keep half for the winter, and we can feed the leaves to the pigs. Sweet potatoes can survive the dry season better than rice but even they cannot survive severe flooding.

We have had a special wooden platform in our house since 1990. About a third of the households in this village have a platform, but in the lower-lying villages, all of them have it. We make sure we have enough food for ten days when the main flooding season comes.

We are very concerned about the weather. We may even suffer hunger this year because we haven't had a rice crop. So many people in our village now go up to forest as rice farming is not working. They go up to collect wood, or to try and find the scrap metal or ordnance left by the Americans during the war.

I haven't been there for several years, but they say it is much more difficult now to find any metal. You can earn up to 100,000 dong (US\$6) a day doing that, but it can be very dangerous. We don't have to go to the forest as our sons work as labourers, so we live off their income.'



The harrowing human impact of the unusual weather on poor villagers in Tram Son cannot be understated. 49-year-old Le Thi Huong was having to deal both with the loss of her crops and with the effect of the weather on her 12-year-old daughter, who had inherited mental health problems from her father who had been affected by the use of Agent Orange during the war. Her daughter is very sensitive to the weather. *'When the weather changes, she cries all night and cannot sleep'*, Huong said.

49-year-old Mr. Nguyen Van Cung lost most of his crops this year due to the weather and to insects eating them. He says there are more insects around because of the climate changing. He also lost his peanut crops as first the cold weather and early rains destroyed his winter/spring crop, and then the early summer rains



ruined his second crop. *'We are supposed to be harvesting the peanuts now, but there simply aren't any'*, he said.

The coastal commune of Hai An is particularly sensitive to extremes of weather or unpredictable rainfall and winds. About half of the commune's income comes from fishing. Like many communities in Quang Tri province, in recent years poorer fishermen using smaller boats have been suffering from declining fish populations near the coast.³³ Villagers spoke of no longer being able to predict the weather from looking at the sky and the tides. Typhoons in particular were much more difficult to anticipate. Several testimonies also spoke of the reduced number of possible fishing days over the last two years because of the 'dramatic' changes in the weather, including higher waves and wind, unusual cold spells and rainy periods. In particular, they raised the recent stormy weather in March and April which had caused severe hardship. Many families had other part-time jobs or economic activities to fall back on, but for some, going heavily into debt was the only option.



³³ Poverty Task Force, *ibid*, p. 18

“I am very worried about the weather changing”

39-year-old Vo Viet Gia lives with his wife and five sons in the coastal village of My Thuy, Hai An Commune. His main occupation is working as a fisherman's mate on a boat owned by another villager. If the boat gets a good catch, he can earn between 50,000 and 70,000 dong (US\$3-US\$4) a day. When they cannot go fishing, he earns about 30,000 dong (US\$2) a day as a labourer or porter.

I am very worried about the weather changing in the last two years. My house is not very secure so I may lose it when the wind gets so strong, and I cannot go out fishing as much to earn an income.

The wind is heavier on the sea, and there have been more storms. Normally the storms start in September or October, but recently we have had storms in March and April. We have not been able to go out fishing as much in the last two years because of the weather.

The cold period this year was the worst I can remember in my life. We can't fish when it is so cold. I lost about 20 days' work in April. My sons could not bear the cold. We were given more clothes by the community and our relatives, but the clothes were often too thin.

I had to work more as a porter and a labourer, and the income is less. Life is difficult as my wife has had TB for three years, although she has had treatment for the last eight months and is feeling better. I have a kidney problem, and I have to pay for some of the treatment.

Normally we have to borrow money from relatives to survive. I am in debt about 4 million dong (US\$250) at the moment.

We know about climate change and how it is caused by human activity. We have to have a greener environment and plant more pine and indigo trees to stop erosion and protect us from the wind.





Poor families live in worse housing so often need more resources to repair and strengthen their houses after storms or flooding

Detailed studies of how villagers in Quang Tri have coped in the past with extreme weather events, and in particular the devastating floods in 1999, have shown that poorer men and women have much less capacity to recover and adapt than better-resourced families.³⁴ This is because low-income families have:

- worse housing, which often gets more damaged in storms or flooding. They use more resources to repair and strengthen their houses as a proportion of their total resources.
- greater vulnerability to diseases affecting their animals and lack adequate sanitation.
- much less diversified household economy and are more dependent on rice production in the lowlands or vegetables in the uplands.

- more from health problems, resulting in lack of household income from off-farm labour, high medical costs and indebtedness.
- little access to credit so are often forced to take informal short-term loans with high interest rates to secure emergency basic needs.

The key point is that the difficulties faced by poor people are a result not just of the floods, but of the multiple stresses linked to their household livelihood situation. This was clearly borne out by the testimonies collected from the three villages as a result of the latest weather events. Those with a diversified household economy, off-farm work opportunities, larger boats and/or better health were much better able to find emergency income to cope and recover.

Women in the villages of Hai Lang were often hardest hit by the flooding. As with many other climate-induced disasters in Asian countries, more women than men died as a result of the flooding. There are many reasons for this but one of them is that many more women than men cannot swim. It was clear from the testimonies that women and girls at times have not been given the same encouragement as men and boys to learn to swim. All sorts of social customs and behaviour restrictions made it more difficult for them to do so. There are other reasons why women were disproportionately affected: they had to spend more time at home looking after children or old people suffering from diseases brought on by the weather extremes; they of-

³⁴ Malin Beckman, Le Van An, Le Quang Bao, 'Living with the floods: Coping and adaptation strategies of households and local institutions in central Vietnam', Oxfam, 2002, and Malin Beckman, 'Resilient Society – Vulnerable People. A study of disaster response and recovery from floods in central Vietnam', Ph.D. thesis, Uppsala University, Sweden, January 2007.

ten were forced to spend more time collecting wood and clean water after a disaster; and they had to overcome more social obstacles to be involved in community leadership roles or disaster risk reduction courses.

Adapting to floods: a life-saver

On 2 November 1999, a very intense tropical storm dropped more than two metres of rain on central Viet Nam in four days. About 500 people lost their lives. 29 people were killed in Hai Lang district alone, and economic losses there were estimated at more than US\$10 million. The winter flooding towards the end of 2007 was widely regarded as the worst since then, although it was spread over six different periods. The district authorities say two people died in 2007 even though the economic losses were greater than in 1999 and the flood waters were between 0.2 and 0.5 metres higher. So what had changed?

The Red Cross authorities and local villagers say several things happened between 1999 and 2007 to ensure that they are now better prepared:

- In 1999 there had been no large boats and only a handful of life jackets. Now the district had eight boats, five canoes and 500 life jackets.
- Before 1999 many households had no platforms built in the ceilings of their homes. Now all the low-lying households and many houses in upland areas too had such platforms.
- Houses are built to be stronger, and when economically possible with two floors. At the commune level, more schools were be-



Many households now have platforms for safe storage during the flooding season.

ing built with two levels to be used as a community shelter.

- Villagers were preparing better by making sure they had enough food stored for seven days. Wherever possible, domestic animals like hens and pigs were put in cages and lifted up onto the raised platforms in their houses.
- Early warning systems had been strengthened to inform villagers in a timely way of forthcoming floods and storms.
- Farmers were adapting their agricultural cycles to try and harvest rice and other crops before the main flooding season. This was helped by using a different type of rice seed that had a shorter crop cycle, or planting more resilient crops like lotus plants.

- More than 10,000 pigs were lost in the flooding in 1999. Now villagers try to sell their livestock before the main flooding season, rather than keeping them for the Tet celebrations (usually in February).

Many villagers in Hai Lang spoke of how they had become better prepared. For example, Le Thi Thanh Thuy, a 52-year-old widow from Luong Dien village, said she and her family had a long history of preparing the house properly, but in the last three years she had also learnt to harvest her rice before the main flooding season, not to grow cassava during that period, and to plant trees near the river to get more protection. 34-year-old Tran Van Son from Tram Son village said that since 2005, like many villagers he had swapped his second rice crop for cassava and green peppers because it can survive the seasons better. Unfortunately, he lost all his pigs and chickens during the 2007 floods as he was out working as a member of the rescue team in the village.

The individual resourcefulness of the villagers throughout Hai Lang was remarkable. But probably the most important aspect of their preparation for the floods was their widespread involvement in training courses on Community Based Disaster Risk Management (CBDRM) organised by local Committees for Floods and Storm Control (CCFSC) and the Red Cross, supported by various international organisations. Oxfam Hong Kong has devised courses based on the villagers' own experiences of coping with the disasters, and has targeted women's participation as a key success factor. (see Oxfam in Hai Lang box)

Hai Lang is not the only district of Viet Nam's central provinces where Oxfam has been working with good results. For example, since 2002 Oxfam Hong Kong (OHK) has been helping with CBDRM activities in the Phuong My commune in the Huong Khe district of the nearby province of Ha Tinh. Volunteer teams have been trained in rescue and first aid skills and how to prepare food and other materials for the flood seasons. The strong community-based training and involvement in preparation measures in Phuong My were a major factor in explaining why there was no fatalities in 2007 despite three to four metres of flooding.

An extensive study carried out in 2004 of how villages in the Hai Lang district were able to recover from the 1999 flooding concluded that the important factors in determining the ability of communities and households to bounce back were³⁵:

- Local organisations having the authority and credibility to organise collective action
- An active local government with strong linkages to the villages
- A relatively equitable distribution of resources within communes
- The degree of homogeneity of the community.

The importance of strong local organisation was also stressed in the conclusions of a detailed study of the floods in the Mekong Delta in 2001.³⁶ The study argued that local people themselves were the most important resource for rescue, protection, survival and recovery – in short, for learning

³⁵ Beckman, Resilient Society, p. 156.

³⁶ Koos Neefjes, Living with the Floods, paper presented at the national seminar in Ho Chi Minh City 'Learning from the Floods', 31 July 2002.

'to live with the floods'. The people's own efforts were the most significant reason for better preparedness for the floods that year, reduced loss of life, reduced damage to property, and quicker recovery from the devastation, when compared to 2000. Awareness building about the risks of flooding was crucial. This was achieved both as

a result of the communities' personal experience of the floods, and through training of officials, staff and volunteers of mass organisations, and schoolteachers. In the words of the report, 'the people became their own saviours'. But the report warned, their awareness and knowledge had to be strengthened further and refreshed regularly.

Oxfam in Hai Lang

Since 2005 Oxfam Hong Kong has been involved in helping to train villagers in the Hai Lang district on how to prepare for the main flooding season and how to adapt to it. Each commune set up a Task Force of about 20-25 people, including members of the Youth and Women's Unions, to coordinate the preparation and maintenance of equipment like boats, hand-held loud speakers, torches and life jackets. They also store basic emergency items like noodles, rice, salt and petrol, and prepare basic evacuation plans to schools or higher-lying buildings.



Rescue drill in Hai Lang

The early warning system has been refined and updated, and volunteers visit households to remind them to make the necessary preparations for the main storm and flooding season, and especially storing enough food on their ceiling platforms. High trees and branches near electricity lines have been cut back to try and reduce the disruption to power supplies caused by the storms.

On the training courses, villagers are taught basic health and hygiene techniques, and how to build a boat out of banana tree trunks. Disaster scenarios are rehearsed. Women are particularly encouraged to attend the courses, and as a result some volunteer teams have achieved at least 50 per cent membership by women.

Mrs Tuyet from the Hai Son commune went to the courses and says she now buys more petrol, rice, salt and a torch before the flooding season. She also raised the floor of her house, and sells her domestic animals before the storms. She says that before the 1999 floods, villagers were not well-informed about what was coming and what to do about it, but now they feel better prepared and aware of the dangers.



The community helps each other to rebuild houses after the flood

Government plans on adaptation and climate change



Viet Nam has for several years recognised the threats and challenges presented by human-caused global warming. It ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and the Kyoto Protocol in 2002. The Ministry of Natural Resources and Environment (MONRE) is the lead government agency for implementing the UNFCCC and the Kyoto Protocol, and for all climate change activities.

MONRE was responsible for submitting the government's initial national communication to the UNFCCC in 2003. This included preliminary assessments of the potential impacts of climate change on major economic activities, an overview of vulnerable sectors and some adaptation measures for water resources, agriculture, coastal zones, forestry and other sectors. In December 2007 Prime Minister Nguyen Tan Dung issued the decision to formulate a National Target Program (NTP). This was circulated by MONRE in draft form in March 2008. The NTP is officially described as the main framework for the management and coordination of CC activities to achieve sustainable development objectives in the future. It includes an assessment of CC impacts on different sectors and region, measures to raise awareness about CC, and an organisational structure to implement the Programme. In early 2008 the Ministry of Agriculture and Rural Development (MARD) also circulated in draft

form its own Action Plan for Climate Change Adaptation as part of the process by which each sector was required to feed into the NTP.

It should be stressed that Viet Nam is able to build on a long history of strong institutional responses to natural disasters like floods and storms. The key institution is the Central Committee for Flood and Storm Control (CCFSC) which has been operating since 1955. Several ministries and other organisations such as the Viet Nam Red Cross, which works from national down to commune level, are key members of the CCFSC. National strategies are designed to reduce the risk of disasters, and include a whole series of measures such the establishment of disaster forecast centres across the country, the construction of flood corridors, and awareness raising activities. However, these strategies focus on emergency responses to short-term climate extremes and reconstruction after them, rather

than long-term adaptation to future climate change. They are also not integrated into wider policies for sustainable rural development and poverty reduction.³⁷

It should also be emphasised that the sorts of budgets that the national government and local authorities have at their disposal for adapting to climate change are clearly inadequate. The district of Hai Lang in Quang Tri for example, which is an area very vulnerable to flooding, has a total budget of just 500 million dong a year (US\$35,000) for all its disaster risk management – a budget that it needed even before climate change began to affect communities. According to officials at the MARD, the total national budget required for disaster management and dyke building for the period 2010-2020 was 1,200 billion dong (US\$ 750 million), even before climate change plans are included.

As a recent UN report has concluded, the experience of Viet Nam shows that effective adaptation planning in high-risk environments requires investments that are beyond the financing capacities of most governments acting alone.³⁸ Building new sea dykes or enforcing existing ones to combat sea level rises is very expensive. A leading Vietnamese water resources expert estimated recently that the government would have to spend about US\$600m by 2020 to reinforce and raise existing sea dykes all along the coast from central Viet Nam to the south-western provinces.³⁹ It is not just the cost of sea dykes that it is a problem. It is also difficult to know

with any degree of accuracy at what rate the sea level will rise in the future, so even trying to make plans for what the situation is likely to be in 2020 is hazardous. However, the key point is that dykes or flood control systems should only form part of any solution. A wide range of adaptation activities like community resilience and improving capacity in all the relevant ministries at national and provincial levels will have to be part of the national plan and international funding priorities.

MONRE has been widely commended for the progress the Ministry and its collaborators have made on formulating the NTP, and for its open attitude towards accepting comments from international donor agencies on the gaps in the plan. However, the Program could be further strengthened in four key ways:

1. As poor men and women are the most vulnerable to the impacts of CC, they need to be at the centre of any plans to reduce the risks and adapt to them. In particular, women are often most vulnerable to the impacts of weather extremes. They should be the one of the priorities for research and analysis as to how they are affected differently, and how their needs and interests can be met.
2. The lessons and experiences of poor men and women at the household and village level in having to adapt to changing climate and extreme weather events should be built on from the bottom-up. Their strong participa-

³⁷ Chaudhry and Ruysschaert, *ibid*, p. 8-9.

³⁸ UNDP, Human Development Report 2007/8, p. 175.

³⁹ 'Vietnam will have to upgrade its sea defenses', AFP report, 27 March 2008

tion in designing and implementing adaptation plans will go a long way to empowering local populations to be resilient in the face of climate change.

3. As CC is a fundamentally a threat to human development, the active involvement of, and coordination with, other key ministries and the private sector is critical. National adaptation measures should include such issues as livelihoods, water management, schools and health care, so all the relevant ministries need to be included in adaptation planning. In particular, adaptation concerns need to be fully integrated into the national and provincial Socio-Economic Development Plans (SEDPs), particularly for the period 2010-2020.
4. Awareness of climate change at provincial level is patchy. More practical consultation exercises need to be rolled out, like the regional workshops organised by MARD on enhancing local awareness and getting practical input into local development plans in the provinces of Nam Dinh, Ha Tinh and Ben Tre in May 2008.



Adaptation concerns need to be fully integrated into the Socio-Economic Development Plans

Conclusion



This report offers a glimpse into the devastating human impact of the climate changes that are already taking place in Viet Nam. It clearly shows that poorer women and men are affected disproportionately by extreme weather events, and are likely to be more vulnerable to those which are coming. But communities across Viet Nam have already shown that they have a great capacity to respond both at the household and local institutional level to disasters and climatic change. Large populations can be reached by locally-organised support, which plays a central role in helping them to recover.

The contrasting experiences of Ben Tre and Quang Tri are illustrative of what can be achieved through building on local people's experience of disasters and their response to them. Ben Tre has had until recently little experience of natural disasters and so does not seem to be as prepared for the future as Quang Tri, where the district of Hai Lang has already shown it can reduce the risks from the heavy flooding season. Drawing on people's experience so they become active agents of implementing community-level policies is central to successful outcomes. 'Scaling up' these experiences at the local level to a national level should be an urgent priority.

The testimonies from Quang Tri in particular show that, in addition to earning cash, women play a central role in the household economy, including household budgeting, farm and garden

production for local consumption, and caring for domestic livestock. Many other roles too are unpaid such as child care, preparing food stocks for possible flooding and attending disaster risk reduction courses. Such roles are often overlooked as they fall outside the 'monetised' economy, so they need to be fully incorporated into any government or international development policies to address poverty alleviation and the reduction of poor families' vulnerability to disasters.

It is Oxfam's experience from other parts of the world that the combination of strong institutional support and strong community participation reduces human vulnerability to natural disasters. Dramatic weather events do not necessarily lead to disasters; that depends on the level of vulnerability of local people and their capacity to resist the impacts. For example, in

recent years Bangladesh has been hammered regularly by cyclone-driven floods. But there have been a declining number of deaths there since it began investing in preparing properly for the floods – shelters and greater community-based preparedness including evacuation plans, early warnings and volunteer mobilisations.⁴⁰ In contrast, Cyclone Nargis which hit Myanmar in May 2008 shows how poverty plus insufficient government investment can turn a natural disaster into a major human tragedy, where losses to property and life are more determined by their condition than the force of the cyclone.⁴¹

A recent study of Oxfam's experience in more than 100 countries around the world shows that a combination of active citizens and effective states is the best way of securing development and poverty reduction.⁴² Active citizens are an essential ingredient in making states work effectively to end poverty, and effective states which manage the process of development are essential to a country's prosperity and to social justice. Such a combination is also the best way of preparing for climate change.

The examples of poor men and women in Ben Tre and Quang Tri also show the intrinsic link between disaster risk reduction, livelihood programmes and poverty alleviation in planning for climate change. For example, a disastrous experience with prawn farming leaves poorer villagers less able to recover from extreme weather

events. Any financial or other encouragement for a particular sector has to include an analysis of disaster risk and climate trends.

Awareness training is crucial. In April 2007 the market research company Nielsen published the results of a worldwide online survey of 25,000 users about how concerned people were about global warming. Out of the 47 countries surveyed, Viet Nam came the 36th lowest in the list.⁴³ That ranking seems out of phase with Viet Nam's status as one of the most vulnerable countries in the world to climate change. The experience in Ben Tre and Quang Tri confirmed Oxfam's general experience that many provincial authorities are not sufficiently aware of climate change issues, and lack information, methodologies, tools and experience for dealing with it. Some awareness-training of key stakeholders and community leaders is beginning, but this needs to be stepped up and women need to be encouraged to participate as key agents of change.

As already mentioned, poor communities in Viet Nam may end up paying a heavy price for global climate change which is caused not by them. In 2004 Viet Nam emitted about 1.1 tonnes of carbon dioxide per capita, which put it 121st in the world ranked by p.c. emissions. If all GHGs are included, Viet Nam emitted 1.6 tonnes p.c. in 2000, which placed it 155th lowest. This compares with 10.5 tonnes p.c. for the EU, 11.0 for the UK, 25.8 for Australia and 10.8 for Japan.⁴⁴

⁴⁰ From Weather Alert to Climate Alarm, Oxfam Briefing Paper, November 2007, p. 13.

⁴¹ Andrew Revkin, 'Poverty and Poor Policy Worsen Impact of Cyclone', New York Times, 18 May 2008.

⁴² Duncan Green, From Poverty to Power: How Active Citizens and Effective States Can Change the World, Oxfam UK, June 2008.

⁴³ Nielsen global online survey, Biggest and 2nd biggest concern in next 6 months: Global warming, 4 June 2007, page 1.

⁴⁴ The figures all come from CAIT (Climate Analysis Indicators Tool), available at <http://cait.wri.org>.



It is unfair that poor communities in Viet Nam may end up paying a heavy price for global climate change which is not caused by them.

Developing countries do not have the resources to finance national adaptation – and should not be expected to cover the cost alone. Many developing countries are the most vulnerable to climate impacts, yet have had the least role in causing the problem. Oxfam estimates that adaptation in all developing countries will cost at least \$50bn annually, and far more if greenhouse gas emissions are not reduced fast enough to keep global warming well below 2 degrees C. It is the high-emissions and high-income countries

– those responsible for causing climate change, and capable of assisting others deal with its impacts – who must provide that finance as grant-based funds, and new and additional to their long-standing commitment of 0.7% of national income as Overseas Development Assistance.⁴⁵ Yet to date, the US, EU, Japan, Australia and Canada – those most responsible to finance adaptation – have provided a tiny fraction of what is needed. Their commitments urgently need to be scaled up to show that the international community is serious about supporting climate-resilient development.

Finally, as has been stressed in this report, planning for climate change has to be both long-term, and systematically integrated or ‘mainstreamed’ across all major development sectors and ministries. This is because disaster risk management, poverty alleviation and sustainable development are all intimately linked. Public policies to reduce hunger and vulnerability, medium and long-term expenditures and climate change planning all have to be joined up. Oxfam and other aid agencies in Viet Nam are already incorporating disaster risk management programmes into livelihood and development programmes, and are ready to work more closely with the government too to ensure that Viet Nam’s development future is a climate-resilient one.

⁴⁵ Oxfam, Financing adaptation, *ibid*.

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