



# HAITI: 'A GATHERING STORM'

Climate Change and Poverty



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Climate change is more than an environmental challenge – it is also a development challenge that calls for urgent action. © Abbie Trayler-Smith/Oxfam

# Executive Summary

“The situation was bad before the hurricanes in 2008 – there was a drought - but after them it got worse and more complicated...”

...people lost what little they had – houses, crops, livestock – which creates a catastrophe of hunger in this area. We feel ashamed, we have to beg from the state and other international agencies” Lissage Geneus, a local government official (CASEC) in Baie d’Orange.

Climate change is more than an environmental challenge – it is also a development challenge that calls for urgent action. Haiti like many developing countries stands to suffer the most from climate change because of its geographic location, sensitivity to extreme weather events and vulnerability of the people. In addition to creating humanitarian disasters, climate change can reduce agricultural output, deplete already scarce water resources and exacerbate environmental problems such as deforestation and soil erosion.

Haiti, a vulnerable country with a history of coups, riots and clashes, has been making progress in the last few years with the establishment of the UN Stabilization Force, MINUSTAH. Climate change, though, threatens to undermine any steps forward. Last year, in 2008, four hurricanes and tropical storms, Fay, Gustav, Hanna and Ike, hit the mountainous Caribbean island in the space of a few weeks, tearing apart

the lives of millions of people, hitting the poor the hardest. With little time for recovery in between, the small island could barely cope.

Haiti lies on the hurricane path in the Caribbean. Its people are resilient and vibrant and although used to facing tropical storms and hurricanes, many farmers, fishermen, local leaders and government officials have observed that these hurricanes appear to be getting stronger and the rains heavier. Deforested mountainsides have aggravated the country’s vulnerability to storms as water, mud and silt rushes down the slopes flooding coastal plains and burying houses and people in mud. Rivers often burst their banks and lakes overflow. With more than 98 per cent of trees cut down in the last few decades, deforestation is a major challenge; in particular, trees are cut down for charcoal, used by more than 70 per cent of people for cooking.

In last year’s storms and hurricanes, crops, livestock and homes were destroyed, roads and bridges left damaged, water pipes ruptured, school buildings ripped apart. The damage was nation-wide affecting nearly 900,000 people. Worst hit was Gonaïves – Haiti’s third most populous city – that was buried under mud killing more than 450 people.

Thousands more were left homeless and without food. Already precarious livelihoods were taken away. Sudden reductions in income due to poor crop yields led to more families becoming vulnerable. Ordinarily many families would sell surplus crops such as beans and maize in the market but last year most had nothing to sell. Indeed they had nothing to eat as most of their crops had already been destroyed, therefore there was widespread hunger. Many are still surviving on food aid.

Almost US\$ 229 million<sup>1</sup> was lost in agriculture, and damages have been valued at 15 per cent of GDP<sup>2</sup> – making it difficult for future economic progress. Currently around a third of the population are food insecure and Haiti already imports around 40 per cent of its food.<sup>3</sup> The price of food had soared by 40 per cent in 2008<sup>4</sup> causing food riots in April (and the eventual fall of the government). As the poorest country in the western hemisphere with a large majority of the population already facing extreme hardship, nearly 80 per cent living on US\$ 2 a day, Haiti is extremely vulnerable to risks from

1 CNSA, Interview with Department of Food Security, Dec 2008

2 UN Haiti Flash Appeal, 2008

3 CNSA, Interview with Department of Food Security, Dec 2008

4 UN Haiti Flash Appeal, 2008

climate change.

It is impossible to say that every extreme weather event is caused by climate change but many scientists now agree that extreme weather events such as hurricanes are likely to become more severe, if not necessarily more frequent. Climate change is creating conditions for more extreme weather events. Hurricane formation is a highly complex process but ultimately, all hurricanes gather their strength from the heat of the oceans—and the world's oceans are heating up as a result of global warming. More intense storms with higher peak wind speeds and heavier precipitation are likely to occur. Global warming may not be the only cause, but it is one of the factors.

Uncertainty does not constitute a case for inaction. People are being forced to adapt to climate risks all over the world – worst affected are poor rural farmers, urban slum dwellers and those living in flood and drought prone areas. Haiti has always been, and will continue to be battered by hurricanes, and they may become more intense in the years to come. Therefore the necessity for poor people to adapt both to existing hazards and to this uncertain future has never been so urgent. What is needed is “no regrets” adaptation – measures people can take that will help them withstand today's climate shocks and whatever the future holds in store.

Developing countries such as Haiti are the most susceptible both to existing climatic shocks and to climate change. Their economies rely

on sectors immediately dependent on the climate such as agriculture and fishing, but they are also the least able to cope with the impacts of extreme weather conditions. Those at particular risk are poor people who do not have the resources or capacity to adapt. Within countries, it is the poorest people who are affected most. Women in poor communities will be particularly affected because of their roles in providing food, water, and firewood for the household. Climate change impacts can also set back progress on women's rights and undermine development prospects – hence the urgency of building both women and men's resilience in vulnerable communities.<sup>5</sup>

It is incumbent on developed nations to provide funds for adaptation since they are primarily responsible for the present global warming through their emissions of carbon dioxide and other greenhouse gases. Leaving the world's poor to face the risks and disasters with their own meagre resources is morally shameful and may well prove to be legally indefensible.

This report gives an insight into how poor people are experiencing climate change in Haiti, already one of the poorest countries in the world, and what challenges they are currently facing, and will continue to face in the future. Research was undertaken in several parts of the country, from Belle Anse in the southeast, Nippes in the south, to Cap Haitian and

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<sup>5</sup> Oxfam International, 2007, Oxfam briefing Note: Financing adaptation: Why the UN's Bali Climate Conference must mandate the search for new funds

surrounding communities in the north.

Many people all over the country believe that, compared to 20 or 30 years ago, the climate is already changing, with the dry spells being longer and the rains shorter but heavier with more intense and frequent hurricanes. People in Nippes and Belle Anse are particularly fearful of the intensity of the hurricanes since they are on the frontline and have not even had the chance to recover from the last one. Many state their disbelief at a series of four fierce hurricanes and storms back to back. Even the village elders had no recollection of so many occurring during such a short period, and so much destruction and misery. Many people in Haiti have now braced themselves for similar hurricanes with the same intensity to hit again this year and next year – but they are ill equipped for the next round.

However, these very people are crucial actors for doing something about it. For example, in the municipality of Baho, where there are frequent floods, communities showed they could work together with local government and be active in disaster risk reduction and seeking new ways of adapting to the changing climate. Through awareness raising activities and setting up a rescue team, they showed that many lives could be saved and the flooding from the river bursting its banks need not end in disaster. A wall was built preventing water from flooding the road, which is the only access for emergency evacuations in emergencies – and

also protecting the local market, the centre of Bahon's economic activity. Participation, ownership of programmes and taking action to reduce the impact of disasters by the community are keys to the success of adaptation and disaster risk reduction.

Though it has limited resources and capacity, the government also plays an important role in disaster response through The National System for Disaster Risk Management. This is a national network – comprised of departmental, municipal and local committees made of up local government officials and civil society representatives – in charge of preparing communities for disasters and helping with disaster response.

On the international scene, rich countries' emissions - USA, Western Europe, Canada, Australia, and Japan - are responsible for producing most of the world's past carbon emissions that are driving today's impacts. Developed countries are responsible for approximately 76 per cent of the GHG emissions already released into the atmosphere.

In 1992, these countries committed to return their annual emissions to 1990 levels by 2000. Instead, by 2005 they had allowed their collective emissions to rise more than ten per cent above 1990 levels. Their failure to act has raised the risk of global warming exceeding the critical threshold of 2 degrees C<sup>6</sup>. Furthermore, inaction now may cost, according to the Stern Review, up to 20

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6 Climate Wrongs and Human Rights, Oxfam Briefing Paper, Sept 2008

per cent of global GDP.<sup>7</sup>

It is essential therefore that rich countries, which are most responsible for emissions and most capable of making reductions, act first in reducing their greenhouse gas emissions – and cut the most. But because of the build-up of heat in the oceans and atmosphere, some climate change will continue even if emissions are cut now. Therefore adaptation and disaster relief are also essential. Based on studies to date, Oxfam estimates that at a very minimum, \$150bn in public investment will be required each year to facilitate both the necessary mitigation (emissions reductions) and – crucially - adaptation action in developing countries<sup>8</sup>. Though this is a large sum, it is many times less than the \$4 trillion spent by developed countries on the financial crisis so far, or the \$1.3 trillion of annual global military spending. Proposals to date fall well short of generating the financing required in this area, and do not sufficiently incorporate the key principles of responsibility (for historic emissions) and capability (to pay) in determining who pays what. Adaptation – which must be integrated into national planning – can build vulnerable communities' resilience so that floods, droughts, sea-level rise, and hurricanes do not automatically undermine their rights to life, food, water, shelter, and health. But disaster relief will also still be essential if severe events such as

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7 Stern Review: The Economics of Climate Change, 2006

8 Stern Review: The Economics of Climate Change, 2006

tropical storms and hurricanes hit.

As a Least Developed Country (LDC), Haiti has also developed its own National Adaptation Programmes of Action (NAPA) through the Ministry of Environment. NAPAs provide a way for LDCs to identify priority activities that respond to their immediate needs to adapt to climate change. According to the NAPA, water related risks (hurricanes, floods, heavy rain) coupled with erosion affect the highest number of geographical regions and these risks need to be prioritised when developing adaptation strategies. However there are serious challenges - it is also recognised in the NAPA that Haiti has been in an unstable political situation, is suffering acute food shortages and as an LDC does not have the resources to fund the NAPA. Nor should it have to. Rich countries that have caused current global warming have the responsibility and the capability to deliver the bulk of funds both for NAPAs and for longer-term adaptation plans in order to redress the international injustice at the heart of climate change – the injustice that LDCs like Haiti whose carbon emissions are relatively insignificant are bearing the biggest burden of climate change impacts.

Disaster-prone developing countries, especially least developed countries and small island states such as Haiti require adaptation assistance with particular urgency in view of their higher vulnerability and risk levels, and significantly lower capacity to respond to and recover from disasters.



Joseph Saintuillus is a farmer and lives in a small village outside Cap Haitien in the north of Haiti. Hurricane Ike destroyed numerous houses and crops likewise, leaving people dependent on food aid.

'It was one evening at around 9pm when hurricane Ike hit. My wife and I were sleeping in one room and my five children were sleeping in another. We suddenly heard a crash and a tree had fallen on our roof – all week it had been windy. Now we all have to live in one room – all my five children and wife.

'We still have our banana plantation but I can't put very much attention into the farm as I am worried about the house. I don't have the money to rebuild it. 'So far, I have received some rice and relief food and some support from the local mayor.'

But Joseph's future, like millions of farmers in Haiti, is far from certain. © Abbie Trayler-Smith/Oxfam

# Recommendations

1. Secure livelihoods at local level and promote recognition of local knowledge and awareness. Disaster risk management must be mainstreamed into agricultural interventions, guiding local farmers towards sustainable solutions to land degradation by building on the existing capacities of farmers. This needs to take into account the need of farmers to secure their livelihoods in ways that imply financial assets and returns in terms of agricultural production.

2. Identify, develop and support reforestation initiatives. Reforestation projects are crucial for adaptation to climate change. Planting trees will help slow down the path of water rushing down the mountains during heavy rainfall and hurricanes and will also assist in soil conservation.

3. Diversify tree varieties in reforestation initiatives. Planting fruit trees alongside will also mean a source of food and help with food security. People can eat the fruit or sell them at the market.

4. Encourage planting of appropriate crops on mountainsides to help prevent topsoil from loosening and running down the slopes with rainwater.

5. Explore and implement appropriate

forestry management models. As long as there is no marketable alternative energy source in Haiti, charcoal will remain in high demand throughout the country and people will still cut trees to be able to respond to that demand. The government should explore forestry management models – including key reforestation projects – that are appropriate for and adaptable to the national context. Regulating tree cutting and supporting initiatives that promote environmentally friendly ways of harvesting wood must be central to any such model.

6. Research and promote alternative fuels to wood. Time and resources must be invested into experimenting with new crops able to produce energy while mitigating negative effect of the deforestation of the mountains. This will also contribute to increasing farmers' income and to conserve the forest areas.

7. Introduce technologies to improve and control charcoal production. While working on identifying and introducing alternative energy sources, it will be necessary to introduce new charcoal production processes in order to decrease losses in the process and make the use of such energy more cost effective

8. Diversify income sources. Finding

an alternative to making and selling charcoal as a source of income is imperative. Women would like help with small businesses. Fishermen in remote areas such as Belle Anse would benefit from fish breeding projects in natural lakes and lagoons so that they can sell fish to markets in nearby towns.

9. Use climate change as an opportunity to scale-up risk reduction programmes and identify the processes by which the risk reduction agenda can be driven forward, through NAPA for instance.

10. Frame and develop national and local research and policy planning on adaptation on the needs of poor people. The social and economic impact of climate change on poor people 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.

11. Promote disaster reduction at local levels by supporting community-based coping strategies. This is more effective and has benefits that go beyond just tackling climate-

driven disasters. Good adaptation is important for development. Local efforts at adaptation and disaster risk reduction measures should be strengthened, and where possible 'scaled up' to the departmental and national level. Women should be at the centre of community-level responses as they are already very effective in some communities at mobilizing local involvement and implementation.

12. Integrate climate planning across government departments. Climate change concerns should not be isolated under a particular sector such as environment but integrated across all sectors – agriculture, fishing, trade, transport, energy etc.

13. 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. There also needs to be a stronger link between climate change adaptation and disaster risk reduction.

14. Increase climate change-specific research. Greater knowledge on the development of flood-resistant or drought-resistant crops and livestock should be developed with small-scale farmers as well as appropriate agriculture for mountainous areas affected by soil erosion.

15. Step up awareness and capacity development building. There is a pressing need to step up public awareness campaigns and capacity development amongst key

stakeholders and key leaders at district, commune and village level.

16. Promote the development of a regional Caribbean Climate Change strategy to tackle the impacts of climate change and adaptation. The problem is so complex and so crucial that expertise needs to be shared. There also needs to be a regional Caribbean body to undertake studies on climate change.

17. Lobby the international community for the necessary financial support of adaptation. Being a LDC (Least Developed Country) facing serious political problems, Haiti cannot mobilize the funds necessary to implement climate change adaptation, as outlined in the NAPA, its first step National Adaptation Programme of Action, and beyond. Nor should it have to. Rich countries that have caused current global warming have the responsibility and the capability to deliver the bulk of funds in order to redress the international injustice at the heart of climate change. 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. Climate change now has to be integrated across all development policy.

18. Advocate for the development of detailed maps and tools with which to assess climate change impacts. There is an urgent need on the part of the international community

to develop detailed maps of the complex impacts of global warming, integrating climate change-related risks with other vulnerabilities. There is limited understanding of which approaches and tools will maximize resilience at regional, national and local levels. For example health where vector-borne, water-borne and respiratory diseases all have demonstrated links with climatic changes – and climate changes impact agriculture that in turn impacts nutrition.





Reforestation is crucial for adaptation to climate change. © Anita Swarup

# Climate Change: Past, Present and Future

Haiti is a small mountainous country in the western half of the island of Hispaniola in the tropical Caribbean

It is geographically located in the middle of a hurricane corridor, and is consequently subject to severe tropical storms from June through November. Observations on the ground from farmers, fishermen, local village leaders, town councillors and national government show that all believe that hurricanes have increased in intensity and frequency, culminating in 2008 with four hurricanes and tropical storms within a few weeks.

“It’s a crisis, we’ve never had back to back hurricanes before”, says Jean Robert Jean, a local corn farmer in Pichon in south east Haiti. According to Vincent Jamil, coordinator of the Departemental Disaster Risk Management Committee (CDGRD) and Representative Department Delege of the Nippes Department, “the violence of hurricanes this year has worsened. We are not used to seeing hurricanes back to back with such strength, it’s the first time”. Patrique Telemague, Mayor of Petite Riviere des Nippes, says “This year was particularly bad because there were four hurricanes. It is an emergency situation, next year we may not even be able to survive”.

Hurricane formation is a complex process and not all climate scientists agree that hurricanes will increase in intensity due to global warming. Others believe, however, that current evidence suggests it is possible that climate change will cause more intense hurricanes. According to a recent report by the US Climate Change Science Program<sup>9</sup>, Atlantic tropical

storm and hurricane destructive potential as measured by the Power Dissipation Index (which combines storm intensity, duration, and frequency) has increased (see Table 1).

It notes:

“It is likely that the annual numbers of tropical storms, hurricanes and major hurricanes in the North

Atlantic have increased over the past 100 years, a time in which Atlantic sea surface temperatures also increased. It is very likely that the human induced increase in greenhouse gases has contributed to the increase in sea surface temperatures and in the hurricane formation regions”.

For North Atlantic and North Pacific hurricanes, it is likely that hurricane rainfall and wind speeds will increase in response to human-caused warming. Analyses of model simulations

suggest that for each 1 degree C increase in tropical sea surface temperatures, core rainfall rates will increase by 6-18 per cent and



Haiti is located on a hurricane corridor and is consequently subject to hurricanes from June through November. © Jeff Schmaltz, NASA's MODIS Rapid Response Team

<sup>9</sup> Weather and Climate Extremes in a Changing Climate, North America, Hawaii, Caribbean and US Pacific Islands, US Climate Change Science Program, Synthesis and Assessment Product 3.3, June 2008



While in the dry season rivers can easily be crossed, during rainy season the floods causing rivers to bust their banks can cause major damages and isolate remote communities. © David Viñuales



With heavy rain, topsoil is easily removed by water running down the mountainside and is deposited in rivers and lakes. © David Viñuales

the surface wind speeds of the strongest hurricanes will increase by about 1-8 per cent.<sup>10</sup>

New analyses in the scientific journal *Nature*,<sup>11</sup> reports that the maximum wind speeds of the strongest hurricanes have increased and that Atlantic hurricanes are getting stronger on average, with a 30-year trend that has been related to an increase in ocean temperatures over the Atlantic Ocean and elsewhere. “Our results are qualitatively consistent with the hypothesis that as the seas get warmer, the ocean acquires more energy to convert to tropical cyclone wind”.

According to the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment report on Climate Change, although there has yet to be convincing evidence in the observed record of changes in tropical hurricane behavior, a synthesis of the recent model results indicates that, for the future warmer climate, tropical hurricanes will show increased peak wind speed and increased mean and peak precipitation intensities.

*“It is likely that maximum tropical hurricane wind intensities could increase, by 5 to 10 per cent by around 2050. Under this scenario, peak precipitation rates are likely to increase by 25 per cent as a result*

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10 Ibid

11 *Nature*, 4 Sept 2008, The increasing intensity of the strongest tropical cyclones

*of increases in maximum tropical hurricane wind intensities, which in turn cause higher storm surges”*<sup>12</sup> Paradoxically, while storms may become more intense - and in Haiti when it does rain, it tends to be very heavy – farmers may face more droughts as a result of climate change because overall there may be a reduction in the number of rainy days. The estimations for 2030 go down from -5.9 per cent to -20 per cent rainy days and for 2060 they go from -10.6 per cent to - 35.8 per cent rainy days.<sup>13</sup> And people say rainfall patterns are also changing and seasons are no longer clear cut - causing problems for farmers who no longer know when to plant.

According to the NAPA, there is also evidence that temperatures are getting higher and dry spells are getting longer. Many farmers, local councillors and leaders interviewed spoke of long dry and hot spells that previously did not exist. The data from the Ministry of Agriculture, National Resources and Rural Development shows that during the period of 1973 to 2003, in Damien where the Faculty of Agronomy of the Haitian State University in the capital of Port au Prince is located the temperature rose by more than 1 degree C (see Table 2). The data has allowed temperature predictions for the years 2030 and 2060 to be made – there is an expected increase in

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12 IPCC, 2007, Fourth Assessment Report, Impacts, Vulnerability, Adaptation and Vulnerability  
13 NAPA, Ministry of Environment, 2006

temperature of 0,8 degrees C to 1,0 degree C and 1.5 degrees C to 1.7 degrees C respectively. And for the Caribbean region as a whole, there was an 8 per cent increase in the number of very warm nights and 6 per cent increase in the number of hot days for the 1958-1999 period.<sup>14</sup>

Global and regional climate patterns have changed throughout the history of our planet.

Prior to the Industrial Revolution these changes occurred due to natural causes but since the late 1800s, scientists believe the changes have been due more to increases in the atmospheric concentrations of carbon dioxide and other trace greenhouse gases (GHGs) as a result of human activities, such as fossil-fuel combustion and land-use change.

Most of the greenhouse gases are from emissions from the US, Europe, Australia and Japan. Haiti is responsible for just a small fraction of the world's GHG emissions but as a small island state, it is likely to be one of the countries in the world to be most affected by global warming.

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14 Weather and Climate Extremes in a Changing Climate, North America, Hawaii, Caribbean and US Pacific Islands, US Climate Change Science Program, Synthesis and Assessment Product 3.3, June 2008

# Climate Change, Environment and Poverty in Haiti

Haiti is particularly vulnerable to climate shocks due to poverty, weak government and lack of infrastructure<sup>15</sup>.

However, after years of conflict and political instability with coups, riots and political clashes, Haiti is making steps forward. The Haitian National Police, with the support of the United Nations Stabilization Mission in Haiti (MINUSTAH) has improved security and kidnapping rates have fallen sharply. Since the political transition in 2004, the economy is also making a gradual recovery. Gross domestic product (GDP) grew 2.3 per cent in 2006 and, following many years of continual decline, per capita GDP rose 0.7 per cent.<sup>16</sup> However climate change has the potential to undermine any progress Haiti has made - last year, the series of hurricanes cost Haiti 15 percent of its GDP<sup>17</sup>.

In Haiti, for many reasons including lack of funding and lack of management of natural resources, there has been excessive deforestation – which has exacerbated

15 Britain's Department for International Development (DFID)'s working definition of fragile states covers 'those where the government cannot or will not deliver core functions to the majority of its people, including the poor'

16 IDB Country Strategy in Haiti 2007-2011, Inter-Development Bank

17 UN Haiti Flash Appel, 2008

the impact of heavy rains, thereby creating more poverty (through repeated floods which destroy crops and livelihoods and increase the vulnerability of poor people). Today less than 2 per cent of forested cover remains. Between 1990 and 2000, Haiti lost a staggering 44 per cent of its total forest cover.<sup>18</sup> *"A long time ago if you looked at the mountain, it would look very green. Now it looks like a desert"*, reports Patrique Telemague, Mayor of Petite Rivière des Nippes and President of CCGRD. In contrast, its neighbour the Dominican Republic on the same island suffers considerably less (20 per cent forest cover) from the same hurricanes due to better environmental management and forest cover.

When forests disappear, the natural shield that they form against the impacts of tropical storms in mountainous terrain is lost. Topsoil is then easily removed by the rain running down the mountainside, and is deposited in rivers, lakes and bays. As a result, farmers who live in the mountains are progressively left with less fertile soil to raise crops – although growing inappropriate crops and bad cultivation methods do not help as they weaken the ground.

18 World Bank, 2007, Haiti: Strategy to alleviate the pressure of fuel demand on national wood fuel resources.





Trees are cut for charcoal - for many, selling charcoal is the only way to earn some cash for much needed food, school fees or healthcare. © Abbie Trayler-Smith/Oxfam

Much of the arable land has been washed into the sea. Haiti is a mountainous country whose highest peak is at 2,684 meters. Around 63 per cent of its land is on slopes of 20 per cent to 40 per cent. So erosion due to drought, winds, rains and manmade factors such as deforestation and unplanned construction in urban areas has led to desertification of the land.<sup>19</sup>

For many, selling charcoal is the only way to earn some cash for much needed food, school fees or healthcare. Most of it is sold in the big towns or in the capital Port-au-Prince to be used by urban consumers. Yverose Derisseau, 22 years old, is a charcoal seller in a market in Belle Anse. "I don't have the means to do anything. I need it to feed my family – my three children. The hurricane destroyed my house, plantain and corn crops. And the soil is not so productive". Her story is a common one that can be heard throughout Haiti. And her bowl of charcoal is sold for as little as 60 gourds – about US \$1.50

Reforestation projects were considered to be the top priority for everyone from village level to local government to national government – but with weak governance structures, political instability and lack of resources and capacity, reforesting Haiti to how it used to be decades ago seems a daunting task.

Climate shocks compounds cycles of poverty. When drought, heavy rains or hurricanes destroy crops and livelihoods, people move towards the larger towns – rural-urban migration is a serious problem. Often people end

up living in houses dangerously built on hillsides – which are themselves vulnerable to floods and landslides.

Haiti cannot afford to suffer more economic losses through climate change impacts. It is the poorest country in the Western hemisphere and ranks 146th out of 177 countries on the United Nations' Development Programme Human Development Index (2007/2008). Fifty four per cent of Haitians live on less than US\$ 1 a day and 78 per cent on less than US\$ 2 a day. Literacy (of people 13 years of age and older) is 43 per cent.<sup>20</sup> Some 20 per cent of children suffer from malnutrition, nearly half the population, has no healthcare and more than four-fifths do not have access to clean drinking water<sup>21</sup>. Real per capita income has fallen by 50 per cent since the early 1980s.<sup>22</sup>

Remittances from the Diaspora constitute the most important private risk management and social protection system for Haitian households. These transfers total about US\$ 800 million annually and account for about 30 per cent of household income. Although remittances are an important source of income for many families, emigration also gives rise to a lack of qualified workers - a brain drain. In Haiti migration may increase as populations on the margin begin to

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20 <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/HAITI>

21 Comparison of the Socio-Economic Impacts of Natural Disasters on Caribbean Societies in 2004, UNDP and ECLAC, 2005

22 ECLAC, 2005, Haiti: Short and Long-term Development Issues

seek less vulnerable livelihoods in new places or as they are potentially forced from their homes by disasters. Private investment is at a virtual standstill and job opportunities are limited.<sup>23</sup>

Haiti therefore is already very vulnerable to any climate change because of its poverty, environmental degradation. In light of the latter, the government does recognise several obstacles facing the implementation of its NAPA (National Adaptation Programmes of Action). It states: *"The country has been in an unstable political situation for a few years, which generated fear and despair. This means that the population will have reservations and there may be a low level of participation"*.<sup>24</sup>

However, to its credit, the government has developed a structure for disaster response that can be built upon and reinforced. The National System for Disaster Risk Management in Haiti is responsible for ensuring good coordination in disaster risk management in the country. This national network – comprised of departmental, municipal and local committees made of up local government officials and civil society representatives – is in charge of preparing communities for imminent disasters and providing for the immediate needs of communities particularly during times of disaster.

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23 Comparison of the Socio-Economic Impacts of Natural Disasters on Caribbean Societies in 2004, UNDP and ECLAC, 2005

24 NAPA, Ministry of Environment, 2006

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19 NAPA, Ministry of Environment, Haiti, 2006



After many years of deforestation, ecological restoration is a challenge in Haiti. ©Abbie Trayler-Smith/Oxfam

# Climate change, floods and hurricanes

Limited size and being prone to natural hazards and external shocks add to the vulnerability of islands to climate change.

Geographic conditions make Haiti particularly prone to recurring natural hazards and disasters of a hydro meteorological nature. As a small island in the Caribbean Sea and the Atlantic Ocean, Hispaniola lies within the hurricane. Haiti, on the mountainous western half of the island, has slopes exceeding 20 per cent gradient covering nearly two-thirds of the country. Thus the likelihood of landslide occurrence is extremely high when there are storms or hurricanes – particularly when there is serious deforestation.

Haiti was hit by four tropical storms and hurricanes in 2008 costing around 15 per cent of its GDP and is still reeling in its aftermath. Many islands in the Caribbean including, the Bahamas, Jamaica, Grenada, the Cayman Islands and the Dominican Republic were also set back immensely following hurricanes and storms. Indications are that impact

in Jamaica in 2004 amounted to 8 per cent of GDP.<sup>25</sup> In the Caribbean region damages were estimated to be US\$ 2.2 billion in four countries: the Bahamas, Grenada, Jamaica and the Dominican Republic.<sup>26</sup>

Floods may also increase as rainfall becomes more variable and more intense. Indeed, in the past three decades the number of floods has risen dramatically in many parts of the world<sup>27</sup>. According to a recent report by the Feinstein Centre, findings indicate that “climate change will have a significant impact on humanitarian costs and the increase could range from a 32 per

25 Comparison of the Socio-Economic Impacts of Natural Disasters on Caribbean Societies in 2004, UNDP and ECLAC, 2005

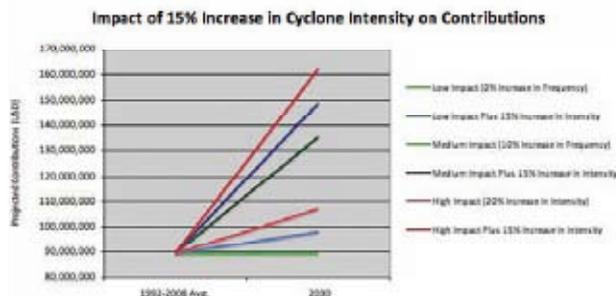
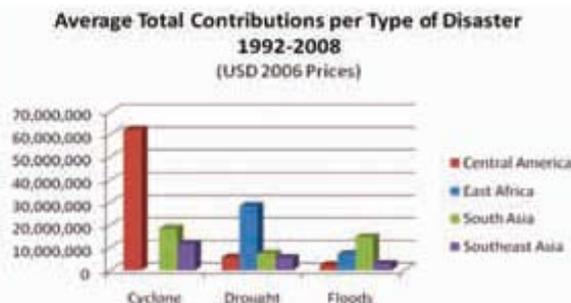
26 UNFCCC, Climate Change: Impact, Vulnerabilities and Adaptation, Dec 2007 in Developing Countries

27 IPCC, 2008, Technical Paper VI on Climate Change and Water

cent increase, taking into account only changes in frequency of disasters, to upwards of a 1,600 per cent increase when other criteria, such as intensity, are also taken into account”<sup>28</sup>. And climate change and vulnerability will combine to cause not only simple, immediate disasters but also more long-reaching, complex ones.

In a period of three weeks in August and September 2008, Haiti was affected by tropical storms and hurricanes Fay, Gustav, Hanna and Ike which caused extensive flooding in nine of the country’s 10 regions damaging houses, roads, schools and other infrastructure. The impact was felt throughout the country. Gonaives, a city with an estimated 350,000 inhabitants, was most affected. The floods caused the greatest damage. They completely

28 Feinstein International Centre, 2008, The Humanitarian Cost of Climate Change



Source: Feinstein International Centre, 2008, The Humanitarian Cost of Climate Change

covered the city with water and mud that rushed down the deforested mountains. The water level rose to up to two meters and an average of 40 cm of mud covered the entire area. In the city of Gonaives itself, more than 450 people died. Thousands more families were affected and thousands of houses destroyed and damaged.

Throughout Haiti, many poor farmers, local leaders and government officials found it difficult to cope with the aftermath of the hurricanes. At the end of 2008, there were food shortages all over the country as crops and livestock were destroyed and access to isolated communities in the mountains was difficult.

*“The poor can no longer cope with hurricanes and now there is no recovery period. And there is widespread hunger as food relief does not reach everyone”*, comments Yolette Etienne, Oxfam’s Country Director in Haiti. The impact was certainly made worse because there was little recovery time in between each hurricane – no time for food or other aid to reach everyone – particularly since the roads were also severely damaged and rivers and lakes had overflowed, cutting access to many villages.

Rivers bursting their banks (carrying too much water down from deforested mountainsides) destroying everything in its path with water, mud and rocks, is something many people in Haiti have to live with. Santa Charles lives with her four children near Peredo River in Marigot, southeast Haiti.

*“The water came all of a sudden; we*



*“The water came all of a sudden; we were very scared and put the children up on the roof”*, said Santa Charles. © Anita Swarup/Oxfam

*were very scared and put the children up on the roof. We used to have flooding in the past but this year is the first time we saw something like that which lasted as long as 14 days. Only God kept us alive. I can’t even describe it, people trying to cross the river died; we lost our crops and livestock. I lost 3 goats and my mom lost 5 goats, chickens and pigs. Now we just manage to live even though we are hungry – before we had plenty to eat”*.

All over Haiti, people are terrified of rivers bursting their banks and changing course. In 2008, the River Gymbly in Belle Anse burst its banks and next year the fear is that it will flood the town. According to Bernadette Pierre, the Mayor of Belle Anse, *“with the next hurricane with the river now changing its course, the city will no longer exist and the whole population will die”*.

Southern areas such as Belle Anse and Nippes are usually on the frontline when hurricanes strike, and they were badly hit in 2004 and 2008. According to Bernadette Pierre, Mayor of Belle Anse, almost 60 percent of the population are suffering from hunger nowadays. Mapou was a town that suffered from severe flooding from hurricanes in 2004; more than 1000 people were killed with around 1600 reported missing. The hurricanes hit Mapou town again in 2008. Bartelemey Salnave, a local government official (CASEC) in Belle Anse in southeastern Haiti notes that the water went up to 1.5 metres and destroyed a lot of houses and livestock. But one major positive thing was that people heard from the radio in Belle Anse that a hurricane was coming and so some of them managed to get into shelters. Unlike in 2004, no-one was killed.

# Climate Change and Food Security

One of the ways in which climate shocks such as hurricanes, flooding and changes in rainfall create cycles of disadvantage is through their impact on agricultural production.

In 2008, the agricultural sector suffered losses of around US\$ 229 million. When a drought or flood destroys a harvest, the resulting loss of income and assets can leave households unable to afford seeds, fertilizers and other inputs needed to restore production the following year. In Haiti, many farmers reported that they could not afford to buy seeds for the next crops. Indeed many have nothing to eat now as most of their crops have been destroyed – there is food relief but even that is not reaching every corner of the country. In past years many families in Haiti would sell surplus crops such as beans and corn in the market but this year most have nothing to sell.

*“Every year we have more hurricanes and more intense hurricanes and the country and population are more vulnerable”*, notes Garry Mathieu, Director of the National Food Security Council.

According the UN Haiti Flash Appeal, around 50,000 families have lost access to their livelihoods and reduced their ability to generate cash income. Standing corn, sorghum, bean, cassava and sweet potato crops, as well as banana and plantain were destroyed in at least 75 municipalities in the 10 regions of the country. About 450 hectares of beans, 250 hectares of corn, 200 hectares of potato and

sweet potato and more than 350 hectares of plantains have been destroyed by the flood waters, erosion and landslides. And it warns that the abandonment of agricultural lands and forced displacement will worsen food insecurity in the months to come.<sup>29</sup> In February 2009, the number of food insecure people in Haiti was estimated to be 2.8 million, about one the third of the population.<sup>30</sup>

Periods of drought combined with heavy rains, strong winds and the pressures on natural resources as well as erosion in mountainous areas which makes much of the land unsuitable for agriculture, will have implications for food production in the future. Jean Frito, Co-ordinator for the Red Cross in Belle Anse in southeast Haiti said: *“There are more droughts than there used to be and more hurricanes than ever. All the corn we had died then we were hit by hurricanes. Then we had very heavy rain. You could see five days rain non-stop without seeing the sun. And of course there was flooding in the city as a result”*.

## Belle Anse

Bartelemey Salnave, a local government

<sup>29</sup> UN Haiti Flash Appeal 2008

<sup>30</sup> Fewsnets, Feb 2009, Haiti Food Security update <http://www.fews.net/pages/country.aspx?gb=ht&l=en>

official (CASEC) in Belle Anse says: *“Many people have lost their homes in Mapou and there are now several families living in one house,”* he explains, *“the water has taken away productive soil and it is now not so easy to grow plantains, sweet potato and corn. Its a vicious cycle – the environment has deteriorated and parents can’t earn any money from crops so they can’t send their children to school even though its only 125*



*“The water has taken away productive soil and it is now not so easy to grow plantains, sweet potato and corn”*, said Bartelemey Salnave. © Anita Swarup/Oxfam

*gourds (US\$ 3) a month”*. People have also lost their seeds in the hurricanes but cannot afford to buy more seeds needed to plant crops again. Mapou,

according to Bartelemy, used to be a fertile area and a 'storehouse' for food – beans, plantains, corn, sorghum. For Denis Phillip, a local baker, times have been hard and his business is down by 50 per cent. Many people do not have the money to buy bread. *"After each hurricane it's a real catastrophe as the hunger issue becomes serious for the peasants around here" he says, "it's very hard as well as we don't have good soil and when it rains a lot of water comes in and destroys Mapou"*.

In the nearby town of Pichon, the situation is also serious. There was a drought just before the hurricanes and the four storms that destroyed crops, livestock and buildings. Here almost 2500 goats and 500 pigs died. *"It's a crisis, we've never had back to back hurricanes before. Now we really are in God's will"* says Jean Robert Jean, a local farmer.

## Malnutrition

Worst hit, though, has been neighbouring Baie d'Orange. After the hurricanes, roads were damaged or cut off and crops and livestock destroyed. There was little or no food available. There is growing concern about the nutritional situation of children in the affected areas that only started to become apparent several weeks after the disasters in December 2008. As whole communities lost their crops and livestock, and access to health and relief services remain difficult, pockets of acute severe malnutrition cases started to appear in many isolated communities.

Since it was impossible to reach them during the worst hit period, as many

as 34 children died of hunger and malnutrition. Oxfam facilitated the local authorities response. Several children were airlifted to hospital. It is hard now to believe that two decades or so ago, Baie d'Orange used to be known as a very fertile area where considerable amounts of coffee, beans and corn were produced.



Tanfan Omanie lost one of her children to malnutrition after the hurricanes destroyed food crops, Baie d'Orange. © Anita Swarup/Oxfam

Tanfan Omanie lost one of her children this year. "He was very swollen, I went to the local school where they were feeding children and they said bring in the child – the next day I was planning to bring in my child but he died". This year she lost everything in the hurricanes, all her beans and all her goats – who had all been pregnant. Now she cannot afford to buy more bean seeds to plant and has to rely on selling charcoal to survive. Before charcoal was a supplement to her income. "So I will have to depend on food relief", she says.

According to Jean Louisena, a local volunteer nurse "there are no health centres here in Baie d'Orange, when the children were sick the parents did not know what to do. So some just died. It's the first year that we are seeing children dying of malnutrition. And the malnutrition rates are increasing – everyday I'm seeing a new group of children".

## Nippes

In Nippes region, many poor people in rural areas are still waiting for food relief. According to Vincent Jamil, co-ordinator of CDGRD and Department Delege of the Nippes Department, *"the population in Nippes are very vulnerable, especially with food"*.

During the hurricane season many rivers in Nippes burst their banks cutting off towns and villages. In last year's hurricanes, infrastructure throughout the department was severely damaged including 50 schools, roads, water pipes and bridges. Indeed, one section of the main road from Nippes to the capital Port-au-Prince is still flooded with the waters of the nearby Lake Miragoane – which has risen due to water coming down the deforested mountainsides. *"At an agricultural level, at least 1 billion gourds has been lost in this region, plantations destroyed and it was harvest time, rice and beans flooded and the farmers completely decapitalised. And many fishermen have lost their materials – boats and nets etc"*, adds Vincent Jamil, co-ordinator of CCGRD and Department Delege of the Nippes Department.



Rice crops all over Haiti were flooded with water after the hurricanes © David Viñuales/Oxfam

*“This cycle is getting worse, in the past we didn’t have hurricanes every year but now they are 3 or 4 times a year. The drought season is longer and as a result there is a delay in the agricultural cycle as well. This is new because of climate change”.*

In the nearby village of Petite Rivière des Nippes, the mayor, Patrique Telegue says that all of the bean crops were destroyed and up to 80 per cent of the plantain crops and over 50 per cent of the sugar cane have been destroyed. *“If it wasn’t for the hurricanes, the market would have been full of plantains. We are one of the municipalities that produced the most plantains that we used to send to the capital Port-au-Prince and other parts of the country”.*

Sedye Desir is a rice farmer who has 6 children near the town of Anse a Veau. *“During the hurricane there was flooding that covered the rice crop – 2 or 3 metres. I lost my crop – I lost a lot of money, my house is destroyed, we had a lot of mud and my house was destroyed by it. Now we are living in misery and we don’t have enough food. This year has been the worst. There was a drought before which destroyed the sorghum. When we were young it was better, we used to have a lot to eat. We need some help, we have nowhere to live and no crops. The children have to go to school and we cannot afford to pay for the fees”.*

## Fishing

Climate change can adversely affect fisheries in a number of ways: through damage to infrastructure or shifts in fish distributions, changes to river deltas and

the degradation of sensitive ecosystems such as wetlands or mangroves. In Haiti, thousands of boats, nets and other fishing equipment were destroyed during the hurricanes, making it difficult for fishermen to take up their livelihoods after this. “After each hurricane, we lose everything we have – boats, nets and we have to start all over again”, says Sanon Camile from the Association of Fishermen in Belle Anse.

Worse still, thousands of tons of soil and sediment were deposited into the sea by overflowing rivers and water rushing down deforested mountainsides taking with it most of the fertile soil. Since traditionally most of the fish is caught from small boats close to the shore, the soil and sediments from the mountains have pushed the fish further out to sea. “The silt is going into the sea and is affecting the fish, who are going further

out after the hurricanes. Now it’s harder to catch fish and fish is more expensive in the marketplace,” notes Jean Frito, local co-ordinator for the Red Cross in Belle Anse. The fishermen do not, unfortunately, have large enough boats to go out further into sea.

Belle Anse was one province that was badly affected and many fishermen have had to stop fishing for a period of time – to allow fish to breed again by the shores. This year is particularly hard as all the fishermen in Belle Anse have had to come together (with assistance from Oxfam and the local mayor’s office) to stop fishing for a period to allow the fish to breed again by the shores.

Sanon Camile, from the Association of Fishermen in Belle Anse, refers to the adverse impact of hurricanes “all this

has severe consequences on our lives, we can no longer provide for our families needs. In the past we had enough money for school fees but not anymore – we haven’t just lost our activity but also our boats and nets –so sending our children to school is very hard’.

Gethno Chery, President of the Fishermen’s Association of Belle Anse wants to see projects that undertake fish farming in lagoons or enclosed area – the fish could then be sold to local markets. There are lagoons nearby which could make this possible. Bernadette Pierre, Mayor of Belle Anse, echoes his views. She sees this as an opportunity for local people to earn an income - but which needs external investment.



*It was harder for fishermen to catch fish after the hurricanes as the silt going into the sea pushed the fish further out.*

# Coffee Co-operative and Food Security

Haitians are resilient people and the community spirit is strong, particularly in rural parts. Some local people have found ways of working together and helping their own food security. The Coffee Co-operative near Cap Haitian is one example.

There are 850 members with about half a hectare of coffee each. Being part of a network is beneficial to the farmers but apart from growing coffee, many now have planted food crops such as plantains and vegetables.

This is good for food security and, as one coffee farmer, Jean Felix Celicourt says “If the coffee crop fails, we can sell the food”. Diversification is important. Coffee production was also affected by the hurricanes and parts of the plantations were seriously affected by the hurricanes in 2008. In 1996 and 1997 they used to produce around 85,000 pounds of coffee but today they produce around a third less due to droughts, stronger hurricanes, pests etc. Jean Felix reports that during those years and earlier “the soil was better. Now the soil is not so good”.

New methods of plantations where more space is left in between coffee trees seem to be better, and allow strong winds to pass through, Jean Felix notes. Diversification and growing other food crops in coffee plantations is also important

Unfortunately, though, climate change and rising temperatures will also have an impact on crops like coffee. Garry Mathieu, Director of the National Food Security Council notes, “we are already seeing the impact of rising temperatures on coffee. Coffee is usually produced at 700-1200 metres but now farmers have to go even higher to produce”.



# Climate Change and Disaster Risk Reduction

Droughts, floods, storms and other climatic events have the potential to disrupt people's lives, leading to losses of income, assets and opportunities. But when hurricanes hit the US, at least in many cases properties are insured. When the same hurricanes hit slums in Haiti or flood coastal towns, the result is devastation with little money for recovery.

Natural hazards are not by definition disasters. It is the adverse impact of the natural phenomenon on people's lives, their vulnerability to the hazard and their inability to cope that creates a disaster. Disasters often result in increased vulnerability of the poor and disempowered or marginalized through the destruction or loss of assets, thereby placing them in a downward spiral of deepening poverty and increasing risk. Poverty and vulnerability are strongly linked. Disaster risk arises when hazards interact with physical, social, economic and environmental vulnerabilities. Events of hydro meteorological origin constitute the large majority of disasters.<sup>31</sup>

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<sup>31</sup> World Conference on Disaster Reduction, January 2005, Kobe, Hyogo, Japan. Hyogo Framework for Action 2005-2015: International Strategy for Disaster Reduction. Extract from the final report of the World Conference on Disaster Reduction [www.unisdr.org/wcdr](http://www.unisdr.org/wcdr)

There is good evidence that disaster reduction measures help alleviate human suffering. The Dominican Republic has not exploited its natural resources in the same way as neighboring Haiti, which now has only two percent of its forest remaining today. Despite being battered by hurricanes in 2008, the Dominican Republic did not suffer the same casualties or damages as Haiti.

Supporting community resilience to hazards and awareness of threats such as extreme weather events and more weather variability is the key to reducing the impact of disasters in Haiti. Disaster preparedness and risk reduction are a crucial part of Oxfam's work, and the effect that climate change can have on vulnerable communities is one of the risk factors that has to be prepared for in the future.

Oxfam's objectives in disaster risk management are:

- To empower at-risk communities/populations to plan for, advocate for and implement long-term risk reduction initiatives.
- To enable at risk communities/populations to respond rapidly and efficiently to a disaster situation.

As an example, Oxfam has been working in the municipality of Bahon in the north of Haiti to reduce their vulnerability to the impact of flooding and take disaster risk reduction measures. The town of Bahon has around 20,000 people. For the last few years, it has been regularly flooded with heavy rains and the river bursting its banks. On average there are about three deaths a year with people trying to cross the swollen river. Villagers are organising rescue teams and the plan is now for a wall to be built by the riverside to help prevent flooding. In Bahon, Oxfam supported the government in forming and training a municipal disaster risk management committee— composed of farmers, nurses, teachers and other local representatives, 30 members in total. Local disaster risk management committees were also established in each of the districts as well as a number of search and rescue brigades for the municipality.

People receive training and then they go back to help others and raise awareness in their immediate communities and villages. As part of the project, engineers are also working with the community to reinforce the riverbank and protect the only accessible road in and out of the town. These activities have been funded by the European Commission's



Disaster preparedness and risk reduction are a crucial part of Oxfam's work, and the effect that climate change can have on vulnerable communities has to be prepared for in the future. © Abbie Trayler-Smith/Oxfam

Humanitarian Aid Service. Wesley Toussaint is the community organiser in Bahun. *“Everybody knows the climate is changing so our mitigation project needs to be included. Everyone will be affected by*



Wesley Toussaint is a community organiser in Bahun.  
© Anita Swarup/Oxfam

*it. Disaster risk reduction is important, we can't avoid being hit by hurricanes, and this will allow us to reduce the impact. Now several people have been trained as a rescue team”.*

*“Training people in the community has helped them. People were suffering from the hurricanes – they were victims. They know this training will help them protect themselves. I would definitely like to see more committees like these; you can see the change in the people who participate in the committees”.*

Louis Delouis, an agricultural technician, is a dedicated community member on the committee. *“When it is rainy, we have more disasters because the mountain is empty because there are no trees. If there*

*isn't something done to the mountain it will always be the same problem. We need to somehow prevent this – by planting trees or digging some canals”.*

Valery Laguerre, the Oxfam's Disaster Risk Reduction Manager in Cap Haitian asserts the need for capacity building and to continue to empower people. *“Climate change is a big challenge for Haiti, it's a very poor country with little resources – there is a humanitarian crisis”,* he adds.

In other parts of Haiti, Oxfam has been involved in working on a community level (through capacity building and training) building walls by rivers that regularly burst their banks such as at Anse a Veau in south Haiti. Here water, silt and mud rushes straight down the mountain into the river La Cul des Savannes that in the past used to flood the surrounding area. *“Thanks to this wall the city wasn't completely flooded – if we didn't have the wall, we would have all drowned. Before the wall was built, floods would destroy homes, kill livestock and leave people in the area with nothing. And people used to die”,* said Jean Claude Thelisme, municipal disaster risk management committee (CCGRD) Now the aim is to extend the wall to prevent flooding further down the river.

The National System for Disaster Risk Management in Haiti is responsible for ensuring good coordination in disaster risk management in the country. This national network – comprised of departmental, municipal and local committees made of up local

government officials and civil society representatives – is in charge of preparing communities for imminent disasters and providing for the immediate needs of communities particularly during times of disaster. Oxfam has developed a series of activities aimed at reinforcing the National System of Civil Protection at the local and municipal level in the department, specifically in the northern municipalities of Cap Haitian, Limbé, Bas Limbé, Borgne and Port Margot, Bahun and Grande Riviere du Nord, and the northeastern communities of Fort Liberté, Ferrier, Ouanaminthe and Trou du Nord. Oxfam also carried out a similar project in Nippes. The main objective of the initiative is to contribute to improving disaster risk management capacities of urban and marginalized rural communities vulnerable to hazards.

Though State presence is limited in Haiti, there are many successful examples of local government and the community working together on disaster risk reduction - although capacity and resources to undertake more of those is inadequate. Many of the 'civil protection members' have played an important part in reducing the number of deaths and casualties in the last series of hurricanes through early warnings or grouping people in more secure houses and/or temporary shelters.

Oxfam is actively working with the local government and civil protection members on disaster risk reduction programmes. The overarching objective of the programmes is to

support the Haitian Civil Protection department to become a genuine tool for durable development, and thus to contribute to the improvement of knowledge, practices and attitudes of the population, institutions and authorities in terms of risk and disaster management.

The National System of Civil Protection is reinforced by establishing municipal and local committees. These are trained in risk and disaster management and able to facilitate the implementation of local risk and disaster management plans in their respective districts. These plans and activities are aimed at reducing certain physical, environment, and/or socio-economic factors that make the areas vulnerable to environmental disasters.

In its humanitarian response and post-emergency responses, Oxfam is assisting community resident to dig ditches which alleviate the impact of floods and flood flow – and help with irrigation during dry periods or droughts. In Cash For Work programmes in Nippes, several hundred people were paid cash to dig out the ditches. Many of them suffered tremendously in the recent hurricanes with all their crops or homes destroyed. A good number are women who have to find a way to support their families if their husbands have left, migrated or are too ill to work.

In one Cash For Work program in Petites Rivière des Nippes, Casimir Anese is the team leader. She had to get a job as her husband does not work and she needs to pay for food

and school fees for the children – but is already 10,000 gourds (around US \$250) in debt. She used to sell underwear in the local market but the business did not work and she did not earn enough money to feed her family. But she is pleased to get this job that pays around 200 gourds (US\$ 5) a day. *“It is something that has to be done in the community so if there is a flood, it won’t flood people’s homes and fields as well – we would lose the product. With the canals, people’s crops won’t be washed away”.*

Assoneze George is an elderly woman of 75 years who is also in debt. *“I am not from around here but I come to work here – the hurricane destroyed all*

*my crops and my home. I don’t have a husband and I had to come here to find money to feed the family. I have 6 children, 3 of which still live with me as they are sick and 3 grandchildren also live with me. The canal is very useful because if you compare the amount of damage done in the past there is less damage now”.*

Samuel Metllus is a brave young 16-year-old boy. He is trying to pay for his own school fees. He used to have a job before the hurricane affected things in the town. *“Things are bad. Life is very difficult. I wake up in the morning and I can’t even afford a cup of coffee”.*



Cash for Work. In its post-emergency responses, Oxfam is assisting community resident to dig ditches which alleviate the impact of floods – and help with irrigation during dry periods or droughts. © Bernard Cherelus/Oxfam

# Haiti's NAPA – National Adaptation Programmes of Action

Haiti has for several years recognized the threats and challenges presented by human-caused global warming. It has ratified the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. As a Least Developed Country (LDC), Haiti has also developed its own National Adaptation Programmes of Action (NAPA) through the Ministry of Environment. NAPAs provide a way for LDCs to identify priority activities that respond to their urgent needs to adapt to climate change. Even if in the near future carbon emissions start to decrease significantly – as they must - impacts will continue to be felt. Therefore adaptation is now crucial and urgent. Climate change adds urgency as new and uncertain climatic conditions are likely to come about and there will be a need to find more resources. Development and adaptation need now to be considered together.<sup>32</sup>

Actions identified in the NAPAs should be priorities for funding, and the channel for this funding is via the UNFCCC's Least Developed Country Fund. The money in the LDCF is voluntarily contributed by industrialised nations. Haiti's NAPA is a document that, if implemented, would

considerably assist vulnerable rural communities to adapt to the adverse impacts of climate change. To fund it requires nearly US\$ 24.5 million but as yet, no funds have been given.

The Ministry of Environment was responsible for submitting the government's NAPA. The NAPA identifies that risks from climate change will affect many sectors of the Haitian economy, such as water the resources, agriculture, fishing, coastal zones, infrastructures, trade, health, education, transport, telecommunication; in short the entire economy. However, sectors like agriculture, land, coastal zones and the water resources seem to be the most vulnerable sectors of the country due to their higher level of sensitivity to climatic stresses. According to the NAPA, water related risk (hurricanes, floods, heavy rain) coupled with erosion affect the highest number of geographical regions. These risks need to be prioritised when developing adaptation strategies.

The NAPA has the following goals:

- To identify the urgent needs for the country for purposes of adaptation and to communicate these needs to international organizations financing environmental initiatives.

- To mobilize all national energies in the fight for environmental protection.
- To contribute to the reduction of the poverty level of the vulnerable populations for a greater capacity of adaptation to climate change.
- To contribute to national and consequently regional and global ecological balance.

The NAPA was written after the Action Plan for the Environment (PAE), developed in 1999 by both the Ministry of Environment and the National Plan of Risk Management and Disasters (PNGRD). Clearly the government in Haiti recognises climate change and its impacts but it faces serious challenges in terms of funding and lack of capacity to cope with such an overwhelming phenomenon. Lack of research and data also presents problems in tackling the impacts of climate change. Jean Arsène Constant from the Civil Protection Department (DPC) notes: *"In Haiti we still do not know enough about hazards and vulnerabilities. There is a lack of data – we are limited in terms of data. We are missing a strategy too and funding"*.

However there are currently no budgets that the national government

<sup>32</sup> IIED Briefing, Taking Steps: Mainstreaming national Adaptation, November 2008



Climate change adds urgency, as uncertain climatic conditions are likely to come about. Development and adaptation need now to be considered together. © Abbie Trayler-Smith/Oxfam

and local authorities have at their disposal for adapting to climate change. In Haiti, the National System for Disaster Risk Management (SNGRD) that works from national down to commune level is a key government department in helping reduce the impact of disasters. Planning in high-risk environments requires investments that are beyond the financing capacities of most governments acting alone. Dealing with floods, reforestation projects or developing new drought or flood resistant crops is very expensive for the government in Haiti.

Adaptation projects and activities take a number of forms. Building or reinforcing infrastructure projects such as water pipes and roads are only part of the 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. The need to integrate climate change adaptation into disaster risk reduction, as climate change is likely to aggravate natural disasters, is important to the Civil Protection Department. Jean Arsène notes: *“We need to develop a link – risk reduction programme and climate change. And two areas that need most adaptation are agriculture and energy”*.

Suggestions include:

- Reforestation projects.
- Developing a variety of sub-species of livestock who are

drought resistant or who can resist large variations in drought and rain.

- Conservation of water as the dry periods are becoming longer which creates problems for agriculture.
- Producing wood from forestry projects to help solve the problem of energy and deforestation.

Deforestation is by far the most challenging issue in Haiti that significantly exacerbates the disasters, deaths and damage to property. Moïse Jean-Pierre, National Focal Point in the Ministry of Environment for the National Climate Change Convention, recognises the link between climate change in the form of heavier rains, deforestation and disaster. However, climate change is too overwhelming an issue for Haiti to tackle as a country by itself and it requires support from the region. *“The problem is so complex and so crucial that we have to work and share expertise with other Caribbean countries. We need more research on climate change”*. He adds *that this is not just an issue for the Ministry of Environment but “what is needed is a cross sectoral approach to deal with climate change – energy sector, transport, agriculture etc”*.

In order to implement the actions, it is recognised in the NAPA that both an action plan for reducing poverty and a well defined government framework for environmental protection are needed. Oxfam echoes these concerns, but is also concerned that the activities in the NAPA have too much of an

emphasis on a project-based approach to adaptation planning, which detail only immediate needs, and it provides a limited perspective on the scale of financing required for effective “Climate-proofing”. “What Haiti needs is a comprehensive strategy, complete with short, medium, and long-term actions, measures and indicators”, concludes Oxfam Haiti’s Director, Yolette Etienne. *“In turn, this strategy must be supported financially by the international community, preferably with the most polluting nations providing more support”*. Small-scale farmers have a wider perspective.

When asked what they would see as “adaptation” they identify many things:

- Diversification of income so that people could earn some money when food crops were destroyed or so that they don’t have to depend on an income from charcoal;
- Small loans so they could start up small businesses;
- Investment by businesses to provide jobs or investment in fish farms;
- Assistance with buying seeds or developing new flood or drought resistant varieties of crops or livestock;
- Cultivation of appropriate crops on mountainsides and, most importantly for all concerned;

- Reforestation projects – which include planting fruit trees which can assist food security.

Deforestation was considered a major challenge in the NAPA but the need for reforestation projects was not sufficiently stressed. For many farmers, fishermen and community leaders, reforestation was considered to be the priority.

Michele Thomas, Civil Protection, Petite Rivière des Nippes reaffirms: *“Projects are needed for reforestation of the mountains – reforestation possibly with fruit trees so we can eat or sell the fruit. And we also need appropriate crops. Farmers should be trained to understand how not to disturb the environment. If these were made we wouldn’t suffer such problems. There will still be hurricanes but the impact will be less”*.

The NAPA is only meant to be a start towards adaptation. Much needs to happen outside the NAPA - and without waiting for funding the NAPA to come through. For poor countries to adapt successfully, change needs to occur at many levels. Communities must be at the heart of efforts to build resilience, whether through diversifying livelihoods or strengthening food and water security. Scaling up community-owned approaches like in Baho where community residents come together with local government for training and awareness raising will be central to successful national strategies. Women must also be at the core of adaptation strategies and for this, gender-disaggregated data and

research is necessary.

Strengthening local institutions is also important. Local institutions have shaped how rural residents responded to environmental challenges in the past and in Haiti local government structures such as the SNGRD play a vital role in disaster risk reduction. This network may also be a highly appropriate mechanism to facilitate adaptation to climate change at the grass roots, shaping adaptation strategies and improving the capacities of the most vulnerable social groups.

Climate change also needs to be factored into national planning and budgeting, and must also integrate adaptation into development-planning processes, for example strengthening institutions, and providing early-warning systems, analysing and mapping risks as well as establishing emergency contingency plans for communities at risk . In addition, they must ensure that climate risks are integrated into national and local disaster-risk reduction plans, so that they can tackle the underlying vulnerabilities that put communities at risk in the face of the increasing number of climate-related disasters.<sup>33</sup>

There are many challenges to implementing the NAPA in Haiti. It states:

1. The country has been in an unstable political situation for a few years which

<sup>33</sup> Oxfam International, 2007, Oxfam briefing Note: Financing adaptation: Why the UN’s Bali Climate conference must mandate the search for new funds

generated fear and despair. This means that the population will have reservations and there may be a low level of participation.

2. The acute food shortage means that for the majority of the population environmental protection is not a priority.

3. The persistent feeling of political-socio-economic insecurity can disrupt the implementation of the activities and may make the financial partners hesitate, which will do nothing but accentuate the problems involved in the implementation of the project.

4. There may be conflicts between partner organizations, partners and the local authorities.

5. Many institutions are involved in the environment field without effective coordination carried out. The role and attributions of each organisation are badly defined.

6. Difficult access and the occurrence of new disasters during the implementation, in the priority action areas, can constitute obstacles with the processes of NAPA.

7. Being a LDC facing serious political problems, Haiti cannot mobilize the funds necessary to implement the NAPA.

# Conclusion

There are limits to what communities on small island states like Haiti can achieve alone. In view of its higher vulnerability and risk levels,

which significantly go beyond its capacity to respond to and recover from disasters, Haiti needs international support with particular urgency. Richer industrialised countries must fund the bulk of climate change adaptation in LDCs like Haiti, given their responsibility for causing the problem and their overwhelming financial capability. For Haiti accelerating climate change could mean more floods, droughts or hurricanes -causing millions more dollars worth of damage and millions of hungry people.

This report is an insight into the destructive impact of the climate changes that are already happening on a daily basis in Haiti. Poor women and men are significantly more vulnerable to the impacts of floods, droughts, storms and hurricanes and have found it difficult to cope – particularly in the last series of storms and hurricanes in 2008 when there was little time for recovery in between. But many have shown a great resilience and ability to “weather the storm” in their own ways, both at a community level and at local institutional level through the Civil Protection system. For example, in last year’s hurricanes many deaths were averted when Civil Protection members alerted people in villages and helped

distribute food relief in the aftermath. Local government officials, with the help of organizations such as Oxfam, are training community residents on disaster risk reduction and coming together in committees such as in Bahon to better deal with future floods. They see disaster risk reduction activities as key to their survival of their communities – and key to adaptation.

Farmers, local leaders and government representatives identified several other key adaptation priorities. Most urgent were reforestation projects, since trees act as important buffers to the impacts of heavy rains and hurricanes and help prevent serious flooding in coastal areas where most people live. Planting fruit trees alongside will also mean a source of food and help with food security. People can eat the fruit or sell it at the market.

Income diversification, and finding an alternative to selling charcoal as a source of income, is also considered vital, by starting up small businesses for example. Fishermen in remote areas such as Belle Anse say they would benefit from fish breeding projects in natural lakes and lagoons and they could sell the fish in nearby towns.

Government representatives note that climate planning across government departments is considered crucial. Climate change concerns should not be isolated under a particular sector such as environment but integrated across all sectors – agriculture, fishing, trade, transport, energy etc. However a major challenge is a lack of data and research on climate change. Sharing expertise, research and information in the Caribbean region was also identified as important – since Haiti does not have the capacity or resources to do this alone.

As mentioned earlier, it is impossible to say that every extreme weather event is caused by climate change but many scientists now agree that extreme weather events such as hurricanes are likely to become more frequent and severe. Uncertainty should not mean inaction. What is needed is ‘no regrets’ adaptation – measures people can take that will help them withstand climate shocks now and in the future. NAPAs provide some indication of what steps should now be taken but these have to be considerably built upon.

Participation and ownership of adaptation and taking action to reduce the impact of disasters by



The community participation is essential to the success of adaptation programs. © Bernard Cherelus/Oxfam

the community is essential to the success of adaptation programs. Oxfam believes that active citizenship is essential - people living in poverty must have a voice in deciding their own destiny, fighting for their rights and justice in their own society. Furthermore, effective states are important too because history shows that no country has prospered without a state structure that can actively manage the development process. A combination of solid institutions and community participation can significantly help reduce vulnerability to disasters such as floods, droughts and hurricanes – and thus prepare for climate change. Climate shocks do not always give rise to disasters if people have the capacity to withstand them.

Increasingly, poor people in small countries like Haiti are compelled to shoulder the burden of global climate change – to which they have barely contributed. Haiti is only responsible for a tiny fraction of global emissions of greenhouse gases yet its people are paying for this with millions of dollars through lost revenue from agriculture, fishing and lost livelihoods.

Developing countries do not have the resources to finance national adaptation – and should not be expected to cover the costs alone. Separate to funding for emergencies that will arise, Oxfam estimates that developing countries will need at least US\$50 billion annually to adapt to climate change, as part of \$150 billion a year in total for

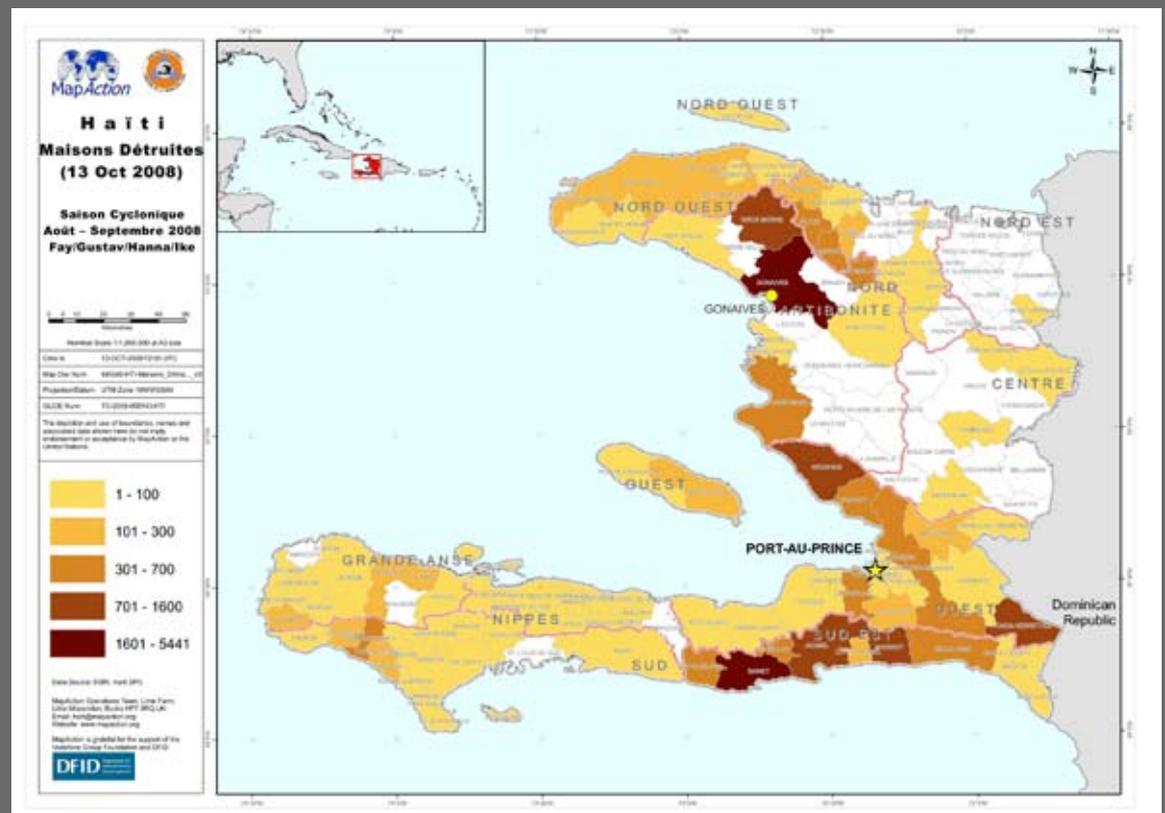
public investment in adaptation and mitigation (reducing emissions and moving to low carbon development paths). These funds should be provided by rich nations, in line with their responsibility for causing climate change and their capability to assist. It is not aid but a form of compensatory finance and must be in addition to donor commitments to provide 0.7 per cent of GNI. Innovative financing mechanisms urgently need to be explored, that can deliver predictable financial flows on the scale required<sup>34</sup>. Furthermore, pro-poor adaptation responses must be considered an opportunity for economic growth and development rather than a drain on international financial resources. And these investments must be targeted to those most vulnerable to the effects of climate change.

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<sup>34</sup> Oxfam proposes innovative mechanisms in *Hang Together or Separately?*, Oxfam Briefing Paper 128, June 2009



The number of houses destroyed or damaged during 2008 hurricane season reached over 45,000, a big number of them concentrated in Fonds-Verretes and Gonaives areas.  
 © MapAction



# Tables

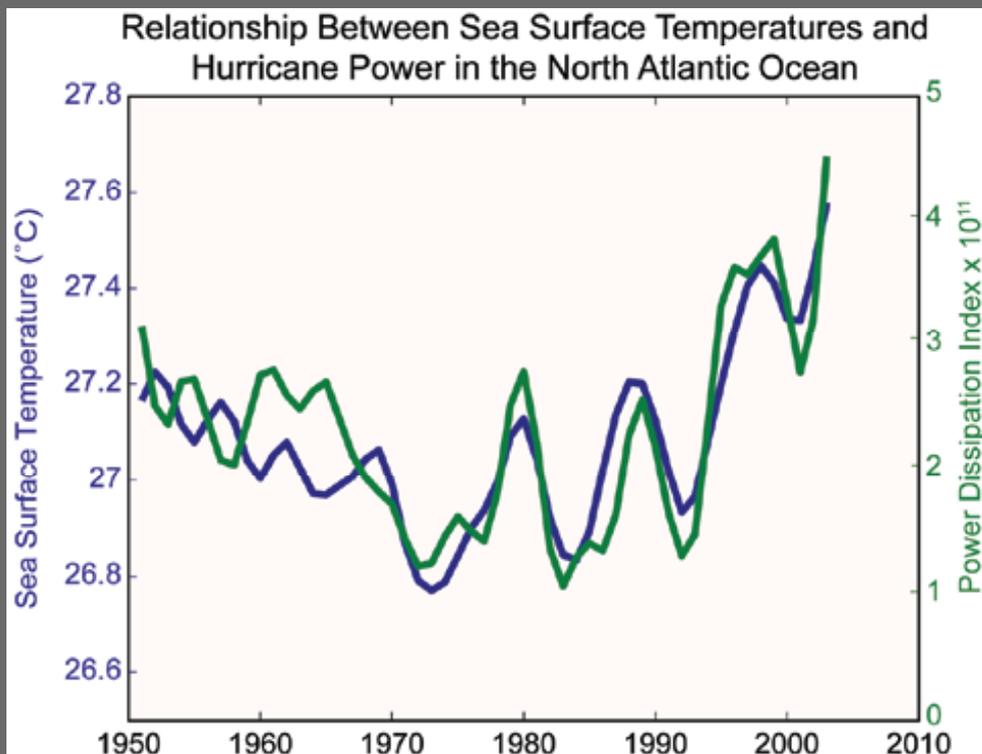


Table 1.  
Sea surface temperatures (blue) and the Power Dissipation Index for North Atlantic hurricanes Source: US Climate Change Program – footnote 8.

**Tableau I.- Évolution Annuelle de la Température à la Station de Damien**

Année	1973	1976	1979	1982	1985	1988	1991	1994	1997	2000	2003
Température °C	27,3	ND <sup>2</sup>	27,4	27,7	27,4	27,8	27,6	27,8	28,4	27,5	28,4

Source : Service météorologique national (DARNDR), Données climatologiques

Table 2.  
Annual evolution of temperatures in Damien Station, Port au Prince, Source: Ministry of Environment, Haiti, NAPA 2006

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