

# Suffering the Science

## Climate change, people, and poverty

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A water-logged Bangladeshi woman in search of drinking water after Cyclone Aila hit Gabura, Satkhira in Bangladesh on 26 May 2009. The flooding was caused by storm surge and breached embankments as a result of the cyclone. This type of surge has almost certainly been made worse by sea-level rise. ©Abir Abdullah/Oxfam

**Climate change is damaging people's lives today. Even if world leaders agree the strictest possible curbs on greenhouse gas (GHG) emissions, the prospects are very bleak for hundreds of millions of people, most of them among the world's poorest. This paper puts the dramatic stories of some of those people alongside the latest science on the impacts of climate change on humans. Together they explain why climate change is fundamentally a development crisis. The world must act immediately and decisively to address this, the greatest peril to humanity this century.**

# Foreword

Two years ago, thousands of scientists came together in the Intergovernmental Panel on Climate Change (IPCC). We agreed that the climate system was warming unequivocally, and that if current rates of greenhouse gas (GHG) emissions from human activity continue, the world would see further warming, accompanied by more extreme weather and sea-level rise, and risks of abrupt and irreversible change.

Earlier this spring, scientists meeting in Copenhagen reiterated and updated the evidence for climate change. We concluded that the scientific evidence has now become overwhelming and that human activities, especially the combustion of fossil fuels, are influencing the climate in ways that threaten the well-being and continued development of human society.

We reported that recent observations show that GHG emissions are at the higher end of those considered by the IPCC. Some of the most worrying new science focuses on the likelihood of more extreme droughts as a result of global warming, and of large-scale and possible abrupt changes in arctic, mountain, and tropical forest ecosystems.

Social scientists emphasized that vulnerability to these changes, especially in poor nations and communities, is high, and that because the effects of climate change have unequal impacts there is a clear need for strategies and funds for adaptation. Many of us now feel that if we do not act now there is a significant chance that we will be looking at a world warmer by 4°C, with profound social and ecological consequences.

All of these reasons for concern have added urgency to the search for the political will to implement the solutions already identified by the IPCC and others, including the decarbonisation of our societies, and the reduction of vulnerabilities through adaptation and poverty alleviation.

This Oxfam study reflects the latest science and adds powerful human stories to our understanding of climate risk and vulnerabilities. It adds an important and authoritative voice to the urgent call for urgent reductions in emissions and attention to adaptation.

Professor Diana Liverman, June 2009

Diana Liverman holds Professorships at Oxford University, where she directed the Environmental Change Institute, and the University of Arizona where she is based in the Institute of the Environment. Professor Liverman was a contributing author and reviewer for three IPCC assessments; chair of the US National Academy of Sciences Committee on the Human Dimensions of Global Environmental Change; chair of the Scientific Advisory Committee for the international Global Environmental Change and Food Systems programme; and a member of the new National Academy of Sciences Committee on America's Climate Choices which is advising the US Government on responses to climate change. She is a co-author of the Copenhagen Science Congress synthesis report which brings together the latest scientific research on climate change and which informed this paper.

# Summary

## Cyclone Aila

As this paper was being prepared in late May 2009, Cyclone Aila hit Bangladesh and East India. The headline news was of deaths (more than 200, including many children), of 750,000 people made homeless, of landslides, floods, water contamination, threat of disease, the devastation of food crops and livelihoods – of 3.6 million people ‘affected’. The Satkhira district in Bangladesh was hit hard. Just weeks before Aila, Oxfam held the first of its international Climate Hearings in villages there. More than 12,000 people gave their personal experiences of climate change, many saying that the sea level was rising, the tides were higher, and salt water was steadily encroaching on their land. When it hit, Aila coincided with yet another unusually high tide and storm waters breached the embankments.

Before Aila, at the hearings, Baburam Mondal described how the encroachment of salt water had wiped out his mangoes and coconuts. Ashoke Kumar Mondal said he had lost his livestock and poultry because of extreme weather. Mahmuda Parvin hadn’t been able to grow vegetables for the past two seasons. After Cyclone Aila hit, Oxfam staff in Satkhira found Baburam rummaging for his belongings in the mud, having lost his home. Mahmuda Parvin’s home was swept away too. We found Mahmuda living on a highway, searching for food and water.

Source: Oxfam International in Bangladesh

*‘We went to sleep the night before, and woke up in the morning with water everywhere. The only thing we were able to save was the roof of the house.’*

Magdalena Mansilla, a 51-year-old farmer in Lambayong town, Sultan Kudarat, in the south Philippines. She has lost her home in floods twice in four years, in 2008 and 2004.

Climate change is a reality and its effects are apparent right now. The scientific predictions are shifting continually – they almost always look bleaker. But Oxfam’s experience in nearly 100 countries is definitive: hundreds of millions of people are already suffering damage from a rapidly changing climate, which is frustrating their efforts to escape poverty. This paper is the story of the ‘affected’.

To tell this story we have brought together the voices of two communities – scientists who study the impact of climate change, and the people who are suffering harm now. In March 2009, 2,500 leading scientists gathered in Copenhagen to present updated research across the entire spectrum of climate change. This paper is based on their work, and as much as possible upon the latest science, set alongside the first-hand stories that emerge from Oxfam’s work with poor people.

## A life behind every statistic

*'Nature has got much worse, people have offended Nature. Spring comes 2-3 weeks earlier than before. Spring is getting harsh; it is raining or snowing all the time. The first thaw is at the end of April. The first rain is in May; it has never been like that before.'*

Gregory Rykhtyn, Vankarem Settlement, Siberia, 2006.

In 2009, a year of 'Climate Summits' for scientists, businesses, and governments, there has been no formal 'People's Summit'. The reality of life under climate change is largely missing from the big debate. No court of justice would hear evidence and then make a ruling without representation from the wronged party. Oxfam tells the stories of affected people in this paper in a modest attempt to help bridge the gap between science and policy. There are people behind every statistic:

- One report estimates that 26 million people have already been displaced because of climate change.
- 375 million people may be affected by climate-related disasters by 2015.
- 200 million people may be on the move each year by 2050 because of hunger, environmental degradation, and loss of land.
- Several major cities that are dependent on water from mountain ranges face collapse.

A new Oxfam study called 'What Happened to the Seasons?' – whose findings are included in this paper – quotes farmers from all over the world who are experiencing seasons that appear to have 'shrunk', to either 'hotter and dry' or 'hotter and wet'. Seasons, they say, are becoming less distinct. They are uncertain when best to cultivate, sow, and harvest.

This is where climate change becomes as real as a redundancy or a repossession notice, or a daily missed meal, or a parent's fear for the safety of a child. People's stories make us realise just how little we are doing to address the causes and effects of this crisis, although it has been bearing down on us for a quarter of a century.

*'Global sea level is rising, and faster than expected. We need to honestly discuss this risk rather than trying to play it down.'*

Professor Stefan Rahmstorf, Potsdam Institute for Climate Impact Research, March 2009.

Ultimately the stories of Magdalena Mansilla and Joseph Abellar, Iha and her daughters, Li Zhuang, Fred Kabambe, Lomaada Nakorilung, and all the other people quoted in this paper are empowering. People are determined to survive the impacts of climate change. Through them, we begin to understand that climate change is an added burden – yet another threat to their ability to cope with poverty. It is interacting with existing problems and making them worse.

## The scientific certainty of harm

Scientists are observing increasing evidence of changes and breakdowns in natural systems from a changing climate caused by rising carbon emissions. For the poor countries in the tropics and sub-tropics particularly, almost every observation and prediction about health, food security, water shortage, natural disasters, famine, drought, and conflict is worsening at an alarming rate.

*Mukelabai, 25, is still stunned as she looks at what remains of her home. 'We put all our children in the canoe and paddled about 25km. We could not save our crops, so we have no food. We are eating nothing.'*

Mukelabai Liywalii, whose family was driven out of their home by floods, Zambia, April 2009.

Most scientists now believe that limiting the global average temperature rise to 2° C is unlikely – not because we are technically or socially incapable, but because they do not believe that politicians are genuinely willing to agree to the necessary cuts in carbon emissions. Indeed, politicians' performance so far in international negotiations has been appalling, although this can be turned round through concerted pressure from the public, the private sector, and civil society.

Two degrees is the 'target' upon which more than 100 governments are basing their strategies because the rich world has deemed this could be an 'economically acceptable' one. However, even warming of 2°C entails a devastating future for at least 660 million people.

Lord Stern, former chief economist to the World Bank, says there is 'a big probability of a devastating outcome' and that 'the likelihood of global warming in the 21st century even beyond the threshold of a 2.4°C increase is dangerously high'. Hans Joachim Schellnhuber, the advisor to the German chancellor on climate change, says that on the basis of the new evidence, he thinks anything up to 5°C of warming is 'likely' by 2100 under a 'business as usual' scenario. Under such a scenario, Schellnhuber expects the human population of the world to fall to just one billion.

Science is now as certain as it can be of harmful climate change. The only real uncertainty is about how much climate change and human suffering we are willing to allow and bear.

## Hunger, disasters, disease – 'the new normal'

Without action, most of the gains that the world's poorest countries have made in development and ameliorating the harmful effects of poverty in the past 50 years will be lost, irrecoverable in the foreseeable future.

*'We used to get three good rains. Now we don't even get two. There's no more rainy season, just the hurricane season. As soon as people see clouds forming, they put together their stuff and head for the hills.'*

Gary Novamn, farmer, Gonaives, Haiti, April 2009.

Climate change's most savage impact on humanity in the near future is likely to be in the increase of **hunger**. Some of the world's staple crops, such as maize and rice, are very susceptible to rising temperatures and to more unpredictably extreme seasons. Almost without exception, the countries with existing problems in feeding their people are those most at risk from climate change.

The impacts on people's **health** are frighteningly diverse. Climate change is bringing water- and insect-borne diseases of the tropics to hundreds of millions of people with no previous knowledge of them. In hotter temperatures people will be unable to work for as long due to heat stress, and if they do their health may suffer.

Climate-related **disasters** have been increasing in frequency at an extraordinary rate. Extend the line of the graph that charts such events between 1975 and 2008, and it says that in 2030 we will experience more than three times as many such disasters as today.

**Water** supply is now so acutely challenged that several major cities that are dependent on the Himalayan and Andes glaciers will face crippling shortages within decades.

Climate-driven **migration** is already a reality, destroying livelihoods, communities, and cultures, and leaving women alone and vulnerable to deal with agricultural work, and to look after children. Governments are concerned that climate change will spark increasing conflict between countries as scarcity of vital water supplies brings bitter disputes over their control.

## Loose change – stop harming and start helping

*'Climate change is a threat multiplier and one of the greatest threats to development: 53 per cent of African disasters are climate-related and one-third of African people live in drought-prone areas. By 2020 yields from water-fed agriculture in Africa could be down by 50 per cent.'*

Dr Balgis Osman-Elasha, Higher Council for Environment and Natural Resources, Sudan, Copenhagen Science Conference, March 2009.

We need to stop harming and start helping. In December 2009 the world's politicians will meet in Copenhagen to sign a deal to tackle climate change. This deal must ensure that global carbon emissions peak by 2015, and then begin falling. Rich countries must commit to reduce their own emissions by at least 40 per cent from 1990 levels by 2020 and all countries must act to reduce global emissions by at least 80 per cent below 1990 levels by 2050.

As importantly, beginning immediately, developing countries will need at least \$150 billion a year to cope with the effects of climate change and to pursue their own low-carbon futures.

Today, most governments are woefully short on the action and ambition needed to achieve this. Helping to climate-proof the developing world is comparatively loose change: \$150 billion is about the same amount that was spent on bailing out just one company, AIG, during the financial turmoil of late 2008.

It is not only morally right, it is economically smart to adapt for climate change. The better developed a country, the better it copes with environmental disaster and recovers. The interventions needed to help poor people cope with harmful climate change are readily available. The world needs to invest wisely to protect all its markets and supply chains, and its consumers and providers. It needs to limit the anger and desperation that inequality and suffering bring. This is an investment in human and national capital, in good development, and in a sustainable future.

## No reason to give up

Climate change's effect on poor people is one of the most bitter ironies of our times. The nations that made themselves wealthy by burning fossil fuels are largely those that will, initially, suffer least from the effects of climate shift. The rise in global *average* temperatures is playing out differently over the poles, the tropics, the seas, and the big land masses. In the temperate zones, for instance, rich countries are buffered

by their wealth, and here climate change's impacts may result in milder or even beneficial weather conditions for a brief period. It is in the tropics where the bulk of humanity lives – many of them in poverty – that climate change is hitting now and hitting hardest.

*'The rich are still swimming in their pools while we are dying of thirst... We have got no toilets. I can't wash my children. I can't cook. I can't clean the mess off the floor. And the worst thing is, we have got almost nothing to drink.'*

Graciela Martinez, mother to a family of eight, Mexico City, April 2009.

Climate change doesn't yet much trouble the average citizen of the richest countries. It featured at number 20 on a list of people's concerns in a recent poll in the USA. Oxfam believes that it should be at the top of everyone's agenda because there is something we can do about it. The scientific consensus – which has sometimes been unfocused and on occasion indecisive – is firming up: it is nearly too late, but not quite. Now our political leaders have to firm up too.

Oxfam's message is: don't give up. Tell world leaders you want a fair and safe future. Rich countries must cut their emissions now, and give developing countries the means to pursue low-carbon futures and to cope with the harmful effects of climate change. The true cost of climate change will not be measured in dollars, but in lives and human potential. That price is being paid already.

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