

# Global Future

Number 3, 2009

A WORLD VISION JOURNAL OF HUMAN DEVELOPMENT

THIS EDITION

## Climate change and poverty



### FEATURING

**Margareta Wahlström**

United Nations Special Representative of the Secretary-General for Disaster Risk Reduction

**Saleemul Huq and  
Muyeye Chambwera**

International Institute for Environment and Development

**Will Steffen**

Climate Change Institute  
Australian National University

**Bill Hare**

Potsdam Institute for Climate Impact Research

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# Letter

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Dear Readers,

As we mentioned in the previous edition, this is the final edition of *Global Future*.

This journal began in December 2000, and has seen thirty-two editions on a wide range of global development themes. We are very grateful for the hundreds of thought-provoking articles that guest and staff writers have generously contributed.

We thank you for your readership and feedback over the years.

To stay in touch with us regarding future publications, please contact us at [global\\_future@wvi.org](mailto:global_future@wvi.org) and let us know your e-mail address.

Sincerely,  
Marina and Heather  
The *Global Future* editorial team

**front cover image:** In the southern village of Chila, in Bangladesh, climate is so adverse that Kallyani Roy’s family of five have changed the location of their house ten times because of river erosion. “Maybe the present location of our house also needs to be changed, because the Chila River is very speedy and it may engulf our house again,” Kallyani Roy says with despair. Bangladesh is particularly vulnerable to climate change’s effects, so life is likely to become even more precarious for people like the Roys.

**photo:** Raphael Palma/World Vision

**facing page background image:** The saltwater lake near Mazamni village is about two hours from Zinder, Niger, and is the main water source for villagers. But the lake has dried out due to drought. Villagers must now trek or ride donkeys several kilometres to get water.

**photo:** Jon Warren/World Vision

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## “WE WILL NOT DIE QUIETLY”

We are at a strange and dangerous point where most politicians want to look like they are “doing something” on climate change, but very few have the clarity and courage to do what actually needs to be done. I am reminded of a scene from the British comedy *Yes Minister*, in which the concept of “politicians’ logic” is explained: “Something must be done. This is something. Therefore we should do it.”



The problem is that it is not just any old “something” that needs to be done. As Bill Hare writes in this edition of *Global Future*, something very particular needs to be done to avert disaster: to have about a **50%** chance of keeping warming below 2°C above pre-industrial levels, rich countries must reduce their emissions by around 25–40% below 1990 levels by 2020, and the biggest developing country emitters need to reduce their emissions below business-as-usual levels. To have a **good** chance of keeping warming under 2°C, and any chance of the safer 1.5°C, the Alliance of Small Island States and the Least Developed Countries have rightly emphasised that 45% cuts are more like what is needed, with more than 95% cuts below 1990 levels by 2050.

Very few of the rich countries are offering anything like these levels of cuts. By implication, these countries are content to risk 3°C, 4°C, or even 5°C of warming, but only a handful of politicians appear to grasp the extraordinary dangers inherent in these scenarios. As Will Steffen argues, our situation is grave and urgent action is required.

When we consider that about 5°C below pre-industrial temperatures produced the ice ages, 5°C **above** pre-industrial temperatures is frightening. Rather than a few more balmy summer evenings, we would experience temperatures not seen on Earth for tens of millions of years.

Several writers discuss the implications of our current path: Margareta Wahlström highlights the importance of disaster risk reduction for climate change adaptation; Chris Shore explains why climate change has such serious implications for the well-being of children; Alex Evans discusses the challenge of feeding nine billion people in the context of a warming world; Lydia Baker emphasises that climate change has critical child health implications; Saleemul Huq and Muyeye Chambwera point out that for developing countries, pro-poor low-carbon growth is likely to have positive net benefits; my own article argues that the economic case for strong action on climate change is compelling; and in our closing reflection, Jim Ball emphasises that regardless of our views on the causes of climate change, we should respond to those suffering its consequences with the open-hearted generosity shown in Jesus’ story of the good Samaritan.

Unless decisive action is taken following Copenhagen, by 2100 our grandchildren are likely to know first-hand what the opposite of an ice age looks like. His Excellency Mohammed Nasheed, President of the island nation of the Maldives, asks poignantly whether our leaders are negotiating a global suicide pact or global survival pact: “Some might prefer us to suffer in silence but today we have decided to speak. And so I make this pledge today: we will not die quietly.”

We do not choose the times we are born into. But we do choose how we will respond. How will our children and grandchildren remember us, if our generation proves incapable of rising to this challenge? ■

**Dr Brett Parris is Chief Economist with World Vision Australia and a Research Fellow at Monash University, Melbourne.**



# CLIMATE CHANGE, A MAJOR THREAT TO CHILDREN'S HEALTH

*Climate change, once perceived as an "environmental" issue, has far-reaching impacts on the health and survival of people – especially the world's poorest children, explains Lydia Baker.*

The reality today is that nearly nine million<sup>1</sup> children each year die before they reach the age of five. The vast majority of these deaths – 97% – occur in low- or middle-income countries, and disproportionately within the poorest communities and households. Most children are dying as a result of a small number of diseases and conditions including malnutrition, pneumonia, measles, diarrhea, malaria, HIV and AIDS, and neo-natal conditions.<sup>2</sup>

Against this backdrop, recently climate change was described as the biggest global health threat of the 21st century.<sup>3</sup> It will affect children's health in a range of different ways. It will increase the prevalence of diseases most likely to kill children, as well as undermine the foundations for child survival: functioning health systems, women's education and empowerment, food security, clean water and safe sanitation.

While no-one will be immune to the effects of climate change, children from the poorest families in low- and middle-income countries will be at particular risk.

This is especially true for children under the age of five, who make up between 10% and 20% of the total population in many of the countries predicted to be most affected by climate change.<sup>4</sup> Children in this age group often have less immunity to

disease and infection, putting them at further risk.

Diarrhea, for example, claims the lives of around two million children under the age of five each year.<sup>5</sup> A lack of access to water and sanitation is responsible for around 90% of these deaths and, as climate change will substantially reduce water availability, the caseload of diarrhea is predicted to increase by between 2% and 10% by 2020.<sup>6</sup> As children, especially those under age five, are by far the largest group who die as a result of diarrhea, they will carry the majority of the burden.

## No-one will be immune, but the poorest children will be at particular risk

Malnutrition is an underlying cause in the death of 3.2 million children each year, and 178 million children suffer from malnutrition. Some of the countries with the highest rates of malnutrition in the world, including Bangladesh, Ethiopia, India and Vietnam, are also predicted to be some of the worst affected by climate fluctuation in the future.<sup>7</sup>

Not only will climate change affect the availability of food in some of the world's poorest countries, it's expected to push up food prices. This is particularly worrying for children from the poorest families, as access to food depends not only on its availability but more importantly on a family's ability to buy it. Poor families often spend up to 80% of their income on food, and even then, this is rarely sufficient to provide their children with a healthy and nutritious diet.

## SEVERE CLIMATIC EVENTS

Beyond the direct effects of climate change on disease and malnutrition, natural disasters – which already affect the lives of millions of people every year and pose unique threats to children's health and nutrition – are becoming more frequent and severe. This trend is predicted to continue and gain pace, with the number of disasters predicted to increase by as much as 320% in the next 20 years.<sup>8</sup> Save the Children estimates that over the same period, 175 million children



*Mahat, aged 18 months, is one of many children who are receiving treatment for malnutrition in drought-affected Wajir, north-east Kenya.  
Photo: Save the Children UK*

will be affected each year by the kind of natural disasters exacerbated by climate change.<sup>9</sup>

From the drought that is affecting around 25 million people across east Africa to the storms and floods affecting south-east Asia, the reality is that these events will take an increasing toll on children. In Wajir, north-east Kenya, where Save the Children is implementing an emergency nutrition programme, the failure of the rains again this year has been a devastating blow to a pastoralist community living on the edge of survival. Eighteen-month-old Mahat, one of many children receiving treatment, has been admitted to hospital on four separate occasions for malnutrition. Like many others, Mahat's family was relatively well-off until the prolonged drought: they used to have more than 50 cattle; now they have none. While doctors can treat Mahat's illnesses with antibiotics, the real problem is that there isn't enough food at home to help the child grow strong and fully recover. Mahat's mother breaks down into tears when asked what the future holds for her child.

Recent decades have seen severe drying in many parts of eastern Africa;<sup>10</sup> this is the fourth year in a row that this part of Kenya has experienced a severe drought. Climate projections show that across the world this is a reality for which, increasingly, we must prepare. The percentage of the earth's land mass that suffers from severe drought conditions has trebled in the last 10 years from 1% to 3%. This figure is predicted to be 8% by 2020, and no less than 30% by the end of the century.<sup>11</sup> Recurrent disasters undermine resilience and reduce a family's ability to cope and adapt to climate change in the long term. Unfortunately, without high levels of investment in disaster risk reduction and measures to help the poorest countries adapt to climate change, stories like Mahat's will become increasingly common.

While the research evidence linking climate change with child mortality is clear and mounting, there is still a lack of recognition and focus on the particular issues facing children at international, national and local

levels. Children must not be seen as victims, but they do face particular risks that must be recognised and addressed in policies and programmes that seek to reduce the impacts of climate change.

### **PROGRAMME AND POLICY RESPONSE**

The first step in addressing this challenge is to ensure that there is quality, disaggregated information on the impacts of climate change on children. This will help to inform programmes and policies to support adaptation, as well as bring the issue into the consciousness of governments and the public. Second, while children are one of the largest groups at risk from climate change, they are also an untapped resource in many countries in that they have a strong role to play in adaptation and risk reduction activities.

### **Children have played little role in causing climate change, but they will be hit the hardest; they should be steering children's adaptation**

Save the Children implements child-centred disaster risk reduction activities in more than 30 countries around the world, and our experience shows time and time again the key role children play in identifying appropriate activities, designing how they should be implemented and getting communities and other children involved so the risks associated with disasters are reduced. These sorts of interventions need urgently to be scaled up to ensure that children themselves can be in the driving seat for their own adaptation to climate change.

Other examples of best-practice interventions that have proven experience in tackling the issues faced by children include direct distribution of cash and vouchers to the poorest people to tackle malnutrition and build resilience. Investment to ensure that health systems including hospitals and clinics are "climate-proofed", so that they can withstand the impacts of climate change, is vital. It will also be necessary to ensure that the

international humanitarian system is fit for purpose, so that when national capacity to respond to a disaster is overwhelmed, international assistance moves quickly and effectively to reach the most-affected people.

At all times, it must be remembered that children have played little or no role in causing climate change. Yet they are the ones who will be hardest hit and will have to face its impacts in the years to come. We must all be ready to ensure that every child has the best chance of survival in a future altered by climate change. ■

**Ms Lydia Baker is Disaster Risk Reduction and Climate Change Adaptation Officer with Save the Children UK.**

<sup>1</sup> UNICEF, *The state of the world's children: Special edition celebrating 20 years of the Convention on the Rights of the Child*, 2009, <http://www.unicef.org/rightsite/sowc/fullreport.php>

<sup>2</sup> UNICEF, *The state of the world's children 2009: Maternal and newborn health*, 2008, pp 8–9

<sup>3</sup> A Costello *et al.*, "Managing the health effects of climate change: Lancet and University College London Institute for Global Health Commission", *The Lancet*, vol 373, no 9676, 2009, pp 1693–1733

<sup>4</sup> S Bartlett, "Children: A large and vulnerable population in the context of climate change", *IIED*, for Expert Group Meeting on Population Dynamics and Climate Change, UNFPA, IIED *et al.*, June 2009

<sup>5</sup> UNICEF, 2008, *op. cit.*

<sup>6</sup> Intergovernmental Panel on Climate Change (IPCC), *Fourth assessment report: Climate change 2007, Impacts, adaptation and vulnerability*

<sup>7</sup> World Bank, *Convenient solutions to an inconvenient truth: Ecosystem-based approaches to climate change*, Environment Department, 2009

<sup>8</sup> M Webster *et al.*, *The humanitarian costs of climate change*, Feinstein International Center, 2008

<sup>9</sup> Save the Children, *Legacy of disasters*, 2007

<sup>10</sup> J Bader & M Latif, "The impact of decadal-scale Indian Ocean sea surface temperature anomalies on Sahelian rainfall and the North Atlantic Oscillation", *Geophysical research letters*, 30 (22), 2003

<sup>11</sup> The Met Office Hadley Centre, *Effects of climate change in developing countries*, November 2007



# LIMITING WARMING TO BELOW 1.5°C – A MATTER OF SURVIVAL FOR THE MOST VULNERABLE

*The task of limiting warming to below 1.5°C by 2100, and bringing CO<sub>2</sub> concentrations back below 350 ppm, will be difficult, argues Bill Hare, but it remains physically, technically and economically feasible – and is critical to saving key human and natural systems.*

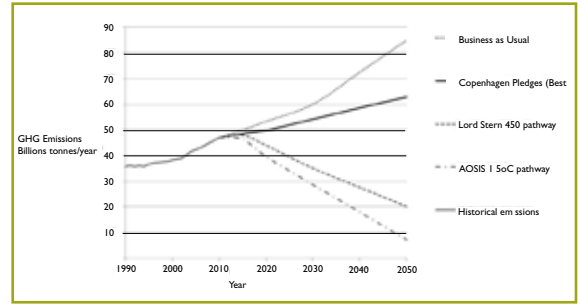
One of the battlegrounds in the Copenhagen negotiations is the question of what should be the global warming limits that prevent dangerous climate change. The most vulnerable countries have been calling for the most stringent limits on global warming and hence the most rapid emission reductions. These limits are being challenged by some as infeasible or impracticable, and in this article we briefly look at the justification and feasibility of the stance taken by the Alliance of Small Island States (AOSIS), the Least Developed Countries (LDCs) and a number of others.

More than 80 countries that collectively make up AOSIS and the LDCs are calling for global warming to be limited to below 1.5°C above pre-industrial levels, and for carbon dioxide (CO<sub>2</sub>) concentrations to be reduced to below 350 parts per million (ppm) as soon as possible. This group of countries represents about 12% of the global population and constitutes only about 1.2% of the world's emissions (from 2005 data). In the context of the Copenhagen negotiations, these countries are calling for the adoption of emission reductions

that would have a good chance of achieving these goals: a peak in global greenhouse gas emissions by 2015 (as indicated by the IPCC in its *Fourth assessment report*), and a reduction by 85% from 1990 levels by 2050. For the industrialised countries, a 40% to 45% reduction by 2020 from 1990 levels and 95% reductions by 2050 is being called for. Developing countries (or, in the parlance of the United Nations Framework Convention on Climate Change, Non-Annex I countries) would need to reduce by 20% to 30% below business-as-usual levels by 2020.

Contrasted against this position is the 2°C warming limit called for by the major emitting countries, including the European Union, the United States, China and others. To give effect to this limit, global emission reductions targets of 50% by 2050 have been put forward, along with a call for the stabilisation of greenhouse gas concentrations at around 450 ppm CO<sub>2</sub> equivalent. However, such an emission pathway and long-term concentration goal would give only about a 50% chance of limiting warming to 2°C, with little chance of bringing warming back to 1.5°C or below. Indeed, stabilisation of greenhouse gas concentrations at around 450 ppm CO<sub>2</sub> equivalent would result in at least a 90% chance of exceeding 1.5°C warming above pre-industrial levels.

Even though a global warming limit of 2°C above pre-industrial levels has been widely endorsed, including at the G8 meeting in June 2009 and at the associated Major Economies Forum the same month, it is clear that 2°C is not “safe” and would not prevent dangerous climate change from affecting many regions. This level of warming poses large, and in many cases unacceptable, risks to key vulnerable natural and human systems – in particular to the LDCs and Small Island Developing States (SIDS). Several metres of sea-level rise over centuries cannot be excluded if there is a sustained global 2°C temperature rise. Global warming

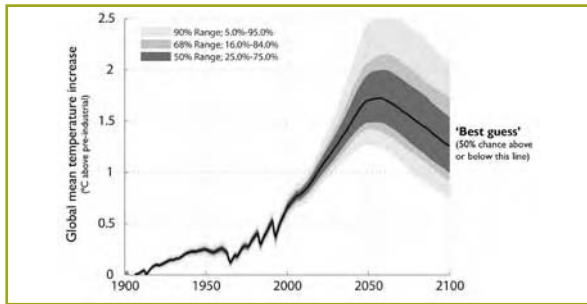


**Figure 1: A range of emission pathways**  
Emissions of greenhouse gases will continue to rise unless strong action is taken. At present the best of all of the pledges on the table when put together (second from top) would only slow the rise in greenhouse gas emissions. Emission pathways that would peak by 2020 and start a long-term reduction towards 50% by 2050, such as that put forward by Lord Stern in the Major Economies Forum (second lowest), would not be fast enough to limit warming to 1.5°C. The lowest of the emission pathways is that put forward by AOSIS and the LDCs.

above 1.5 °C, the associated sea-level rise, and ocean acidification due to the level of CO<sub>2</sub> in the air, will cause accelerating economic damages, loss of territory, droughts, floods and loss of species. A temperature increase above 1.5°C would also significantly exacerbate natural disasters, which are likely to become larger, occur simultaneously and in regions that had not experienced extreme disasters previously or at the same time or intensity. At a warming above 1.5°C and by around 2°C, 10–15% of land species assessed will be likely to be committed to extinction.

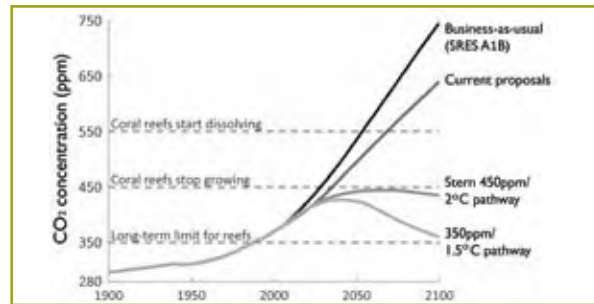
**It is clear that 2°C is not “safe” – it poses large, unacceptable risks**

Limiting warming below 1.5°C would bring greater certainty in avoiding the worst impacts of climate change. It will reduce, though not eliminate, major risks and damages to SIDS and LDCs, and will still require major support from the international community for adaptation. Limiting warming below 1.5°C will reduce significantly the risk of sea-level rise, giving coasts and atolls breathing space to adjust. We know that the risks of climate change will rise rapidly in the most vulnerable regions with increasing global mean temperature. One of the main findings of the IPCC's *Fourth assessment report* is that it is “very likely” that climate change will slow the pace of progress toward



**Figure 2: Global mean temperature scenarios**

This figure shows the likely path of global mean temperature increases should the AOSIS 1.5°C pathway be followed, with a peak in emissions around 2015 and a decline to 85% below 1990 levels by 2050. A peak warming above 1.5°C is unlikely to be avoided due to the large burden of warming already loaded into the system due to historical greenhouse gas emissions; however with deep emissions reductions the global temperature increase should peak by the 2050s and drop to 1.5°C before 2100. The dark line shows the “best guess” estimates from a consideration of a full range of climate system uncertainties, and the shaded region shows the probability range for temperature increases given the assumed emission pathway.



**Figure 3: Coral reef threat scenarios**

Rising CO<sub>2</sub> concentration will acidify the world’s oceans, causing threats to all calcifying marine organisms including coral reefs, which in turn would harm fisheries. Business-as-usual and current proposals for action in Copenhagen would bring CO<sub>2</sub> concentrations above the level that recent scientific work identifies would lead to the cessation of coral reef growth within a few decades, and to the point where coral reefs dissolve shortly after the 2050s. Emission pathways that would limit warming to 2°C would not return CO<sub>2</sub> concentrations back to 350 ppm, a level identified as a long-term limit for coral reef survivability in a recent assessment.

sustainable development over the next half-century, when a warming of over 2°C is expected to exacerbate poverty and impede the achievement of the Millennium Development Goals.

Even at the current 0.8°C warming above pre-industrial levels, significant impacts are already being observed globally, including increased spread of vector-borne diseases, more intense floods, droughts, heat waves and intense storms, as well as the first effects of rising seas on coastal communities in low-lying regions. Damages to homes and communities from sea-level rise, salt water intrusion on agricultural lands and destruction of fresh water supplies are occurring in many small islands. Shoreline erosion and flooding has caused major damage to roads, public utilities and households, and salt water damage to agricultural crops and the fresh water lens has caused severe food and fresh water shortages in a number of low-lying islands. In Africa, which is one of the most vulnerable regions to climate change, we are already seeing some of the expected effects of increased drought intensity and strain on water resource capacity, due to global warming aggravated by existing developmental challenges such as poverty, governance and institutional issues, limited access to capital, eco-system degradation and conflicts.

### FEASIBILITY OF 1.5°C

Whilst there can be no doubt that the task of limiting warming to below 1.5°C by 2100, and bringing CO<sub>2</sub>

concentrations back below 350 ppm, will be difficult and challenging, it is also clear based on present scientific understanding that it remains physically, technically and economically feasible to do so. The most recent generation of low-emission scenarios published since the IPCC’s *Fourth assessment report* in 2007 indicate that the total integrated cost over the next century would be less than 2% of global GDP.<sup>1</sup> Put another way, this would delay the economic growth that would otherwise have occurred by a couple of years at the most. Bringing CO<sub>2</sub> concentrations back to 350 ppm will be very difficult on any meaningful time scale, and if it is to be achieved within the next hundred years will require in the latter half of the century technologies that take CO<sub>2</sub> from the air and store it under the ground. Such technologies are not yet deployed, however we have good grounds for believing that they will work and we have several decades in which to develop and begin deploying them.

If we are to have a better than even chance of limiting warming to below 1.5°C, or even a very high chance of limiting warming to below 2°C, what happens at Copenhagen will be quite fundamental. In recent years, every major scientific report on the subject has argued that further delay in reducing emissions comes with escalating risk of rapidly rising damages in the future or of added economic costs to mitigation. Most recently, the International Energy Agency in its 2009 *World energy outlook* argued:

*“Saving the planet cannot wait. For every year that passes, the window of the action on emissions over a given period becomes narrower – and the costs of transforming the energy sector increase ... each year of delay ... would add approximately \$500 billion to the global incremental cost...”<sup>2</sup>*

As of mid-November 2009, the current proposals for emission reductions in Copenhagen by the developed countries add up to only 8–12% below 1990 levels by 2020 after accounting for forestry credits.<sup>3</sup> These targets are well short of the 25% to 40% reductions indicated as necessary by the IPCC for an even chance of limiting warming to below 2°C, and far short of the 45% requested by the poorest and most vulnerable countries for a decent chance of limiting warming to below 1.5°C. ■

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<sup>1</sup> S Rao, K Riahi et al., *IMAGE and MESSAGE scenarios limiting GHG concentrations to low levels*, Laxenberg, IIASA, 2008; B Knopf, O Edenhofer et al., *D-M2.6 Report on first assessment of low stabilisation scenarios. Adaptation and Mitigation Strategies (ADAM): Supporting European Climate Policy* (project co-funded by the European Commission within the Sixth Framework Programme (2002–2006), Potsdam Institute for Climate Impact Research (PIK), 2008, p 44

<sup>2</sup> <http://www.worldenergyoutlook.org>, p 14

<sup>3</sup> <http://www.climateactiontracker.org>



# CLIMATE CHANGE AND FOOD SECURITY IN THE 21<sup>ST</sup> CENTURY

*Resource scarcity trends, including climate change, point to a future “food crunch”, but we now have a moment of opportunity to agree on a global food security strategy, asserts Alex Evans. This must include not only a climate change deal, but a major shift in agricultural practice.*



World Vision's food security project in Laos helps poor households reduce their dependence on wet season rice, teaching new farming techniques to improve crop yields and introducing alternative income-generating activities.

Photo: Albert Yu/World Vision

Global food prices have eased significantly from their record highs in the first part of 2008, as commodity markets have weakened with the world-wide economic downturn. However, this does not mean that policy-makers around the world can breathe a sigh of relief. For one thing, even at their somewhat diminished levels current prices remain acutely problematic for low-income import-dependent countries and for poor people all over the world.

The World Bank estimates that higher food prices have increased the number of under-nourished people by as many as 100 million, and the UN Food and Agriculture Organisation puts the global total of under-nourished people at over a billion. Looking to the medium and longer term, moreover, food prices are poised to rise again.

## RESOURCE SCARCITY TRENDS

Although many policy-makers have taken a degree of comfort from an OECD-FAO report on the world's agricultural outlook to 2017,<sup>1</sup> which argued that food prices would shortly resume their long-term decline, this report largely overlooked the potential impact of long-term resource scarcity trends – notably climate change, energy security and falling water availability.

These trends, together with competition for land and higher demand resulting from increasing affluence and a growing global population, represent a major challenge for global food security.

**Climate change** (discussed in more detail below) will result in an increase of 40–170 million in the number of under-nourished people world-wide, according to the Intergovernmental Panel on Climate Change. While higher average temperatures may, up to a point, lead to yield increases in higher latitudes, lower latitudes (where most developing countries are located) will start to see negative impacts immediately. Increases in the frequency and severity of extreme weather and climate-driven water scarcity also will affect food production, as will the need to reduce greenhouse gas emissions from

agriculture, which accounts for as much as 32% of emissions.

**Energy security** also affects food prices in multiple ways, from fertiliser prices, on-farm energy use and transport costs, to using crops to produce bio-fuels – the single most important driver of food price increases in recent years. While oil prices have fallen dramatically since the summer of 2008, prices are set to rebound sharply when the world emerges from the downturn – pulling food prices up with them.

**Water scarcity** is likely to be among the most serious impacts of climate change. Half a billion people live in countries chronically short of water; by 2050, exacerbated by unsustainable water usage, that number will rise to more than four billion. Agriculture, which accounts for 70% of global fresh-water use, will be particularly vulnerable.

**Competition for land** is likely to become a major problem. To meet rising global demand for food, increased acreage will be needed, but demand for land for other uses – such as bio-fuels, timber, carbon sequestration, forest conservation and city expansion – is also intensifying.

**Demand for food**, finally, will rise over coming decades as world population increases towards 9.2 billion in 2050. Growing affluence and rising expectations mean that ever more people are eating “Western” diets rich in meat and dairy products, increasing demand for crops as animal feed. The World Bank projects that by 2030, world-wide demand for food will increase by 50%.

There is therefore a real risk of a “food crunch” at some point in the future, which would fall particularly hard on import-dependent countries and on poor people everywhere. But this outcome is not inevitable. Instead, policy-makers should use the current easing in food prices as a moment of opportunity in which to identify and agree on a global food security strategy. Beyond aiming to increase world food production dramatically, it must aim to make the world's food production and distribution systems more resilient, more sustainable and more equitable. To this end, in my report *The feeding of the nine billion* I offered ten key recommendations for



action on agriculture, agricultural trade, an emergency global food security system, and (recommendation 10) a comprehensive global deal on climate change [the focus of this excerpt].

## AGRICULTURE AND CLIMATE

Since the last major swing in the earth's climate some 11,500 years ago, humans have lived in unusually stable times, which have proved highly conducive for agriculture. Today, this relative stability is at risk, with the earth likely to warm by 0.2°C per decade for the next twenty years, and by between 0.6° and 4.0°C by the end of the century, depending on future emissions. What does this mean for food production?

**Higher temperatures** can be seriously detrimental to agricultural productivity. A major study at the International Rice Research Institute in the Philippines in 2004, for example, found that "grain yield declined by 10% for each 1°C increase in growing-season minimum temperature."<sup>2</sup> The 2007 IPCC *Fourth assessment report* states that in low-latitude regions "even moderate temperature increases (1–2°C) are likely to have negative yield impacts for major cereals",<sup>3</sup> while effects on crop yields could be positive in higher latitudes (such as North America) at least in the early decades of the century. William Cline of the Center for Global Development underlines a further significant unknown: the extent to which increased concentrations of CO<sub>2</sub> in the atmosphere will cause a "carbon fertilisation" effect that could increase crop yields (plants use CO<sub>2</sub> in photosynthesis, and higher CO<sub>2</sub> levels reduce plants' water loss through respiration). For most developing countries, Cline finds unambiguously negative results: Africa faces 17% lower yields with carbon fertilisation and 28% without; Latin America, 13% lower with and 24% without; and in India, the range of possibility is between –30% and –40%.<sup>4</sup>

**Changes in water availability** will be another highly significant impact of climate change on agriculture, and will also expose hundreds of millions of people to additional water stress during this century. More than a sixth of the world's population live in river basins fed by glaciers or snowmelt, and are likely to see more flow in winter

and less in summer.<sup>5</sup> Sea-level rise will reduce freshwater availability in coastal areas through salinisation of groundwater and estuaries. Increased variability and intensity of rainfall will increase the risk of floods and droughts, and again, current models predict more rain at higher latitudes, and less in the tropics.<sup>5</sup> The impacts of these changes will vary widely. In Africa, between 75 million and 250 million people are likely to be exposed to additional water stress by 2020, and yields from rain-fed crops in some countries could be reduced by up to 60%. By the 2050s, freshwater availability in Central, South, East and South-East Asia is projected to decrease.<sup>6</sup>

**Sudden-onset weather shocks** will have further impacts on agriculture. Principal among these will be extreme weather events such as hurricanes and floods, which in 2008 (Cyclone Nargis, for example) had major impacts on agricultural yields.<sup>7</sup> Significantly, extreme weather events are often overlooked in estimates of the effect of climate change on agricultural yields.

**Agriculture's own emissions** have a significant impact on climate change: food and agriculture are responsible for up to 32% of man-made greenhouse gas emissions if deforestation is also included. Given that total emissions will need to fall by as much as 85% by 2050 (even more in developed countries, under an equitable global regime), agriculture will have to play its part.<sup>8</sup> Agriculture is likely to need to become a net sink for emissions rather than a net source of them. Planting trees or making increased use of bio-char as a form of carbon sequestration is one way to achieve this; improving land and soil management is also critically important.

## THE OUTLOOK

Many highly populous developing countries face strongly negative impacts on agriculture even over the next few decades, and catastrophic impacts over the longer term. In the short term, adaptation to climate change will be crucial for their food production and food security. But without adequate, and early, emissions reduction, there is a real long-term possibility of climate change impacts

being so severe that adaptation *in situ* becomes effectively impossible for the majority of people in these countries.

Globally, the effects of climate change on agriculture are uncertain, but the long-term outlook for aggregate global yields is more uniformly negative under "business-as-usual" emission scenarios. Thus, the outlook for global food production is contingent on the agreement and implementation of a comprehensive global deal to stabilise greenhouse gas concentrations at a safe level – even as agriculture itself faces the significant challenge of becoming a net "negative emitter". Achieving these demanding goals will require major shifts, both within agriculture and beyond it. The fact that the history of agriculture is so full of creativity and innovation gives real grounds for hope about prospects for feeding nine billion people even as climate change makes itself felt; but the scale of the challenge means that sustained action can be put off no longer. ■

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<sup>4</sup> W Cline, *Global warming and agriculture: Impact estimates by country*, 2007, Washington DC: Center for Global Development

<sup>5</sup> Z W Kundzewicz et al., "Freshwater resources and their management", *Climate change 2007: Impacts, adaptation and vulnerability*, op. cit., 2007, pp 173–210

<sup>6</sup> IPCC, *Climate change 2007 (Fourth Assessment Report): Synthesis report summary for policy-makers*, Geneva, 2007

<sup>7</sup> World Bank, *Double jeopardy: Responding to high food and fuel prices*, Working paper presented at G8 Hokkaido-Toyako Summit, 2 July 2008

<sup>8</sup> IPCC, *Change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (eds B Metz et al.), 2007



# THE RISKS OF DOING NOTHING

*Delaying action will mean more severe climate change, and escalate the costs of adaption and mitigation, argues Will Steffen.*

Many challenges await humanity in December in Copenhagen, when the global community gathers to come to grips with climate change in earnest. A central theme will be equity issues – the industrialised countries are largely responsible for the carbon dioxide in the atmosphere today while the developing countries are bearing the brunt of the impacts of climate change.

Meanwhile, science is painting a clearer picture of the risks that lie ahead if the Copenhagen negotiations fail and human-driven climate change is allowed to continue unabated over the coming decades. In a word, the message from science to the negotiators is “urgency”.

In many ways the climate system is moving faster now than we had thought likely a decade ago, and faster than the middle-of-the-range climate model projections suggest. For example, the rate of accumulation of carbon dioxide in the atmosphere has increased since 2000 due to growth in the global economy and the relative weakening of the natural processes that absorb carbon dioxide from the atmosphere.

Warming of the ocean, which absorbs the vast majority of the extra heat at the Earth’s surface due to

increasing greenhouse gases in the atmosphere, also has increased over the past few decades. Ocean heat content has risen particularly sharply since the late 1990s. Sea-level rise, in part due to the thermal expansion of warming ocean water, also has increased in rate, from 1.6 millimetres per year in the 1961–2003 period to 3.1 mm per year in the 1993–2003 sub-period. The higher rate has continued unabated through the most recent measurements to 2008.

## The message from science to the Copenhagen negotiators is “urgency”

The world’s ice realms also are changing rapidly. Arctic sea ice is being lost at a rate faster than any model has predicted. In the last 15 years the Greenland ice sheet has gone from being in balance – the rate of melting and disintegration balanced by the accumulation of snow in the interior – to a net loss of about 200 cubic kilometres per year. More recently, the Antarctic ice sheets also have shown net losses in mass.

Global air temperature, too, is rising as expected. Despite considerable year-to-year and even decadal variability, the long-term trend is unmistakably upwards. Thirteen of the 14 warmest years ever recorded since the instrumental record began around 1850 have occurred since 1995.

The rate at which the world’s climate is now shifting towards a warmer future carries significant risks for contemporary society, and especially for developing countries and for Australia. Of all of the world’s industrialised countries, Australia is probably the most vulnerable to the consequences of climate change, or “climate disruption” as it is increasingly called, and thus shares many of the same climate threats with its neighbours in the Asia–Pacific region.

Sea level is expected to rise by an additional 50 centimetres to one metre by 2100 relative to 1990; levels somewhat more than one metre cannot be ruled out. A sea-level rise of “only” 50 centimetres would increase the frequency of flooding events associated with high tides and storm surges by 100-fold at many places along Asia–Pacific coastlines.



*Cyclone Nargis hit Myanmar in 1998 leaving 138,000 people dead or missing, flattening homes, destroying farm animals and rice fields and leaving millions of people without the basics. Reviving livelihood activities in small villages was key to bringing back the Delta in its entirety. One year on, Maung, 16, was back trolling Bogale’s largest tributary for fish with his father.*

Photo: Khaing Min Htoo/World Vision

The future viability of many low-lying islands in the Pacific and Indian oceans is now in question, and some small island states may have to be abandoned towards the end of this century. Many of Asia's largest cities are situated on low-lying river deltas, and are very vulnerable to even modest rises in sea level. A sea-level rise of one metre by 2100 will bring serious impacts for over 600 million people.

Increasing absorption of carbon dioxide by the ocean is increasing its acidity, which, coupled with rising sea surface temperature, is putting stress on corals. The Great Barrier Reef, the world's largest coral-dominated eco-system, may well be largely converted to algae beds by the second half of the century. For Australia, the largest impacts will be on the tourism industry, but the impacts on food supplies will be severe for many developing countries that depend on coral eco-systems for fish protein.

## RISKS TO HUMAN HEALTH

The health and well-being of humans is directly threatened by global warming. Temperature-related extreme events, such as heat waves, lead to a higher death rate, with the very young, the elderly and the poor most vulnerable. Higher temperatures also increase the risk of extreme events, such as the massive bushfire that devastated large parts of Victoria, Australia, in February 2009.

Already, water resources are being affected by climate change. The north-western area of China and the southern part of Australia are both aridifying, with implications for food production in both countries. That there is a link between these drying trends and climate change is becoming more likely with ongoing research efforts. In addition, the glaciers and ice caps in the Himalayan mountains, which serve as a massive water storage facility for many of the big Asian rivers, are melting rapidly and will almost surely disappear completely around the middle of the century. This will have significant impacts on the water resources of about two billion people in Asia's most populous countries.

The severity of these doom-and-gloom projections, of course, assumes that human-driven emissions of greenhouse gases will continue unabated for several decades at least. Much has been written about the perceived high costs of reducing greenhouse gas emissions; making this the primary focus contributes to inaction and to a possible realisation of these doom-and-gloom projections.

However, the prevailing economic thought globally has shifted strongly, to a recognition that the costs of inaction far outweigh the costs of abatement. Delaying action means more severe climate change with escalating adaptation and impacts costs. Delay also locks in carbon-emitting infrastructure, such as coal-fired power plants, and makes emission reductions in future much more costly.

The news from the engineering community is even better. Society already has many technologies, such as a suite of renewable energy systems, that can quickly and effectively reduce greenhouse gas emissions. Their costs are dropping rapidly, and novel approaches such as "smart grids" are facilitating their deployment. Both rich and poor countries need to benefit from such technologies.

The challenge of climate change is indeed complex – spanning science, technology, economics, public policy, history, psychology, systems analysis, public health, development and much more. The broad knowledge base required to meet the challenge is expanding rapidly, giving hope that society is approaching a turning point in the transformation to a low-carbon future. But there is no time to lose in getting to that turning point. ■

**Professor Will Steffen is the Director of the Australian National University's Climate Change Institute (<http://www.anu.edu.au/climatechange>). This article is adapted from an article that was published in *The Canberra Times* on 27 July 2009.**

## Further reference



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- Climate change series** (World Vision Australia, 2009):
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- ▶ **Real Climate** <http://www.realclimate.org>
- ▶ **Climate denial crock of the week** <http://tinyurl.com/CimateDenialCOTW>
- ▶ **The 350 campaign** – a movement to unite the world around solutions to the climate crisis. <http://www.350.org>
- ▶ **Climate Action Network** – a worldwide network of over 450 Non-Governmental Organizations (NGOs) working to promote government and individual action to limit human-induced climate change to ecologically sustainable levels. <http://www.climateactionnetwork.org>
- ▶ **The Copenhagen diagnosis** (I Allison *et al.*, The University of New South Wales Climate Change Research Centre (CCRC), Sydney, Australia, 2009) <http://www.copenhagediagnosis.org>
- ▶ **Global Carbon Project** <http://www.globalcarbonproject.org/carbonbudget>

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# GLOBAL SUICIDE PACT OR GLOBAL SURVIVAL PACT?

*This address was given by His Excellency Mohammed Nasheed, President of the Maldives, at the inaugural session of the Climate Vulnerable Forum on 9 November 2009.*

“Your Excellencies, distinguished guests, ladies and gentlemen, we gather in this hall today, as some of the most climate-vulnerable nations on Earth. We are vulnerable because climate change threatens to hit us first, and hit us hardest. And we are vulnerable because we have modest means with which to protect ourselves from the coming disaster. We are a diverse group of countries. But we share one common enemy.

For us, climate change is no distant or abstract threat; but a clear and present danger to our survival. Climate change is melting the glaciers in Nepal. It is causing flooding in Bangladesh. It threatens to submerge the Maldives and Kiribati. And in recent weeks, it has furthered drought in Tanzania, and typhoons in the Philippines. We are the frontline states in the climate change battle.

Developing nations did not cause the climate crisis. We are not responsible for the hundreds of years of carbon emissions, which are cooking the planet. But the dangers climate change poses to our countries, means that this crisis can no longer be considered somebody else’s problem. Carbon knows no boundaries. Whether we like it or not, we are all in this fight together. For all of us gathered here today, inaction is not an option. So, what can we do about it?

To my mind, whatever course of action we take must be based on the latest advice of climate scientists. Not on the advice of politicians like us.

As Copenhagen looms, and negotiators frantically search for a solution, it is easy to think that climate change is like any other international issue. It is easy to assume that it can be solved by a messy political compromise between powerful states. But the fact of the matter is, we cannot negotiate with the laws of physics. We cannot cut a deal with Mother Nature. We have to learn to live within the fixed planetary boundaries that nature has set. And it is increasingly clear that we are living way beyond those planetary means.

Scientists say that global carbon dioxide levels must be brought back down below 350 parts per million. And we can see why. We have already overshoot the safe landing space. In consequence the ice caps are melting.

The rainforests are threatened. And the world’s coral reefs are in imminent danger.

Members of the G8 rich countries have pledged to halt temperature rises to two degrees celsius. Yet they have refused to commit to the carbon targets, which would deliver even this modest goal. At two degrees we would lose the coral reefs. At two degrees we would melt Greenland. At two degrees my country would not survive. As a president I cannot accept this. As a person I cannot accept this. I refuse to believe that it is too late, and that we cannot do any about it. Copenhagen is our date with destiny. Let us go there with a better plan.

**We cannot cut a deal with Mother Nature; we must learn to live within the fixed planetary boundaries**

When we look around the world today, there are few countries showing moral leadership on climate change. There are plenty of politicians willing to point the finger of blame. But there are few prepared to help solve a crisis that, left unchecked, will consume us all. Few countries are willing to discuss the scale of emissions reductions required to save the planet. And the offers of adaptation support for the most vulnerable nations are lamentable. The sums of money on offer are so low, it is like arriving at a earthquake zone with a dustpan and brush. We don’t want to appear ungrateful but the sums hardly address the scale of the challenge.

We are gathered here because we are the most vulnerable group of nations to climate change. The problem is already on us, yet we have precious little with which to fight. Some might prefer us to suffer in silence but today we have decided to speak. And so I make this pledge today: we will not die quietly.

I believe in humanity. I believe in human ingenuity. I believe that with the right frame of mind, we can solve this crisis. In the Maldives, we want to focus less on our plight, and more on our potential. We want to do what is best for the planet. And what is best for our economic self-interest. This is why, earlier this year, we announced

plans to become carbon-neutral in ten years. We will switch from oil to 100% renewable energy. And we will offset aviation pollution, until a way can be found to de-carbonise air transport too.

To my mind, countries that have the foresight to green their economies today will be the winners of tomorrow. They will be the winners of this century. These pioneering countries will free themselves from the unpredictable price of foreign oil. They will capitalise on the new, green economy of the future. And they will enhance their moral standing, giving them greater political influence on the world stage.

Here in the Maldives we have relinquished our claim to high-carbon growth. After all, it is not carbon we want, but development. It is not coal we want, but electricity. It is not oil we want, but transport. Low-carbon

technologies now exist, to deliver all the goods and services we need. Let us make the goal of using them.

A group of vulnerable, developing countries committed to carbon-neutral development would send a loud message to the outside world. If vulnerable, developing countries make a commitment to carbon neutrality, those opposed to change have nowhere left to hide. If those with the least start doing the most, what excuse can the rich have for continuing inaction?

### Few countries are willing to discuss the scale of emissions reductions required to save the planet

We know this is not an easy step to take, and that there might be dangers along the way. We want to shine a

light, not loudly demand that others go first into the dark. So today, we want to share with you our carbon neutral strategy. And we want to ask you to consider carbon neutrality yourselves. I think a bloc of carbon-neutral, developing nations could change the outcome of Copenhagen.

At the moment every country arrives at the negotiations seeking to keep their own emissions as high as possible. They never make commitments, unless someone else does first. This is the logic of the madhouse, a recipe for collective suicide. We don't want a global suicide pact. And we will not sign a global suicide pact, in Copenhagen or anywhere.

So today, I invite some of the most vulnerable nations in the world, to join a global survival pact instead. We are all in this as one. We stand or fall together. I hope you will join me in deciding to stand.” ■

*His Excellency Mohammed Nasheed is President of the Republic of the Maldives.*

## ANNOUNCEMENT

Dear Readers,

As we mentioned in the previous edition, this is the final edition of *Global Future*.

We thank you for your readership and feedback.

To stay in touch with us regarding future publications, please contact us at [global\\_future@wvi.org](mailto:global_future@wvi.org) and let us know your e-mail address.

sincerely,  
Marina and Heather  
The *Global Future* editorial team



## Communities restoring forests, capturing carbon

### ETHIOPIA

"The poor do not have the necessary technology and resources, in terms of money and so on, to be able to change and adapt ... We can only succeed to adapt to climate change if we fight poverty effectively and generate the resources needed for the purpose."

– Ethiopian Prime Minister Meles Zenawi, at a national climate change conference in Addis Ababa, 16 January 2009<sup>1</sup>

**“**Ethiopia is one of the poorest nations in the world, with a per capita gross domestic product (GDP) of just \$US177 per annum. Agriculture accounts for nearly half of GDP and employs the vast majority of the population.<sup>2</sup> The country is prone to periodic droughts and floods; natural resources are scarce and extreme poverty is rife. Environmental degradation is a major contributor to poverty. Over-exploitation of forest resources has left less than 3% of Ethiopia's native forests untouched. Chronic food insecurity has resulted in malnutrition being responsible for more than half of all deaths among children under age five.<sup>3</sup> Climate change exacerbates these major challenges to sustained poverty reduction in Ethiopia.

The Humbo district is located about 420 kilometres south-east of the Ethiopian capital, Addis Ababa. Of the nearly 49,000 people in

Humbo, an estimated 85% live in poverty. High population density, variable rainfall, environmental degradation and an over-reliance on maize has meant that the area experiences chronic food shortages. Poverty, hunger and increasing demand for agricultural land have driven local communities to over-exploit their once plentiful forest resources. This deforestation threatens groundwater reserves that provide 65,000 people with potable water.

Soil erosion is also a severe problem in Humbo. Heavy rain events regularly cause lowland areas to flood, and in extreme events, mudslides kill people and livestock and damage crops and infrastructure. In Humbo, increased rainfall in the highlands and cyclone activity due to climate change will worsen soil erosion, flooding and mudslides, while prolonged drought conditions will be exacerbated in lowland areas. Recurrent droughts and floods create poverty traps for many households, constantly thwarting efforts to build up assets.

#### CREATING A “CARBON SINK”

World Vision saw an opportunity to pilot an innovative forestry project in Humbo under the Kyoto Protocol's Clean Development Mechanism (CDM). The CDM allows industrialised countries to invest in projects that reduce emissions in developing countries to supplement their domestic carbon reduction efforts. To be approved, CDM projects must prove that those particular emissions would not have been reduced without the additional incentive of the carbon credits produced. After two years of consultation, planning and negotiations, the Humbo Community-based Natural Regeneration Project was born, becoming Ethiopia's first Land Use, Land Use Change and Forestry carbon trading initiative.

The Humbo project involves the regeneration of 2,728 hectares of degraded forests with indigenous, bio-diverse species. These forests act as a “carbon sink”, absorbing and storing greenhouse gases from the atmosphere to mitigate climate change while building environmental, social



Global  
VOICES OF LIFE FROM ARO

“we never expected to see so much growing from these rocky, barren slopes”

When a preliminary review of forestry activities was conducted in July 2008, a common sentiment was expressed by a community member: “We are too much happy. We never expected to see so much grass growing from these rocky, barren slopes, to see trees growing so quickly or to harvest firewood so early in the programme.” ■

**Reported by Mr Tony Rinaudo, Natural Resource Management Advisor, Mr Joseph Kihika Kamara, Country Programme Co-ordinator for Ethiopia, and Mr Paul Dettman, Carbon Credit Advisor, World Vision Australia.**

and economic resilience. Over the 30-year crediting period, it is estimated that over 870,000 tonnes<sup>4</sup> of carbon dioxide equivalent will be removed from the atmosphere, making a significant contribution to mitigating climate change.

Over 90% of the Humbo project area is being reforested using low-cost Farmer-Managed Natural Forest Regeneration (FMNR). When farmers fell trees for wood, a series of live tree stumps are left which each sprout multiple shoots. The farmers decide which of these shoots to keep and cut away the excess, giving the selected shoots room to grow. To supplement the FMNR reforestation, newly established tree nurseries are also raising over 450,000 seedlings each year to restore the forest where no living tree stumps remain.

#### MANY BENEFITS OF FOREST RESTORATION

The regeneration of the Humbo forest is producing tangible benefits for local communities. Forest restoration has resulted in increased production of wood and tree products, including honey, medicine, fibre, fruit and wildlife. Improved land management has stimulated grass growth, providing fodder for livestock that can also be cut and sold as an additional source of income.

Reforestation is also reducing land degradation and soil erosion. Water infiltration is improving, resulting in the recharging of ground water and a reduction of flash flooding. Crops surrounding reforested areas benefit through modification of the microclimate – reduced wind speed, lower temperatures, higher humidity and greater infiltration of water into the soil. Eventually, it is hoped that carbon credits will provide a supplementary income stream for the community.

<sup>1</sup> IRIN, Poverty hampers climate change adaptation, says PM, 16 January 2009, <http://www.irinnews.org/report.aspx?ReportId=82409>

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<sup>4</sup> UNFCCC, Clean development mechanism project design document form for afforestation and reforestation project activities, (CDM-AR-PDD) Version 04, August 2008



**Facing page** – One of many Humbo residents who have expressed joy at the results of the project

**Above** – Young girls from the Humbo region

**Background** – Over 90% of this area does not need replanting from nursery stock; forest regeneration in Humbo is taking place almost entirely through the selection and pruning of existing tree stumps. Only one year into the programme, rapid re-vegetation is occurring on the Humbo Mountain

Photos: Tony Rinaudo/World Vision

## Reducing flood and storm vulnerability

### VIETNAM

“Over the past 15 years, Vietnam has made significant progress in alleviating poverty and working towards the Millennium Development Goals. Vietnam is now one of the fastest-growing economies in south-east Asia, but this new-found affluence is largely limited to the major cities. In rural areas, many people still live with chronic poverty, relying on subsistence agriculture for their livelihoods.

With a long coastline and densely populated river deltas, Vietnam has a long history of dealing with natural disasters. On average there are six to eight typhoons each year, and flooding occurs frequently in river deltas and low-lying areas.<sup>1</sup> The rural poor are particularly vulnerable to natural disasters because they have limited infrastructure to protect them in extreme weather events, and rely on the natural environment as their primary source of income.

#### A THREAT TO DEVELOPMENT

Climate change is now emerging as a significant threat to Vietnam's development. Impacts of climate change are already becoming apparent:

- Summers have become hotter in recent years, with average monthly temperatures increasing 0.1–0.3°C per decade.
- Heavy rain, droughts and floods are becoming more frequent.<sup>2</sup> In 1996 and 2001 alone, extreme flooding in Vietnam's Red River Delta, Mekong Delta and Central Region caused damage to houses, schools, hospitals, paddy fields and other assets estimated at \$680 million.<sup>3</sup>
- The human cost has been severe and is likely to rise. The floods of 1996 and 2001 caused more than 1,600 deaths<sup>3</sup> and diseases such as dengue fever, malaria and avian flu are all likely to spread.<sup>3</sup>

According to World Bank projections, Vietnam will also be among the top five countries most affected by rising sea levels.<sup>3</sup>

In response to this situation, World Vision is working in the Mo Duc and Duc Pho districts of Quang Ngai province to strengthen community resilience to natural disasters, and to reduce vulnerability by diversifying income sources. World Vision Vietnam's project aims to reduce storm and flood vulnerability in 10 communes where agriculture and aquaculture activities are particularly at risk during the typhoon season. Key activities include:

- developing household and hamlet Disaster Risk Reduction Plans (DRRP)



to strengthen the capacity of communities to deal with natural disasters;

- engaging children in school-based disaster preparedness programmes, because children are often most at risk when natural disasters hit;
- promoting diversified income sources to reduce the impact on livelihoods from losing crops or fishing equipment in extreme weather events – alternative income-generating activities include animal husbandry, fish sauce production, fish farming, mushroom production, broom making, and vegetable cultivation;
- establishing a revolving fund managed by the Vietnam Women's Union in co-operation with World Vision to help households increase their flood-preparedness – foundations have been raised, beams fortified, roofing tied down or replaced and walls strengthened to make dwellings much more resistant to the impact of storms and floods; and

**Top** – Children in Duc Loi; World Vision supports school-based disaster preparedness programmes, because children are often most at risk when natural disasters hit

**Background** – Infrastructure improvements, such as this new dyke, have had a major effect in managing and reducing the impacts of floods

**Facing page** – Making fish sauce, an alternative source of income

Photos: World Vision Australia



- making basic community infrastructure more resilient to natural disasters, and providing motor boats, life buoys, electricity generators and early warning systems for communities.

### REDUCING VULNERABILITY

The project has reduced the vulnerability to natural disasters of thousands of people in Quang Ngai.

Disaster Risk Reduction Plans have been pasted onto boards in easily visible sites in 41 hamlets. More than 570 teachers and 5,700 students have received disaster risk reduction training in school-based interventions, and 10 Commune Rescue Teams and 100 hamlet facilitators have received training in first aid and disaster risk reduction planning.

Equipment provided to Commune Rescue Teams was crucial in allowing them to respond effectively when Typhoon Xangsane struck in 2006. More than 2,500 families have been assisted through loans to diversify and improve their incomes.

Some 41 villages have built a range of infrastructure facilities capable of withstanding storms and floods, such as daycare centres, medical stations, concrete bridges and rural roads. Infrastructure improvements have had a major effect in managing and reducing the impacts of floods. Kindergartens, health centres and schools have been able to stay open during the storm season, and are also used as evacuation and temporary shelter during heavy floods. And the revolving fund has provided almost 1,000 households in 50 hamlets with funds to make homes more disaster-proof, thus reducing the need for evacuations in extreme weather events.

As one participant from Duc Minh, whose husband is away working for extended periods of time commented, "After the house was repaired, my children and I feel very safe and happy. We do not worry whenever a storm or flood comes."” ■

Reported by Mr Stephen Collins, World Vision Australia's Country Program Coordinator for Vietnam, Mr Nguyen Dinh Kien, Project Manager for World Vision Vietnam, and Mr Pham Quoc Anh, Regional Manager for the southern Vietnam region, World Vision Vietnam.

“now we do not worry  
when a storm  
or flood comes”

<sup>1</sup> United Nations Development Programme (UNDP), *Human development report 2007/2008 – Fighting climate change: Human solidarity in a divided world*, 2007, [http://hdr.undp.org/en/media/HDR\\_20072008\\_EN\\_Complete.pdf](http://hdr.undp.org/en/media/HDR_20072008_EN_Complete.pdf)

<sup>2</sup> IPCC, *Fourth assessment report: Working Group II, "Impacts, Adaptation and Vulnerability"*, Chapter 10, 2007, <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter10.pdf>

<sup>3</sup> Asian Development Bank (ADB), *The economics of climate change in South East Asia: A regional review*, 2009, <http://www.adb.org/Documents/Books/Economics-Climate-Change-SEA/PDF/Economics-Climate-Change.pdf>





# SMOKE, MIRRORS AND ECONOMICS

*Dire warnings of economic catastrophe are preventing strong action on climate change. Once the implications of the science are grasped, however, these arguments make little economic sense, explains Brett Parris.*

There are at least six reasons why, far from ruining our economies, strong action on climate change is in fact critical for the world's economic prosperity and political stability:

## **1. Conventional economic estimates of the “costs” of addressing climate change are small.**

The Intergovernmental Panel on Climate Change (IPCC) noted that by 2030 the costs of an emissions path to stabilise emissions at 445 parts per million carbon dioxide equivalent (445 ppm CO<sub>2</sub>-eq)<sup>1</sup> would be at most around a 3% decrease in global gross domestic product (GDP), compared to a baseline projection where there was no action (and no climate change). So at worst, strong action would cost about one year's economic growth.<sup>2</sup>

The Australian Treasury similarly found that reducing emissions to 24% below 1990 levels by 2020 would shave just 0.1 percentage points off annual real per capita economic growth – implying that Australians would have to wait until 2054 to be as rich as they would otherwise have been in 2050.<sup>3</sup> Note that these “reductions” are not reductions from current income levels, but slight reductions below projections of much higher incomes.

Are there reasons to doubt these results? Yes – but those doubts make the case for action even more compelling.

## **2. The conventional estimates of the “costs” of addressing climate change are not the net costs.**

Economists use baseline projections of gross national product (GNP) growth as a benchmark against which the “costs” of mitigating climate change can be compared. But these baselines rarely take into account the impacts of climate change on the economy. For example, the *OECD environmental outlook to 2030* noted that its analysis only shows the impact of the economy on the environment, and not vice versa:

*“It does not, however, reflect the environmental impact back on the economy. Failing to provide this fully integrated picture has two implications. First, the Baseline fails to reflect GDP loss from environmental damage, so GDP*

*projections may be higher than are justified. Second, since without that feedback environmental policy will always show a loss of GDP, there is a misleading implication that environmental policy always decreases welfare.”<sup>4</sup>*

The Australian Government's report similarly notes: “The modelling does not include the economic impacts of climate change itself, so does not assess the benefits of reducing climate change risks through mitigation.”<sup>5</sup>

Projections for economic growth that ignore the impacts of climate change cannot be used to assess the net costs and benefits of mitigation measures. To do so is like deciding whether or not to hose down a burning house purely on the basis of the cost of the water, ignoring the fact that the house is on fire.

## **It's like basing the decision whether to hose down a burning house purely on the cost of the water**

## **3. Much economic analysis tends to grossly under-estimate the likely costs of unmitigated climate change.**

Most economic analysis of climate change simply presumes that strong economic growth will continue regardless of any impacts climate change might have on economies and societies.

But economic models are rarely well integrated with climate, political and financial models, so they cannot examine things like the effects of famines and mass migrations on the stability of governments, or the likelihood of conflict and the impacts it might have on investment decisions and financial markets. Neither can they account for the impacts of sea-level rise on coastal property values, financial markets and insurance markets.

It is also often assumed by economists that sea-level rise represents a slow, progressive inundation that is relatively straightforward to manage. But the storm surges which accompany tropical storms can often be 5–7 metres high. Periodic inundations

by storm surges have been to the order of 9–28 times more expensive than permanent inundation, due to factors such as repeated re-building and repair costs and higher insurance costs.<sup>6</sup> Since many of Asia's major coastal cities (including Manila, Jakarta, Kolkata, Mumbai, Dhaka, Karachi, Bangkok and Shanghai) are vulnerable to sea-level rise and storm surges, the economic costs of unmitigated climate change are likely to be far higher than most conventional economic analysis would suggest.

The geo-political implications of water and food security projections, in Africa and in Asia, are also extremely serious. The glaciers of the Himalayas and the Tibetan Plateau are the source for several of Asia's most important rivers, yet many of these glaciers are melting, with temperatures on the Tibetan Plateau rising three times faster than the global average for the last 50 years.<sup>7</sup>

Increased glacier melt in the next 20 to 30 years is likely to increase flooding, including sudden and catastrophic glacier lake outburst floods. But by the late 2030s, some river flows are likely to decrease dramatically as the glaciers shrink. By the 2050s more than a billion people in Central and South Asia could be suffering significant water shortages, and crop yields could decrease by 30%.<sup>8</sup>

There are enormous humanitarian and security implications if, as expected, water shortages spread across southern Africa, the Mediterranean basin, Turkey, Israel, Lebanon, Syria, Iraq, Iran, the Caucasus, Pakistan, Afghanistan, India and parts of China. Water shortages and declining crop yields in the face of rising populations would in turn lead to widespread food shortages, which would be likely to trigger large movements of people and potentially major armed conflicts with staggering humanitarian and economic costs. Again, economic models tend to ignore these factors.

#### **4. Industries tend to over-estimate the costs of adjustment to emissions reduction policies.**

Another reason for the dire warnings of economic disaster from emissions reductions is because

the affected industries have every incentive to over-estimate the impacts: in order to persuade governments to be less stringent with regulations and more generous with assistance packages. It is instructive to analyse, then, what actually happened to industries in the past when similar measures were introduced.

In California, for example, vehicle manufacturers over-estimated the costs of their compliance with new efficiency regulations by between two and ten times, due mainly to unanticipated technological innovations which lowered compliance costs.<sup>9</sup>

While fighting the introduction of a new law, companies have every incentive to over-state the compliance costs. Once a new law is introduced, resources are at least partially switched to innovating to minimise compliance costs below what was envisaged.

#### **5. Economists tend to ignore low-probability high-impact possibilities.**

Much economic analysis relies on the "average" projections – the

"most likely" events. But very high-impact events are also possible, with probabilities far greater than events like being hit by a bus (for which we routinely take out insurance!). When these risks are given their proper weight in the analysis, strong action to rein in emissions looks eminently sensible.<sup>10</sup>

### **We are on track for around 6°C of warming; the word "catastrophe" hardly begins to capture the consequences**

This point is further reinforced by the fact that scientists are now warning that we are currently on track for around 6°C of warming, and that even higher temperatures are possible this century.<sup>11</sup> The word "catastrophe" hardly begins to capture the consequences of warming anywhere close to 6°C, since it would render many irreversible high-impact events no longer "low probability" but guaranteed.

#### **6. Current markets and industrial structures are distorted by two centuries of misleading price signals.**

*Repair costs should be considered when measuring the impact of climate change. Residents of Barangay Santa Teresa in the municipality of Malillipot, Albay, in the Philippines, repair their bridge following a typhoon in 2007.*  
Photo: Maria Socorro Melic/World Vision





Sreymom Koy, 13, holds a bunch of peanuts that she and her family harvested. Economic Opportunity for the Poor (EOP) is a project under the Food and Water Security programme of World Vision Cambodia, which aims to address problems, such as environmental challenges, by replacing traditional monoculture crop cultivation with multi-production through integrated farming systems. Photo: Sopheak Kong/World Vision

Some policy-makers and elected officials are concerned that measures to address climate change could be “market-distorting” and therefore “inefficient”. This perspective rests on an unspoken assumption that the current market environment is efficient, or could be made so by further deregulation.

In fact, the entire problem of anthropogenic (human-caused) climate change has stemmed from the most colossal market failure in history: the failure of prices to reflect the true costs of emissions for the last 200 years. Markets and industrial structures are currently distorted by this long-term market failure and by subsidies to emission-intensive fuels and industries.

Today, new low-carbon industries are trying to establish themselves and compete with established emissions-intensive industries on a playing field that is severely distorted in favour of heavy emitters. It is entirely appropriate that a raft of policy measures be used to correct this distortion.

Such measures should include market-based measures, but in the context of an already highly distorted market, policy-makers should not assume that other regulatory measures are “market-distorting”.

Regulatory measures such as higher-efficiency standards,

subsidies for low-emission renewable technologies, public investment in network infrastructure and so on would, in fact, help to make the market more efficient by correcting the built-in distortions and by enabling the price signals the market sends to better reflect the true costs of emissions.

### We are witnessing the emergence of a clean industrial revolution with thousands of new jobs being created

#### GOOD ECONOMIC REASONS

As the true costs of greenhouse gas emissions come to be better reflected in prices, and as energy efficiency standards are tightened, we are witnessing the emergence of a clean industrial revolution with thousands of new jobs being created. Many of these are labour-intensive, blue-collar jobs in both rural and urban areas: building new distributed renewable energy systems and smart power grids, retrofitting buildings and homes, building new mass transit infrastructure, and installing renewable energy systems at large and small scales.

In view of the staggering economic and humanitarian risks of weak emissions reductions, the Least Developed Countries (LDCs) and the Alliance of Small Island States (AOSIS) have called for efforts consistent with warming of no more than 1.5°C and 350 ppm CO<sub>2</sub>-eq. Given the risks that failure would bring, there are good economic reasons for other countries to support them in this call. Indeed, economic opportunities abound for those countries and those companies with the vision to invest in the low-carbon future needed to avert disaster. ■

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<sup>1</sup> CO<sub>2</sub>-eq is a measure of the warming impacts of the most important greenhouse gases expressed in terms of the equivalent concentration of CO<sub>2</sub> alone.

<sup>2</sup> IPCC, “Summary for policymakers”, in *Climate change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change eds. B Metz et al.; Cambridge University Press, Cambridge, 2007, pp 11–12

<sup>3</sup> Australian Government, *Australia's low pollution future: The economics of climate change mitigation*, Canberra, October, 2008, p xii

<sup>4</sup> OECD, *OECD environmental outlook to 2030*, OECD, Paris, 2008, p 513

<sup>5</sup> Australian Government, *op. cit.*, p xi

<sup>6</sup> J A Michael, “Episodic flooding and the cost of sea-level rise”, *Ecological economics*, vol 63, no 1, 15 June 2007, pp 149–159

<sup>7</sup> J Qiu, “The third pole”, *Nature*, vol 454, no 7203, 24 July 2008, pp 393–396

<sup>8</sup> IPCC, “Summary for policymakers”, in *Climate change 2007: Impacts, adaptation and vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, eds. M L Parry et al., Cambridge University Press, 2007, p 13

<sup>9</sup> R Hwang & M Peak, “Innovation and regulation in the automobile sector: Lessons learned and implications for California's CO<sub>2</sub> standards”, April 2006, [http://docs.nrdc.org/air/files/air\\_08030301A.pdf](http://docs.nrdc.org/air/files/air_08030301A.pdf)

<sup>10</sup> M L Weitzman, “On modeling and interpreting the economics of catastrophic climate change”, *Review of economics and statistics*, vol 91, no 1, February, 2009 pp 1–19

<sup>11</sup> A P Sokolov et al., “Probabilistic forecast for twenty-first-century climate based on uncertainties in emissions (without policy) and climate parameters”, *Journal of climate*, Vol. 22, No. 19, October, 2009, pp 5175–5204



# WHY CLIMATE CHANGE MATTERS FOR CHILDREN

*Christopher Shore explains how the effects of climate change undermine the basics of child well-being – water, food, health and nutrition, and safety.*

Children are of central importance for World Vision. We describe ourselves as a child-focused organisation. We measure our relief and development impact through specific child well-being outcomes: “Girls and boys enjoy good health, are educated for life, are cared for, are protected, and participate in decisions that affect their lives.”

Does climate change truly matter for children’s well-being? It matters enormously, for both today’s and tomorrow’s generations of children. Today’s children are already experiencing climate change. And without robust action to reduce the emissions and concentrations of greenhouse gases, we can expect that future generations of children will experience it increasingly profoundly.

Simply put, climate change affects the natural environment that children live in, and this in turn affects their economic, social and political environments. In development terms, the effects of climate change will undermine first the physical drivers of child well-being – children’s water, food, health and nutrition, and physical safety – and then the socio-economic drivers.

## WATER

One of the biggest impacts on children’s environment concerns water. Rainfall patterns are already changing, and are expected to change more over time. In some places we see less rainfall (such as Kenya). In other places we see rainfall coming at unexpected times or in more intense events (as in 2009 typhoons in Asia). And in some places we see more rainfall (such as floods in deserts of West Africa). Cultivation of rice, a daily staple for millions upon millions of poor children, is highly sensitive to irrigation timing. Unpredictable rains can be deadly if farmers cannot adapt quickly and effectively to the new patterns, and if children and their families run out of food or the nutritionally balanced mix of foods.

When rains that were once predictable over three months now come in three weeks of downpours, rainwater catchment and management systems often cannot cope, and need to change.

## Climate change threatens our progress towards making this a better world for children

Glaciers are the fresh water reservoir for billions of people, gathering water in the winter, and releasing it through the summer via streams and rivers on their way to the oceans. We are seeing glaciers melt at alarming rates all around the world – in the short term causing flooding and the associated health and safety problems for the vulnerable, including children (since many poor families live on marginal land like flood plains); in the long term, diminished glaciers mean serious water shortages.

For children’s health and survival, they need sustainable access to sufficient amounts of clean, pure water. Climate change puts that at risk.

## TEMPERATURE

Rising temperatures also will have dire effects upon children in the developing world. They pose a food security risk, as some important

and productive food crops like maize and soybeans dramatically decline in yield as temperatures pass about 30 degrees celsius, while some food plants require a certain number of cold nights in order to flower. Extreme heat events, such as hotter and longer heat waves, can take living organisms to the edge of their capacity; not only do they wreak havoc on plants and animals, but for children weakened by hunger or disease, they can be fatal.

As a result of melting glaciers and ice sheets, and thermal expansion of the oceans, we are also seeing sea levels rise, causing flooding, destruction of farmland, salinisation of drinking water, and a host of other problems. Storms are becoming more intense, and coastal storm surges are causing destructive flooding and deaths. Vulnerable children and families are already being forced out of low-lying and coastal areas, as their homes and livelihoods become untenable.

## DISEASE

These environmental changes are likely to bring a significant increase in disease – in humans, animals and plants. Children in Nairobi and Harare, cities built above the mosquito line, are now experiencing one of the great child killers – malaria – as warmer temperatures allow the disease to move into new areas. With lack of clean water, diarrhea will flourish. Again, food supply will alter as plants and animals experience changed disease patterns.

By undermining the physical drivers of child well-being – water, food, health and nutrition, and safety – climate change threatens our progress towards making this a better world for children. Unless we make dramatic changes in our energy and consumption patterns, we doom future generations of children to a world that is far worse. ■

*Mr Christopher Shore is Director of World Vision International’s Climate Change Response Initiative.*



# DISASTERS AND POVERTY: CAN THE VICIOUS CIRCLE BE BROKEN?

*Even as disasters become more frequent and severe, argues Margareta Wahlström, the systematic application of risk reduction measures can reverse some of the worst vulnerabilities – if it mobilises poor communities and draws on their own knowledge.*

In June 2009, 153 governments, 138 international organisations from the United Nations system, international and national NGOs, representatives of science and others met in Geneva for the second Global Platform for Disaster Risk Reduction. This is a voluntary forum that works to reduce the impact of disaster events on individuals, communities and countries; and to promote learning, implementation and action for reducing risk. The meeting issued a strong call for concrete action in five major areas:

- the application of disaster risk reduction approaches to immediately get started on adaptation to climate change;
- drastically increased investment in disaster risk reduction, recognising that risk is reduced at local level by local governments working alongside the communities and civil society;
- full commitment to empowering and resourcing local action;
- special attention to making schools and hospitals safer – assessing all facilities in highly risk-prone areas by 2011 followed by a plan of action to improve the buildings by 2015; and

- a call to stop short-lived pilot projects and instead invest in viable and sustainable programmes.

## A PARADIGM SHIFT

All of the Global Platform's work is aligned with the Hyogo Framework for Action. The Framework was launched in 2005 – just weeks after the Indian Ocean tsunami, with its deadly consequences, resulted in a paradigm shift. The tsunami had a profound impact even thousands of kilometres away, among communities not living in high-risk areas themselves, and has continued to shape our emotional and social perspective of disasters.

A further driver of change in attitude to disasters has taken place with the recognition and identification by science that climate change is having a damaging effect on the earth – causing more frequent and more extreme climatic events, environmental hazards, and economic and other repercussions. While a large mainly scientific community has worked for more than 30 years to systematically gather facts and knowledge in order to reduce the impact of disasters, it now seems that the recognition of climate change's impact has been the real trigger for major change. Indeed, it offers opportunities for political and community leadership that have rarely been available until now.

The UN First Global Assessment Report for Disaster Risk, *Risk and poverty in a changing climate*, was issued in May 2009.<sup>1</sup> Based on the analysis of data from 7,000 disaster events over the past 37 years, the report gives irrefutable evidence for what every disaster response practitioner knows well: that disasters are happening more frequently, that the poor people (in both poor and rich countries) suffer most from disasters, and that their long-term livelihood is threatened by repeated localised disaster events that undermine the modest wealth generated by increasing income and efforts to eradicate absolute poverty in many countries.

The report also demonstrates that in all parts of the world, risk and exposure to disaster events are increasing, and that governments' capacity to reduce risk cannot keep



*Through mutual trust and co-operation, and sharing their wisdom, grassroots community groups can help each other face the challenges that climate change brings. Kenyan farmers, both women and men, have been trained in new farming techniques by a World Vision Food-for-Assets Programme. "Aside from the things we learned in the training, we became more united because we work together," said Evans Mumba, chairman of the farming group. "Before, we were indifferent to each other, now if one is in trouble or needs support, we all help."*

Photo: Cecil Laguardia/World Vision

pace with the increasing risk; hence, the costs of disasters are increasing drastically. In an average year, 85–90% of all disasters are related to weather events, and water or lack of water. Floods are the single most costly disaster category given their frequency and severity: they cause at least 50% of the economic losses recorded annually.

### WHO WILL BEAR THE COSTS?

From this it is very obvious that the impact of global warming and climate change will continue to increase our vulnerability as societies, and as our societies become more wealthy, the cost of disaster events increase. Those countries and populations that already are most exposed to disasters will also be the first to suffer the impact of the ongoing shifts in weather impact related to floods, high winds and associated geo-hazards such as landslides. Many – even most – of the most exposed countries have large populations living in poverty, and several countries are large, rapidly growing and expanding economies.

While we are yet in the early stages of fully comprehending the impact of the changing climate on economies, the estimates indicate huge costs for adaptation and potentially huge costs for disasters. Who will carry the burden of these costs? For example, there are indications that with even the conservative two-degree increase in average temperatures, the agricultural output in India could fall by 25%. Globally the number of poor people living on less than \$1.25 a day could increase from 1 billion to 1.5 billion due to the impact of climate on production and labour. Essentially, such impacts would reverse the significant achievements of the poverty reduction Millennium Development Goal targets, and drive many people back into poverty.

### Risk reduction can roll back the destructive scenario

Is this scenario irreversible, or can we change the pace and direction of the unfolding events? A recent report from a group that includes a

major global re-insurance company, *Shaping climate-resilient development*,<sup>2</sup> shows how the systematic application of risk reduction measures in agricultural irrigation practices, and in monitoring and oversight, protection of infrastructure, water management and other well-known practices, could in fact roll back this entire destructive scenario. The study demonstrates that through reducing the risks and the cost of response to the associated disasters and providing safeguards against future losses, productivity will not drop but rather will increase.

### MOBILISING COMMUNITIES

Such a change in business practices requires a change of perspective and approach. There is the opportunity to tackle both disasters that reinforce poverty and those that increase the number of poor people, through working in a manner that mobilises communities and draws on their keen knowledge of the opportunities and obstacles to take preventive and mitigating measures.

Many millions of poor women are an enormous untapped potential for action and for development of new resources. Through their innovations, their creativity in finding income sources for survival, their work to care for their families, to ensure their children get education, through their determination and sheer will power, they are rapidly changing the balance of work and wealth generation. Our vision must be to recognise these women, to ensure that resources are available to them, to engage them directly in measures and action for local-level risk vulnerability reduction.

I have just had the privilege to visit and listen to large groups of women engaged in self-help groups in southern India. Their creativity and energy to tackle their considerable daily challenges is a source of inspiration to us all. They have found that their most effective and efficient tool for change is themselves: through their groups built on mutual trust, and through assuming political or community leadership roles.

But they are acutely aware that their livelihoods are deeply threatened by the irregularity and unpredictability of rainfall and cropping seasons. They ask to be part of the solution to the

challenge of adaptation to the weather and climate conditions. To do that, they must have access to, and participate in creating, the body of knowledge that will enable and empower whole countries to adapt. Let us recognise their role, and let us all demonstrate a will and determination for concerted action such as these women and community actors have already demonstrated. ■

**Ms Margareta Wahlström is the United Nations Special Representative of the Secretary-General for Disaster Risk Reduction.**

<sup>1</sup> *Climate risk and poverty in a changing climate: Invest today for a safer tomorrow*, [http://www.preventionweb.net/english/hyogo/gar/report/documents/GAR\\_Prelims\\_2009\\_eng.pdf](http://www.preventionweb.net/english/hyogo/gar/report/documents/GAR_Prelims_2009_eng.pdf)

<sup>2</sup> *Economics of Climate Adaptation Working Group, Shaping climate-resilient development: A framework for decision-making, 2009*, <http://www.preventionweb.net/english/professional/publications/v.php?id=11138>



# SHIFTING TO PRO-POOR, LOW-CARBON GROWTH

*Saleemul Huq and Muyeye Chambwera argue that for developing countries, pro-poor low-carbon growth is likely to have positive net benefits – including a bridging of the development gap between rich and poor.*

Climate change and poverty are the biggest challenges confronting the world and both require urgent attention. Current economic growth based on high greenhouse gas emissions is not sustainable, and will worsen the plight of the poor. But poor countries rightfully argue that economic growth helps them fight poverty, and they cannot afford to stop pursuing economic growth in order to reduce greenhouse gases. Low-carbon growth is emerging as a key option for the world to meet its needs without generating adverse climate effects, but for poor countries, low-carbon growth strategies are only as good as they help them move out of poverty and adapt to climate change.

This is separate from the issue of mandatory greenhouse gas emission reductions. Industrialised countries are largely responsible for reducing greenhouse gases, or mitigation, as their present and past emissions eclipse those of poor countries. For instance, per capita carbon emissions in Zambia and Bangladesh are 0.2 tonnes and 0.9 tonnes respectively, while those of the United States and

the United Kingdom are 23.5 tonnes and 10.6 tonnes respectively.<sup>1</sup>

Emission levels by the very poor countries are so low that there is little or no room for reductions. Thus the interest of developing countries in low-carbon growth is not for them to meet any obligatory mitigation targets, but rather to meet their pressing needs.

A key consideration is that the pursuit of low-carbon growth does not inhibit growth or exacerbate poverty. Further, it should help reduce the gap between the rich and the poor within countries, and between rich and poor countries. Good low-carbon development also must lead to good adaptation.

## INCENTIVES AND OPPORTUNITIES

A stable global climate requires changing technologies and lifestyles, including energy sources and efficiency. Industrialised countries will make the largest changes because they have to climb down from high emission levels, by as much as 90% in some cases. Developing countries are already operating at low emission levels, and their shift to low-carbon pathways will involve small or no cuts for the poorest. Yet to be in line with the global technological trends and remain competitive, developing countries have to start considering and pursuing low-carbon growth pathways. Failure to do so may lock them in technologies that are being phased out and fast becoming obsolete, like old light bulbs that are being replaced by energy-efficient ones. They have an opportunity to make early moves towards industrial, livelihood and business practices that will be operational in a de-carbonised future. The energy efficiency associated with low-carbon pathways leads to large cost savings, such as in buildings that are designed for minimum energy use.

Low-carbon opportunities enable developing countries to jump the development barrier through clean technologies. These opportunities lie in areas that simultaneously accelerate development and reduce poverty. They include using solar, wind, geo-thermal, methane, water and other locally available resources, and improving the efficiency of existing technologies.

Recent studies<sup>2</sup> show that low-carbon energy access by poor

households helps to improve the lives of the poor and underpins the achievement of the Millennium Development Goals. Low-carbon growth that targets the poor in areas such as energy thus has potential to benefit up to 1.6 billion people who rely on fuelwood and two billion who have no access to electricity, with additional benefits such as health, education, transport and employment.

## Countries can change from being importers of fossil fuels to exporters of renewable energy

As industrialised countries seek to invest in low-carbon energy, developing countries have the opportunity to attract this investment. For example, Nigeria has signed an agreement with the European Union to explore non-oil-based development, with renewable sources (bio-mass, wind or solar) topping the list. German companies plan to invest US\$555 billion in solar power plants in northern Africa and sell the energy to Europe, thereby limiting Europe's dependence on oil and gas imports. Thus many developing countries can move from being importers of fossil fuels to exporters of renewable energy. Pursuit of low-carbon technologies in developing countries also enables them to access carbon markets.

## MAKING THE SHIFT PRO-POOR

Shifting to low-carbon growth pathways that benefit the poor requires identifying the poor and their needs, and targeting them appropriately. Making this growth broad-based involves making the poor active participants. The poorest often live in marginal rural areas or in informal urban settlements, commonly featuring livelihood insecurity, limited access to clean energy, and direct dependence on natural resources. Low-carbon development that addresses these issues lifts entire countries out of carbon dependence while reducing poverty. The poor are a large potential market that can be engaged by stimulating the development of technologies operating at their scale.

As countries make national assessments of the potential areas for



low-carbon investments, they need simultaneously to consider the distributional effects of these investments, especially how they will affect the poor and marginalised groups.

Broad-based approaches need to involve small and medium-sized businesses to promote technologies such as improved stoves, bio-gas, water pumps and other technologies that benefit poor households, and to scale them up to reach more people in rural and urban areas. This requires building the capacity of the poor to develop such small-scale enterprises and providing incentives for partnerships between communities and the private sector.

Participatory research and technology development targeting and involving poor communities lead to appropriate technologies being developed, and in turn to higher adoption rates. Similarly, developing countries that decide to shift to pro-poor carbon growth need to re-orient their education systems and curricula to reflect this, in areas such as engineering, agriculture and commerce.

Pro-poor approaches are effective in as far as they are supported by appropriate policies and institutions. Effective policies demonstrate countries' intentions to pursue pro-poor growth. These send clear signals to all development players, including investors, donors and those who design low-carbon technologies.

Policies should strengthen the rights and security of the poor, protect property rights and promote private investment. Similarly required are policies that promote multiple participation and break monopolies in energy development and provision. For example, allowing private players to use existing electricity distribution systems could stimulate the development of small hydro-electricity schemes that feed into the national grid while supplying local people with electricity.

The design of any investment agreements should reflect developing countries' deliberate pro-poor approach. These must be supported by clear guidelines for involving the poor as well as targets and indicators for pro-poor outcomes at project, programme and national levels.

## FINANCING PRO-POOR LOW-CARBON GROWTH

The shift to low-carbon growth that benefits the poor requires initial investment in national assessments, capacity building, setting up local enterprises, facilitating community-private partnerships and other initiatives. Potential funding sources include foreign direct investment, carbon finance, development assistance and UNFCCC climate funds, as well as countries' own internal resources.

The World Bank's Community Development Carbon Fund provides carbon finance while promoting community development. Hybrid business models are required, combining for-profit and not-for-profit. Many low-carbon initiatives are likely to be financially viable in the long term, and will attract private investments. Again, clear policy signals are also required to attract the different funding opportunities to developing countries with clear pro-poor low-carbon growth plans in place. ■



*In Ethiopia, Bilile Gurmu uses her solar cooker to prepare beans for dinner. She can use the solar cooker any time the sun is shining; it saves using logs and the time spent looking for them.*

*Photo: Jon Warren/World Vision*

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<sup>1</sup> J MacGregor & M Chambwera, "Room to move: 'Ecological space' and emissions equity", *IIED Sustainable development opinion*, 2007, <http://www.iied.org/pubs/pdfs/17023IIED.pdf>

<sup>2</sup> IIED, *Scaling up low carbon energy for the poor: Learning from the Ashden Awards for Sustainable Energy*, 2009, [http://www.ashdenawards.org/reports/low\\_carbon\\_energy](http://www.ashdenawards.org/reports/low_carbon_energy), report commissioned by the UK Department for International Development (DfID)

# the Back Pages

...spiritually speaking

## GOOD SAMARITANS ON CLIMATE ADAPTATION

*Knowing that climate change will hit the poor in poor countries hardest, and not doing what we can to help overcome their plight, is like passing by on the other side. We must be like the Good Samaritan.*

Climate change is a natural disaster intensifier. It makes floods fiercer, hurricanes harsher, and droughts drier. The one thing the world doesn't need are more victims of natural disasters. Like the father and his family during the 2005 Niger famine found hundreds of miles from the nearest feeding station, who told a journalist: "I'm wandering like a madman. I'm afraid we'll all starve." Or the mother during the same famine who lamented as she watched her young daughter die: "As far as I'm concerned, God did not make us all equal. I mean, look at us all here. None of us has enough food."<sup>1</sup>

One reason such stories should not simply touch us as compassionate individuals but rouse us as nations and as an international community is because of the scale of the impacts, which have important economic and security implications. Billions will be adversely impacted, so it's in our common interest to overcome the causes and consequences of climate change.

Given that these impacts will fall hardest on the poor in poor countries, those who have done least and yet will suffer the most, it should not surprise us that the Bible speaks to our responsibility to help them.

In several accounts in the Gospels people ask Jesus what is the greatest commandment in the Law. In effect, they were asking: if there is one thing our lives should be about, what is it? What is the most important thing in life?<sup>2</sup>

In reply, Jesus quotes from Deuteronomy 6:4–5, something that observant Jews of his time recited in the morning and in the evening: "Hear, O Israel, the Lord our God, the Lord is one. Love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength" (Mark 12:29–30). Jesus immediately adds: "The second is this: 'Love your neighbour as yourself,'" quoting Leviticus 19:18. To make things perfectly clear, Jesus adds: "There is no commandment greater than these."

Why does Jesus add the second commandment to love our neighbours as ourselves? He does so because you can't love God unless you love your neighbour, because while God loves you, He loves your neighbour, too. These two commandments joined together by Jesus are what the Church has called The Great Commandments, and from a Christian perspective they are what our lives should be all about.

At this point, according to the Gospel of Luke, one of the experts in the law asks Jesus a follow-up question: "And who is my neighbour?" This elicits one of the most memorable and loved of Jesus' stories, the parable of the Good Samaritan. A man was robbed, beaten and left to die beside a road. Two religious leaders, first a priest, then a Levite, saw him lying there but failed to help him; then a Samaritan saw him, and came to his rescue.

During Jesus' time Samaritans were considered by Jews to be heretical, treacherous half-breeds, and were regarded with utter contempt. By having the Samaritan be the one who demonstrated love by his actions, Jesus in effect says that **everyone** is our neighbour – even (or especially) others we hold in contempt. And furthermore, by having religious leaders fail to relieve the man's suffering, Jesus implied that those of us who think of ourselves as religious, as doing the right things to please God, had better think again.

Here is where this parable intersects with climate change.

The priest and the Levite were not the ones who robbed the man. But the essence of love is the presence of good acts, not simply the absence of bad ones. By passing by on the other side and not helping the man in the ditch, the priest and the Levite made his plight worse and failed to love God.

On the other hand, we today, collectively, are in fact making the plight of the poor worse through our contribution to climate change. And knowing their

plight and not doing what we can to help overcome it is like passing by on the other side – something no morally mature individual or nation can do. We must be Good Samaritans.

Part of rich nations acting like Good Samaritans when it comes to climate change is by providing sufficient funding and assistance to poor countries to help them do two things: (1) achieve sustainable and climate-friendly economic progress, and (2) adapt to the consequences by helping them enhance resilience and reduce vulnerability to climate impacts.

There are two complementary and sometimes overlapping ways to achieve adaptation, to enhance resilience and reduce vulnerability. The first is achieved by realising the poverty-reducing and democracy-increasing dimensions of freedom, something that traditional overseas development assistance (ODA) should be helping to foster. The second is achieved through projects, processes and mechanisms designed in whole or in part to address climate impacts. Both are needed. Neither can be neglected. Funding to help poor countries both mitigate/abate and adapt needs to be new and additional, in comparison to traditional ODA as required by the Bali Action Plan.

That the rich countries have a moral responsibility and opportunity to help the poor countries grow in a climate-friendly manner and adapt to the consequences of climate change, and to reduce our own greenhouse gas emissions, there is no doubt. We have the means. Let us now summon the moral will to be Good Samaritans on climate change. ■

**The Reverend Dr Jim Ball is Senior Director, Climate Campaign, for the Evangelical Environment Network, USA. <http://creationcare.org>**

<sup>1</sup> H Anderson, BBC, "Niger children starving to death," 20 July 2005, <http://news.bbc.co.uk/1/hi/world/africa/4695355.stm>

<sup>2</sup> See Mark 12:28–34; Luke 10:25–37; also Romans 13:9–10; Galatians 5:13–14; James 2:8; Deuteronomy 6:4–5; Leviticus 19:18. Biblical texts from *The Holy Bible*, New International Version, Zondervan Bible Publishers, 1978

**World Vision** is a Christian relief, development and advocacy organisation dedicated to working with children, families and their communities world-wide to reach their full potential by tackling the causes of poverty and injustice.

As followers of Jesus, World Vision is dedicated to working with the world's most vulnerable people. World Vision serves all people regardless of religion, race, ethnicity or gender:

Children are often most vulnerable to the effects of poverty. World Vision works with each partner community to ensure that children are able to enjoy improved nutrition, health and education. Where children live in especially difficult circumstances, surviving on the streets, suffering in exploitative labour, or exposed to the abuse and trauma of conflict, World Vision works to restore hope and to bring justice.

World Vision recognises that poverty is not inevitable. Our Mission Statement calls us to challenge those unjust structures that constrain the poor in a world of false priorities, gross inequalities and distorted values. World Vision desires that all people be able to reach their God-given potential, and thus works for a world that no longer tolerates poverty.

**back cover image:**

Ekidor and Lowosa care for their family's two remaining camels, taking them to dry river beds to feed on the vegetation there. But with little rain, there is practically nothing for the animals to eat. Their father says, "This place is so dry. We have to take the animals to greener pastures, but that's where the enemies are."

**photographer:**

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