# Climate Justice for a Changing Planet

## A Primer for Policy Makers and NGOs

UNITED NATIONS

NGLS
UN Non-Governmental Liaison Service

# Climate Justice for a Changing Planet: A Primer for Policy Makers and NGOs

by Barbara Adams and Gretchen Luchsinger

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Cover photo: © Yann Arthus-Bertrand / Altitude
Women carrying buckets in the Dogon region near Bandiagara, Mali (14°20' N, 3°37' W)
- www.yannarthusbertrand.org – www.goodplanet.org

Graphic 1: UN Development Programme (UNDP). 2008. *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World*. New York. [http://hdr.undp.org/en/media/HDR_20072008_EN_Complete.pdf]

Graphic 2: Pendleton, Andrew and Simon Retallack. 2009."Fairness in Global Climate Change Finance." Institute for Public Policy Research, London. [www.boell.org/downloads/fairness_global_finance.pdf]

Graphic 3: Friends of the Earth. 2009a. "A Dangerous Distraction: Why Offsets Are a Mistake the U.S. Cannot Afford to Make." [www.foe.co.uk/resource/briefing_notes/dangerous_distraction.pdf]

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# Acronyms

| | |
|---|---|
| BWIs | Bretton Woods Institutions |
| C | Celsius or Centigrade |
| CBD | Convention on Biological Diversity |
| CDM | Clean Development Mechanism |
| CERs | Certified Emissions Reductions |
| CIF | Climate Investment Funds |
| CITL | Community Independent Transaction Log |
| CMP | Conference of the Parties serving as the Meeting of the Parties |
| COP | Conference of the Parties |
| CO2 | Carbon Dioxide |
| CO2eq | Carbon Dioxide Equivalent |
| ERU | Emission Reduction Unit |
| ETS | Emissions Trading System of the EU |
| EU | European Union |
| FAO | Food and Agriculture Organization of the UN |
| FDI | Foreign Direct Investment |
| G-8 | Group of 8 |
| G-20 | Group of 20 |
| G-77/China | Group of 77 and China |
| GDP | Gross Domestic Product |
| GDR | Greenhouse Development Rights |
| GNP | Gross National Product |
| GEF | Global Environment Facility |
| GHG | Greenhouse Gas |
| GWP | Global Warming Potential |
| HDI | Human Development Index |
| IEA | International Energy Agency |
| IMF | International Monetary Fund |
| IPCC | Intergovernmental Panel on Climate Change |
| IPRs | Intellectual Property Rights |
| IPPR | Institute for Public Policy Research |
| ITL | International Transaction Log |
| JI | Joint Implementation |
| LDCF | Least Developed Countries Fund |
| LDCs | Least Developed Countries |
| LULUCF | Land-use, Land-use Change and Forestry |
| MDBs | Multilateral Development Banks |
| MDGs | Millennium Development Goals |
| NAPA | National Adaptation Programme of Action |
| NGLS | UN Non-Governmental Liaison Service |
| NGO | Non-governmental Organization |
| ODA | Official Development Assistance |
| OECD | Organisation for Economic Co-operation and Development |
| ppm | parts per million |
| PPP | Purchasing Power Parity |
| R&D | Research & Development |

| | |
|---|---|
| RCI | Responsibility and Capability Index |
| REDD | Reducing Emissions from Deforestation and Forest Degradation |
| SCCF | Special Climate Change Fund |
| SIDS | Small Island Developing States |
| SPA | Strategic Priority on Adaptation |
| TRIPS | Trade-Related Aspects of Intellectual Property Rights |
| UN | United Nations |
| UNCCD | UN Convention to Combat Desertification |
| UNCED | UN Conference on Environment and Development |
| UNDP | UN Development Programme |
| UNEP | UN Environment Programme |
| UNFCCC | UN Framework Convention on Climate Change |
| UNICEF | UN Children's Fund |
| WMO | World Meteorological Organization |
| WTO | World Trade Organization |
| WWF | World Wide Fund for Nature |
| WWI | Worldwatch Institute |

# Preface

There is little doubt that climate change will lead to unprecedented changes in the natural environment, which will in turn affect the way we live, with potentially dramatic consequences on our health, energy sources and food production systems.

There is also increasing recognition that these impacts are being felt disproportionately by poor people who already live under precarious conditions. Climate change, with its many facets, further exacerbates existing inequalities faced by these vulnerable groups. It threatens to undermine the realization of fundamental rights for many people and to reverse progress made towards the achievement of the internationally agreed development goals, including the Millennium Development Goals (MDGs). It is a global justice concern that those who suffer most from climate change have done the least to cause it.

The concept of climate justice acknowledges that because the world's richest countries have contributed most to the problem, they have a greater obligation to take action and to do so more quickly. However, many fear that whatever international agreement is reached between governments, it will compound the already unjust burden on the poor and vulnerable. A rapidly growing number of social movements and civil society organizations across the world are mobilizing around this climate justice agenda. Citizens from both the South and the North are drawn to this concept, in part, because many are already experiencing the impacts of climate change and they worry about the fate of their families, homes and livelihoods.

It is the role of NGLS to ensure that these voices and perspectives are brought to the table. These voices can help lead to more innovative forms of collaboration to address daunting global challenges. Our experience suggests that the solutions to the problems that we face as a planet will only succeed if they have both broad input and broad ownership from all stakeholders.

*Climate Justice for a Changing Planet: A Primer for Policy Makers and NGOs* examines how to move towards a climate justice agenda and to ensure that equity is at the core of any solution to climate change. It compiles the latest research and analysis made by several international organizations and by the aforementioned civil society movement, highlighting in particular the need for climate change to be addressed simultaneously with the furthering of the international development agenda, achieving poverty reduction goals and respecting international human rights norms. It clearly demonstrates that climate justice is not only an ethical imperative, but also an economic and social one.

Elisa Peter
Acting Coordinator
United Nations Non-Governmental Liaison Service (NGLS)
November 2009

*"Adaptation is becoming a euphemism for social injustice on a global scale. While the citizens of the rich world are protected from harm, the poor, the vulnerable and the hungry are exposed to the harsh reality of climate change in their everyday lives. Put bluntly, the world's poor are being harmed through a problem that is not of their making. The footprint of the Malawian farmer or the Haitian slum dweller barely registers in the Earth's atmosphere."*

*— Archbishop Desmond Tutu*

# Introduction
# Equity and Justice

*"Human beings are at the centre of concerns for sustainable development."*

*—1992 Rio Declaration on Environment and Development*

Climate change may be the most significant challenge the world faces today. It will affect everyone, regardless of geographical location or socioeconomic status. It may determine the way we produce food, our access to water, our health, where we live, and the diversity of plant and animal species. No other current concern can claim the scale of climate change – and the scope of the potential catastrophe if the world fails to act in time.

Climate change was originally perceived as mainly a scientific or environmental issue. While it does have a scientific basis and involves all aspects of the environment, it has emerged through the economic and political systems that govern the world today. These same systems are now charged with sorting out the threats from climate change. However, actions to date have fallen short, while global temperatures climb and the greenhouse gas (GHG) emissions that cause climate change continue to grow.

As a phenomenon that affects the whole world, climate change clearly warrants a comprehensive global response. While this has been the intent of international negotiations held on the subject, starting with the 1992 UN Framework Convention on Climate Change (UNFCCC), and continuing through the annual meetings of the Conference of the Parties (COP) to the convention, there has been an ongoing tendency to focus on some issues and interests, but not others.

One of the most fundamental gaps involves the equity dimensions of climate change. Climate change at its heart reveals the still stark divides in resources, development paths and emissions contributions between rich and poor nations, and rich and poor people within those nations. Almost all aspects of climate change can be traced along these lines: who has caused it, who can cope with it and how, who will survive and even benefit, and who will be hardest hit by its consequences.

Because of its magnitude, climate change shines a strong light on longstanding inadequacies in the way the world operates, politically and economically. The UNFCCC noted the inequities that have resulted and committed nations to reducing them. But since then, many disparities have deepened or gone unresolved. Contested international negotiations have produced partial solutions, not all of which have been fully implemented. Still missing is the crucial acknowledgement that no solution will work without equity at its core. A path of development and low emissions is possible for everyone – if extreme imbalances in development are evened out.

Equity is foremost a matter of justice and human rights, recognizing that groups that have benefited most from high levels of emissions in the course of their development are now called upon to ensure that other groups have equal opportunities to develop, within a framework of mutual efforts to slow the pace of climate change. The fact that some of the people with the lowest levels of emissions and development will suffer some of the most severe consequences of climate change must also be rectified.

Equity also fosters effectiveness and efficiency. Given a common goal – a livable planet – it ensures that resources, including financial and technical ones, go where they are needed most, not just where they are likely to produce profits. Efficiency comes from making the most appropriate choices now for the world as a whole, rather than delaying them until the consequences are more severe, expensive and difficult to fix.

Given the history of climate change negotiations to date, a position of equity is also pragmatic, because it will be the only way to strike a meaningful political consensus that will be viewed as fair and result in sustained action by most countries.

In recent years, the notion of "climate justice" has emerged as a way of encapsulating the equity aspects of climate change. Climate justice builds on a platform of equitable development, human rights and political voice. It is an agenda that seeks to redress global warming by reducing disparities in development and power that drive climate change and continued injustice. This implies transformative changes and the need to look beyond national boundaries to what is good for the world as a whole.

*Climate Justice for a Changing Planet: A Primer for Policy Makers and NGOs* considers how to move towards a climate justice agenda. It is designed for people engaged in climate change policy-making, whether through governments or non-governmental organizations (NGOs) as well as others interested in better understanding the current discourse. Chapter 1 explores international discussions on climate change through an equity lens, and takes a critical look at attempts to mitigate emissions. Chapter 2 examines four major gaps in equity – development disparities, vulnerable groups, global governance and finance – that must be central topics for climate justice policy advocacy. Chapter 3 introduces possible policy directions.

The booklet is premised on the notion that political will strong enough to forge a meaningful international consensus on tackling climate change can emerge – and transform both the content of decisions and how they are made. By definition, this process must uphold the basic principles, universally endorsed, of human rights to sustainable development, security and the shared resources of a common planet. The alternative: a patchwork response and worsening inequities in a steadily warming world.

# Chapter 1
# We've Come a Short Way

Climate change began in the rapid development spurred by the Industrial Revolution in the 19th century, although its effects are being felt today. In just under 20 years, the international community has formally recognized that climate change is taking place. It has agreed that greenhouse gas emissions must be mitigated and adaptation strategies put in place to shelter people from climate threats. Commitments to share technology and resources have been made.

But emissions continue to grow on an unsustainable scale. Most countries remain unequipped to cope with the rising incidence of extreme weather events and environmental shifts that directly impact development. Why has so little progress occurred?

## One or two degrees – or five

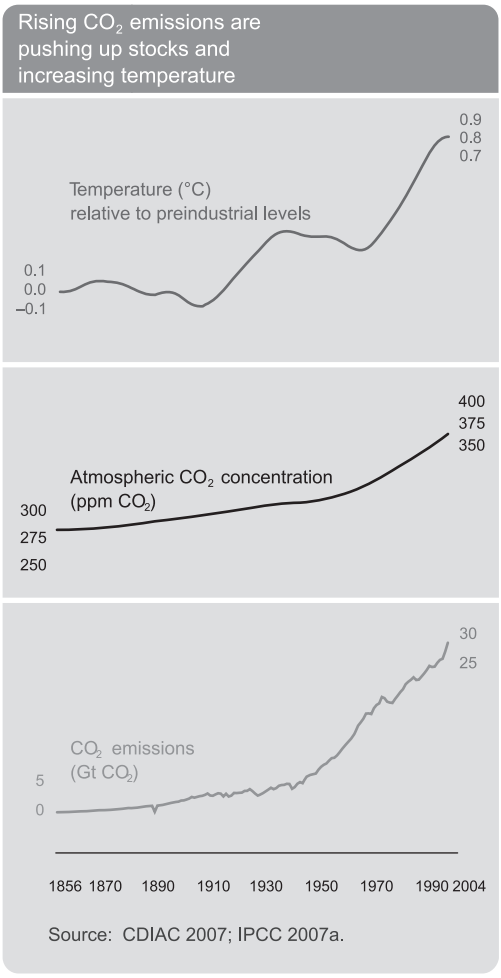
> *"A 10-year delay in taking abatement action would make it virtually impossible to keep global warming below 2 degrees Celsius."*
>
> *— McKinsey & Company*[1]

One or two degrees Celsius (C) in the coming 40 years. It doesn't sound like much, on first glance. But that scenario – on the optimistic end of current predictions – would be much more than the 0.74 degree C rise in average global temperatures that has occurred over the last 100 years.[2] Two degrees represents a 14 percent increase in the global average. The average was around 14 degrees C in the 1970s, but had already reached 14.6 degrees C in the first eight years of the 21st century.[3]

In nature, greenhouse gases make up only about 1 percent of the earth's atmosphere, where they act like the glass roof of a greenhouse and trap heat. Adding more of them means trapping more heat, so global temperatures rise. Since the Industrial Revolution, the natural levels of greenhouse gases have been supplemented by emissions of carbon dioxide from the burning of fossil fuels such as coal, oil and natural gas, by methane and nitrous oxide from farming and deforestation and by several long-lived gases from industrial production. Preindustrial levels of carbon dioxide, the most prevalent greenhouse gas, were at 278 parts per million (ppm), a figure that is now at 380 ppm.[4]

Once greenhouse gases are aloft, they remain in the atmosphere for a very long time, during which there is cumulative damage through higher temperatures. This means that once the process begins, some impacts become inevitable. Immediate action, such as steep cuts in emissions, will not have an immediate effect, but could mean that temperature increases eventually will not be so severe. Climate change has to be understood as a process that began in the past, is gathering steam today and could have irreversible implications for generations into the future.

**Graphic 1**




The Intergovernmental Panel on Climate Change (IPCC), the leading international scientific body on climate change, says that emissions must peak by 2015 – or the world will not avoid the worst impacts of climate change.[5] It calculates that maintaining average global temperatures between 2 degrees C and 2.4 degrees over preindustrial levels will require global emissions cuts between 50 percent and 85 percent over 2000 levels by 2050.[6]

The *Stern Review on the Economics of Climate Change*, a ground-breaking study produced for the British Government in 2006, made predictions based on the world continuing on a path of "business as usual," meaning emissions remain high in today's industrialized countries and accelerate in fast-growing developing countries. It estimated that temperatures would rise by at least 2 to 3 degrees C within the next 50 years, with a 50 percent chance of warming by more than 5 degrees C in the first half of the next century.[7] By comparison, the last 5 degree shift in global temperatures occurred between the Ice Age – and now.[8]

The environmental impacts of climate change with a 0.74 degree C increase are already obvious. More and more extreme weather events are striking around the world. Sea levels have risen by 10 to 20 centimetres. Rain patterns are shifting and glaciers are melting.[9]

Since all human beings are dependent on the earth's resources, these impacts extract a direct economic and development cost in lives, livelihoods, health, food security and so on. The Stern Review estimated that the costs of extreme weather alone could reach 0.5 to 1 percent of world gross domestic product (GDP) per year by the middle of the century[10] (see Box 1 for a regional example).

The review also predicted that if greenhouse gas emissions continue unchecked, climate change will reduce global per capita consumption between 5 percent and 20 percent. Calculations at the higher end of the range factor in impacts on the environment and health, and the disproportionate share of the climate change burden on poor regions of the world. By contrast, stabilizing emissions to maintain a temperature increase around 2 degrees C would require around 1 percent of GDP annually until 2050.[11]

In other words, the cost of emissions reductions is far less than the cost of doing nothing.

**Box 1: In Asia, Mounting Losses**

The Asia-Pacific region, with its vast land masses, long stretches of coast lines and half the world's population, may be most affected by climate change. Over the last decade, four countries – Bangladesh, India, the Philippines and Viet Nam – have lost an estimated US $20 billion from natural hazards that may only grow more severe in a warming world.

Based on modeling, the Asian Development Bank estimates that the economies of Indonesia, the Philippines, Thailand and Viet Nam could lose 6.7 percent of GDP per year by 2100, more than twice the global average, if no mitigation or adaptation actions are taken. The calculation factors in non-market impacts, mainly related to health and ecosystems, and catastrophic risks. Early action to cushion impacts could reduce damages to 1.9 percent of GDP and cost as little as 0.2 percent, on an annual basis.

*— Source: Asian Development Bank 2009a and 2009b.*

## A brief history of negotiations, as the climate changes

*"Our foot is stuck on the accelerator and we are heading towards an abyss."*

*— UN Secretary-General Ban Ki-moon*[12]

Steps to negotiate international consensus on addressing climate change began in 1992, when governments attending the UN Conference on Environment and Development (UNCED) signed three landmark conventions: the UNFCCC, the Convention on Biological Diversity (CBD), and the UN Convention to Combat Desertification (UNCCD).

The UNFCCC established a broad set of commitments for elaboration over time and created the COP as a governance mechanism to annually review implementation. The convention states that the threats of climate change should be reduced through the control of greenhouse gases, on the basis of equity and common but differentiated responsibilities and capabilities. The greatest responsibility for fighting climate change is assigned to industrialized countries, referred to collectively as the Annex 1 countries, since they have historically been the source of most greenhouse gas emissions. The convention also calls on developing countries to limit emissions, but in accordance with the right to sustainable development, and with the recognition that having the resources to take climate change measures depends on achieving some level of economic development. A precautionary principle stipulates that States Parties should pursue measures to anticipate and prevent damages from climate change, even if full scientific certainty has not been established.

The Kyoto Protocol was negotiated under the UNFCCC as a legally binding international agreement to reduce emissions, entering into force in 2005 with emissions reduction targets for 37 industrialized and transition countries, and the European Community. They are known as the Annex B countries,[13] and meet at the same times as the COP.[14] For the period from 2008 to 2012, their targets for emissions cuts are an average of 5 percent below 1990 levels.

The protocol highlights three market-based options for reducing emissions: emissions trading, the Clean Development Mechanism (CDM) and joint implementation (JI).

Emissions trading – sometimes called carbon trading – allows countries that have emissions under their targets to sell this excess capacity to those that are over their targets. The International Transaction Log (ITL), administered under the UNFCCC, tracks and verifies transactions.

The CDM permits a country with emission reduction targets to implement an emission-reduction project in a developing country and earn "offset" credits that can be applied to the Kyoto targets – the idea being that lower emissions in the developing country will balance higher emissions in the industrialized country.

Joint implementation is the same arrangement, but entails countries with targets investing in reductions in other industrialized countries, namely, countries with economies in transition.

How are industrialized countries faring on reductions so far? Overall, among those that signed the UNFCCC, there has been a decline of 4.7 percent from 1990 to 2006. Within this aggregate figure, however, there has been a 37 percent decrease on the part of countries with economies in transition due to economic decline. Emissions in other industrialized countries have actually climbed by 9.9 percent.[15] The United States, historically the largest global emitter, did not sign the Kyoto Protocol. Canada, which is a signatory, is emitting at 25 percent above 1990 levels, even though its target is 6 percent below.[16]

Global emissions, accounting for both developed and developing countries, are now growing at 3.5 percent a year, compared to 0.9 percent in the 1990s.[17] The UN Development Programme's 2007/2008 *Human Development Report* estimated that if all the world's people were to generate greenhouse gases at the same rate as some industrial countries, nine planets would be required to maintain an environment fit for human habitation. If current emission rates continue, the carbon budget – a set amount of acceptable emissions worldwide – for the entire 21st century will be used up by 2032 – assuming that the objective is to avoid dangerous climate change scenarios.[18]

*"If we agree to 2 degrees Centigrade limit to temperature increase, the Philippines… would lose more than a third of our territory. We are fighting for our survival."*

*— Bernarditas Muller, Philippines,*
*Coordinator for technology and finance for the G-77 and China*[19]

## Rich world, poor world

> *"The idea of freezing the current level of global inequality over the next half century or more (as the world goes about trying to solve the climate problem) is economically, politically and ethically unacceptable."*
>
> *— United Nations*[20]

Emissions on a scale significant enough to alter the earth's atmosphere are a byproduct of a development model based on rapid industrialization, production and consumption. Through new modes of development and the widespread adoption of low-carbon technology, this link could be broken, but that has yet to take place. As a result, emission rates today offer a clear picture of how inequitable development has been – and continues to be. In Sri Lanka, which ranks at 102 out of 179 countries on the UNDP Human Development Index (HDI),[21] annual per capita carbon dioxide emissions from energy consumption are 0.6 metric tons each year. In the United States and Canada, the equivalent figure is around 19 metric tons.[22] The carbon footprint of the average person in Burundi, one of the poorest countries in the world, is about the same, annually, as a television left on standby mode.[23]

Since 1950, Annex 1 countries have contributed up to three-quarters of the increase in emissions, despite accounting for only 21 percent of the world's population.[24] The World Bank suggested in 2002 that a single multinational corporation, Shell, has contributed more greenhouse gas emissions through burning gas as part of oil extraction in Nigeria than all other sources of greenhouse gases in sub-Saharan Africa combined.[25]

Today, a handful of developing countries have started emitting on the level of industrialized countries, although in per capita terms, not in overall national emissions, and not with the historical record of industrialized nations. Countries such as Malaysia and the Republic of Korea, which are not bound by Kyoto targets because they are not Annex B countries, have reached European emissions levels. Bahrain, Kuwait, Qatar and the United Arab Emirates now occupy the top four ranks in per capita emissions – Qatar's rate has quadrupled since 1990 and is three times that of the United States.[26]

China now produces the largest amount of overall national emissions, topping the United States. But this figure must be qualified by the fact that China's population is four times as large as that of the United States, making its per capita emissions rate roughly 75 percent less.[27] Together, all developing countries now account for around half of total global emissions, which is still far below what would be an equitable share based on population sizes. The 100 least-emitting countries, which include the 48 States classified as least developed, produce only about 3 percent of the global total.[28]

One unjust irony of climate change is that even though developing countries have historically contributed less to emissions and most continue to have a small carbon footprint, as a group they will suffer earliest and most from harmful shifts in the environment.

The poorest in particular are heavily dependent on agriculture for food and incomes; it is the economic sector most sensitive to climate change, including through water stress. And they have fewer resources, in finance, technology and existing infrastructure, to adapt to what lies ahead. Some studies estimate that for every 1 degree C rise in average global temperatures, annual average growth in poor countries could drop by 2 to 3 percent, with an associated cost in human development and basic survival.[29]

Already, it is estimated that fallout from climate change kills 300,000 people a year, including through the spread of disease and malnutrition, and seriously affects another 325 million. Four billion people are vulnerable in some fashion; 500 million are at extreme risk. Developing countries have 98 percent of affected people and 99 percent of all deaths from weather disasters. They bear 90 percent of the total economic losses.[30]

### Stalled debates

Despite the obvious disparities in the causes and impacts of climate change – and the moral imperative to reduce disparities reflected in international human rights agreements since the Universal Declaration of Human Rights – stark divisions between rich and poor countries have consistently marked international climate change negotiations. They have mostly run aground on the question of who should take the first step: wealthier countries, in dramatically cutting their emissions and changing their consumption and production patterns, or developing countries, in restricting emissions at the expense of development to pull people out of poverty. Agreements that have been struck, like Kyoto, have been stymied by the lack of progress on emissions in rich countries, and the failure to live up to commitments to provide new resources and low-cost technology to developing countries to manage the impacts of climate change and move towards low-emissions development.

In fractious talks, some industrialized countries have maintained they will not commit to emissions targets unless emerging developing economies do too. Some representatives of developing countries have declared that the only emissions limits they will accept are those that are identical to the ones industrial countries already enjoy. Given the pace of climate change already in motion, the implications of either position could be catastrophic.

**Box 2: Taking a Debt Perspective**

Some analysts and a growing number of developing countries have developed the notion of climate debt. This suggests that rich countries have a two-fold debt to poor countries. The first part is an emissions debt, in that rich countries have taken up an inequitable amount of carbon "space" that is now no longer available to poor countries. The second part is an adaptation debt related to the costs of managing climate change. Basic fairness implies that developing countries should not be expected to pay for problems they have not caused.

The South Centre has calculated some numbers on climate debt. The world has only 600 billion tons of carbon emissions from 1880 to 2050, assuming 2050 emissions are 50 percent below the 1990 level. Based on population, the equitable share of Annex 1 countries is 125 billion tons. By 2008, they had already consumed 240 billion tons and are expected to go through another 85 billion tons from 2009 to 2050. The total Annex 1 consumption is thus 325 billion tons, leaving a carbon debt of 200 billion tons.

This means that developing countries only have 275 billion tons, rather than their equitable share of 475 billion tons. To pay back their debt, Annex 1 countries would have to both cut emissions by 100 percent and offer compensation to developing countries, such as through contributions to adaptation.

— Source: Khor 2009a.

The months leading up to the 2009 negotiations on climate change in Copenhagen, intended to build on the Kyoto commitments, offered further evidence of the difficulty of compromise. In its declaration "Responsible Leadership for a Sustainable Future," the Group of Eight (G-8) major industrial countries agreed that their emissions should be cut by 80 percent by 2050, but suggested that baselines should vary.[31] Developing countries countered that the 1990 baselines in the Kyoto Protocol should be maintained and not manipulated to allow meager reductions, since baselines after that point tend to be higher. They also called for aiming to cap global temperature increases at no more than 1.5 degrees C, rather than the 2 degrees C stipulated by the G-8. Sea level rises beyond 1.5 degrees C may already be enough to swamp parts or all of the territory of low-lying and island States.

G-8 countries reiterated the expectation that emerging economies will cut their emissions, without acknowledging the vastly different starting points between the two groups (see Boxes 2 above and 3 below). Many developing countries could still multiply their emissions by five, six or more times and not reach even half the level of a high-emitting Annex B country.

**Box 3: Proposals for Cuts**

In the months before the 2009 Copenhagen negotiations, industrialized countries put a diverse array of emissions proposals on the table. All were below the proposals of developing countries, various groups of which suggested a range of 40-plus percent cuts below 1990 levels by 2020 for industrialized countries. The IPCC has suggested mid-term mitigation targets for industrialized countries should be in the range of 25 percent to 40 percent below 1990 levels by 2020.

*Australia*: 25 percent below 2000 levels by 2020 if the world agrees to stabilize carbon dioxide emissions at 450 ppm or lower. Otherwise, 5 percent below 2000 by 2020, up to 15 percent if major developing countries substantially restrain emissions and advanced economies take on similar commitments.

*Canada*: 20 percent below 2006 levels by 2020, and 60 percent to 70 percent by 2050.

*European Union*: 20 percent below 1990 by 2020. Up to 30 percent if other industrialized countries make comparable commitments and advanced developing countries contribute according to their responsibilities and capabilities.

*Japan*: 25 percent below 1990 by 2020, conditioned on a global agreement.

*New Zealand*: 10 percent to 20 percent below 1990 levels by 2020, conditioned on a comprehensive global agreement.

*United States*: The draft American Clean Energy and Security Act of 2009 calls for 1 percent to 4 percent below 1990 levels by 2020, including 2 billion tons of carbon offsets.

*— Sources: Jhamtani 2009a; Black 2009b; UN Secretary-General Ban Ki-moon 2009.*

Industrialized countries have also held firm on issues related to intellectual property rights (IPRs), which might affect technology transfers to developing countries (see Box 4). While tight IPR restrictions are often justified as needed to maintain incentives to innovate, a large amount of money is at stake. In the next two decades, expenditures on global energy systems alone, including on low-carbon technology, will need to double to US $20 trillion to make them economically viable.[32] Industrialized countries already dominate the environmental technology market, with a share of 79.9 percent. Only a few developing countries, such as Brazil, China and Mexico, produce significant amounts of clean energy technology.[33]

### Box 4: Should IPRs Be Off the Table? Should Trade Tariffs Be On?

*"The cost of inaction – or inadequate actions – is unacceptable."*

*— Todd Stern, US Special Envoy for Climate Change*

By its own estimates, the costs of climate change will be significant in the United States. A report for the Committee on Energy and Commerce of the US House of Representatives anticipates that water stress in parts of the country will continue to worsen, with the southwestern part of the country at risk of becoming a dustbowl. Threats to coral reefs could jeopardize US $30 billion in the fishery and tourism industries. In 2008, severe flooding in the Midwest wiped out 2 percent of the nation's corn crop, with losses topping US $10 billion.

Developments like these provide a clear rationale for taking urgent steps to slow climate change, including by ensuring most countries have access to appropriate technology as part of a global effort. Instead, like other industrialized countries with a large percentage of technology patents, the United States has called for taking the issue of intellectual property rights (IPRs) off the table in discussions on technology transfer. Developing countries would like rules on IPRs to be loosened so that there is wider access to technology, as a global public good in curbing climate change. The United States maintains that protections should be strictly upheld to encourage continued innovation.

The United States Congress has drafted and/or passed several recent laws or amendments that link US participation in global climate change agreements and associated funding to compliance with existing provisions for intellectual property rights, including those under the World Trade Organization's (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

In June 2009, the House of Representatives passed an amendment to the 1978 American Clean Energy and Security Act. The amendment, while recognizing that developing countries lack sufficient technology and resources and relevant commitments under the UNFCCC, defines investments in clean technology as a way to open new markets for US companies. It links the weakening of IPRs to competitive risks for US companies and limits on job creation. Conditions for multilateral and bilateral assistance would include existing commitments to mitigate emissions and adequate protection of intellectual property rights within the recipient country.

The Foreign Operations and Related Programs Appropriations Act, passed by the House of Representatives, makes US $300 million available to the Clean Technology Fund and the Strategic Climate Fund of the World Bank, but only upon certification of the protection of IPRs. Somewhat in opposition to these steps have been recent statements by US Energy Secretary Steven Chu, who has urged the sharing of "all intellectual property as much as possible."

*(Box 4 continued)*

Other forms of protectionism in the United States are at work in trade legislation, with draft statutes proposing that exporters from emerging economies buy emissions allowances for goods they bring into the United States. Domestic firms that have to pay for emissions allowances can thus maintain their competitiveness.

Developing countries have called this move illegal under WTO rules. They have resisted calls from industrialized countries to keep the issue under the WTO, however, insisting that it must be linked to climate change negotiations.

Also at stake is how the chain of global trade adds to emissions in developing countries through the production of goods for export. Exports now account for one-third of China's total economic output; exports to the United States alone represent 6 percent of output. Net exports accounted for 23 percent of China's carbon emissions in 2004.

*— Sources: Shashikant 2009; US House of Representatives, Committee on Energy and Commerce 2009; Sanderson 2009; WWF 2009; Worldwatch Institute 2009; Bradsher 2009*.

## Graphic 2

**Greenhouse Development Rights results for representative countries and groups**

| Year | 2010 | | | | | 2020 | 2030 |
|---|---|---|---|---|---|---|---|
| | Population (% of global) | GDP per cap. (US$ PPP) | Capacity (% of global) | Responsibility (% of global) | RCI[1] (% of global) | RCI (% of global) | RCI (% of global) |
| | 7.3 | 30,472 | 28.8 | 22.6 | 25.7 | 22.9 | 19.6 |
| EU15 [2] | 5.8 | 33,754 | 26.1 | 19.8 | 22.9 | 19.9 | 16.7 |
| EU12 [3] | 1.5 | 17,708 | 2.7 | 2.8 | 2.7 | 3.0 | 3.0 |
| United States | 4.5 | 45,640 | 29.7 | 36.4 | 33.1 | 29.1 | 25.5 |
| Japan | 1.9 | 33,422 | 8.3 | 7.3 | 7.8 | 6.6 | 5.5 |
| Russia | 2.0 | 15,031 | 2.7 | 4.9 | 3.8 | 4.3 | 4.6 |
| China | 19.7 | 5,899 | 5.8 | 5.2 | 5.5 | 10.4 | 15 2 |
| India | 17.2 | 2,818 | 0.7 | 0.3 | 0.5 | 1.2 | 2.3 |
| Brazil | 2.9 | 9,442 | 2.3 | 1.1 | 1.7 | 1.7 | 1.7 |
| South Africa | 0.7 | 10,117 | 0.6 | 1.3 | 1.0 | 1.1 | 1.2 |
| Mexico | 1.6 | 12,408 | 1.8 | 1.4 | 1.6 | 1.5 | 1.5 |
| LDCs [4] | 11.7 | 1,274 | 0.1 | 0.04 | 0.1 | 0.1 | 0.1 |
| Annex I | 18.7 | 30,924 | 75.8 | 78.0 | 77 | 69 | 61 |
| Non-Annex I | 81.3 | 5,096 | 24.2 | 22.0 | 23 | 31 | 39 |
| High income | 15.5 | 36,488 | 76.9 | 77.9 | 77 | 69 | 61 |
| Middle income | 63.3 | 6,226 | 22.9 | 21.9 | 22 | 30 | 38 |
| Low income | 21.2 | 1,599 | 0.2 | 0.2 | 0.2 | 0.3 | 0.5 |
| World | 100 | 9,929 | 100% | 100% | 100% | 100% | 100% |

Notes: [1] Responsibility and capability index; [2] The 15 countries that made up the EU before May 2004; [3] The 12 countries that joined the EU in 2004 and 2007; [4] Least developed countries.

**Box 5: A Framework for Greenhouse Development Rights**

The Stern Review recognized that there is no real alternative to convergence on roughly equal per capita emissions at low levels, worldwide. But getting to that point has been a matter of diverging points of view.

Several approaches could be tried. One is to say that every person should have the same emissions allowance, meaning that populous countries would have a greater overall allowance. Another idea is that all countries should reduce by the same percentages. Alternatively, those who pollute the most should pay for climate-related economic burdens – a principle affirmed in the 1992 Rio Declaration on Environment and Development and Agenda 21. Costs could also be borne by countries most able to afford them.

Recently, the groups EcoEquity and the Stockholm Environment Institute have developed the Greenhouse Development Rights Framework, which seeks to share climate change burdens in ways that are fair, while shielding people in poverty.

A Responsibility and Capacity Indicator would define each country's cumulative contribution to climate change, and their ability to address it without sacrificing people's basic needs. It would adjust for a development threshold of per capita income less than US $7,500; emissions corresponding to consumption below that would not count in the responsibility calculation. The final formulation could then be used to set emissions targets.

*— Source: Worldwatch Institute 2009.*

**Who has the right?**

The backdrop to climate change talks is who has the right to develop, since many of the activities that produce greenhouse gases, such as energy supplies, relate directly to economic output, at least under current configurations. Developing countries who are trying to "catch up" have said explicitly that they need to continue emitting to develop, like rich countries have in the past, or have access to massively scaled up resources and low-carbon technologies.

Industrialized countries are concerned about holding on to the development they already have. In cutting emissions too fast, they might crimp their economies. For example, the Government of New Zealand has indicated, based on its own modeling, that it "will continue to meet any future international obligation primarily by purchasing international emission units rather than by domestic emissions reductions. This occurs because domestic abatement opportunities are limited and costly, and are often associated with output contractions."[34]

The problem with the global dimensions of climate change is that the habitual negotiating position of defending national interests and maintaining business-as-usual economic models – which often ends in making nominal concessions – is no longer sustainable, nor fair (see Box 5 for one alternative).

## Emissions mitigation: trading in the future?

> *"Creating carbon markets and establishing a predictable carbon price will be part of the policy mix, but they do not address the development dimension of the challenge."*
>
> *— United Nations*[35]

The Stern Review famously referred to climate change as "the greatest and widest-ranging market failure ever seen."[36] Yet Kyoto settled on three market mechanisms – emissions trading, the CDM and joint implementation – in order to address it. So far, these have been the most prominent global emissions mitigation efforts.

Emissions trading makes carbon dioxide into a marketable commodity. In doing so, it establishes a pattern of supply and demand, and a carbon price. Under the most common scenario, the cap and trade system, emissions allowances are assigned to sectors or industries under a cap that shrinks over time. Emitters who exceed their allowances then have the option to purchase additional credits from those who have not. An alternative is to purchase offsets to make up for going over an allowance – such as through investing in CDM projects in developing countries. Under the Kyoto Protocol, countries can also trade "removal units" on the basis of land-use changes and forestry activities that act as "sinks" by absorbing carbon emissions.

By building on existing market structures, emissions trading is intended to bring a wide-ranging group of governments and private sector enterprises on board the emissions reduction agenda. The idea is that market incentives will stir moves towards reducing emissions, such as through the adoption of low-carbon technology, cuts in excess consumption or new manufacturing patterns. Trading allows countries and industries flexibility in where they make emissions cuts, decisions that can be linked to considerations in the larger economy or business environment.

In 2006 and 2007, emissions trading under greenhouse gas caps was part of reducing an estimated 1.5 billion tons of carbon dioxide-equivalent emissions, just under 2 percent of total emissions.[37] The overall carbon market, which includes "voluntary" markets not linked to the Kyoto Protocol, doubled in 2008, reaching US $126 billion. Of this, transactions by the EU's Emissions Trading Scheme (ETS) accounted for around US $92 billion. About US $6.8 billion flowed into projects conducted under the CDM and joint implementation systems. Much of the rest, just over US $26 billion, went into the secondary CDM market, which involves spot, futures and options transactions that do not result in emissions reductions.[38]

While some financial analysts predict that emissions trading will boom into a trillion-dollar market in the coming decade or so,[39] emissions trading has been criticized for its ineffectiveness, volatility and potential to exacerbate

inequities. The ETS, for example, which involves 10,000 factories and utilities in 30 countries,[40] has mostly distributed emissions allowances free of charge. Governments can "exempt" influential industries from emissions cuts by allotting them extra allowances. Companies can build the value of these allowances into prices – for electricity, for example – and earn windfall profits.

Despite plans for an auctioning system that would assign a cost for some allowances by 2010, European leaders have agreed to give free emission permits at least until 2020 to high-emitting industries, including cement, chemicals and steel. Companies asked for exemptions on the basis of the global recession and foreign competition; a high percentage of European manufacturers will qualify for the free permits.[41]

On the carbon market, speculators already do the majority of carbon trading – about two-thirds of carbon investment funds by volume serve capital gains purposes, rather than helping companies comply with carbon caps.[42] Through practices such as short-selling, speculation induces price volatility, which is already built into the nature of the emissions market itself, since supply is controlled by caps but not demand. When demand declines and prices fall too low, businesses have less incentive to cut emissions or make longer-term low-carbon investments.

> *"The (Global Gas Flaring Reduction Partnership) has emphasized carbon finance as a remedy for flaring, but the use of project-level carbon finance is a mere bandage for policy ailments that require a more fundamental cure."*
>
> *— World Bank Independent Evaluation Group* [43]

So far, there has been little impetus to regulate carbon trading, including shoddy carbon offset credits that qualify as "subprime carbon" and carbon derivatives – forecasted to surpass the credit derivatives markets that helped trigger the recent global financial meltdown. Some market observers are already calling for stringent regulation that puts a heavy burden of proof on traders to show both the market efficiency and social utility of carbon-based financial products with risks that are difficult to assess.[44]

### Problems with offsets

The continued reliance of industrialized countries on offsets is another concern. This system essentially depends on poor countries subsidizing the reductions that rich countries should be taking. The EU15 countries,[45] for instance, have achieved emissions reductions of 2.7 percent to date, towards a commitment of 8 percent by 2012 based on 1990 levels. The European Environment Agency expects reductions to rise to 3.6 percent by 2010.[46] But almost all will come from external offsets in developing countries, and creative accounting in the EU for reforestation and forest management.[47] After the G-8 agreed in 2009 to support a goal of industrialized countries cutting greenhouse gases by 80 percent by 2050, one estimate found that the United Kingdom will most likely comply by buying up 50 percent of the reduction from abroad. Emissions in the United Kingdom will only decline by 40 percent.[48]

In the United States, Greenpeace has predicted that weak targets in draft legislation on climate change will be "further undermined by 2 billion tons per year of allowable offsets. That number is so large that the amount of available offsets will exceed the actual pollution reductions required under the cap until at least 2026 – meaning it will be more than a decade before polluters would have to make real cuts in their emissions," even though the bill commits the US to an 83 percent reduction by 2050.[49]

Other problems with offsets, whether done under the CDM or elsewhere, come from variable certification and measurement standards. One recent study of CDM projects found that three-quarters of dams receiving credits did not meet the CDM standard of being additional – in other words, they received credits even though they had been built and were already operating.[50]

Some offset projects have had unintended consequences, as in cases of displacing indigenous peoples and introducing invasive species of trees. They can have perverse incentives, such as encouraging pollution so that it can be offset (see Box 6). Industrialized countries tend to pursue the cheapest, easiest offsets, potentially leaving more expensive ones for future reduction commitments developing countries may need to make.

**Box 6: Burning Up Offset Credits**

Oil companies in Nigeria flare or burn off 40 percent of the natural gas they find during oil extraction. The Agip Oil Company plans to build electricity plants to use the gas, in which it can claim 1.5 million offset credits a year. The only problem: flaring is illegal in Nigeria. Oilwatch's Michael Karikpo describes the scenario as being "like a criminal demanding money to stop committing crimes."

*— Source: Mukerjee 2009.*

Offsets through the CDM land primarily in one country: China, with 84 percent of the confirmed project-based CDM transactions in 2008. It was followed by India and Brazil, with 4 percent and 3 percent shares, respectively. While new countries entered the CDM pipeline in 2008, including some in sub-Saharan Africa such as Senegal and Tanzania, most of the least-developed countries (LDCs) have been overlooked, even as they have the most limited public funding capabilities and access to foreign direct investment (FDI).[51]

At the December 2007 COP-13 meeting held in Bali, a new offset mechanism was put on the table – Reducing Emissions from Deforestation and Forest Degradation (REDD). Since deforestation contributes to about 20 percent of greenhouse gas emissions in any given year[52] countries would be able to earn carbon credits to trade on international markets by refraining from cutting down trees. Beyond mitigating climate change, the scheme could transfer resources from industrialized to developing countries that could be used for sustainable development and to protect biodiversity. Opponents of REDD and offsets fear that this will provide another opportunity for shifting away from major reductions in industrialized countries.

## Trying taxation

One alternative to emissions trading and offsetting is a carbon tax. Proponents argue that it is a more transparent mechanism, imposing a direct cost on carbon usage that cannot be whittled away through trading allowances or offsets. To avoid penalizing people with fewer resources, taxes can be recycled as tax relief, such as for energy usage in households under a certain income level.

A concern with carbon taxation is that it is not tied directly to quantifiable emissions cuts, like cap and trade. Tax rates can be adjusted in line with reduction objectives, however. Overall, this approach can be more politically palatable as well, appealing to governments otherwise unwilling to adopt emissions caps because the funds collected can add up to a steady flow of revenue. This can be used to fund infrastructure and development investments. Sweden adopted a national tax on carbon emissions in 1990. Since then, it has seen an 8 percent decline in emissions while GDP has risen by 48 percent[53] (see Box 7 on a variety of other national "green" initiatives).

### Graphic 3

Total and per capita emissions implications under a global target of 50 percent reductions below 1990 levels by 2050

| Scenario | Total greenhouse gas emissions (billion tons) | Developing countries' emissions (billion tons) | Developed countries' emissions (billion tons) | Developed countries' per capita emissions (tons) | Developing countries' per capita emissions (tons) |
|---|---|---|---|---|---|
| 1990 reference base year | 38.6 | 18.2 | 20.4 | 15.3 | 5.0 |
| 2050-Developed countries meeting 80 percent target, no offsetting | 19.3 | 3.6 | 15.7 | 3.0 | 2.0 |
| 2050-Developed countries meeting 80 percent target, using offsets for half of this total reduction | 19.3 | 10.9 | 8.4 | 9.2 | 1.1 |

### Box 7: National Green Initiatives Gather Momentum

Despite the limited progress on international commitments to halting climate change, some countries are forging ahead with their own "green" targets and plans. For example:

*China* adopted a goal of reducing energy required for each unit of GDP by 20 percent from 2006-2010. Emissions growth has already slowed to almost half the economic growth rate over the last two decades; China now has higher fuel efficiency standards for automobiles than the United States. Its recent economic stimulus package had green elements on a scale that "dwarfed" those of similar efforts, according to Yvo de Boer, Executive Secretary of the UNFCCC. There are early indications that some emissions targets may be part of the next five-year plan, starting in 2011. By 2020, President Hu Jintao has vowed to cut carbon dioxide emissions per unit of GDP by a "notable margin" from the 2005 level, and increase the share of non-fossil fuels in primary energy consumption to around 15 percent. Up to US $462 billion has already been committed to scaling up renewable energy by 2020.

*Costa Rica* intends to be climate neutral by 2021. In 1996, it began taxing fossil fuels; 3.5 percent of the money goes towards the National Forestry Financing Fund. In 2007, Costa Rica planted more than 5 million trees, attaining the highest per capita tree-planting rate in the world. It has adopted a goal of increasing renewable energy generation to over 90 percent and promoted the use of energy-saving appliances.

*Ecuador's* President, Rafael Correa, has proposed leaving the oil under Yasuni National Park untapped, meaning about 20 percent of Ecuador's supplies would remain in the ground. The value of the oil is currently US $5.7 billion, about 10 percent of national GDP. But abating the combined emissions from burning the oil and deforesting the park to extract it would require up to US $3.7 billion, based on an abatement cost of US $20 per ton. Opportunity costs might come from the loss of the park's incredibly rich natural resources. What cannot be priced: human lives and culture. The park is home to the 20,000 members of the indigenous Waorini tribe.

*Norway* recently announced that is would shorten the timeframe for its goal of becoming carbon neutral, from 2050 to 2030. It aims to reduce emissions 30 percent below 1990 by 2020, with two-thirds from domestic reductions. Kyoto Protocol commitments may be exceeded by 5 million tons. Norway is participating in offsetting and REDD, while embracing a vigorous national energy efficiency and savings policy. Carbon capture and storage technologies are being applied to offshore oil fields.

*— Sources: People's Daily Online 2007; Pierson and Tankersley 2009; Buckley and Graham-Harrison 2009; UNDP 2008; de Boer 2009; Chandler et al. 2002; Moncel 2009; Gallagher 2009; UNEP 2008; Hu Jintao 2009*.

### Price: the bottom line

For both emissions trading and carbon taxation, the bottom line is the price of carbon in countries that have exceeded an equitable allowance of atmospheric space. When it becomes expensive to emit, people and businesses will look for ways to compensate. Both cap and trade and carbon taxation can increase the price of carbon, but taxes may do so in a more consistent manner. In either case, the price of carbon must fully reflect the economic and social costs – or "externalities" – of releasing it into the atmosphere, including in restricting development options for poor countries. Economic and social costs are already high and, according to a growing body of evidence, increasing.

## Adapting to the inevitable

> *"Adaptation is becoming a euphemism for social injustice on a global scale. While the citizens of the rich world are protected from harm, the poor, the vulnerable and the hungry are exposed to the harsh reality of climate change in their everyday lives. Put bluntly, the world's poor are being harmed through a problem that is not of their making. The footprint of the Malawian farmer or the Haitian slum dweller barely registers in the Earth's atmosphere."*
>
> *— Archbishop Desmond Tutu*[54]

Climate change negotiations have focused so far primarily on emissions reductions as a response to a warming climate. But adaptation, where people figure out how to live with inevitable climate changes, is equally critical. The recent record of UN appeals for humanitarian aid underscores the need: in 2008, 9 out of 11 appeals involved climate-related disasters.[55] Adapting to climate change involves a variety of activities, such as improving water supplies, strengthening disaster preparedness and adopting new agricultural techniques.

All countries will have to develop adaptation strategies at some point, but countries with more wealth and knowledge will be far better equipped to do so. Looked at just as a matter of money, the UK is already spending US $1.2 billion annually on flood defences. The Dutch are investing in homes that can float on water and the Swiss in snow-making machines. Venice, a single city, will spend US $3.8 billion over five years to protect itself against rising sea levels.[56]

These figures are many times more than global sums promised so far for adaptation in developing countries – about US $279 million.[57] They are beyond the reach of most developing countries, many of which struggle with persistent gaps in information, infrastructure and social protection that undercut even basic adaptation efforts. In a blunt way, they indicate the depth of development disparities that, as climate change progresses, will further reinforce existing patterns of marginalization. Some people will manage to cope with climate challenges, while others fall further behind.

As much as mitigation, adaptation is an issue of development and equity, but not just because people who know and earn more have more adaptation resources and options. There is also the question of who should pay to adapt to the fallout from historical and current emissions: those who have produced them, or those who are sharing the consequences? An economic efficiency angle exists as well. According to the UNFCCC, every US $1 invested in anticipatory costs can save up to US $7 in future relief.[58] And the less that is done now on mitigation, the more that will be required to adapt later on.

The low profile of adaptation in international negotiations and limited political momentum around it may have several explanations. One is that adaptation can involve a more complex set of policy choices spanning all aspects of development, from jobs to healthcare to food. It does not lend itself easily to a market mechanism such as emissions trading. It requires large public investments in actions that may be critical to public welfare, but will not be attractive to for-profit private sector investment. Another reason is that industrialized countries already have the capacities to equip themselves for adaptation – although only if climate change remains within reasonable bounds. Extending greater resource flows to developing countries would require stronger acknowledgement of the "adaptation debt" produced by their emissions, and its moral and ethical dimensions.

For the most part, adaptation continues to be viewed primarily as something that will occur to manage the impacts of climate change. A more far-reaching perspective also considers adaptation in terms of factors that have produced climate change, such as wasteful consumption and production patterns in industrialized countries and in the wealthier echelons of developing countries.

Low-carbon technology will go some way towards emissions reduction. But current patterns of production, consumption and waste all contribute to greenhouse gases on a scale that is clearly unsustainable and unjustifiable. In England, producing a single kilogramme of food requires 10 kilogrammes of waste, for instance. A one-ton car comes from 70 tons of materials.[59] Every five minutes, the United States goes through 15 million sheets of paper and two million plastic beverage bottles.[60] Some analysts have begun suggesting that a consumption-based approach be used in negotiating emissions reductions.[61]

In a sense, both mitigation and adaptation need to be points where development and climate change intersect. A new type of development could be one that avoids the pitfalls that have characterized the past and led the world to the brink of disaster. If current efforts simply build on existing development patterns and the inequities that accompany them, they will not be swift or deep or fair enough.

# Chapter 2

# What's Missing? Mind the Gaps

*"The Maldives and many other Small Island Developing States do not have the luxury (of) hesitation and inaction. Nor can we afford to pick and chose where and when this important issue needs to be addressed. For us, it is not solely a development issue, it is also a moral issue, an ethical issue, a political issue, a legal issue, a human rights issue as well as a grave security issue…. Addressing the injustices of climate change is…the moral and ethical responsibility of the entire international community. It is time that we put people back in the heart of the climate change debate. We believe a comprehensive rights based approach to sustainable and just development, anchored in the concept of common but differentiated responsibility, is now an imperative."*

*—Ahmed Khaleel, Permanent Representative of the Maldives to the United Nations*[62]

Climate change has grown in prominence as a global concern since the adoption of the UNFCCC in 1992. But the piecemeal international responses so far constitute a kind of tinkering around the edges, while the roots of the problem lie undisturbed. Not enough has been done to qualify these efforts as equitable or effective.

A climate justice agenda requires closing gaps in four sets of issues that have appeared in negotiations but should be at the centre. These comprise development disparities; vulnerable groups; governance; and resources. All involve substantial shifts in current political dynamics and economic equations. But if unaddressed, they will continue to perpetuate inequities and introduce inefficiencies that will stall meaningful progress.

## Disparities in development

*"The only way to make tangible progress is to approach the climate challenge as a development challenge."*

*—United Nations*[63]

Development is the starting point for discussing climate change – for all countries. This immediately directs attention to the ways that development can help or obstruct progress to reduce global warming. A holistic definition of development encompasses activities that produce emissions, such as generating electricity and cutting down forests, and the elements essential for human well-being and adaptation to climate change, such as food security and livelihoods. It must be premised on a notion of balance, where people can both thrive and draw

responsibly on natural resources. Equity is implied, since resources are finite and must be shared. Justice comes from recognizing that people who are poor have the right to pursue opportunities to seek well-being – just as wealthier people have already done – rather than being further penalized by poverty.

Politically, making development the reference point for climate change is complicated because it requires industrialized countries to recognize that climate change has come mostly from their own development, and to face the reality that they may no longer be able to sustain what they have achieved simply by holding on to existing practices, whether in manufacturing, consumption patterns or in demanding more than a fair share of atmospheric space.

For developing countries, there is no valid argument for sacrificing development to emissions control as long as industrialized countries are unwilling to make significant cuts themselves, and carry out large-scale transfers of resources and technology. Regardless of actions taken by industrialized countries, developing countries face fallout across the full range of development issues that many are already struggling to resolve, and the imperative of developing fast enough to cope with new challenges. The poorest countries are not at a level of development where they will be able to keep up or adapt in even the most nominal ways without significant investments from external sources.

Climate change effectively multiplies other stresses on development that developing countries already have more of, such as high rates of population growth, poor health, lack of water and sanitation, vulnerable employment and political instability. Many of these stem from inequities that undercut development and capacities to improve it. Three common results are deterioration in the pace and quality of development; migration as people are forced to move; and insecurity as people cornered by a lack of options struggle for basic subsistence. One study has predicted that climate change may exacerbate risks of violent conflict in 46 countries with 2.7 billion people.[64]

Fallout from climate change is already strongly evident in the following areas, with impacts expected to grow if concerted and timely actions are not taken.

### Food security and agriculture

In the area of food security and agriculture, an estimated 1.02 billion people globally are suffering from malnutrition due to problems in the production and distribution of food, worsened by the impacts of the world economic crisis as well as climate change.[65] Through water stress and temperature increases, climate change will reduce the output of staple crops. Even if food is available, people may not have access to it due to other impacts from climate change, such as diminished livelihoods due to the destruction of natural resources and general economic instability. The number of malnourished people may rise by 600 million more.[66]

In the supply of food, subsistence farmers will be most vulnerable to climate shifts, as they have the fewest resources to adapt to them. Extending mass industrialized agriculture, which has broadened access to food in some parts of the world, will be complicated if current production patterns continue. Agriculture has made substantial contribution to greenhouse gases, comprising 14 percent.[67]

### Water

Water is one of world's most basic and increasingly contested resources. It is critical to agriculture, health and sanitation, manufacturing, power generation and daily household use – and a major element in climate change. Current usage of freshwater exceeds a sustainable level by some 25 percent,[68] but over a billion people still lack access to safe drinking water. Freshwater supplies may decline due to climate shifts by as much as 20 to 30 percent in some regions.[69] By 2025, 1.8 billion people may be living in areas experiencing water scarcity.[70]

Other water impacts on development will come from floods and droughts, and higher sea levels absorbing land for human habitation. People who are already poor will have few defenses against these changes, since managing them generally requires large investments in infrastructure. The acidification of sea water – anticipated on a scale not seen for tens of millions of years, if current emissions trends continue – will alter sea resources, depriving coastal people of food and livelihoods.

### Health

Poorer quality of water and air and higher temperatures will combine to threaten health through increased diarrheal, infectious and cardiovascular diseases.[71] Existing poor health, often linked to poverty, makes people less equipped to survive physical stresses. Malaria cases are already about 250 million per year.[72] As many as 400 million more people may be at risk of the disease due to climate change, including in regions where it had been eradicated.[73] Up to 80 percent of malaria deaths already occur in sub-Saharan Africa,[74] where health systems have been severely weakened by conflict, macroeconomic policy choices that have undercut domestic social spending, and HIV and AIDS.

### Energy

Development depends on energy, which partly explains the strong resistance to emissions controls. Energy fuels modern economies and has a direct impact on human development, productivity, health, education, communication and transport. No country has substantially reduced poverty without a large increase in energy use and/or more efficient energy sources.[75]

People who lack modern energy sources – an estimated 2 billion worldwide[76] – resort to fuels such as wood and dung, which harms health, turns basic tasks such as cooking into time-consuming activities, and contributes to deforestation and desertification. It further traps people in cycles of poverty and increases their vulnerability to climate change. It also contributes to greenhouse gas emissions.[77] The World Bank estimates the human welfare benefits of access to electricity are up to US $1 per kilowatt-hour, while corresponding carbon damages would be only a few cents per kilowatt-hour. Providing basic electricity to all currently unconnected households, globally, would add only one-third of a percent of overall greenhouse gas emissions, less with renewable and efficient energy measures.[78]

Fossil fuel subsidies are one aspect of energy provision that require closer examination, since they have been criticized as primarily benefiting wealthier population segments and maintaining high emissions rates. The 20 largest economies outside the Organisation for Economic Co-operation and Development

(OECD) currently provide annual subsidies of over US $300 billion.[79] National spending on this is many times higher, in some cases, than spending on health care or other critical development priorities. Investments in new forms of energy and green jobs are among the opportunities that may be missed.

## Some groups face more threats

Billions of people are vulnerable to climate change because of the conditions imposed by poverty. Additional threats come when poverty intersects with other parameters of exclusion, such as gender, ethnicity, age, health status, caste or geographical location. Excluded groups are often pushed into marginal lands or neighbourhoods in cities. They have limited access to a wide range of resources, from housing to water to livelihoods.

### Women

Gender discrimination, as one of the most widespread inequities, is embedded in social, economic and political systems around the world. This leaves women with less access to resources, a less powerful political voice and more limited capacities to claim their rights.

These persistent constraints can be seen at work in natural disasters, where women die at higher rates than men. Those in poor households gather most of the household water and fuel – two natural resources most likely to be affected by climate change. In rural areas, they tend to depend more than men on agriculture for food and income. They are already more prone to malnutrition, in part because of childbearing and more limited access to health care than men.

Analyzing the dimensions of climate change from a gender perspective requires looking at the mostly socially defined differences between men and women. Women may have greater needs for energy services due to household work, for example. If a poor country embarks on a low-carbon development path without a corresponding extension of affordable modern household energy sources, they would bear the brunt of the burden.[80]

Where resource and technology transfers are involved in combating climate change – as under the CDM – current patterns of discriminatory access suggest women will receive few of the benefits. Women are extensively involved in managing forest resources in some areas and make substantial contributions to agriculture, for example. But they hardly factor into existing policies, programmes and budgetary allocations for either sector. This exclusion has held true for the UNFCCC negotiations. It has only been in the run-up to the 2009 negotiations in Copenhagen that several States Parties have begun concertedly advocating for the inclusion of gender equality provisions.[81]

### Children

Children have also rarely featured in climate change debates, even though they will inherit a future irrevocably marked by climate change, and they comprise a large segment of the current population. A third of the world's population is under 18, with 85 percent in developing countries.[82]

Children will suffer more health consequences from warming temperatures because of their physical, cognitive and physiological immaturity. The current main killers of children – malaria, diarrhoea and undernutrition – are highly sensitive to climate.[83] Around 80 percent of malaria deaths already occur among children under five.[84]

Children also have a higher mortality rate from weather-related disasters than adults. They are at risk of being orphaned or separated from their families, and suffering abuse or trafficking. While children need protection from threats like these, they can also be seen as agents of change, reached through schools to learn new attitudes and behaviours that will be crucial to reducing and adapting to global warming.

### Indigenous peoples

One set of groups that depends heavily on natural resources threatened by climate change is indigenous peoples. Amid dwindling natural resources, some have experienced human rights violations, displacements and conflicts, and death.

Carbon sink and renewable energy projects, for example, have appropriated indigenous lands. This experience has sparked concerns about the REDD initiative. By increasing the value of indigenous lands through monetizing it on the international markets, REDD could work to the disadvantage of indigenous peoples. Many do not carry formal land titles and have limited economic and political power. Dispossession or reduced access to traditional natural resources could be among the possible outcomes, making existing inequalities worse.

Some governments have pushed for the inclusion of indigenous peoples' rights in the UNFCCC discussions. As a whole, indigenous peoples have a documented legacy of creative and effective local responses to climate change, and a valuable body of traditional knowledge gleaned from living closely with the natural environment.

> *"We have not raised a single franc for that area and already 10 villages have disappeared. That is some 10,000 people who have had to go make a living elsewhere farther inland."*
>
> *— Ibila Djibril, head of climate change in Benin's Ministry of Environment, on the results of coastal erosion in the Grand Popo region. Benin has found funds for reinforcing coastal areas east of Cotonou – US $70 million.*[85]

### Migrants

People who are vulnerable to climate change and lack the resources to adapt will use multiple coping strategies. One of the most obvious will be migration, either permanently or temporarily, and within or across countries. Natural disasters, zones no longer fit for human habitation and environmental degradation may drive many more people to migrate, on top of those who will be refugees and internally displaced. While there are no definitive projections, hundreds of millions of people may be affected.

Economic drivers that fuel migration will likely become more acute if livelihoods tied to natural resources are lost or threatened by climate change, although the poorest people will be the least likely to have even this choice. Population densities may increase in areas that become destinations for people seeking habitable places to live and work, adding pressures on remaining natural resources and land use, and social and political systems.

## Meaningful participation

Climate justice principles need to be reflected in development choices and strategies, but should also guide participation in making choices, implementing them and accounting for them. Decision-making dominated by a few issues or groups has proven inequitable and inadequate.

In climate change talks, while consensus is the aim, national interests – at times linked to commercial or trade concerns – overridingly continue to drive the scope of international negotiations, despite the fact that the future may depend on a much stronger notion of the common welfare. Industrialized country

> *"In the case of the…'contents of the atmosphere,' it is hard to think of an argument as to why rich people should have more of this shared resource than poor people. They are not exchanging their labor for somebody else's and they are not consuming the proceeds of their own land, or some natural resource that lies beneath it."*
>
> *— Nicholas Stern*[86]

governments have kept the focus on emissions and mitigation, even though adaptation is more important now in many developing countries. "Meaningful participation" has come to refer to the willingness of developing countries to commit to an emissions reduction regime. It does not encapsulate whether or not the process of participating in climate talks is meaningful to developing countries, and reflects their priorities and inputs, much less those of civil society and other groups not sitting at the negotiating table.[87]

The UNFCCC and Kyoto Protocol both call for "cooperation" among governments, but so far the structures enacted to carry this out have been contested. The Global Environment Facility (GEF), for instance, funds initiatives in developing countries in line with the UNFCCC as the convention's designated financial mechanism. But it has a separate board and strong institutional links to the World Bank, which is still the GEF's trustee. Questions have been raised about equitable access to GEF funds for some smaller and poorer countries.[88]

The International Monetary Fund (IMF), as the other arm of the Bretton Woods institutions (BWIs), has helped prop up the economic and financial systems that have produced climate change. In 2009, the G-20 agreed to channel US $750 billion out of a US $1.1 trillion global rescue package into the fund. Governance reforms have been promised to expand voting rights, given that the top 20 countries still have nearly 70 percent of the votes and the remaining 166 have under 30 percent.[89]

Questioning of the quality of international decision-making around climate change, especially in light of continued reliance on economic models that have fueled it, is now coming from multiple sources. Nicholas Stern has said that an effective response to climate change must involve international understanding and collaboration based on methods that are effective, efficient and equitable. He suggests a framework in which individual countries assess their own responsibilities and targets with reference to progress made in the rest of the world.[90] The United Nations has put forward an argument that shifting to a low-emissions, high-growth development pathway requires a governance structure that can "pursue a much more focused and coherent agenda, prevents dominance by donor countries and provides for participatory decision-making on financial contributions and disbursements."[91]

An increasingly vocal climate justice movement has mobilized civil society groups, extending political activism beyond environmental organizations to those focusing on development and human rights. Indigenous peoples associations, for example, have demanded a voice in the forums making decisions about climate change, including international negotiations. They have also filed court cases in national, regional and international courts, drawing attention to the threats they face.

The lack of accountability for the emissions targets in the Kyoto Protocol is an ongoing deficit in governance related to climate change, although these are binding under international law. Fulfilling commitments to adaptation resources has also fallen below what has been promised. These shortfalls have deepened the distrust of many governments participating in climate change talks, weakening the COP as an instrument for global cooperation.

Some governance concerns relate to the private sector, which both contributes to and must play a major role in curbing global warming through the creation and use of greener, cleaner technology. To date, high-emitting industries have been skillful in convincing governments to loosen restrictions on emissions, although some are also seeking new business opportunities in mitigation and clean energy. Less clear is how private sector decision-making corresponds with the global movement to respond to climate change, or with development and human rights priorities that do not lend themselves to short-term profits (see Box 8).

Coordinated governance is important within each country, entailing collaboration across branches of government, and the public and private sectors. Equity concerns are as critical here as they are on the global stage, given the widening social disparities at work within some developing and industrialized countries. Bolivia is an example of a country that has put a framework in place to deal with climate change – through its constitution, which makes commitments to the right to development and non-discrimination, including in reference to the use and protection of natural resources.

### Box 8: People Excluded from Choice, Not Consequence

A case of carbon offsetting in India illustrates what happens when decision-making excludes the people it affects. The fields around a giant chemical factory in the Indian state of Gujarat used to grow cotton for local villagers. Now they barely grow anything. Water from local wells smells acrid and kills the plants it should be nourishing. Children are born with deformities.

The factory makes refrigerant gasses for air-conditioners and fridges. Four years ago, it received an investment from a company in the United Kingdom interested in purchasing carbon offsets for its own emissions. The UK company provided new technology to stem greenhouse gas emissions, as verified by auditors paid by the factory. But dangerous contaminants not defined as emissions began seeping into nearby land and water. Some of the investment money was used for a second factory to produce Teflon and caustic soda, both are processes that generate substantial pollution. Soon after installing the technology, the factory sold the carbon credits it had earned on the international market and tripled its earnings.

The Chief Minister of Gujarat describes carbon offsetting as a good business opportunity. “It’s a typical Western capitalist system, cash- and profit-based. In the East we think differently; caring for nature and the environment is something that comes naturally to us. But of course we’ll take the carbon credits money if it is offered to us. Why wouldn’t we?”

No one has consulted the villagers in this process, most of whom are poor and prone to discrimination as members of low-caste or untouchable groups. Illnesses are growing rapidly from drinking from the polluted wells, but there are no other sources of water. The Gujarat High Court has confirmed poisonous levels of fluoride in the water and evidence that toxic wastes are not being disposed of properly. Its call for compensation has gone unanswered. When villagers marched on the factory to express their frustration, 84 people were arrested.

The British company insists it is only responsible for the technology it provided under the terms of a single project. The Indian company claims the fluoride comes from “natural deposits.” So in the end, everyone benefits except the villagers. Only they – and the earth – suffer the consequences.

*— Source: Ghouri 2009.*

## Who should pay?

*"Rich countries are showing great reluctance to face up to the reality of what rationing carbon means for levels of growth and prosperity in their countries. It is going to be a fundamental change…. What we are beginning to witness is a whole new set of rules for economics, based on rationing resources."*

*— John Prescott, Rapporteur for the Parliamentary Assembly of the Council of Europe*[92]

There is no doubt: large quantities of resources will be required to combat climate change. Climate justice requires deliberate attention to how resources can be directed to reduce development disparities. Realistically, poorer countries are not able to finance existing development priorities, much less the new investments required by climate change. The recent financial crisis shows that where there is a will and a sense of threatened national interests, funds can be raised. Massive public funding, amounting to US $18 trillion or almost 30 percent of gross world product, has gone into recapitalizing banks, nationalizing financial institutions and guaranteeing financial assets. Fiscal stimulus plans, by April 2009, amounted to about US $2.7 trillion.[93]

No one knows exactly how much climate change will cost. Some figures mainly consider infrastructure and technology requirements for mitigation and adaptation, without factoring in potentially much greater development costs from poorer health, food insecurity and so on. There is growing agreement that most of the current figures are too low and will need to be raised over time, especially as consensus has grown that total carbon emissions will need to stop at lower thresholds – 450 ppm or below – to avoid crossing the 2 degree C mark.

Nicholas Stern has raised his estimate for the costs to cut emissions from an initial 1 percent of global GDP by 2050 to 2 percent, and warns that the actual cost may be substantially more.[94] The IPCC has predicted that costs to stabilize emissions at 445 ppm would be 3 percent of global GDP between 2012 and 2030.[95]

These economy-wide studies diverge from "bottom-up" estimates that look at the mitigation potential of a range of technologies in different countries. The UNFCCC estimates that an additional US $200 billion to US $210 billion will be needed annually for mitigation by 2030 to return emissions to current levels, along with US $432 billion annually invested in the power sector and US $148 billion in renewable and low-carbon energy, and carbon dioxide capture and storage (see Box 10 on financing technology).[96] A McKinsey & Company study has suggested that upfront investment in mitigation measures could climb from US $780 billion in 2020 to US $1.2 trillion in 2030.[97]

Estimates on costs for adaptation vary widely. The World Bank has calculated the price for climate-proofing development assistance and foreign and domestic investments at between US $9 billion and US $41 billion annually from 2010 to 2015, with costs after that jumping to US $80 billion to cover a variety of impacts.[98] Oxfam has proposed a figure of about US $50 billion a year, based on a survey of 13 national adaptation plans, while UNDP has suggested it will top US $86 billion a year by 2015.[99]

A 2009 study by the International Institute for Environment and Development and Grantham Institute for Climate Change claimed that current adaptation cost predictions are much smaller than they should be, in part because they do not account for low levels of current investment in development that make some countries more vulnerable to climate change than others. Without full funding for development, funding for adaptation will remain insufficient.[100]

For overall climate change-related transfers from industrialized to developed countries, the G77/China has put forward a calculation of up to 1 percent of the annual gross national product of Annex 1 countries.[101] Members of the African Union have stipulated that Africa alone will need US $67 billion to US $200 billion annually in compensation for what will likely be severe constraints on already low levels of development.[102]

### A record of inadequacy

Regardless of the figure chosen for the costs of climate change, patterns of financing so far have not proven adequate in their amount or distribution. The estimated US $20 trillion to be spent between 2004 and 2030 to meet global energy demands could be critical to "decarbonizing" economic growth, for example.[103] In the OECD countries, however, both public and private expenditures on energy-related research, development and deployment have declined in recent years. Public flows have dropped to US $8 billion from about US $12 billion two decades ago, while private funds have fallen to US $4.5 billion compared with US $8 billion a decade ago.[104]

At the World Bank, the largest decline in lending for infrastructure projects since the mid-1990s has occurred in the electricity sector, on the expectation that the private sector would take up the slack. The trend at the Bank reversed in 2002, but new commitments have not yet reached the level of the mid-1990s.[105]

Public climate change financing pledged to developing countries through multilateral and bilateral channels is about US $21 billion[106] – about two-thirds of the amount that OECD countries spend on energy production subsidies.[107] The bulk of climate change funds flow through bilateral channels and the World Bank.[108]

Only US $279 million has been explicitly committed to multilateral adaptation projects over the next several years – resources for mitigation generally dwarf those for adaptation, even though the latter is a priority in low-emitting poorer countries. The Oxford Institute for Energy Studies calculated that from 2000 to 2006, an estimated US $600 million was offered by OECD countries for assistance with adaptation, but mostly for disaster risk reduction. This was only 1/34th of the US $11 billion spent in that period on climate projects, most of which went towards mitigation measures in a few countries.[109]

In mobilizing public resources for climate change, the history of official development assistance (ODA) is not encouraging. Very few countries have reached the longstanding international commitment of giving 0.7 percent of GNP. In some cases, disbursement of funds lags behind. Aid delivery continues to focus on the strategic priorities of donor countries rather than developing country requirements. In 2004, only 40 percent of the US $3.4 billion in emergency humanitarian funds requested by the UN was delivered, much of it too late to avert human development setbacks.[110]

## Underfunded Funds

A series of funds to support developing countries has been set up under the auspices of the GEF, including the Special Climate Change Fund, the Least Developed Country Fund and the Strategic Priority on Adaptation. Just over US $157 million has been spent by all three so far, on 98 projects with an average cost of US $1.6 million.[111] As an indication of the potential costs of adaptation and the possible inadequacy of these expenditures, one recent study found that adaptation of a single watershed in China would be US $1 billion a year.[112]

The Least Developed Country Fund encourages eligible States to create national action plans for adaptation based on urgent needs. As of May 2009, 40 countries had submitted plans, with a total cost of US $1.63 billion,[113] but the fund has only disbursed about US $48 million.[114]

The UNFCCC calls on industrialized countries to provide new and additional resources for climate change measures, including for adaptation costs in particularly vulnerable countries. They should take all practical steps to promote, facilitate and finance the transfer of or access to environmentally sound technologies.

> *"All studies agree that current international financing mechanisms are of inadequate size compared to the requirements to combat climate change."*
>
> *— G-20 Climate Finance Experts Group*[115]

Developing countries have specified that climate change financing needs to substantially increase to qualify as "additional," and should not be counted under existing ODA commitments. Some donor countries have maintained that resources for adaptation, in particular, are difficult to distinguish from ordinary ODA support for health, education, etc. Developing countries also want financing decisions to be agreed upon and made under the relatively democratic UNFCCC COP. Industrialized countries have preferred to channel resources bilaterally or through the World Bank. The Bank's Climate Investment Funds have been stocked with US $6.2 billion,[116] with an additional US $900 billion for its carbon partnership and forest carbon partnership facilities. These figures compare with US $2.7 billion for the GEF over the past 17 years,[117] and the much smaller amounts in the GEF funds for climate change adaptation.[118]

The Climate Investment Funds count contributions as ODA, and their definition of clean energy has been disputed, since it includes "clean" coal and large hydropower plants considered less clean than wind, solar and thermal systems. The World Bank continues to finance extractive and "dirty" energy industries under agreements with developing country governments. In fiscal 2007-2008 alone, it increased spending on oil, coal and gas by 94 percent over the previous year, while spending on renewable energies increased only 13 percent.[119]

Some NGOs have also questioned the wisdom of sending resources through World Bank loans that incur financial debts, when industrialized countries are already in an atmospheric debt to developing countries for their disproportionate use of atmospheric carbon capacity.

### A market role?

Another potential source of climate financing is the private sector – its investments constitute up to 86 percent of all global investment and financial flows.[120] Some investment is already happening through the CDM and joint implementation projects. The Adaptation Fund, created after the Kyoto Protocol came into force and designed to be financed through a levy on CDM projects, could generate between US $80 million and US $300 million a year by 2012 depending on trading volume and price.[121] The Adaptation Fund completed the first two sales of certified emissions reductions in mid-2009, totaling US $18.4 million.[122]

Questions about the ability of the CDM to produce finance for low-carbon development hover around the small sums involved so far, and the fact that a large segment of CDM funds are still going into carbon-intensive industries and fossil fuel projects.[123] Proponents argue that the CDM and other offsetting mechanisms need a major expansion to produce larger transfers, but this would not address the existing problems with proving that projects are additional and make a verifiable contribution to emissions reductions.

In the wake of the recent global financial crisis, there is a great deal of skepticism about the role of markets in supplying financing. Energy investments, for example, require large upfront spending and a long timeframe, and involve uncertain returns – all features that can make them unlikely to attract sufficient private sector resources. Adaptation costs are more likely to be perceived as public investments requiring levels of ongoing support that generally come from the public sector.

> *"When the CDM was introduced 10 years ago, there was much expectation from the developing countries that it would provide the necessary up-front financial and technical support for new sustainable development projects that would reduce greenhouse gas emissions. Today…it is mostly functioning to provide additional cash flow to projects that are already able to move forward with its [sic] own financing."*
>
> *— Asian Development Bank senior official in 2008*[124]

### Box 9: Linking Finance and Technology

One critical role for climate change finance is investing in new technology. Low-carbon technology is increasingly available and will become more so. It will be an essential part of the large emissions cuts in industrialized countries. For developing countries, there may be opportunities to benefit both development and the climate by using cleaner technology to plug gaps in existing infrastructure such as energy systems, in the way that cell phone networks have leapt ahead of landline phones in some places.

However, low-carbon technologies typically remain more expensive than traditional carbon-intensive technologies. Patents and research and development capacities are highly concentrated in industrialized countries. Poorer developing countries face continued barriers to access, including limited resources and capacities to obtain and use technology, and pursue innovations. For many at this point in time, technology for adaptation and basic development is far more critical than techniques for emissions mitigation.

The UNFCCC has generated figures on the costs of technology needed by developing countries, predicting this should be between US $6 billion and US $41 billion annually for deploying technologies, with another US $176 billion to US $464 billion annually for diffusion and commercial transfer. It estimates that between US $10 billion and US $100 billion annually should be applied to research and development, but only in industrialized countries – a notion criticized for ignoring needs and potentials in developing countries.

*— Sources: South Centre 2009; UNFCCC 2008.*

## A menu of options

Looking forward, and driven by increased pressure in international negotiations, a number of financing proposals have come from different countries and groups (see Boxes 10 and 11). General options include the auctioning of emissions allowances, an international assessment system beyond ODA, levies on international aviation and shipping, an international financial transaction tax, and the shifting of fossil fuel subsidies in industrialized countries into climate change financing in developing nations.

**Box 10: Proposals for Financing**

Some of the proposals for climate change financing include:

*Mexico* has suggested the creation of the Comprehensive World Climate Change Fund for mitigation, adaptation and technology transfer. All countries would contribute; withdrawals would be determined based on current emissions, population and GDP. The fund would aim to spend US $10 billion a year. All countries would have an equal voice in its governance.

*Switzerland* has sketched a funding scheme based on a global carbon tax of US $2 per ton of carbon dioxide emitted. Countries emitting less than 1.5 tons per person per year would be exempt. Out of estimated annual revenues of US $48.5 billion, US $18.4 billion would be for a Multilateral Adaptation Fund, with countries paying in based on their level of national income.

*Norway* has suggested auctioning international permits for emissions and distributing the revenues to developing countries.

*The Commonwealth Secretariat* has raised the issue of multilateral debt swaps to combat climate change. These could generate US $90 billion, with an additional US $40 billion from bilateral relief.

*— Sources: Worldwatch Institute 2009; Development Finance International 2009.*

Whether resources for climate change are public or private, they need to be treated as investments in the global public good of stabilizing climate change. From a climate justice perspective, equitable distribution of resources takes on board the historical reasons why some people and countries are further behind than others, and the benefits of closing the gaps – for development, human rights and a habitable world.

**Box 11: Applying a Formula of Responsibility and Capability**

The Greenhouse Development Rights Framework could be used to apportion mitigation and adaptation costs based on its responsibility and capability indicator. This encapsulates each country's historical contribution to climate change and the ability of those above a minimum development threshold to address it without sacrificing people's basic needs.

The responsibility and capability formulation could be applied to multiple financing mechanisms, including to create, operate and monitor them. Using the indicator to establish a US $250 billion per year global climate change fund, for example, would mean the US's share would currently be US $82.7 billion, the EU15's US $57.4 billion, and China's US $13.75 billion. The indicator would adjust over time to capture shifts in responsibility and capability.

*— Source: Pendleton, Andrew and Simon Retallack 2009.*

# Chapter 3
# Towards a Climate Justice Agenda

*"Climate change is already undermining the realization of a broad range of fundamental rights for many people – the right to health and even life, rights to food, water, shelter and property, rights associated with livelihood and culture are all affected. Our challenge is to build accountability for human rights into future efforts to address climate change. By doing so, we will better understand who is most at risk and how we should act to protect them."*

*— Mary Robinson, October 2009*

A climate justice agenda is founded on the principle of equity, across all aspects of climate change, but beyond that point it must be a living agenda. The elements will likely shift over time to fulfill the needs and priorities of different peoples and nations, as they define them, and to protect the environmental resources on which we all depend.

It is beyond the scope of this booklet to offer a set of comprehensive recommendations for a climate justice agenda. Presented here are some starting points to begin reframing current climate change debates, as part of a broader process of people claiming their rights to sustainable development and participation in decisions that affect their lives.

**Make justice the starting point.** This is the only approach that is comprehensive enough to tackle climate change, foster sustainable economies, and be politically acceptable to the majority of countries. Climate change talks have been contentious and consensus difficult, but the push to strike agreement at all costs carries the risk that decisions made to reduce inequities will be postponed, while climate change threats continue to grow. There can be no grand global bargain without justice at its core.

**Build on existing development and human rights agreements.** Both adaptation and mitigation activities should be carried out under the well-established development and human rights frameworks affirmed by decades of national and international policies and actions. Climate change cannot be reversed at the expense of poverty eradication or by thwarting the right to development. The continued tendency to view climate change and development as parallel rather than intertwined issues will hinder progress on both fronts.

**Step up action—urgently—to slow climate change.** As a whole, the world has the knowledge, resources and technology to counter climate change. It articulated a common political vision in the UNFCCC. Given the escalating pace of global warming, it now has to act with far greater urgency to realize these commitments. Change is possible even if it requires major economic and political rearrangements around the core principles of equity and sustainable development.

**Aim high—adopt the most ambitious targets.** Climate change predictions have consistently proven to be underestimated. Using the most pessimistic calculations recognizes that some countries and peoples face lower thresholds for threats than others. By aiming for the most ambitious targets, there is a greater likelihood that sufficient steps will be taken in time. Given the risks for small islands and low-lying territories as discussed in Chapter 1, the world should take a precautionary approach and aim to keep temperature changes to a maximum of 1.5 degrees C. The 1990 baseline for emissions cuts must apply to all industrialized countries – it is unjust to allow extra years to be added to a history of overconsumption of atmospheric space. Overall greenhouse gas emissions should be reduced and kept at a ceiling of 350 ppm, and the trajectory of global emissions must shift downward no later than 2015.

**Move adaptation to the foreground.** Adaptation efforts need to move promptly to the foreground of international and national support for development and climate change, even as mitigation efforts are dramatically scaled up. Contributions to adaptation financing by industrialized countries should be linked to the depth of their own mitigation efforts, the ability to pay and historic emissions. In developing countries, national development plans, backed by national and international financing, should integrate adaptation and "climate proofing" across all relevant sectors. They should focus on strengthening resilience among vulnerable groups, such as through social protection schemes and targeted investments in public services and infrastructure. All of these steps should be taken urgently, given that the costs of adaptation rise when actions are delayed.

**Transform the systems and institutions that have created climate change.** Tinkering around the edges describes much of the response to climate change so far. This falls short of what is needed. As the world stalls, only some people continue to reap rewards from current political and economic configurations. Billions more do not. Governance and development models should be built around notions of justice and equity, with the objective of working for the planet and people as a whole, and evening out imbalances that are not sustainable. It is not enough to talk about low-carbon pathways through technology, for example, without also rethinking current models of production, global trade and consumption patterns.

**Reduce exclusion in global decision-making.** Climate change talks and actions have featured a few voices and priorities, and neglected many others. The small island developing States (SIDS), least developed countries (LDCs) and indigenous peoples face particular threats that are not being adequately addressed, in addition to the injustice of being low emitters struggling to cope with severe impacts on development and even territorial integrity. The notion of developing countries being at the table should be refined to emphasize that this must include those who do not have a powerful role in the global economy.

All major climate change decisions should take place within the UN system, as the most democratic international forum, including those related to the use of adaptation and mitigation funds, and the setting of targets. At the same time, new accountability mechanisms need to be developed to ensure that these decisions accord with the fulfillment of the broadest spectrum of human and sustainable development needs.

**Call on both industrialized and developing countries to set climate and development targets.** Both climate change and development have to be viewed from a global framework under which appropriate, equitable and sustainable balances can be struck. Targets should be part of national planning and set in agreement with informed citizens about the kind of world people want to share. They should reflect the notions of historical responsibility and common but differentiated responsibilities, as well as variations in development contexts. The Greenhouse Development Rights framework, which integrates responsibility and capability indicators, is one model that could be applied to defining emissions targets.

Industrialized countries could take the lead and demonstrate what can be achieved by adopting and implementing targets of a 45 percent decline in emissions over 1990 levels by 2020. Developing countries, particularly those with fast-growing economies, may need to adopt targets by 2020 or before, but they should not be required to accept binding targets until industrialized countries demonstrate how lower carbon growth can work, commit to equitable and inclusive global institutions and frameworks, and provide sufficient financial and technological support in accordance with national development plans.

**Agree on a convergence in per capita emissions.** This should be set at an annual 2 tons of carbon dioxide and equivalent greenhouse gases per person by 2050, with minimal scope for deviation. Current mitigation and development plans and targets should be framed with this average in mind.

**Back a public investment approach to climate change.** Key decisions should be made by the public sector in accordance with public interests, and deliberately linked to objectives such as reducing emissions while ensuring equitable access to energy services required for development. An appropriate public policy framework could, for example, build links between the adoption of green technology, the expansion of energy services, and the generation of new opportunities for decent jobs. In industrialized countries, for the near term, other public policy priorities should include allocating responsibilities for emissions between producers and consumers, and setting a price on carbon through taxation or regulations on market minimums.

The private sector can play a role in addressing climate change, but the market should operate in service to development, not the other way around. An under-supervised market should not be viewed as a reliable source of actions or financial flows on the scale required to stop climate change. Even a growing chorus of private sector firms, based on the recent global crisis, has called for putting effective policy and regulation of markets at the heart of the response to global warming. Market imperfections will otherwise continue to hinder mitigation options, such as those to achieve greater energy efficiency. A high bar should be in place to ensure, rather than assume, that markets are making contributions to reducing climate change and fostering sustainable development.

C**hallenge market-based cap and trade, and offset programmes.** These have contributed little to emissions reductions. There is a lack of conclusive evidence on whether the problem is the models being used or current approaches to implementation. To be warranted, both systems need to make clearly demonstrable contributions to lower emissions and climate justice –

such as through significant transfers of resources to adaptation for vulnerable groups. Both should be rigorously monitored for whether or not they are perpetuating inequities, as when industrialized countries mostly pursue offsets to reach emissions targets instead of significantly reducing their own emissions. Development costs caused by carbon, such as impacts on health and food security, should be factored into the market price of carbon regardless of where in the world they originate.

**Free up finance.** The sums for halting climate change are large but feasible. There should be an immediate scaling up of investments to slow the pace of change and avoid more substantial future costs. Since the sums calculated by international organizations have been low and subject to revision, other figures should be considered as potential reference points, such as the US $24 trillion for climate debt proposed by NGOs (see Box 12). The magnitude of actions in developing countries should be determined by the predictability, speed and scale of international financial support.

Transfers to developing countries should be consistent with the priorities they identify, such as those in national adaptation and development plans. They should be unfettered by conditionalities and additional to the existing ODA commitment of 0.7 percent of GNP. They should not be sent through international debt mechanisms that impose additional penalties, particularly on poor countries with limited responsibility for climate change. All countries should have access to finance, but priority countries should be those facing the greatest vulnerabilities from climate change. The Greenhouse Development Rights Framework could be applied to designating funding amounts from industrialized countries and transferring funds to developing countries. Each industrialized country should have a national plan in place spelling out how it will achieve existing commitments to ODA and additional commitments to financing for climate change.

Regardless of its source, financing should be tied directly to new opportunities for development that is equitable and sustainable. It should not reinforce existing failed systems, on the finance or climate side, or entrench the privileges of some groups over others. Carbon intensive energy subsidies should be phased out entirely in industrialized countries and justified in developing countries in terms of providing measurable development benefits to poor and marginalized peoples. Financing for land-use programmes such as forest conservation and grasslands restoration should be linked to the development rights of people who are poor or use the land as part of indigenous traditions.

**Take climate change technology out of the for-profit-only box.** Everyone wins if temperatures stop rising. But a for-profit orientation and restrictive policies related to technology, such as those governing trade and intellectual property rights, continue to benefit a few people rather than sustainable development at large. While monetary incentives are important drivers of innovation, the incentive of a habitable world needs to be predominant. There is a long history of targeted public financial support for technology so that it can evolve, and be diffused and priced at levels allowing widespread adoption. In the near term, diffusing existing technologies for mitigation in industrialized countries will require a minimum carbon price underpinned by stable institutions and regulations, energy efficiency standards, public procurement and benchmarking.

For developing countries, technology transfers need to encompass priority adaptation needs. They should also be connected to opportunities to adopt green technologies that support equitable development, decent jobs and a low-carbon path, in view of future mitigation. Overall, the role of technology in developing countries needs to be understood as something that requires large-scale transfers from industrialized countries and less restrictive intellectual property rights, but must also move towards the rapid expansion of domestic capacities. Technology and finance policies should include investments in domestic research and development, the promotion of local technologies, and the cultivation of relevant educational skills.

**Engage the general public in debate about the significance and urgency of climate change.** Concerted advocacy should explain to the general public, in non-technical ways, what is happening and what is at stake for them, their societies and the world. The phenomenon of climate change transcends political orientations and group identities, but some voices are heard more than others. Do the points of view represented in climate change negotiations reflect those of people at large? If not, how can public perspectives be articulated? Targeted advocacy should mobilize civil society groups, parliamentarians, local officials and other groups who may be working on development and rights issues affected by climate change, but without a concerted focus on climate justice. At all levels of decision-making, Principle 10 of the 1992 Rio Declaration on Environment and Development should be applied. It states that environmental issues are best handled with the participation of all concerned citizens.

### Box 12: NGOs Propose Measures for Justice

A Platform for Climate Justice, a consortium of people's movements in Asia, has highlighted solving climate change and injustice through the transformation of global economic, political and socio-cultural systems. It urges the broad recognition of climate debt, along with reparations to redress it, estimating a figure of US $24 trillion from the climate debt incurred between 1800 and 2008. Emissions should be stabilized at 350 ppm by 2020 and temperature rises kept within 1.5 degrees C. Northern countries must make most of the cuts, although Southern governments should adopt clear national targets for promoting renewable energy and shifting to low-carbon technology. The group opposes trade agreements that undermine measures to solve the crisis, and maintains that strict regulations are needed for transnational corporations.

*— Source: A Platform for Climate Justice of Asian Movements, Organizations and Networks 2009.*

# List of Annex I Countries

> The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.
>
> — The United Nations Framework Convention on Climate Change

Australia
Austria
Belarus
Belgium
Bulgaria
Canada
Croatia
Czech Republic
Denmark
Estonia
European Community
Finland
France
Germany
Greece
Hungary
Iceland
Ireland
Italy
Japan
Latvia
Liechtenstein
Lithuania
Luxembourg
Monaco
Netherlands
New Zealand
Norway
Poland
Portugal
Romania
Russian Federation
Slovakia
Slovenia
Spain
Sweden
Switzerland
Turkey
Ukraine
United Kingdom of Great Britain and Northern Ireland
United States of America

# List of Kyoto Protocol Countries

As of October 2009, 184 States have signed and ratified the Kyoto Protocol

Albania
Algeria
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chile
China
Colombia
Congo
Cook Islands
Costa Rica
Croatia
Cuba
Cyprus
Czech Republic
Côte d'Ivoire
Democratic People's Republic of Korea
Democratic Republic of the Congo
Denmark
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
European Community
Fiji
Finland
The former Yugoslav Republic of Macedonia
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hungary
Iceland
India
Indonesia
Iran
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kenya
Kiribati
Kuwait
Kyrgyzstan
Lao People's Democratic Republic
Latvia
Lebanon
Lesotho
Liberia
Libyan Arab Jamahiriya
Liechtenstein
Lithuania
Luxembourg
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauritania
Mauritius
Mexico
Micronesia
Moldova
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Niue
Norway
Oman
Pakistan
Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Korea
Romania
Russian Federation
Rwanda
Saint Lucia
Saint Vincent and the Grenadines
Samoa
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Solomon Islands
South Africa
Spain
Sri Lanka
Sudan
Suriname
Swaziland
Sweden
Switzerland
Syrian Arab Republic
Tajikistan
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkmenistan
Tuvalu
Uganda
Ukraine
United Arab Emirates
United Kingdom
United Republic of Tanzania
Uruguay
Uzbekistan
Vanuatu
Venezuela
Viet Nam
Yemen
Zambia

# Glossary

**Adaptation:** adjusting human, socio-economic and environmental policies and practices in order to protect the world's people from the harmful effects of climate change; or to take advantage of climate change opportunities.

**Adaptation Fund:** a fund that has been created by the Parties to the Kyoto Protocol to finance adaptation projects and programmes in developing countries that have ratified the Kyoto Protocol. Financing of the Fund will partly be made available through the Clean Development Mechanism (CDM) and through other sources.

**Annex countries:** groups of nations with different commitments and obligations with regard to international climate agreements. Annex 1 countries include industrial countries, including Organisation for Economic Co-operation and Development (OECD) members and the European Union, and countries with economies in transition. These countries agreed to reduce their greenhouse gas emissions to 1990 levels by the year 2000. Annex 2 countries are industrial countries that have a special obligation to support developing countries in their efforts to reduce emissions by providing them with technology and financial resources. Non-Annex 1 countries include countries that are most threatened by climate change and Annex B countries are those nations that have agreed upon emission reduction targets under the Kyoto Protocol.

**Atmospheric debt:** one of the "climate debts" that developed countries have towards developing countries as they, on their development paths, have consumed more than a just share of the Earth's atmospheric space.

**Auctioning of emission allowances:** a mechanism that will assign a cost to emissions allowances/permits.

**Baseline:** a level or concentration in a certain year against which succeeding greenhouse gas (GHG) emission levels and concentrations are measured.

**Carbon budget:** a set amount of tolerable/acceptable emissions worldwide within a certain time frame. In the present debate on climate change, the carbon budget is set at 1,600 gross tons of carbon dioxide equivalents (CO2eq) for the period 1990-2050.

**Cap and Trade:** an emissions trading system, whereby emissions allowances are assigned to sectors or industries under a set limit (cap) that shrinks over time. Emitters who exceed their allowances then have the option to purchase additional credits from those who have not. An alternative is to purchase offsets to make up for going over an allowance.

**Carbon capture and storage:** a process to collect and subsequently store (often underground) the carbon dioxide that is released during industrial processes and energy production, so that it does not directly end up in the atmosphere.

**Carbon credit:** a "credit" that a country or company can gain when it remains under a set amount of emission allowances (e.g. under a cap and trade scheme or under the Kyoto Protocol), and which can be traded with countries or companies exceeding their emission allowances.

**Carbon debt:** see climate debt.

**Carbon dioxide ($CO_2$):** is an incombustible gas formed as a result of human activities, in particular through the burning of fossil fuels.

**Carbon dioxide equivalent (CO2eq):** a measurement unit to indicate to what extent a greenhouse gas contributes to global warming – its global warming potential (GWP) – and to weigh the climate effects of all greenhouse gases against each other. Using carbon dioxide as a reference gas, CO2eq is calculated by multiplying the quantity of a greenhouse gas by its GWP.

**Carbon emissions:** the carbon dioxide or carbon dioxide equivalents released in the atmosphere, mainly as a result of human activities and production.

**Carbon market:** a carbon trading system through which countries or companies buy or sell units of greenhouse-gas emissions, measured in carbon dioxide equivalents (CO2eq), to meet their national caps on emissions, either under the Kyoto Protocol or under other agreements.

**Carbon sinks:** places like forests and oceans that – through natural processes – absorb more greenhouse gases than they release into the atmosphere.

**Carbon storage:** see carbon capture and storage.

**Carbon space:** the amount of space left in the atmosphere to absorb carbon dioxide without causing further global warming.

**Carbon tax:** a tax on carbon dioxide emissions, initiated to set a price on pollution through greenhouse gas emissions and to generate resources that can be used for further adaptation and mitigation efforts.

**Carbon trading:** see emissions trading.

**Clean Development Mechanism (CDM):** a mechanism under the Kyoto Protocol, which stimulates Annex B countries to invest in projects that remove or reduce greenhouse gas emissions in developing countries, and for which Annex B countries obtain certified emissions reductions (CERs) which they can use to compensate for their own emissions and to meet their own emission reduction targets.

**Certified emissions reductions (CERs):** a Kyoto Protocol unit, issued for emission reductions under the Clean Development Mechanism and that equals 1 metric ton of carbon dioxide equivalents (CO2eq).

**Conference of the Parties (COP):** the main body of the UNFCCC, comprising the nations that have ratified the Convention. On a yearly basis, it promotes and reviews progress in the implementation of the Convention.

**Climate debt:** the concept suggesting that rich countries have a two-fold debt towards poor countries, including an emission and adaptation debt, as rich countries have taken up a disproportionate amount of carbon "space," and as such have contributed most to climate change; something poor countries should not be expected to bare the costs off.

**Climate Investment Funds (CIF):** an interim measure in the lead up to a new international climate change agreement – jointly developed by the Multilateral Development Banks (MDBs), developed and developing countries, civil society, the private sector and other stakeholders – in order to increase financial resources and human skills for developing countries to address climate change.

**Climate proofing:** a term used for identifying and ensuring that potential climate change risks to a development project or to other assets are reduced to acceptable levels.

**Emission allowances:** the total amount of greenhouse gases that a company or country are allowed to emit within a certain time frame.

**Emission reduction unit (ERU):** a Kyoto Protocol unit, issued for emissions reductions under Joint Implementation and that equals 1 metric ton of carbon dioxide equivalents (CO2eq).

**Emissions trading:** one of the three Kyoto mechanisms that, on the basis of specific eligibility requirements, allows an Annex B country that is not fully using its emission allowances to sell "spare" Kyoto Protocol units to another Annex B country that is exceeding its allowances. More generally, emission trading stands for the transfer of emission allowances or carbon credits across international borders or between companies enrolled in a cap-and-trade scheme.

**Emissions Trading System (ETS):** the world's largest emissions trading system, which allows companies and countries of the European Union to freely trade emission allowances across the European Union.

**EU15 Countries:** includes the following European Union Member States: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, United Kingdom, Greece and Spain.

**Global Environment Facility (GEF):** a global partnership that has been established to deal with global environmental challenges and to provide grants for national initiatives that aim to address environmental issues related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. The GEF manages the financial mechanisms under the UNFCCC, such as the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).

**Global warming:** a continuing increase in the average temperature of the Earth's lower layer atmosphere.

**Global warming potential (GWP):** a relative measure to weigh how much a given mass of greenhouse gas contributes to global warming in comparison to the same mass of carbon dioxide (which has a GWP of 1).

**Greenhouse gases (GHGs):** atmospheric gases which are responsible for global warming and consequently climate change as they absorb infrared radiation in the Earth's atmosphere – creating the greenhouse effect. Greenhouse gases include among others carbon dioxide, water vapour, methane, ozone, nitrous oxide, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

**Group of 8 (G-8):** a group of eight industrialized countries (France, Germany, Italy, United States, Japan, Canada, Russia and Great-Britain) that meets at least once a year to foster consensus on global issues, including climate change.

**Group of 20 (G-20):** established in 1999, the G-20 consists of twenty finance ministers and central bank governors of 19 countries and the European Union. The group is mandated to foster discussions on key global economic issues among industrialized and developing countries.

**Group of 77 (G-77):** established in June 1964 and comprised of 130 developing countries (seventy-seven at its creation), it is the largest intergovernmental organization in the United Nations that articulates, promotes and negotiates collective economic interests.

**Historical responsibility:** the notion that developed countries have been the source of most greenhouse gas emissions during more than 150 years of industrial activity and consequently contributed most to climate change. Therefore, industrialized countries are, from a historical point of view, responsible for today's climate change challenges and need to take the lead in climate change mitigation and adaptation.

**Intergovernmental Panel on Climate Change (IPCC):** established in 1988 by UNEP and WMO, the IPCC operates as an objective and neutral source of information and advisory body for governments as it explains the scientific underpinnings of climate change through its periodic assessments reports.

**International Transaction Log (ITL):** an electronic accounting system that allows the UNFCCC Secretariat, through national registries, to keep track of the issuing, transfer and cancellation of emission allowances or carbon credits of countries that have signed the Kyoto Protocol.

**International financial transaction tax:** a tax that would be levied on every financial transaction that is crossing borders, including transactions related to derivatives and currencies.

**Joint implementation (JI):** one of the three mechanisms under the Kyoto Protocol, established to support Annex B countries to meet their binding greenhouse gas emissions targets without necessarily reducing domestic emissions. JI allows an Annex B country to earn emission reduction units (ERUs) by initiating emission reduction or removal projects in another Annex B country.

**Kyoto Protocol:** an international binding agreement, entered into force in February 2005, which sets greenhouse gas emissions reduction targets averaging 5 percent against 1990 levels for 37 industrialized countries and the European community for 2008-2012.

**Kyoto Protocol unit:** a measurement unit under the Kyoto Protocol that equals 1 metric ton of carbon dioxide equivalents (Co2eq) in emission reductions. Examples are the Certified Emission Reductions (CERs) and the Emission Reduction Unit (ERU).

**Land-use, Land-use Change and Forestry (LULUCF):** a greenhouse gas inventory sector that includes greenhouse gas emissions reductions and removals from the atmosphere as a result of changes in land use and forestry activities.

**Least Developed Country Fund (LDCF):** a fund managed by the Global Environment Facility (GEF) to support the 48 least developed countries (LDCs) in their adaptation strategies to climate change, in particular to prepare and implement their National Adaptation Programmes of Action (NAPAs) under the Convention.

**Low-carbon development:** implementing economic development strategies that result in no or only small amounts of greenhouse gas emissions.

**Mitigation:** strategies to reduce or remove greenhouse gas emissions from the atmosphere, amongst others by maintaining carbon sinks and switching towards more green energy technologies.

**Multilateral debt swaps:** a mechanism to cancel multilateral debt in highly indebted countries with grants, and as such create opportunities for developing countries to invest the money that they are no longer using to repay their debts in direct actions to address climate change.

**National Adaptation Programmes of Action (NAPA):** documents that are prepared by Least Developed Countries (LDCs) in order to identify their most urgent and immediate actions to adapt to climate change.

**Parts per million (ppm):** a ratio-based indicator to measure the concentration of greenhouse gases, in particular carbon dioxide, in the atmosphere.

**Removal Units (RMU):** a Kyoto Protocol unit, issued under LULUCF activities that

remove carbon dioxide from the atmosphere and that equals 1 metric ton of carbon dioxide equivalents (CO2eq).

**Reducing Emissions from Deforestation and Degradation (REDD):** an approach to reduce carbon dioxide emissions from deforestation and forest degradation by providing financial incentives to countries that are willing and able to maintain and protect their forests.

**Special Climate Change Fund (SCCF):** a fund managed by the Global Environment Facility and established to support the implementation of long-term adaptation strategies, policies and measures as well as technology transfer and capacity building in order to increase the flexibility of countries' economic sectors to adapt to the impacts of climate change.

**Strategic Priority on Adaptation (SPA):** a former pilot project by the Global Environment Facility (GEF) of US$ 50 million to support developing countries in addressing local adaptation needs, and in particular to develop and implement concrete adaptation projects in line with the GEF areas of work.

**UN Framework Convention on Climate Change (UNFCCC):** recognizing the industrial and human induced negative effects on the environment and the need to stabilize future greenhouse gas emissions, this Convention entered into force in March 1994. Ratified by 192 countries, the Convention aims to provide an overall framework for intergovernmental cooperation on climate change; including gathering and sharing of information on greenhouse gas emissions; national mitigation and adaptation strategies and best practices; and support for developing countries.

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## *Authors' biographies*

### Barbara Adams

Barbara Adams, Senior Fellow, Global Policy Forum, was trained as an economist and served as Executive Director of the Manitoba Council for International Affairs from 1977–1979 in Canada. Later, she worked as Associate Director of the Quaker United Nations Office in New York (1981–1988), where she worked with delegates, UN staff and NGOs on issues of economic and social justice, women, peace and human rights. She later served as Deputy Coordinator of the UN Non-Governmental Liaison Service (NGLS) through the period of the UN global conferences and until 2003. From 2003–2008 she served as Chief of Strategic Partnerships and Communications for the United Nations Development Fund for Women (UNIFEM).

During her career she has worked as a consultant to UNICEF, served on the board of directors for the Canadian Council for International Cooperation (CCIC) and has undertaken development work in Latin America, including on housing and settlement projects in Uruguay.

Barbara Adams has authored and co-authored many articles, reports and booklets on the UN, including *Accounting for Africa at the United Nations: A Guide for Non-Governmental Organizations*; and *Putting Gender on the Agenda: A Guide to Participating in UN World Conferences*.

### Gretchen Luchsinger

Gretchen Luchsinger was trained as a writer at Columbia University before working as a journalist with Newsweek International. In 1994, she joined the Women's Feature Service in New Delhi, coordinating coverage on gender and development for mainstream media outlets, and managing the production of daily newspapers at the series of UN development conferences in the 1990s.

Since 1999, she has worked as an independent writer and editor covering UN intergovernmental negotiations and development programmes. Based in New York, she has travelled extensively to profile UN country programmes, with an emphasis on post-conflict States. She has produced publications and websites on a spectrum of current political, development and communication issues for different branches of the United Nations, including the UN Development Fund for Women, the UN Development Programme, the Human Development Report Office and the UN Children's Fund. In 2009, in addition to the NGLS publication on climate change, she has been engaged in issues related to elections, decentralization, violence against women, and gender and economics.

## *Photographer's biography*

### Yann Arthus-Bertrand

Born in 1946, Yann Arthus-Bertrand has always been fond of nature and an advocate of conservation. After a three-year study of a pride of lions in the Masaï Mara Reserve in Kenya, he published in 1981 with his wife Anne his first book entitled *Lions*. It was also in Kenya that, as a hot air balloon pilot, he discovered aerial photography and his calling: to demonstrate the Earth's beauty through photography in order to raise awareness of the importance of preserving it.

A full-time reporter and photographer, Yann Arthus-Bertrand specialized as early as 1986 in aerial photography and nine years later began his project *The Earth from Above*. Through books – more than 3 million copies of *The Earth from Above* sold in 24 languages – and exhibitions – nearly 130 million visitors in 120 cities worldwide – this image bank of the Earth seen from above helps the public understand the issue of sustainable development.

He later became a photographer for specialized coverage of adventure, sport and nature in France and founded Altitude in 1991, the world's first aerial photography agency. He also launched the project "Six Billion Others" (2003), a collection of worldwide video testimonies on general themes, such as life, death, love, and hate; and founded GoodPlanet, a non-profit organization that aims to sensitize the public and to develop concrete solutions to move towards a more sustainable way of life. GoodPlanet became a foundation in June 2009.

Yann Arthus-Bertrand is also the author of *Seen From Above*, a documentary series of several one-and-a-half hour episodes, which explore environmental issues. It is currently being distributed for broadcast in 34 countries. Other environmental awareness raising projects include Action Carbone, "Why Sustainable development?" and the recently released movie: HOME, which shows the state of the planet and the challenges to protect it. Yann Arthus-Bertrand is Goodwill Ambassador for the United Nations Environment Programme (UNEP).

Further information about Yann Arthus-Bertrand and his photography can be found online: (www.yannarthusbertrand.org/v2/yab_us.htm). For information on GoodPlanet, visit: (www.goodplanet.org).

## *United Nations Non-Governmental Liaison Service (NGLS)*

The United Nations Non-Governmental Liaison Service (NGLS), established in 1975, is a jointly financed interagency programme of the UN system. NGLS promotes constructive relations between the United Nations and civil society, including through dynamic partnerships to foster greater coherence around cross-cutting and emerging issues on the UN's agenda and by facilitating meaningful civil society engagement in UN processes.

Drawing on its inter-agency nature and UN system-wide perspective, NGLS provides strategic information, analysis and support to a wide range of constituencies, using its unique convening and networking capacity to strengthen multistakeholder dialogue and alliance-building on core UN issues. NGLS programme activities deal with the full UN agenda on economic and social development, human rights, environment, peace and security and operate across the entire UN system of agencies, programmes, funds and departments concerned with these issues. NGLS works with national and regional NGOs from developing and industrialized countries and international NGOs.

The information produced by NGLS – both in published form and electronically – combines public information on UN and NGO events and issues, practical "how to" guides to the UN system for NGOs, and substantive analysis of issues on the international agenda. All NGLS publications are available on its website (www.un-ngls.org).

In 2008, the work of NGLS was supported by:
- United Nations Department for Economic and Social Affairs (UN/DESA)
- United Nations Conference on Trade and Development (UNCTAD)
- International Fund for Agricultural Development (IFAD)
- International Labour Office (ILO)
- Joint United Nations Programme on HIV/AIDS (UNAIDS)
- United Nations Children's Fund (UNICEF)
- United Nations Development Fund for Women (UNIFEM)
- United Nations Development Programme (UNDP)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- United Nations Environment Programme (UNEP)
- United Nations Human Settlements Programme (UN-HABITAT)
- United Nations Population Fund (UNFPA)
- Office of the United Nations High Commissioner for Refugees (UNHCR)
- World Food Programme (WFP)
- World Health Organization (WHO)

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*"Climate change is already undermining the realization of a broad range of fundamental rights for many people – the right to health and even life, rights to food, water, shelter and property, rights associated with livelihood and culture are all affected. Our challenge is to build accountability for human rights into future efforts to address climate change. By doing so, we will better understand who is most at risk and how we should act to protect them."*

*—Mary Robinson, October 2009*

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