



## Overview

### The science

Climate change is probably the most serious global issue that humans face today. Human-caused emissions are making our climate warmer and more volatile: global average surface temperatures have increased by 0.74 degrees Celsius over the past century – as far as scientists can tell, the largest and fastest warming trend in history. Eleven of the last 12 years were among the 12 warmest years in the last century and a half.

Among the impacts we can already see: seasons are arriving at different times; glaciers are receding; sea levels are rising (since 1993, at a rate of more than 3 millimetres a year); and extreme weather events are already becoming more frequent and more severe. As the planet continues to warm, it is probable that we will see an increase in the frequency and severity of floods and droughts in many regions.

Amid uncertainty over predicting the impacts of climate change, and faced by a bewildering array of metrics and measurements, it can be unclear what is the best way to gauge ‘the state of climate change’. However, the single most important indicator to track, as a kind of scorecard for climate change, is atmospheric concentrations of carbon dioxide (CO<sub>2</sub>).

To understand the relationship between CO<sub>2</sub> concentrations and emissions, think of the atmosphere as being like a bathtub. Emissions are represented by the flow of water into the bath. Carbon sinks – oceans, forests, and other things that ‘soak up’ CO<sub>2</sub> – serve as the plughole. And the overall level of water in the bath – signifying greenhouse gas concentrations – gives an indication of the risk of overflow.

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During the last ice age, when low CO<sub>2</sub> levels made for lower temperatures (and more ice, and lower sea levels), the concentration level figure was about 180ppm (parts per million). Just before the start of the industrial revolution it was about 280ppm. Today, the level is 386ppm, and rising by about 3ppm a year – very fast when compared against the whole geological record: ice cores from the last 650,000 years show concentrations varying between 180ppm and 300ppm.

### The UN Framework Convention on Climate Change

In 1992, world leaders met in Rio de Janeiro for the ‘Earth Summit’ – formally titled the UN Conference on Environment and Development. The UN Framework Convention on Climate Change (UNFCCC) was one of the treaties agreed there; it formally made the stabilisation of greenhouse gases the ultimate objective of the whole multilateral climate policy process:

‘The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.’ [Article 2]

The UNFCCC set no mandatory limits on countries’ emissions, and is not legally binding in itself. But it did establish a national greenhouse gas inventory – a prerequisite for future action to stabilise the climate – and set up a treaty secretariat, based in Bonn. And most important of all, the convention’s drafters included provisions for subsequent ‘protocols’ that allow for mandatory emission limits, thus configuring the UNFCCC as the umbrella treaty for all future action.

## The Kyoto Protocol

Five years later, the Kyoto Protocol was agreed as a follow-up treaty to the UNFCCC. Kyoto was designed to reduce the emissions of industrialised countries by 5.2 per cent below 1990 levels by 2012. Under the key targets, the EU was to reduce its emissions by 8 per cent below 1990 levels by 2012, the US by 7 per cent, and Japan by 6 per cent; in all, 36 parties (including the EU in its own right) took on binding targets. The protocol imposed no quantified emissions targets on developing countries, which have no obligation beyond monitoring and reporting their emission levels. A total of 175 parties have ratified the protocol, including Brazil, India and China.

Kyoto was, therefore, never more than a very modest first step – even before the subsequent withdrawal of the US. In particular, it ducked the question of the level at which greenhouse gas levels in the atmosphere should be stabilised, in large part because no real attempt was made to broach the issue of developing country participation. But it was a landmark treaty nevertheless: not only in that it established the principle of binding targets, but also in that it agreed important rules for an ‘operating system’ for climate stabilisation, including setting the stage for a global emissions trading system.

## Bali and the post-2012 process

Following a high-level event on climate change organised by UN Secretary-General Ban Ki-moon in New York in September 2007, international negotiators gathered on the island of Bali in Indonesia in December of that year to begin discussions in earnest on what should follow the expiry of the Kyoto Protocol’s ‘first commitment period’ in 2012. The result of these discussions was the ‘Bali Roadmap’: an agreement to conclude discussions on post-2012 action by 2009, at a climate change summit due to be held in Copenhagen.

Agreement to begin these negotiations was without question a major breakthrough. Towards the close of the summit, the talks appeared very close to collapse – with the respective roles of developed and developing countries proving especially contentious. Secretary-General Ban Ki-moon and Indonesian President Susilo Bambang Yudhoyono returned to the summit at the 11th hour to pressure countries into a deal. Subsequently, compromise language was agreed, and the US was persuaded to join the international consensus.

The route from Bali to Copenhagen will be complicated, however, because the US remains outside the Kyoto Protocol (Australia had withdrawn, but rejoined at Bali). There are consequently two tracks to the process: first, the track under the UNFCCC – to which the US remains committed – catchily titled the ‘Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention’; and second, the track for parties committed to the Protocol – in which the US is not a participant – called the ‘The Ad Hoc Working Group on Further Commitments for Protocol Annex I Parties’.

The Bali outcome was certainly a step forward, but in the end these were only talks about talks. The real work on agreeing the actual elements of a global deal on climate change remains ahead of us.

## Mitigation: reducing emissions to stabilise the climate

### Towards the Copenhagen summit

Between the Bali and Copenhagen summits, climate negotiators have a hectic schedule. First, there is the UNFCCC ministerial summit in Poland in December 2008. In addition, there are official-level UNFCCC meetings in summer 2008 and summer 2009; and there is also a long list of other summits at which climate is guaranteed to come up, including the G8 meetings in Japan in 2008 and in Italy in 2009. At the back of many negotiators’ minds is the fact that there will be a new US President in the White House from the beginning of 2009 – who may prove more open to engaging with the rest of the world on climate change.

### The scale of the challenge

EU policymakers are on record saying that they want to limit global average warming to no more than 2 degrees Celsius. As the 2007 Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) makes clear, this is a challenging target. If policymakers want to limit warming to between 2 and 2.4 degrees Celsius, then:

- CO<sub>2</sub> levels need to be stabilised between 350 and 400ppm (they are currently at 386ppm).
- The concentration levels for *all* greenhouse gases (rather than just CO<sub>2</sub>) need to be stabilised at between 445 and 490ppm of carbon dioxide equivalent (current levels are 455ppm).

In order to achieve these targets, the IPCC estimates, global carbon dioxide emissions need to peak and then start to decline by 2015 at the very latest; and, by 2050, global emissions need to be between 50 and 85 per cent lower than their 2000 level.

### Bringing developing countries into the fold

In the background lurks the question of developing country participation. As noted earlier, developing countries have no targets under the Kyoto Protocol. This is consistent with the UNFCCC, which emphasised the principle of 'common but differentiated responsibilities'. Developing countries, after all, have much lower historical responsibility for causing the problem and far lower per capita emissions today than developed countries – yet they are also the countries facing the worst damages. Above all, many developing countries fear that taking on binding targets would compromise their ability to grow their economies in order to reduce poverty and achieve the Millennium Development Goals.

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Few would disagree that developed countries should take the lead in addressing the problem of climate change. Even so, a problem as fundamentally global as climate change ultimately needs a global solution: it will be impossible to stabilise greenhouse gas levels unless developing countries' emissions are capped. This raises the question of fair shares to a global emissions budget – perhaps the most politically charged long-term issue in climate policy. Many countries, including India and Germany, have called for the enshrinement of the principle that country emission entitlements should converge to equal per capita levels by a negotiated date. It is hard to see how a 'global emissions budget' stands any chance of being agreed to by developing countries without formally enshrining the principle of equitable shares to it.

Another difficult issue for negotiators is how to deal with the issue of forestry, where there are two key issues: firstly, agreeing measures to give countries incentives to conserve their existing forests and avoid deforestation, and secondly, agreeing action on planting new forests (that can soak up carbon dioxide from the air). The question of how to address aviation and shipping – neither covered under the Kyoto Protocol – within future action may also emerge as a central concern.

## Adaptation: building resilience to the impacts of a changing climate

### Climate change impacts

Even if the Copenhagen summit were to result in a best-case outcome for action on reducing global emissions, the world would still be committed to decades of an unstable climate because of greenhouse gases that have already been emitted into the atmosphere. Sea levels will still rise from their current levels; extreme weather events will still become more frequent and more intense; precipitation patterns will still shift, with vast implications for agriculture and food security. As a result, a global strategy for adapting to climate change and building resilience to its effects is needed.

Like so many other elements of sustainable development, though, adaptation is not just a stand-alone activity that can be left to one ministry, international agency or area of expertise. On the contrary, adaptation is much more like a thread that runs through *all* aspects of countries' economic, social and governance systems. Many countries are already developing their own national adaptation plans; others are working on building more effective regional cooperation, likely to be a critical tool in the arsenal of responses to climate change.

### Adaptation in developing countries

It is the world's poorest people and countries that are most at risk from climate change impacts. One indication of how multi-faceted that risk is was set out in a recent International Alert report entitled 'A Climate of Conflict', which found that in 46 countries – home to 2.7 billion people – 'the effects of climate change interacting with economic, social and political problems will create a high risk of violent conflict'. There is thus a clear need for the international community to assist developing countries to adapt: as the UN Secretary-General put it in 2007, the task will require an 'unparalleled expression of solidarity among countries'.

A key part of that solidarity will need to come in the form of money. Oxfam recently estimated that at least \$50 billion would be needed each year to help developing countries with climate adaptation – a figure close to the current global total for development

aid. While the Bali summit did agree to operationalise a new Adaptation Fund for developing countries, its budget is so far only \$50 million: one thousandth of the Oxfam estimate.

But money is only part of the story. Another area highlighted by the UN is the need for vastly improved information- and knowledge-sharing among governments – about which coping strategies have worked where, for example. Similarly, while the IPCC provides a state-of-the-art overview of projected climate impacts at the global level, much more specificity is still needed on how the effects of climate change will impact particular countries and regions.

For the UN and for international donors like the World Bank, the UK's Department for International Development and NGOs, climate adaptation needs to become a central part of everything they do. Aid projects need to be 'climate-proofed', to ensure that they are not washed away (potentially literally) by climate impacts. Humanitarian relief agencies will need to plan ahead for a world of more disasters, more food shocks, and more mass movements of people in the wake of disasters. Peacekeepers need to be aware of how climate change will affect the risk of violent conflict, and how it will impact the way that operations are carried out.

Above all, though, international actors need to help developing countries lead their own adaptation strategies. As with other parts of international development, there is no 'one size fits all' approach: adaptation work will only prove durable and effective where it follows countries' own development priorities.



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