



**Breaking the  
Climate Deadlock**  
**A Global Deal for Our  
Low-Carbon Future**

**Executive Summary**

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# Executive Summary

## A The challenge is immense

There is now virtually overwhelming evidence about climate change and its consequences; there remain uncertainties, but the risks of negative and irreversible consequences are clearly high.

- Over 2,500 scientists from over 100 nations participating in the Intergovernmental Panel on Climate Change (IPCC) concluded in November 2007 that “warming of the climate system is unequivocal” and human activity was “very likely” responsible.
- Recent research indicates that we need to limit warming to approximately 2°C; the indications are that moving beyond this level of warming will greatly increase the risks of irreversible and potentially catastrophic changes to the climate.
- In 2005 the atmosphere had a concentration level of carbon dioxide equivalents (CO<sub>2</sub>e, a measure of greenhouse gases) of 455 parts per million by volume (ppmv). When the impact of aerosols is taken into account the effective concentration is 375 ppmv.
- To have a reasonable chance of limiting warming to approximately 2°C, we would need to peak concentrations at around 475-500 ppmv CO<sub>2</sub>e (including aerosols), and then reduce emissions to stabilise concentrations at 400-450 ppmv by the 23rd century.
- The scientific consensus is that in order to meet such a concentration path for CO<sub>2</sub>e, we need to peak global annual emissions no later than 2020 and then cut global annual emissions by at least 50 percent versus 1990 levels by 2050 (1990 is the base year for the UN Framework Convention on Climate Change (UNFCCC) – though there is political contention over the use of this base year). However, peaking globally by 2020 requires rapid, major emissions reductions by developed countries, and there is doubt, today, whether this can be achieved.
- In 1990 the world emitted around 40 billion tonnes of CO<sub>2</sub>e. Today the figure is estimated to be 55 billion. Without action this would rise to 60 billion by 2030 and 85 billion by 2050. In order to meet the 50 percent reduction, we need to take it down to less than 20 billion tonnes by 2050.
- If, as projected, the world population rises to 9 billion people, this would mean an average of approximately 2 tonnes of CO<sub>2</sub>e per person per year by 2050. Today the average is 8 tonnes, with over 20 tonnes for the US, 10 tonnes for Europe and Japan, 6 for China and 2 for India.
- The implications of all of this are transformative for the world economy; in order to cut carbon to this degree and maintain current levels of economic growth, carbon productivity (GDP per tonne of carbon) needs to increase tenfold over the next four decades. This cannot happen without profound behavioural and technological change.

## B The challenge can be met

- We can meet approximately 70 percent of the abatement required over the next two decades with existing or near-commercial technologies.
- Energy efficiency alone could cut energy demand by 20-24 percent and save hundreds of billions of dollars per year.
- There are low-carbon energy sources already in large scale use today that can be expanded, e.g., wind, nuclear, and solar.
- Biofuels, particularly sugarcane-based and next generation lignocellulosic biofuels, offer significant potential in transport, but strict policies and incentives are needed to ensure they are sustainable, with less impact on food and land use.
- There are new technologies that are near to deployment: carbon capture and storage (CCS); new transport technologies; new forms of solar; and the use of information technologies to monitor energy use. All offer the potential for huge reductions in emissions.
- Preserving the world’s natural carbon sinks, i.e., forests, has massive benefits. Deforestation now accounts for 15-20 percent of CO<sub>2</sub>e emissions.

## **C** The challenge can be met without damaging the economy

- Various estimates indicate that abatement will have an impact on the economy, but both the IPCC and the Stern Review have found that it is likely to be relatively low – significantly less, for example, than the recent oil price rise.
- Costs would likely be financed by private sector and government borrowing over time, and are modest compared to normal capital replacement cycles; thus the actual impact on GDP growth in a given year is likely to be minimal or even positive.
- There will be major investments, creating jobs and business opportunities, in the move to a new low-carbon economy. For example, over 2 million people are today employed in renewable energy; investment in new environmental technologies rose from \$10 billion to \$66 billion from 1998 to 2007.
- Trade will be a sensitive issue, but evidence indicates that the impact on trade flows is likely to be modest.
- Experience from past environmental issues such as acid rain and CFCs indicates that costs are often overstated; costs in both cases turned out to be less than a third of original estimates.

## **D** Addressing climate change leads to energy security

- Around 50 percent of potential abatement actions – energy efficiency, renewables, biofuels, nuclear – result in increased energy security. Other abatement actions are mostly energy security neutral and less than 3 percent of potential abatement runs counter to energy security.
- Pursuing energy security without consideration for climate could, however, lead to negative climate effects; notably from increased use of coal and energy-intensive sources of oil such as tar sands.
- However, pursuing climate and energy security together would create far more diverse energy supplies, greater scope for local energy production, and reduced dependence on imported oil and gas.
- Not addressing climate and energy security increases the risk of future conflict resulting from climate effects and resource scarcity.

## **E** Adaptation will be a necessity, not a choice

- Climate change is already occurring and will continue to occur even with strong action.
- Over a billion people live in coastal regions prone to flooding, and will likely be affected even if radical action is taken.
- Droughts, shifting agricultural patterns, greater storm intensity, and spread of disease areas are all effects that will need to be addressed – particularly for the poorest and most vulnerable nations.
- Insurance will become a major issue, to provide effective safety nets through local insurance and global reinsurance systems. New forms of micro-insurance will be needed for low-income families.

## **F** Waiting is risky and expensive

- The science has become more, not less, alarming on the dangers of climate change as time has passed.
- The longer we wait, the more expensive the reduction will be, the more painful and abrupt the economic transformation, and the more we will be required to spend on adaptation. Recent US reports have shown that delaying the start of emissions reductions from 2010 to 2020 will almost double the annual rate of reductions required.
- China and India and developing countries will make many of their major energy investments over the coming decade. We have a short window of opportunity to make that power infrastructure as energy efficient as possible; it will be far more expensive to achieve this later.
- Deforestation has to be reversed – otherwise we will deplete carbon sinks irreversibly, requiring us to take more expensive actions elsewhere.

Given the above, a global deal on climate change is essential. Without it, individual countries can act, but the cumulative impact will be much less than concerted action within a framework that accelerates the process of change in both developed and developing nations. The Bali Action Plan agreed in December 2007 under the UN Framework Convention on Climate Change (UNFCCC) provides the overall direction for the post-Kyoto treaty negotiations that will occur in Copenhagen in December 2009. The purpose of this report is to describe the building blocks that need to be in a global deal and the research necessary to broaden and deepen our understanding of them and how they interrelate. A future report for the 2009 G8 will then try to show how these elements could be put together in a coherent deal.

We have identified ten core building blocks for a global deal.

## [1 The global target](#)

From this, all else flows. There has to be a clear direction given by a global target. There is a growing consensus that we need a cut in CO<sub>2</sub>e emissions of at least 50 percent by 2050. There are however different views as to what the baseline should be. The UNFCCC has been working off a 1990 baseline, which is the baseline specified in the Kyoto treaty; but there are those who want to work off a more recent baseline. The key is that annual emissions should be reduced to below 20 billion tonnes by 2050.

### **Further work**

- How should such a target be expressed? As a percentage versus a baseline or as an absolute amount?
- If a percentage, should the baseline year be 1990, or more recent? What are the implications of the baseline year for national targets?

## [2 An interim target](#)

Leaving it all to 2050 doesn't allow us to describe the pathway to change or prevent a rise in emissions that becomes irreversible. The science says it is critical to constrain the date by which global emissions peak.

### **Further work**

- For which date should the target be set – 2020 or later?
- What should the target for reductions be by that date? What does this require from developed nations?
- Should the target be expressed as an absolute amount? A percentage reduction? A peaking date?

## [3 Developed world commitments and carbon markets](#)

The developed world needs to start peaking and reducing emissions soon. The primary mechanism for achieving this should be a set of binding emissions caps and an international carbon market for trading emissions permits. Developed countries should also put forward national action plans as to how they will meet their emission cap obligations. An important question is what the baseline year should be for the caps. 1990 was agreed as the baseline year for the UNFCCC, but much has changed since then.

### **Further work**

- What overall level of reductions should developed countries target?
- What should the process be for determining national caps?
- How should the national caps be expressed? Absolute reductions or percentage off of baseline? If baseline, what year?
- How should existing and planned national/regional carbon markets be integrated into a global market?
- How should the Kyoto Clean Development Mechanism (CDM) be reformed as a part of a carbon market developed at Copenhagen?
- How should the international carbon market be regulated?

## 4 **Developing world contributions**

Bali agreed there should be “common but differentiated” contributions toward meeting the global goal from developing nations. There need to be obligations: to work to national action plans to abate emissions as far as possible consistent with growth; to peak at a certain point; and thereafter to reduce emissions. Meeting these obligations will require technology and funding to support them. Developing world mechanisms may also include a reformed CDM and “no lose” incentives for energy efficiency and carbon productivity improvements at the industry sector level.

### **Further work**

- How are the national action plans to be formed?
- When should developing country emissions peak?
- What reductions are then possible?
- What additional obligations, with the availability of technology and funding support, should developing nations undertake?
- How to distinguish between rapidly industrialising, less rapidly industrialising and very poor nations?
- What sector-level schemes might provide incentives and investment for deeper and more rapid action?
- What other ways might developing nations participate in the carbon market?

## 5 **Sectoral action**

A carbon price will be necessary to drive the needed changes but may not be sufficient. Action at the industry sector level may also prove an important tool for driving transformation. Developed countries may use sector targets as a part of their national policies, and one-sided sector-based incentive schemes may help developing countries accelerate their efforts. Where similar opportunities exist in many countries, sectoral approaches may benefit from international cooperation, and enhance the delivery of national targets.

### **Further work**

- How can sectoral schemes be most effectively used by developed nations to deliver cap commitments?
- How might one-sided sector-based incentive schemes be designed for developing countries?
- In which cases might international cooperation on sectors help countries take on and deliver more ambitious targets?
- Are sector-specific schemes needed for sectors currently outside of national caps, e.g., international aviation and shipping (so-called “bunker fuels”)?

## 6 **Financing**

The world has a much stronger chance of hitting global targets, and the overall mitigation of emissions will ultimately be less costly, if developed nations provide significant funding to support accelerated action by developing nations; for technology development and deployment; for adaptation; and for halting deforestation. The size of the flows required is comparable or larger than current overseas development aid (ODA) flows and will thus be challenging to deploy and manage effectively. Some of the funding is needed immediately, some over time.

### **Further work**

- What institutional structures are required to manage large new climate funding flows? New institutions versus existing? How can we ensure effectiveness and accountability?
- How can we maximise funding for key technologies, especially CCS, by major contributor countries?
- Can we auction developed country permits as a way of raising money to accelerate developing nation action?
- How can we ensure that financing for climate issues is incremental to, but integrated with, ODA?

## 7 Technology

There are certain key technologies that require rapid development to offer medium term reductions. The principle one is CCS – without this technology, achieving the targets described, will either be unfeasible or significantly more costly. A broad portfolio of technology investments is required, including solar, nuclear, sustainable biofuels, IT and “smart grid” technologies, as well as basic R&D for the third generation of low-emissions technologies. New mechanisms are required to encourage low-emissions technology diffusion in developing countries and to reduce barriers to intellectual property access.

### Further work

- How do we accelerate CCS? How do we engage governments and the private sector to make the investments required to get CCS to commercial viability and widely deployed?
- For countries committed to nuclear, how do we expand nuclear capability?
- How do we create incentives for and support a broad portfolio of technology innovation?
- How do we integrate technology diffusion in developing countries with overall economic development?
- What is the best intellectual property rights regime for encouraging low-emissions technology development and transfer?

## 8 Forests

There will need to be a specific plan for tackling deforestation. This should differentiate between the forestry needs of different nations; should have a proper system of monitoring; and should develop the incentives to encourage the action necessary to stop deforestation.

### Further work

- What are the incentives/obligations necessary to prevent deforestation?
- Are market-based incentives feasible and under what circumstances? Where is programmatic funding required?
- What is the right system of monitoring?
- How will funding be raised to support necessary in-country action?
- How can in-country capabilities be built to support forestry efforts?
- What can be done to encourage economic development that is compatible with forest preservation and expansion?

## 9 Adaptation

Climate change is occurring today and adaptation is required, particularly for the most vulnerable countries. Estimates on funding required vary, but it will be significant. We should also look at innovative ways in which the private sector can play a role through the global insurance market.

### Further work

- What funding will be needed for adaptation by which countries, for what applications, and over what time frames?
- What should the sources of this funding be?
- What institutional mechanisms are required to deliver funding, integrate it with development agendas, and ensure effectiveness?
- What role might the insurance industry play?

## 10 Institutions and mechanisms of action

It is apparent that the scale, complexity, and range of action will require effective institutional structures and mechanisms. These can be existing institutions. They can be created. They can be partnerships between the private and public sector. We should attempt to construct non-traditional and non-bureaucratic means of acting.

### Further work

- What overall governance structures are required for the actions arising out of a new Copenhagen treaty? How can we strengthen the UNFCCC?
- How centralised should the governance structures be versus a principle of subsidiarity? Should there be different, customised solutions to each aspect, or one over-arching body?
- What is the best way of informing and monitoring the overall performance of the treaty and its various mechanisms (e.g., carbon markets)?
- What is the best way of encouraging continued research and development of our knowledge base? How can we ensure that growing knowledge is incorporated in future target setting and other mechanisms?
- What is the role of the World Bank, the International Energy Agency (IEA), and other multilateral institutions?
- What role can the private sector play and how can public/private partnerships be an instrument of action?

In order to have productive negotiations in Copenhagen, we must be actively working on these questions now.

The G8 Hokkaido Toyako Summit – with the +5 and others in attendance – and the Major Economies Meeting (MEM) chaired by the US offer the chance to agree:

- That these elements should indeed be the building blocks of the global deal.
- To take certain key decisions now, e.g., the global target of at least 50 percent ; funding for CCS development and deployment; and actions to advance the concepts of carbon markets and equitable contributions by developing nations.
- To put in place a process for developing these building blocks in the run-up to the Maddalena G8.
- To commission further work.

In that way, the UNFCCC meeting at Poznan at the end of 2008 can move the process forward, and the Maddalena Summit in 2009 will be a major opportunity for the G8 to build on progress in Hokkaido, provide leadership and create positive momentum in the months leading to Copenhagen.

If the G8 nations are committed to take action themselves, transform their economies, lead in new technologies, and support the nations of the developing world, then the chances of a successful and perhaps even historic outcome in Copenhagen will be greatly increased.