ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

OECD

For a stronger, cleaner, fairer world economy

Tackling Climate Change and Growing the Economy

Key messages and recommendations from recent OECD work

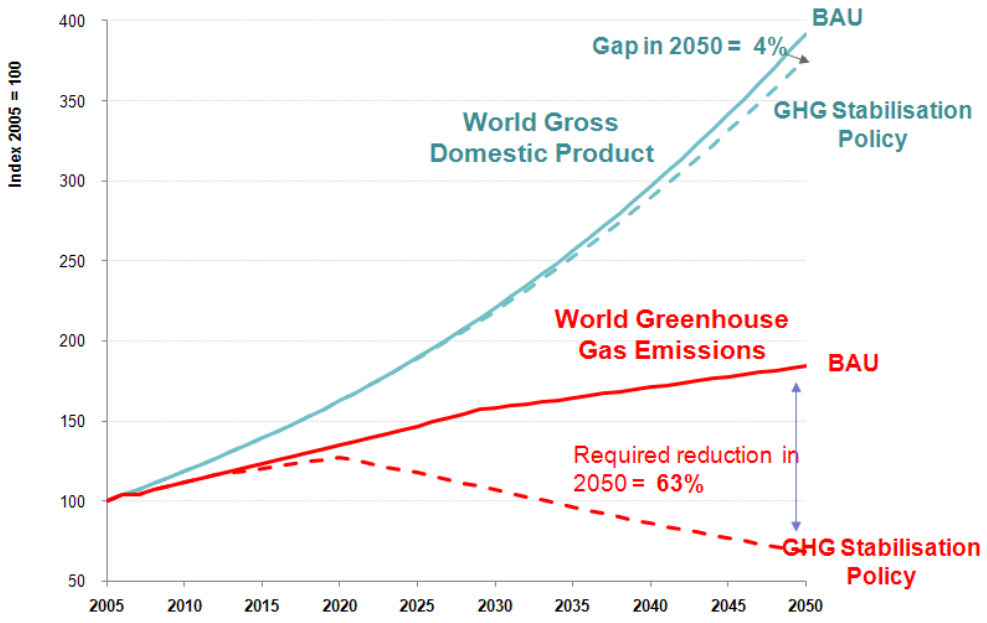
Are current commitments enough?

- If we don't take action now, global greenhouse gas (GHG) emissions will rise by about 70% by 2050, pushing world temperatures up 4ºC - 6ºC by 2100.
- We calculate that the level of developed countries' targets which are on the table translate into an 18% reduction in their emissions by 2020 compared with 1990. This falls short of the 25 to 40% reduction for industrialised countries suggested by the IPCC to be on a pathway to keep the temperature rise to no more than 2ºC.

How can we achieve the needed GHG emissions reductions while growing the economy?

- The massive emission cuts required to stabilise GHG concentrations must be done by applying cost-effective policies, with a focus on carbon pricing, applied as broadly as possible across all emission sources. Cap-and-trade and carbon taxes should be key elements of a policy mix to build a global carbon market, complemented by regulations and standards (e.g. on building energy efficiency), increased investment in R&D, and information-based approaches (e.g. energy efficiency labels for appliances).
- A full-fledged global carbon market developed in the next decade or so to keep the GHG concentrations at safe levels would cost only one-tenth of a percent of average world GDP growth between 2012 and 2050. Cumulatively that's about 4% of world GDP in 2050 (Figure 1). A small price to pay if we consider that GDP in 2050 is expected to be 250% higher than today.

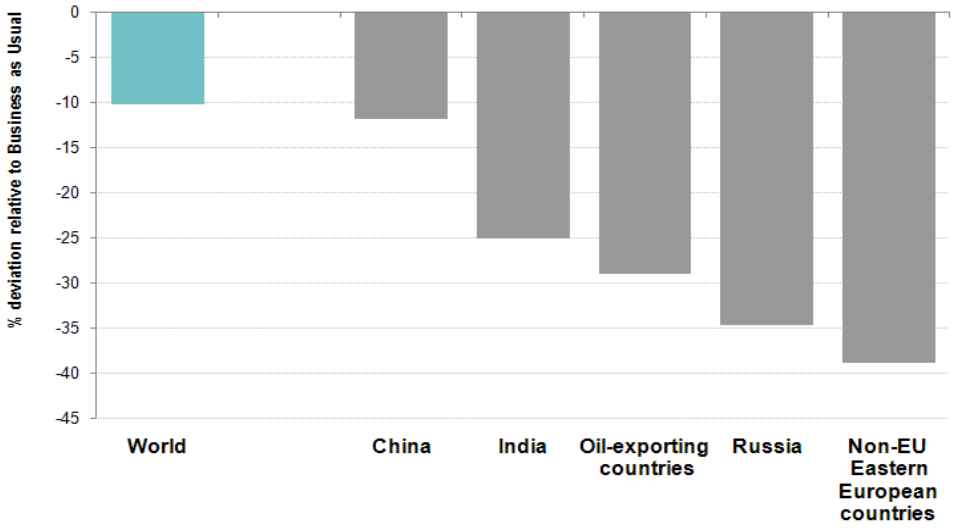
Figure 1. Ambitious Action to Reduce GHG Emissions Is Affordable



Source: OECD (2009), *Economics of Climate Change Mitigation: Policies and Options for Global Action beyond 2010*

- A major contribution to cutting emissions would be to stop supporting environmentally-harmful energy consumption and production. Energy subsidies are particularly high in Russia, other non-EU eastern European countries, and a number of large developing countries, including India and China. Of course emission caps in developed countries are essential, but removing fossil fuel subsidies in emerging economies and developing countries could lead to a reduction in global GHG emissions by 10% by 2050 compared to baseline, and by as much as 30% in some countries. (Figure 2). At the same time, it would improve economic efficiency. For example, removing energy subsidies in India and China would increase household real income there by 2.5% and 0.7% respectively. While it is often more difficult to calculate fossil fuel producer and consumer subsidies in developed countries, the OECD is currently developing a methodology for estimating these subsidies in order to better understand the scope of these subsidies and to support country plans and strategies to phase them out.

Figure 2. Impact of Energy Subsidy Removal on GHG Emissions in 2050



Source: OECD (2009), *Economics of Climate Change Mitigation: Policies and Options for Global Action beyond 2010,* based on IEA data on subsidies

How do we engage all countries and all sectors in action?

- We need to move towards a global carbon market, involving as many countries, industries and emission sources as possible, to reach even a moderately ambitious GHG-concentration target at a manageable cost. Reducing global GHG emissions is a shared goal for both developed and developing countries. Even if developed countries brought their emissions to zero, their efforts alone would not be sufficient to meet this goal due to expected emissions growth in the major emerging economies by 2050.
- We calculate that targets for emission reductions announced by many emerging economies and developing could reduce their baseline emissions in 2020 by about 8% compared with business-as-usual projections.
- While collectively these pledges move us closer to the emissions reductions needed to achieve ambitious climate goals, more effort by all is needed. Leadership in developed countries is essential, to deliver on their own commitments and to spur action globally, including through financing and technology support. Increased financing could greatly facilitate action by more countries to further reduce their emissions.

Where will the new scaled-up financing come from?

- Both public and private financing needs to be scaled-up to support low-carbon investment and adaptation to climate change, especially in developing countries. Developed countries have the responsibility to provide financial, technology and capacity development support to help developing countries take action on climate change. Many countries are concerned about where we will find these new funds, but it is possible to raise

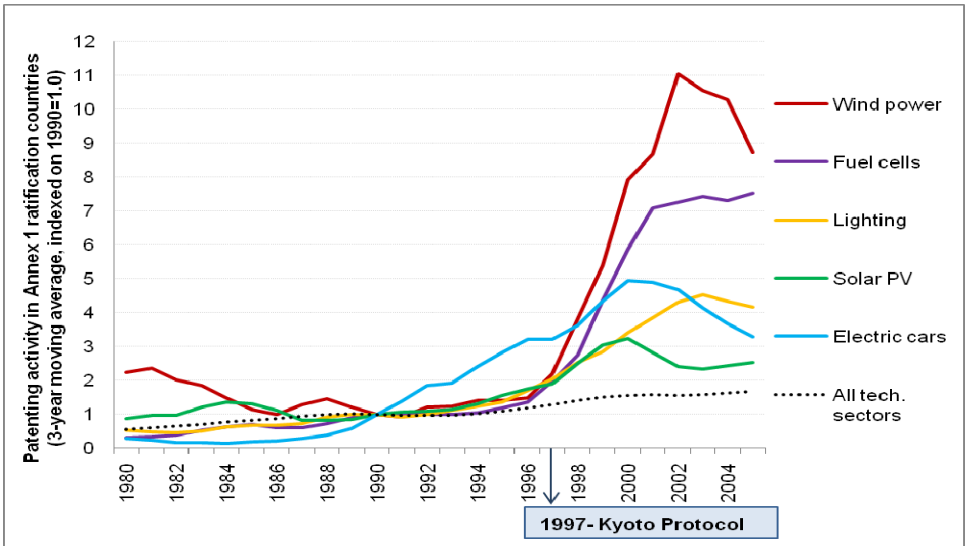
significant and additional finance. For example, if industrialised countries used carbon taxes or auctioned permits to achieve a 20% reduction in emissions, they could raise revenues of as much as 2.5% of their GDP by 2020. While some of these revenues would be used for national priorities, some could also be used for financing climate change action in developing countries. Even if we dedicate only one twentieth of these additional revenues to financing for developing country action, this could amount to as much as USD 50 billion annually.

- Public finance is a critical element, but it will need to be complemented with private financing. We need to encourage private investment. Carbon markets and flexible mechanisms such as an improved Clean Development Mechanism and possible sectoral crediting mechanisms can help provide financing for low-carbon investments, particularly in developing countries, while also lowering the cost of achieving agreed emissions reduction targets.

How can we best encourage innovation in low-carbon technologies?

- Innovation activity in low-carbon technologies grew dramatically after the Kyoto Protocol agreement (Figure 3). A clear policy signal at Copenhagen demonstrating commitment by the international community will be critical for business investment decisions in R&D for low-carbon technologies and infrastructure.

Figure 3. Innovation Trend in Climate Mitigation Technologies



Source: OECD (2009). Based on data extracted from EPO/OECD Worldwide Patent Statistical Database (PATSTAT). www.oecd.org/environment/innovation; *The Invention and Transfer of Environmental Technologies* (OECD, forthcoming 2010).

- But we need more than international commitments - at the national level we need a stable, long-term and predictable policy framework to encourage the rapid development and diffusion of green technologies. Without a stable policy framework, this uncertainty can be a significant "brake" on innovation.
- We need a credible and sufficient global carbon price to bring on a green technology revolution. Price signals show investors that it is worth developing technologies for a green future. Putting a price on carbon emissions, for example through taxes or cap-and-trade schemes, will penalise carbon-intensive technologies and create markets for low-carbon technologies such as solar and wind energy and carbon capture and storage. It will also accelerate investment in energy efficiency. Carbon pricing to keep greenhouse gas concentrations even at moderate levels could lead to a four-fold increase in world energy R&D spending by 2050.
- But carbon pricing will not be enough. Specific R&D policies are also needed to accelerate the development of new low-carbon technologies. Government investment in research, development and demonstration projects holds promise for technology breakthroughs, particularly in the power sector. And we need to develop efficient

markets, and reduce trade barriers, for low-carbon technologies. Such breakthroughs could cut by half the costs of reducing greenhouse gas emissions by 2050, create new business opportunities and make ambitious climate policies more affordable. Yet public R&D expenditures in the energy sector, as a share of total R&D spending and of GDP, have been falling steadily since the early 1980s according to IEA data. Governments need to reverse this trend.

How can fears of carbon leakage or competitiveness losses be addressed?

- Many countries fear their industries may lose competitiveness if they take on ambitious climate action without similar efforts by other countries. To protect their energy-intensive industries, a number have exempted these industries from emissions reductions, provided them with relatively un-ambitious targets, or allocated emission permits for free. Yet exempting energy-intensive industries from carbon pricing could raise the cost of achieving global emissions targets significantly.
- Fears of competiveness losses or "carbon leakage" (the risk that emission reductions in one set of countries are partly offset by increases in other countries) are often exaggerated. Unless only a few countries take action against climate change, carbon leakage rates are almost negligible. For example, if the EU acted alone to reduce GHG emissions (by 50% in 2050), about 12% of their emission reductions would be offset by emission increases in other countries. However, if all industrialised (Annex I) countries act, this leakage rate is reduced to below 2%.
- Addressing competitiveness effects with border tax adjustments (BTAs) would be costly. BTAs refer to border carbon taxes on imports from countries that do not restrict carbon emissions. They are costly to both the country implementing them and their trading partners, and do little to address competitiveness impacts. In the scenario whereby the EU achieves a 50% reduction in emissions by 2050, adding a BTA would have negligible effects to prevent the output losses of the EU energy-intensive industries and would raise the cost of action in the EU from 1.5% of GDP to 1.8% of GDP in 2050.
- The most effective way to tackle carbon leakage is to ensure broad participation in actions to reduce emissions by all large emitters.
- As we exit the financial crisis, many countries see green growth as fundamental to rebuilding sustainable economies. Green and growth go hand in hand – we can, and must, do both together. At the request of Ministers of economy and finance, the OECD is developing a green growth strategy. In addition to the work on the Economics of Climate Change, the OECD work on green growth will examine additional aspects such as employment and social implications of the necessary shift to a green economy and the role of eco-innovation and new "green" industry as a new source of growth. We plan to release an OECD Green Growth Strategy in 2011.

For further reading:

The Invention and Transfer of Environmental Technologies (OECD forthcoming 2010)

"Competitive Cities and Climate Change" (OECD 2009, http://www.oecd.org/dataoecd/30/36/44232251.pdf)

The Economics of Climate Change Mitigation: Policies and Options for Global Action Beyond 2012 (OECD 2009, www.oecd.org/env/cc/econ/beyond2012)

Eco-Innovation in Industry: Enabling Green Growth (OECD 2009)

"Environmental Policy Framework Conditions, Innovation and Technology Transfer" (OECD 2009, ENV/EPOC/WPNEP(2009)2/Final, www.olis.oecd.org/olis/2009doc.nsf/linkto/env-epoc-wpnep(2009)2-final)

"Financing Climate Change Mitigation: Towards a Framework for Measurement, Reporting and Verification" (by J. Corfee-Morlot, B. Guay and K. Larsen, 2009, OECD/IEA, http://www.oecd.org/dataoecd/0/60/44019962.pdf)

Policy Brief: Business, Eco-innovation and Globalisation (OECD 2008, www.oecd.org/dataoecd/61/1/41105608.pdf)

OECD work on climate change, www.oecd.org/env/cc

OECD Innovation Strategy, www.oecd.org/innovation/strategy

OECD Green Growth Strategy, www.oecd.org/greengrowth

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