



FACTOIDS from the new OECD book (updated October 2009)

The Economics of Climate Change Mitigation: Policies and Options for Global Action beyond 2012

Did you know that...

- If we continue business-as-usual, **global greenhouse gas (GHG) emissions will rise by about 70% between now and 2050** and continue to grow thereafter. With such a trajectory, the rise in world temperatures from pre-industrial levels could easily reach 4°C, and possibly 6°C, by 2100.
- Many governments from developed countries have made explicit commitments to reduce GHG emissions in the near-term, but the declared targets are not ambitious enough. **The combined effect of the developed country targets to reduce emissions would lead to only about 8-14% reduction in their emissions by 2020 compared with 1990.** This falls short of the 25 to 40% reduction that the IPCC has suggested is needed for developed countries to put emissions on a pathway that would prevent temperatures from rising by more than 2°C, a goal supported by world leaders from a number of developed and developing countries at L'Aquila.

How can we achieve the needed GHG emissions reductions?

- Given the magnitude of emission cuts required to stabilise GHG concentrations at an acceptable level, it is imperative that action to mitigate climate change is taken at the lowest cost. This can be done if a cost-effective set of policy instruments, with a focus on carbon pricing, is applied as broadly as possible across all emission sources. Cap-and-trade and carbon taxes should be key elements of the policy mix, to help build a global carbon market, but will need to be 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).
- For instance, **if a full-fledged global carbon market is developed in the next decade or so, we could keep temperature increases under 3°C at a cost of just one-tenth of a percent of average world GDP growth between 2012 and 2050.** Put differently, this would mean a 4% reduction in GDP in 2050 compared to a scenario where no policy action is taken. Bear in mind that over the same period world GDP growth is projected to grow by more than 250%.
- Removing environmentally-harmful subsidies to energy consumption and production is an important first step in pricing carbon. Energy subsidies are particularly high in Russia, other non-EU eastern European countries, and a number of large developing countries, including India. Joint OECD-IEA analysis shows that **removing fossil fuel subsidies in emerging economies and developing countries could reduce global GHG emissions by 10% by 2050 compared to baseline, and by as much as 30% in some countries, while improving economic efficiency in these economies.** For example, removing energy subsidies in India and China would increase household real income by 2.5% and 0.7% respectively.

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

- Moving towards a global carbon market will be essential. This is because reaching even a moderately ambitious GHG-concentration target at a manageable cost will be difficult unless as many countries, industries and emission sources as possible are engaged in action to reduce emissions. **Even if OECD countries brought their emissions to zero, their emission reductions would be fully out-weighted by the new emissions growth projected in the major emerging economies – China, India, Brazil and Russia – by 2050.**

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

- Many countries fear their sectors will lose competitiveness if they take on ambitious action to reduce emissions without similar efforts by other countries. To protect their energy-intensive industries, a number have exempted these industries from emissions reductions, provided them with low targets, or allocated



emission permits to them for free. **Exempting energy-intensive industries from carbon pricing, however, could raise the cost of achieving global emissions targets significantly.** For example, exempting energy-intensive industries would raise the costs of action by 50% in 2050 to stabilise concentrations at 550 ppm CO₂ eq.

- Moreover, fears of competitiveness losses or “carbon leakage” (the risk that emission reductions in one set of countries are partly offset by increases in other countries) should not be 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), almost 12% of their emission reductions would be offset by emission increases in other countries. However, if all industrialised countries (Annex I countries) were to act, this leakage rate would be reduced to below 2%.
- **Addressing competitiveness and leakage effects of mitigation policies with border tax adjustments (BTAs) – import fees levied by carbon-restricting countries on goods manufactured in non-carbon-restricting countries – may be costly.** BTAs can reduce carbon leakage to some extent, but at a relatively high cost to the economy imposing the tax, and without significantly addressing competitiveness concerns. For instance, in the scenario whereby the EU achieves a 50% reduction in emissions by 2050, adding a BTA to the policy mix would have negligible effects to prevent the output losses of the EU energy-intensive industries, would raise the cost of action in the EU (from 1.5% of GDP to 1.8% of GDP in 2050), and would also impose a cost on trading-partner countries.
- **Broadening participation in actions to reduce GHG emissions to include the largest emitting emerging economies and, later, all developing countries remains the most cost-effective way to tackle carbon leakage.** In the near future, a global carbon market may gradually develop through links between national and regional emissions-trading schemes or through crediting mechanisms or other trading systems.

How can we provide the incentives for broad country action? What role for technological developments?

- **Carbon pricing that seeks to stabilise CO₂ eq concentrations at 550 ppm could provide incentives for a four-fold increase in world energy R&D spending by 2050.** In practice, however, pricing carbon is unlikely to be enough to spur sufficient investment in R&D because barriers to innovation are large. Development of low-carbon technologies will also need to be supported through R&D policies.
- A negotiated agreement on allocation of emission targets across countries could provide powerful incentives for large developing countries to participate in global action to achieve ambitious climate goals. **Developing countries are projected to gain significantly from permit allocation rules if their emission rights cover their business-as-usual emissions or are inversely related to their contribution to past emission levels.**
- Financing and technology support will be essential to help developing countries reduce their GHG emissions while continuing to grow economically, and to help the most vulnerable countries adapt to the climate change that is locked-in. The carbon market and policy instruments will be an essential source of financing. For example, **if all industrialised countries were to use taxes or auctioned permits to reduce their emissions by 50% in 2050, the size of the fiscal revenues could reach 2.5% of GDP in those countries by 2020.** These revenues could be used to bolster economic growth, offset reductions in labour taxes, or to help provide the financing needed to support action in developing countries.
- **Emissions from deforestation are substantial, particularly in developing countries, amounting to as much as 17% of global GHG emissions.** Mechanisms to support reductions in emissions from deforestation and forest degradation will be essential as part of a cost-effective and comprehensive post-2012 agreement. Studies suggest that deforestation emissions can be reduced at relatively low cost, reducing carbon prices by up to 40% in 2020.