Royal Society response to House of Lords Economic Affairs Committee inquiry into 'The economics of climate change'

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We are pleased to respond to the Committee's call for evidence for the inquiry into the 'Aspects of the economics of climate change'.

Our comments are based primarily on the enclosed Royal Society report *Economic instruments for the reduction of carbon dioxide emissions* (Royal Society 2002). In this report we recommend the introduction of well-designed economic instruments, such as a carbon tax or auctioned permits, as the most cost-efficient way to reduce carbon dioxide (CO_2) emissions. By associating a cost with emissions of CO_2, a tax corrects a failure in the market that allows emissions to be largely cost-free.

We consider the scientific understanding of climate change is now sufficiently certain to justify taking steps, without delay, to reduce global greenhouse gas emissions. However, uncertainty in the economics of climate change has been used as an argument for not taking action now on mitigating carbon dioxide emissions.

Our report concludes that although the impact of a tax or auctioned permits may be large on some sectors within the economy, substantial long-term reduction in global emissions is, even in its narrowest sense, affordable (Royal Society 2002). In chapter 4 of our report we present the result of studies assessing the impact of mitigation using worldwide carbon taxes over the next 100 years to achieve stabilisation of CO_2 concentrations. The average reduction in GDP below base across all models, baseline scenarios and stabilisation levels is 1.3% by 2100. This implies a negligible fall in the average growth rate of GDP from 2.300% a year to 2.299% a year. The report highlights that extending the introduction of economic instruments to Europe and beyond greatly improves their success and benefits.

Additional environmental benefits of carbon taxes are not included in these studies, but are potentially so important that they may more than offset any estimated economic costs (OECD 2000). These benefits, which are associated with the burning of fossil fuels, include reduction SO_2, NO_x, small particles and noise.

In our report (Royal Society 2002) we describe two options for setting a price for a carbon tax. The mitigation target approach bases targets on past levels of emissions. The targets are then achieved through policies that should be effective, efficient and equitable. This practical approach is used by the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

The other approach is the use of cost benefit analysis. This method assesses the costs and benefits of climate change, adaptation and mitigation, and calculates the carbon tax required to minimise net present costs. This logical approach requires considerable effort to estimate damage costs. We consider the results controversial because:

- Many effects of climate change are unknown and have an impact far into the future, and involve the Earth's ecosystems.
- Uncertainty is high and there is a possibility of large-scale changes to the climate.

Understanding and tackling the effects of climate change will require collaboration between natural scientists, social scientists and economists. In our report *Guide to facts and fictions about climate change* (Royal Society 2005) we highlight the work of Bjorn Lomborg who organised an event called the Copenhagen Consensus, which attempted to assess the need to tackle various global problems on the basis of an economic analysis of costs and benefits. Lomborg and colleagues controversially re-interpreted the detailed analysis in a paper they had commissioned to reach the conclusion that 'costs [of the Kyoto Protocol] were likely to exceed benefits'. The paper, authored by William Cline, had concluded the opposite.

In response to the Copenhagen Consensus, the distinguished economist Jeffrey Sachs pointed out (2004) that the Copenhagen Consensus suffered from 'severe shortcomings' because it did not include input from scientists and the 'scientific information is presented through the over-simplified lens of rudimentary cost-benefit analysis'. He described the DICE99 model used in the analysis as 'a plausible strategy for an economist, but it doesn't come close to engaging the best natural-science models'. Sachs concluded: 'While simple economic models can be illuminating, and I applaud DICE99 for what it can do, having climate scientists at the table to highlight the shortcomings of grossly simplified economic models is invaluable for arriving at proper policy conclusions'.

References

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