

# What is the cost of Climate Change?

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Climate change has moved up the agenda of politicians and their advisers to such an extent that the Government's Chief Scientific Adviser, Sir David King, recently described it as a problem "more serious even than the threat of terrorism"<sup>1</sup>.

Professor Tyndall working at the Royal Institution in London was the first to measure the warming effects of atmospheric gases in 1861 and since then scientists have been measuring the surface temperature of the earth and, over a shorter period of time, the concentration of CO<sub>2</sub> and other greenhouse gases in the atmosphere which they believe to be responsible for the increasing surface temperature. From this information predictions are being made, using computer models, about the effects in the future of any further rise in temperature. Some of these predictions are worrying. Global changes in rainfall patterns and rising sea levels may create major new problems for those responsible for building and maintaining the national infrastructure.

The political response to this perceived problem has been to encourage the development of some selected technologies to try to reduce the man-made CO<sub>2</sub> emissions from electricity generation, industry and transport. Less attention appears to have been paid to the role of economic policy instruments in controlling emissions, and as a result the economic instruments and subsidies the Government has used so far may not be very effective. For instance, the wind farms which the Government has encouraged developers to build provide only 0.6% of our national electricity demand but it has been estimated that "the subsidy for wind power until 2020 will be some £30 billion... enough for 1200 brand new city academies". To do this the Government has been using a "source of funds not subject to Treasury scrutiny" and it is "an irrational policy"<sup>2</sup>. These figures suggest that the price per tonne of carbon reduction by relying on wind energy is an order of magnitude higher than the commercially traded rate for carbon in Europe.

Also the Government emphasis on mitigation appears to have overshadowed the alternative consideration of adaptation to climate change which may be a better choice economically.

It was to try to address the economic problems arising from climate change that the House of Lords Select Committee on Economic Affairs invited evidence and prepared a report on the "Economics of Climate Change"<sup>3</sup>.

It is encouraging that this report starts at the beginning by examining the publications of the Intergovernmental Panel on Climate Change (IPCC). These are relevant because the content of the Government's Energy White Paper and the subsequent Energy Bill were prepared in response to the IPCC forecasts on climate change.

The IPCC was set up by the UN in 1988 to address anthropogenic climate change and reported in 1990. It was followed by the Earth Summit at Rio de Janeiro in 1992. A second report in 1995 was followed by the Kyoto conference in 1997 which saw the agreement of the Kyoto Protocol to control emissions in order to reduce the prospect of global warming.

The Select Committee clearly thought that the IPCC has more work to do before its predictions could be a reliable guide for future decisions. In general they were concerned that the IPCC had not explored as rigorously as they should have done the links between projected economic change in the world economy and climate change, nor for instance the positive aspects of global warming and said "the Government should press the IPCC to reflect in a more balanced way the costs and benefits of climate change". The Committee also raised serious questions about the IPCC emissions scenarios which apparently did not include recent emissions experience in their short term projections. The balance of the evidence the Committee received suggested that the high emissions scenarios contained some questionable assumptions and outcomes and they considered that a reappraisal of the IPCC's scenarios exercise is urgently needed.

More fundamentally, and more worryingly, the Committee said "we have some concerns about the objectivity of the IPCC process, with some of its emissions scenarios and summary documentation apparently influenced by political considerations". Although there is among scientists a majority view on climate change there are also some dissenting opinions on the grounds that their computer model predicts higher temperature rises than have been observed in the historic past. The Committee was concerned that the dissenting voices were not always given a full hearing. They also observed that there might be political interference in the nomination of scientists to the IPCC and they were concerned that in at least one instance an experienced scientist was rejected for membership apparently because he did not pursue the consensus line. They considered consensus was not a necessary criterion for

membership of the IPCC “Consensus is the stuff of politics, not science”. The Committee made the recommendation that when members of the IPCC are being selected the nominees’ credentials should rely solely on their scientific qualifications for the tasks involved.

The Committee recognised the practical point that regardless of what action we take now the time lag in the climate system is such that global warming will continue. And since there is a risk that international negotiations will not secure large scale and effective mitigation action a more balanced approach to the relative merits of adaptation and mitigation is needed, with far more attention being paid to adaptation measures. The economic and social returns from investing in adaptation should be properly weighed against the cost of mitigation.

Looking at the specific problem of electricity generation the Committee considered that UK energy policy has focused too much on mitigation and appears to be based on dubious assumptions about the role of renewable energy and energy efficiency. They questioned the basis of the energy and climate policy which appeared to rest on a debatable model of the energy-economic system and dubious assumptions about the cost of meeting the CO<sub>2</sub> reductions.

The cost to the UK of achieving its objectives had been poorly documented and not clearly presented to the public. In saying “we look to the Government, with much stronger Treasury involvement, to review and substantiate the cost estimates and to convey them in transparent form to the public,” the Committee is apparently expecting the Government to undertake a stronger technical and financial scrutiny of the effect of the Government’s subsidies, and for the Government to ensure better communication with the public to explain the problem of responding to climate change and the costs they will have to pay.

The Committee drew attention to the fact there are available a number of low carbon methods of generating electricity and they expressed their surprise that the Government’s *Energy White Paper* should have placed such emphasis on just one technology, wind energy. The Committee did not recommend any particular choice of energy generation, apart from saying that it is prudent to maintain as wide an energy portfolio as possible. But it did recommend that it would be unwise to close the nuclear option and said,

“We argue that the current capacity of nuclear power .... should be retained.”

Finding the right selection of financial carrots and sticks to reduce carbon emissions and to encourage the use of better and cleaner fuels is not a straightforward matter but the Committee said they shared the criticisms they had received of the Government’s Climate Change Levy, which is anything but a tax on carbon. It is in fact an energy tax, the rate does not vary directly with the carbon content of the fuel and it offers generators no incentives to switch between low and high carbon fuels. The Committee therefore urged “a thorough review of the Climate Change Levy regime with the aim of moving as fast as possible to replacing it by a carbon tax”.

On an international scale the Committee considered that the compliance mechanisms in the Kyoto protocol were weak and even counter-productive. Several witnesses said they would make little difference to rates of warming. Excessive reliance on the “targets and penalties” approach embodied in Kyoto is unlikely to work. The Committee considered that a better approach would be to focus on technology and on more appropriate research and its diffusion.

They reported an interesting comparison which has been made with the 1963-1972 US Apollo programme to put a man on the moon. This cost about 2.5% of US GNP in 1970 or 1% of the then global annual GNP. The International Energy Agency has estimated that a similar expenditure (1% of world GNP) would finance the research and diffusion needed to make carbon-free energy economically viable. This would be a global good in which everyone would share the benefits .

This report reminds us of the relevance of economics in dealing with climate change and raises questions about the Government’s present financial support for reducing CO<sub>2</sub> emissions. The Committee calls on the Government to give the Treasury a more extensive role in examining the costs and benefits of climate change policy and in the work of the IPCC. If climate change is now an important political matter this report will be useful advice in planning a successful policy.

<sup>1</sup> Sir David King, Climate change science: Adapt, mitigate or ignore? Science. 303.176-7, 2004

<sup>2</sup> Lord Tombs, House of Lords debate, 23 June 2005 Hansard HoL 1787

<sup>3</sup> The Economics of Climate Change, House of Lords Select Committee on Economic Affairs, July 2005, HL paper 12-1