The economics of climate change: an overview of the Stern review

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Biographical notes: Richard Welford is a Professor at the Centre of Urban Planning and Environmental Management, University of Hong Kong and a founding Director of CSR Asia. He has considerable expertise in international business and has lived in both Europe and Asia. He has worked for the Samsung Corporation in Korea and carried out research for the UN in Southeast Asia. He currently advises the Swire Group and Cathay Pacific and has worked as a Consultant to a number of brand-name multinational corporations. He has written 15 books and over 100 articles relating to globalisation, international business, environmental management, human rights and social responsibility. He has carried out a number of surveys on Corporate Social Responsibility (CSR) and sustainable development across the world, making him one of the few people able to evaluate exactly the state of play with regard to CSR. He heads the research-based think tank CSR Asia in Hong Kong, which offers information, training and consultancy to leading businesses in Asia.

The most comprehensive review ever carried out on the economics of climate change was commissioned by the UK Chancellor in July 2005. It was been carried out by Sir Nicholas Stern, Head of the Government Economic Service and former World Bank Chief Economist.

Most press coverage has highlighted the catastrophic implications of not acting to reduce greenhouse gases. But, in fact, the conclusion of the review is essentially optimistic. There is still time to avoid the worst impacts of climate change, if we act now and act internationally. Governments, businesses and individuals all need to work together to respond to the challenge, the review says, and strong, deliberate policy choices by governments are essential to motivate change.

But the task is urgent and actions to mitigate climate change are needed now. Delaying action, even by a decade or two, will take the world into dangerous territory with potentially disastrous impacts on many countries in the world. This is still a window of opportunity but it is fast closing.

The first half of the review focuses on the impacts and risks arising from uncontrolled climate change, and on the costs and opportunities associated with action to tackle it. A sound understanding of the economics of risk is critical here.

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The review finds that all countries will be affected by climate change, but it is the poorest developing countries that will suffer earliest and most. Unabated climate change risks raising average temperatures by over 5°C from pre-industrial levels. Such changes would transform the physical geography of our planet, as well as the human geography.

Adding up the costs of a narrow range of the effects, based on the assessment of the science carried out by the Intergovernmental Panel on Climate Change in 2001, the review calculates that the dangers of unabated climate change would be equivalent to at least 5% of GDP each year.

The review goes on to consider more recent scientific evidence (for example, of the risks that greenhouse gases will be released naturally as the permafrost melts), the economic effects on human life and the environment, and approaches to modelling that ensure the impacts that affect poor people are weighted appropriately. Taking these together, the review estimates that the dangers could be equivalent to 20% of GDP or more.

In contrast, the costs of action to reduce greenhouse gas emissions to avoid the worst impacts of climate change can be limited to around 1% of global GDP each year. People would pay a little more for carbon-intensive goods, but our economies could continue to grow strongly.

According to the report, if we take no action to control emissions, each tonne of carbon dioxide that we emit now is causing damage worth at least $85. But these costs are not included when investors and consumers make decisions about how to spend their money. Emerging schemes that allow people to trade reductions in greenhouse gases have demonstrated that there are many opportunities to cut emissions for less than $25 a tonne. In other words, reducing emissions will make us better off. According to one measure, the benefits over time of actions to shift the world onto a low-carbon path could be in the order of $2.5 trillion each year.

The shift to a low-carbon economy will also bring huge opportunities. Markets for low-carbon technologies will be worth at least $500 bn, and perhaps much more, by 2050 if the world acts on the scale required. Thus tackling climate change is the pro-growth strategy; ignoring it will ultimately undermine economic growth.

The review looks at what this analysis means for the level of ambition of global action. It concludes that the levels of greenhouse gases in the atmosphere should be limited to somewhere within the range 450–550 ppm CO_2 equivalent. Anything higher would substantially increase risks of very harmful impacts but would only reduce the expected costs of mitigation by comparatively little. Anything lower would impose very high adjustment costs in the near term and might not even be feasible, not least because of past delays in taking strong action.

The second half of the review examines the national and international policy challenges of moving to a low-carbon global economy. Climate change is the greatest market failure the world has seen. Three elements of policy are required for an effective response.

The first is carbon pricing, through taxation, emissions trading or regulation, so that people are faced with the full social costs of their actions. The aim should be to build a common global carbon price across countries and sectors.

The second is technology policy, to drive the development and deployment at scale of a range of low-carbon and high-efficiency products. And the third is action to remove barriers to energy efficiency, and to inform, educate and persuade individuals about what

they can do to respond to climate change. Fostering a shared understanding of the nature of climate change, and its consequences, is critical in shaping behaviour, as well as in underpinning both national and international action.

Effective action requires a global policy response, guided by a common international understanding of the long-term goals for climate policy and strong frameworks for cooperation. Key elements of future international frameworks should include:

- Emissions trading

  Expanding and linking the growing number of emissions trading schemes around the world is a powerful way to promote cost-effective reductions in emissions and to bring forward action in developing countries.

  Strong targets in rich countries could drive flows amounting to tens of billions of dollars each year to support the transition to low-carbon development paths.

- Technology cooperation

  Informal coordination as well as formal agreements can boost the effectiveness of investments in innovation around the world.

  Globally, support for energy research and development should at least double, and support for the deployment of low-carbon technologies should increase up to five-fold.

  International cooperation on product standards is a powerful way to boost energy efficiency.

- Action to reduce deforestation

  The loss of natural forests around the world contributes more to global emissions each year than the transport sector. Curbing deforestation is a highly cost-effective way to reduce emissions; large-scale international pilot programmes to explore the best ways to do this should get underway very quickly.

- Adaptation

  The poorest countries are most vulnerable to climate change. It is essential that climate change be fully integrated into development policy, and that rich countries honour their pledges to increase support through overseas development assistance.

  International funding should also support improved regional information on climate change impacts, and research into new crop varieties that will be more resilient to drought and flood.

The review provides us all with a wake-up call. Now is the time to start taking the steps needed to protect people and the planet from chaos that many of us could see within our own lifetimes. Certainly, future generations will be impacted by the policy decisions relating to climate change that we make today. Not to challenge greenhouse gas emissions today may go down on record as worst ethical behaviour ever enacted by the human race.