

Some Economics of Climate Change: a response to The Stern Review Discussion Paper, “What is the Economics of Climate Change?”

Julian Morris¹

1. The author is joint author of another submission to the Stern Review, to which the reader’s attention is drawn.² I here wish to address some issues specifically relating to the economics of climate change that were only marginally addressed in that.
2. The Stern Review Discussion Paper on “What is the Economics of Climate Change” ignores the vast bulk of the immense theoretical and empirical work on the economics of climate change that has been published in the peer-reviewed literature.
3. Economics has much to contribute to an understanding of how best to address climate change.
4. I shall here focus on one contribution, which is the assessment of socially optimal policies that might be pursued. Other possible contributions include the political economy of climate change science,³ and the possibility of self-enforcing international agreements.⁴
5. In order to identify socially optimal policies to address any problem, we first need to know the nature and extent of the problem. In this case, we must start by forecasting future emissions of gases thought to interfere with the climate. These forecasts must be based on an understanding of likely economic activity and the emissions that might result from that activity. (This is clearly a job for economists – and indeed much economic work has been done on the subject.)
6. Once possible emission pathways have been identified, potential climate changes might be forecast. (This is a job for climate scientists, rather than economists.)
7. With possible climate changes identified, impacts may then be forecast. (Again, this is not a job for economists but for other experts.)
8. Once possible impacts have been identified, their costs and benefits can be assessed. This is another job for economists – and again one that has received a great deal of attention in the economics literature.
9. At each stage in the process it will be necessary to assign probabilities to the forecasts made. These probabilities can then be combined to arrive at a final probability for each predicted outcome.
10. By multiplying the final probability of each identified outcome with its economic impact (positive or negative) summed over the period (with future impacts discounted at an appropriate rate), it is possible to derive an estimate of the expected economic impact of climate change.
11. Economic analysis is likewise able to identify, within bounds, the probable costs of taking action either to mitigate anthropogenic climate change or to adapt to such changes.
12. By combining these assessments of the benefits of taking action (i.e. climate change impacts avoided through mitigation or adaptation) with the costs of taking action, it is

¹ Submitted in a personal capacity. The author is Executive Director, International Policy Network and Visiting Professor, University of Buckingham Department of International Studies. Email: jmorris@policynetwork.net

² Byatt, I., Castles, I., Henderson, D., Lawson, N., McKittrick, R., Morris, J., Peacock, A., Robinson, C. and Skidelsky, R. (2006): “The Stern Review ‘Oxonia Papers’: A Critique,” Submission to the Stern Review.

³ See for example: Bate, R. (2001) “The Political Economy of Climate Change Science: a discernible human influence on climate documents?” London: Institute of Economic Affairs, available at:

<http://www.iea.org.uk/files/upld-article3pdf?.pdf> ;

⁴ See for example: Barrett, S. (2001), “Towards a Better Climate Treaty”, *Policy Matters* 01-29, Washington, DC: AEI/ Brookings Joint Center for Regulatory Studies; Buchner, B. and Carraro, C. (2004): “Economic and Environmental Effectiveness of a Technology -based Climate Protocol” Turin: *Fondazione Eni Enrico Mattei Nota di Lavoro* 61.2004.

possible – in principle – to identify actions that might be taken that have net social benefits, taking into account distributional impacts, etc.

13. This is – broadly – how some of the best minds in economics have approached the problem in hundreds of analyses over the course of the past twenty years.⁵
14. Given the complexity of the problem being analysed and the long time period of the forecasts, the probabilities assigned will likely be subject to substantial uncertainty. But that is not an excuse to avoid making such assignments.
15. Various methods have been devised by statisticians and economists to address the problem of uncertainty, none of which includes abandoning the assignment and use of probabilities.
16. For example, in Bayesian analysis, initially a somewhat arbitrary probability is assigned and as new information is acquired so the probability is firmed-up, in an iterative process.
17. In the absence of concrete assignments of probabilities, assertions such as “the most recent science indicates that some of the risks are more serious than previously thought,” (Stern Review, paragraph 7) are unhelpful.
18. In place of rational analysis, the Discussion Paper evinces deep pessimism about the potential impact of climate change and assumes that government intervention should be based on worst case scenarios.
19. If all government action were predicated on worst case scenarios, a large proportion of beneficial human activities would be prohibited.⁶ Clearly this would not be auspicious for the improvement of the human condition.
20. Cost-benefit analysis and similar methods for prioritisation provide much more rational bases for government action.⁷
21. The Discussion Paper (paragraphs 23 to 25) uncritically endorses IPCC scenarios of future emissions pathways that have been widely criticised as based on flawed economic analysis,⁸ and which are not assigned probabilities.⁹
22. The Discussion Paper continues with a statement made with a degree of certainty that is wholly unjustified by the available evidence: “Stabilisation [of the climate] *will* require significant reductions in emissions of greenhouse gases even compared to global levels in 1990, and *the scale of the effort required is much larger compared to business-as-usual scenarios for global economic growth.*” (Paragraph 27, emphasis added.)
23. Even if it is true that significant reductions in emissions of greenhouse gases will be required in order to stabilise the climate, this begs the question of timing. If the climatic response to increased concentrations of these trace gases is not dramatic (i.e. small positive, zero or negative feedback from water vapour) and the human impact net positive or a small net negative for relatively large increases in concentrations, then the level at which it would be desirable to stabilise concentrations might be high (e.g. 700 ppm CO₂ equivalent). Under such circumstances, the natural course of economic activity pursued within competitive markets may well lead to a reduction in emissions that prevents such a

⁵ See for example the excellent summary given in *The Economics of Climate Change*, London: House of Lords Select Committee on Economic Affairs, 2005.

⁶ See e.g. Morris, J. (ed.) (2000): *Rethinking Risk and the Precautionary Principle*, Oxford: Butterworth-Heinemann; Cross, F. B. (1996) “The Paradoxical Perils of the Precautionary Principle, *Washington and Lee Law Review*, vol. 53, No. 3, p. 860.

⁷ An interesting attempt to prioritise government action relating to global issues was conducted by Bjorn Lomborg’s Copenhagen Consensus, which rated Kyoto-style action to reduce greenhouse gas emissions as a poor investment. See: www.copenhagenconsensus.org

⁸ See for example: David Henderson, ‘SRES, IPCC and the Treatment of Economic Issues: What Has Emerged?’ *Energy and Environment*, Vol 16 Nos 3 and 4, 2005.

⁹ See for example: Schneider, S. H., “What is Dangerous Climate Change,” *Nature*, Vol 411, 3 May 2001, pp. 17-19.

level ever being reached, without any need for government restrictions to be imposed on emissions. While this is perhaps an extreme scenario, there would be many others that are less extreme but which nevertheless would not justify the statement made in paragraph 27 of the Discussion Paper.

24. In the place of rational economic analysis, the entire Discussion Paper is pervaded with a foreboding of imminent doom and at every turn the authors take pains to stress the negatives. Consider paragraph 7, which says, *inter alia*, “Some risks, if they were to crystallise, could be irreversible and accelerate the process of global warming, for example the release of greenhouse gases from thawing permafrost or the dieback of the Amazon forest.”
25. While it is worthwhile identifying risks associated with climate change, it is necessary – if these are in fact to be called “risks” – to assign to them probabilities of occurrence. Otherwise they should be referred to as “threats” or “dangers” or some other word that less categorically – in the context of economics – implies a probability or probability distribution.¹⁰
26. It strikes this author that the failure to assign probabilities to the various threats otherwise misidentified as “risks” would make any “economic” assessment of climate change that seeks to identify socially optimal policy options futile.

¹⁰ In *Risk, Uncertainty and Profit* Frank Knight (1921) argued that “risk” proper refers to “measurable uncertainty,” and is clearly distinct from “unmeasurable uncertainty.” This convention has been followed by economists in large measure because of the importance of assigning probabilities when attempting to perform quantitative analyses.