

Proposed paper for the Input-Output Conference Seville, 2008

"Avoiding Dangerous Climate Change: The Role of Input-Output in Modeling a Zero-Carbon Global Economy"

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Abstract

Since the early 1990s, it has been internationally recognized that one consequence of economic activity has been the accumulation of greenhouse gases and that this may lead to climate change. This already threatens development in poor countries that are most vulnerable to climate variability. If unchecked, it will threaten future generations with unknown but potentially catastrophic climate events, given the availability of fossil carbon at current prices relative to carbon-free alternatives, which could raise concentrations to levels not seen for millions of years. At the same time the costs of reducing the emissions have been agreed as negligible in relation to expected growth in incomes. This paper will describe how input-output modelling within the context of a global structural model of the energy-environment-economy (E3) system can inform policies and measures to achieve decarbonisation of the global economy. The model, E3MG, is a large-scale dynamic econometric model covering 20 world regions and based on Post Keynesian theory. The paper will address the issue of the interaction between economics and technology, such that induced technological change including change in input-output coefficients, can be represented, based on past observations and projecting over 100 years.

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Terry is Leader for Integrated Modelling in the Tyndall Centre for Climate Change Research, and a member of the Editorial Board of *Economic Systems Research*. His research responsibilities also include directing the Centre's work for the UK Energy Research Centre on the domestic and transport submodels of the UK Multisectoral Dynamic Model (MDM-E3) and the Centre's contribution to the FP6 European project ADAM. He is also Chairman of Cambridge Econometrics, the company originally formed by University of Cambridge researchers to apply MDM-E3. He was a Co-ordinating Lead Author (CLA) for the IPCC's Fourth Assessment Report taking responsibility for the chapter on greenhouse gas mitigation from a cross-sectoral perspective. Previously he was a CLA for the IPCC's Third Assessment Report and a member of the core writing team for the Synthesis Report Climate Change 2001. He has been working with models incorporating input-output tables since 1965.

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