

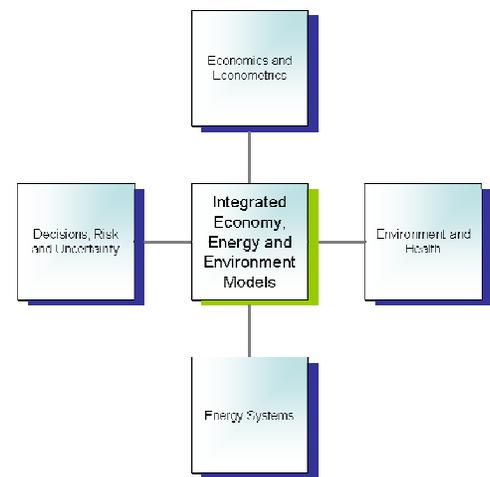
Briefing Paper series
from the Cambridge
Centre for Climate
Change Mitigation Re-
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An Introduction to 4CMR

Our Research

The centre focuses on research that examines in detail climate change economics and mitigation strategies. The objectives are to improve the base of knowledge about the interactions between energy, environmental and economic systems; to develop and test measures, definitions, policies and processes that are effective in mitigating climate change; and to illustrate and quantify the consequences of different mitigation strategies. While our research brings forward advances in understanding energy systems, environmental impacts and economic performance, our approach is to focus on the integration of these three related systems in a broadly interdisciplinary programme of research. As a result, we are keenly interested in collaborating with people who share this commitment to *integrated, problem-focused research*, and who will bring specialist expertise into this process of integration.



The research team at 4CMR combines expertise in environmental science, energy economics, econometrics, computer modelling, applied mathematics, policy analysis, risk assessment, statistics and the socio-economics of technological change. In addition to economic and econometric modelling, this team examines the effects of aviation and shipping, adapting to extreme weather events, modifying urban environments, enabling strategies for sustainable technology and innovation, and other processes that reduce the risks of climate change.

The economic modelling we undertake examines energy and environment interdependencies within the global economy, evaluating short and long-term impacts of climate change policy. The key model that 4CMR has developed in collaboration with Cambridge Econometrics, is the Energy-Environment-Economy (E3) Model at the Global Level (E3MG). This model has evolved from research that includes contributions from Economics Nobel Prize laureates and the governor of the Bank of England. It was the central mitigation model used by the Intergovernmental Panel on Climate Change in their research, for which they were jointly awarded (with Al Gore) the 2007 Nobel Peace Prize.

The Briefing Papers series by 4CMR provides policy makers, organisations, communities and citizens with advanced research on the roles of economic, energy and environmental strategies for reducing the risk of climate change.



The series is made possible through a generous award from the Three Guineas Trust supporting both the research described and public outreach and engagement.

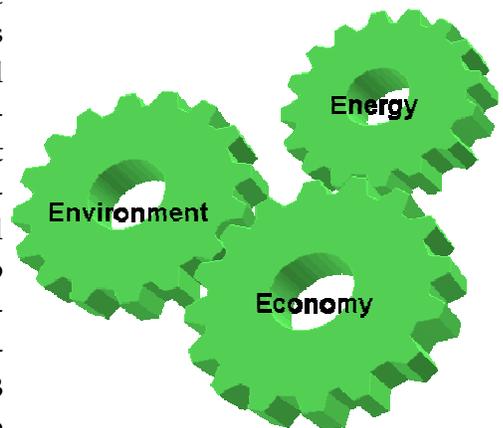
Our Research Platforms

Our research on the links between energy, environment and economy is built around four Platforms through which we conduct foundational research, and which are integrated in the E3 models which lie at the heart of all of our activities. This research is centred in economic modelling, and so the first Platform below has "pride of place". The other three Platforms support that economic modelling by developing the links between economies and the environmental and energy systems on which they depend.

1. **Economics and Econometrics:** Developing core theories and models to further understanding of the role of economies in energy and environmental systems, and to identify paths forward to a sustainable global economy.
2. **Environment and Health:** Developing methods to assess the changes in environments associated with climate change policies, including the co-benefits of policies on the environment and on human and ecosystem health.
3. **Energy Systems:** Developing systems models of energy generation and use, including the associated emissions and the role of sustainable technology innovation in decarbonising the global economy.
4. **Decisions, Risk and Uncertainty:** Developing methods to perform uncertainty, variability and sensitivity analyses for simulations of the effects of climate change risk reduction strategies and policies, and using these tools to understand and improve decisions.

Why E3 and not E?

Our research is an interdisciplinary exploration of the links between energy, environmental and economic systems and policies. We take this approach because our empirical studies suggest that effective, efficient and equitable solutions must address the interconnections between energy, environmental and economic processes, and joined-up policies must reflect these interconnections. An integrated and interdisciplinary approach to analysing E3 systems is the only way to ensure that climate change policies reflect the full impacts of policies on the goal of decarbonising the global economy.



The Cambridge Centre for Climate Change Mitigation Research (4CMR) studies the interconnected economic, energy and environmental policies at the heart of climate change policy.

This Briefing Paper was developed by Dr. Douglas Crawford-Brown of 4CMR



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