**Award: ESRC Centre for Climate Change Economics and Policy**

**Project: Evolution of carbon markets (CCCEP Phase 2)**

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**Overview of project aims**

In the last ten years, the use of markets to reduce pollution, particularly carbon emissions, has come of age. When markets for emission permits emerged during the 1980s, they had elementary design features, reflecting the traditional objectives and skills of environmental economists in regulating local pollutants from limited sources. Today, emission permits markets are infinitely more complex, having evolved structurally and weathered the impacts of unexpected shocks, most notably the Financial Crisis. The evolution of markets and their reaction to shocks have raised numerous - and previously little explored - questions about the markets' responsiveness and inter-connectedness. This project developed new analytical approaches to address these questions through an inter-disciplinary collaboration between scholars in economics, mathematics and climate.

**Overview of data**

* Practically the entirety of the research in this project has been based on theoretical models and has therefore not produced any data to be archived.
* Paper 3 has used publicly available data relating to the annual country level carbon dioxide emissions covering 1950-2012 from the World Resources Institute. The data is available to download at <https://www.wri.org/resources/data-sets/cait-country-greenhouse-gas-emissions-data> The paper complements this dataset with publicly available aviation and maritime emissions data covering 1971-2012 from the Organization for Economic Co-operation and Development. The data is available to download at <https://data.oecd.org/> The data for the US power emissions covering 1950-2011 comes from the Energy Information Administration. The data is publicly available and can be downloaded at <https://www.eia.gov/totalenergy/data/browser/>
* Paper 4 has used publicly available data from IEA and proprietary data from ENERDATA for the calibration of the model. IEA data is available to download at <https://www.iea.org/statistics/co2emissions/> . Enerdata dataset was purchased and cannot be shared publicly.
* Paper 5 and 6 have used data on agricultural profits, labour, fertiliser, fuel costs, and clearance and conversion costs from L'Instituto Brasileiro de Geografia e Estatística IBGE. The data is available to download at <https://ww2.ibge.gov.br/english/> The Appendix of paper 6 gives the references to the specific data sources. .
* Paper 7 uses publicly available data relating to the European Electricity sector from Eurostat, International Energy Agency and Eurelectric to parameterise the paper's model. Section 4 of the paper provides details on how the are processed to obtained the quantities reported in Tables 2-6, and gives the references to the specific data sources.

**Links to other projects**

This project is related to a broader programme of work at the Grantham Research Institute on Climate Change and the Environment, LSE, on policy design and evaluation, under the *Mitigation* programmeand the current *Policy Design and Evaluation* programme.

**CCCEP publications**

1. “Emissions trading systems with cap adjustments”, Sascha Kollenberg and Luca Taschini. *Journal of Environmental Economics and Management* – Vol. 80 (3):20-36, 2016
2. “Dynamic Supply Adjustment and Banking under Uncertainty: the Market Stability Reserve”, Sascha Kollenberg and Luca Taschini, Centre for Climate Change Economics and Policy Working Paper No. 219, 2016
3. “Carbon dating: when is it beneficial to link ETSs?”, Baran Doda and Luca Taschini. *Journal of the Association of Environmental and Resource Economists* - Vol. 4 (3):701-730, 2016
4. "Linking Emissions Trading Systems Multilaterally", Baran Doda, Simon Quemin and Luca Taschini, Centre for Climate Change Economics and Policy Working Paper No. 311, 2018
5. “Understanding the Demand for REDD+ Credits”, Tim Laing, Luca Taschini and Charles Palmer. *Environmental Conservation* – Vol. 43 (4):389-396, 2016
6. “Getting more ‘carbon bang’ for your ‘buck’ in Acre State, Brazil”, Charles Palmer, Luca Taschini and Tim Laing. *Ecological Economics* – Vol. 142 (1):214-227, 2017
7. “Energy Policy and the Power Sector in the Long Run”, Baran Doda ad Samuel Fankhauser, Centre for Climate Change Economics and Policy Working Paper No. 312, 2017