Durham University
Business School

PhD Studentships for Academic Year 2026-27

Centre for Environmental and Energy Economics (CE3)

About the Research Centre

We work on a wide range of prominent environmental and energy problems. Many of these issues are associated with failure or absence of proper markets, which require corrective public policy actions to increase the efficiency of economic outcomes.

Find out more at: CE3 - Durham University Business School

Topic 1

Title of Proposed Research Topic:

Game theory and climate change negotiations after the Paris Agreement

Potential Supervisors:

Professor Alejandro Caparrós

Dr Lucia Sbragia

Description of Possible Research Topic:

Game theory has been applied to study international environmental agreements for several decades, with most papers focusing on climate change. Implicitly or explicitly, essentially all existing analyses have assumed a single burden sharing agreement, the situation created by the Kyoto Protocol. However, the Paris Agreement has moved the world away from a burden sharing agreement. Pledges, partial commitments and multiple levels of cooperation, including regional and sectoral agreements, are the new norm. This will impact international cooperation, but also the distribution of efforts within the European Union and other blocs. Game theoretical analyses of these issues are not available and will be the focus of this research project.

Key References:

Breton, M & Sbragia, L., 2019. The Impact of Adaptation on the Stability of International Environmental Agreements. Environmental and Resource Economics 74(2): 697-725.

Harstad, B. and Battaglini, H., 2016. Participation and Duration of Environmental Agreements. Journal of Political Economy 124(1), 2016: 160-204.

Caparrós, A. and Péreau, J.C., 2017. Multilateral Versus Sequential Negotiations over Climate Change. Oxford Economic Papers 69(2): 365–387.

Finus, M. and Caparrós, A., 2015 (eds.). Game Theory and International Environmental Cooperation: Essential Readings. The International Library of Critical Writings in Economics, Edward Elgar.

Finus, M., Furini, F., Rohrer, A.V., 2021. The efficacy of international environmental agreements when adaptation matters: Nash-Cournot vs Stackelberg leadership. Journal of Environmental Economics and Management 109: 102461.

Vosooghi, S. and Caparrós, A., 2022. Information Disclosure and Dynamic Climate Agreements: Shall the IPCC reveal it all? European Economic Review 143: 104042.

Topic 2

Title of Proposed Research Topic:

Gender, climate change and just transition to renewables in developing economies

Potential Supervisors:

Professor Laura Marsiliani

Dr Thomas Renstrom

Description of Possible Research Topic:

Renewable energy sources currently account for a small percentage of electricity generation in most developing countries. Yet, as signatories of the UNFCCC Paris Agreement, those countries have pledged to reduce GHG emissions substantially with respect to Business as Usual by 2030. Transitioning towards renewables is one of the ways forward. At the same time, there is evidence that women and girls may not only be disproportionally affected by climate change but also by climate change mitigation and adaptation policies, especially in climate vulnerable countries. Fostering women empowerment and gender equality is key to ensure just transition to a net zero economy and sustainable development.

This project will develop fit-for purpose models of energy market reforms with a particular focus on equity considerations, including just transition opportunities for vulnerable stakeholders such as women and low-income and rural households.

Key References:

Amin S., Jamasb T., Llorca M., Marsiliani L., Renström T. and A. Sarkar (2021) "Captive Power, Market Access and Macroeconomic Performance: Reforming the Bangladesh Electricity Sector," Energy Economics, Volume 102, October 2021.

Duflo, E. (2012). Women empowerment and economic development. Journal of Economic Literature, 50(4), 1051-1079.

Eastin, J. (2018) Climate change and gender equality in developing states. World Development Volume 107, Pages 289 - 305

Eastin, J. and Dupuy, K. (2021) Gender, Climate Change and Livelihoods: Vulnerabilities and Adaptations, CABI Publishing

Sedai, A. K., Nepal, R., & Jamasb, T. (2022). Electrification and socio-economic empowerment of women in India. The Energy Journal, 43(2).

Stiglitz, J. E. (2017), Where Modern Macroeconomics Went Wrong, NBER Working Paper No. 23795. Available at: https://www.nber.org/system/files/working_papers/w23795/w23795.pdf

Topic 3

Title of Proposed Research Topic:

Socio-economic considerations on the pollution-health nexus

Potential Supervisors:

Professor Riccardo Scarpa

Professor Laura Marsiliani

Description of Possible Research Topic:

The latest report of the Lancet Commission on Pollution and Health highlights that diseases caused by pollution were responsible for an estimated 16% of all deaths worldwide. This research project links the epidemiological impact of pollution with socio-economic considerations.

Key References:

Gakidou, E. et al. 2017. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet, 390(10100), pp.1345-1422. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)32225-6/fulltext#

Landrigan, P. J et al. 2017. The Lancet Commission on Pollution and Health Report, The Lancet, 391(10119), pp.462 – 512

OECD (2016), The Economic Consequences of Outdoor Air Pollution, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264257474-en.

OECD (2020), Air quality and health: Mortality and welfare cost from exposure to air pollution (database), Statistics, OECD Environment, https://doi.org/10.1787/c14fb169-en (accessed on 3 November 2020).

Topic 4

Title of Proposed Research Topic:

The non-market valuation of community renewables

Potential Supervisors:

Professor Riccardo Scarpa

Professor Laura Marsiliani

Description of Possible Research Topic:

Collective efforts to implement renewable energy generation can give access to a variety of technologically implementable solutions that are ordinarily overlooked. The research would investigate the total economic value of initiatives in this field.

Key References:

Campos Inês, Pontes Luz Guilherme, Marín-González, Esther Gährs Swantje, Hall Stephen, Holstenkamp Lars, 2020. Regulatory challenges and opportunities for collective renewable energy prosumers in the EU, Energy Policy, 138:111212

C. Franceschinis, M. Thiene, R. Scarpa, J. M. Rose, M. Moretto, and Cavalli R. “Adoption of Renewable heating systems: An empirical test of the diffusion of innovation theory”. In: Energy 125 (2017), pp. 313–326.

Jelte Harnmeijer, Matthew Parsons and Caroline Julian, 2013, The Community Renewables Economy: Starting up, scaling up and spinning out. ResPublica (https://www.respublica.org.uk/wp-content/uploads/2013/09/yqq_Community-Renewables-Economy.pdf)

R. Scarpa and K. G. Willis. Willingness-to-pay for renewable energy: Primary and discretionary choice of British households for micro-generation technologies. In: Energy Economics 32.1 (2010), pp. 129–136.

K. G. Willis, R. Scarpa, R. Gilroy, and N. Hamza. (2011) Renewable energy adoption in an ageing population: Heterogeneity in preferences for micro-generation technology adoption". In: Energy Policy 39.10 (2011), pp. 6021–6029

Topic 5

Title of Proposed Research Topic:

Impact of Populism, Lobbying and Economic Factors on Renewable Energy Transition Dynamics

Potential Supervisors:

Professor Laura Marsiliani

Dr Thomas Renstrom

Description of Possible Research Topic:

The influence of political economy factors such lobbying and populist politics in the transition to renewable energy sources remains not fully explained. This research aims to investigate how political and economic dynamics shape the renewable energy transition. The findings will provide policymakers with valuable insights into overcoming political and economic barriers towards a just and sustainable energy transition.

Key References:

Acemoglu, D., Egorov, G., Sonin, K., 2013. A political theory of populism. The quarterly journal of economics 128, 771-805.

Amin, S., Jamasb, T., Llorca, M., Marsiliani, L., Renström, T.I., 2022. Decarbonisation policies and energy price reforms in Bangladesh. Energy Policy 170, 113224.

Amin, S., Jamasb, T., Llorca, M., Marsiliani, L., Renström, T.I., Sarkar, A., 2021. Captive power, market access and macroeconomic performance: Reforming the Bangladesh electricity sector. Energy Economics 102, 105468.

Fredriksson, P.G., Neumayer, E., Damania, R., Gates, S., 2005. Environmentalism, democracy, and pollution control. Journal of environmental economics and management 49, 343-365.

Marsiliani, L., Renstrom, T.I., 2000. Time inconsistency in environmental policy: tax earmarking as a commitment solution. The Economic Journal 110, 123-138.

Marsiliani, L., Renström, T.I., 2007. Political institutions and economic growth. Economics of Governance 8, 233-261.