

PhD scholarships 2024/25

Centre name: Centre for Environmental and Energy Economics (CE3)

Topic 1

Title of proposed research topic: Game theory and climate change negotiations after the Paris Agreement

Potential supervisors:

Prof. Alejandro Caparrós

<https://www.durham.ac.uk/business/our-people/alejandro-caparros/>

Dr Lucia Sbragia

<https://www.durham.ac.uk/business/our-people/lucia-sbragia/>

are members of the CE3 and are interested in supervising PhD research that focusses on climate change negotiations and game theory

Description of possible research topic with some key references:

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.

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:

Prof. Laura Marsiliani

(<https://www.durham.ac.uk/business/our-people/laura-marsiliani/>)

Dr Thomas Renstrom

(<https://www.durham.ac.uk/business/our-people/t-i-renstrom/>)

are members of the CE3 and are interested in supervising PhD research at the intersection of gender and family economics and efficiency and equity aspects of energy market reforms.

Description of possible research topic with some key references:

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 disproportionately 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.

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:

Prof. Riccardo Scarpa

(<https://www.durham.ac.uk/business/our-people/riccardo-scarpa/>)

Dr. Laura Marsiliani

(<https://www.durham.ac.uk/business/our-people/laura-marsiliani/>)

are members of the CE3 and are interested in supervising PhD research that focusses on the economics of pollution and health.

Description of possible research topic with some key references:

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.

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#](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:

Prof. Riccardo Scarpa

(<https://www.durham.ac.uk/business/our-people/riccardo-scarpa/>)

Dr. Laura Marsiliani

(<https://www.durham.ac.uk/business/our-people/laura-marsiliani/>)

are members of the CE3 and are interested in supervising PhD research that focusses on the economic value of community initiatives to generate power from renewables.

Description of possible research topic with some key references:

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.

Campos Inês, Pontes Luz Guilherme, Marín-González, Esther Gähns 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/ygg_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