

**UKNEE**

UK Network for  
Environmental Economists



# **envecon 2023**

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Applied Environmental Economics Conference

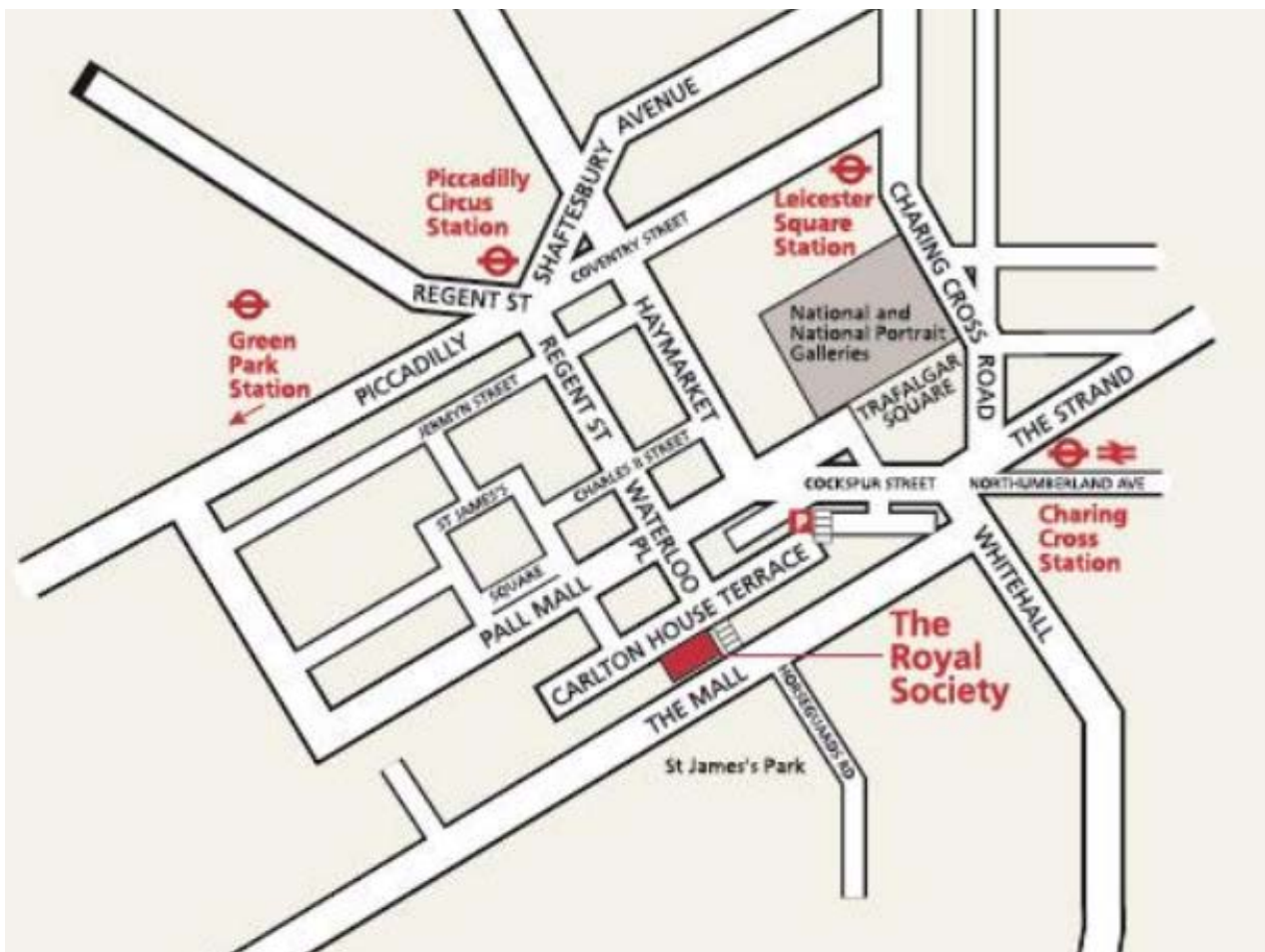
Friday, March 24, 2023

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# Accessing the Venue

**The Royal Society 6 – 9 Carlton House Terrace  
London SW1Y 5AG**

(please find the site map below)



# Our Partners

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## [Economics for the Environment Consultancy \(eftec\)](#)

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EAERE aims to contribute to the development and application of environmental, climate, and resource economics by encouraging multi-stakeholder collaboration.

*With Thanks to the UKNEE Scientific Committee:*

- **Paolo Agnolucci**, University College London;
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- **Ian Bateman**, LEEP & University of Exeter;
- **Diane Burgess**, Agri-Food and Biosciences Institute, Northern Ireland;
- **Mike Christie**, Aberystwyth University;
- **Simon Dietz**, Grantham Research Institute & London School of Economics and Political Science and EAERE;
- **Silvia Ferrini**, Centre for Social and Economic Research on the Global Environment, University of East Anglia;
- **Ben Groom**, University of Exeter;
- **Nick Hanley**, University of Glasgow;
- **Yiannis Kountouris**, Imperial College;
- **Susana Mourato**, London School of Economics and Political Science;
- **Ece Ozdemiroglu**, eftec;
- **Dan Rigby**, University of Manchester.

# Agenda

Time (GMT)	Session
08:45 - 09:30	Registration and tea, coffee, pastries
09:30 - 09:50	<b>Keynote: Tom Burke CBE, E3G</b>
09:50 - 11:20	<b>Session 1: Economic Valuation</b> <i>Chair: Allan Provins, ettec</i>
	<ul style="list-style-type: none"><li>• <b><i>The IPBES Values Assessment: The diverse values and valuation of nature for transformative change to a sustainable and just future</i></b> Mike Christie, Environmental and Ecological Economics, Aberystwyth University, UK</li><li>• <b><i>Valuing the benefits of species recovery through stated preference methods in a habitat quality framing</i></b> Russell Drummond, Senior Consultant, ettec, UK</li><li>• <b><i>Cost-benefit analysis of spatially coordinated land management</i></b> Daniel Leppert, PhD Candidate in Economics, Durham University, UK</li><li>• <b><i>What is the willingness - to - pay to avoid IQ losses? Evidence from eleven OECD countries</i></b> Chiara Sotis, PhD Candidate in Environmental Economics, London School of Economics and Political Science, UK</li><li>• <b><i>Valuing biodiversity as an ecosystem service to agroecosystems through endogenous production decisions</i></b> Stephanie Brockmann, Economics, University of New Hampshire, USA</li></ul>
11:20 - 11:40	<b>Coffee Break</b>
11:40 - 12:40	<b>Session 2: Climate Change Policy</b> <i>Chair: Ben Groom, University of Exeter</i>
	<ul style="list-style-type: none"><li>• <b><i>Environmentally-adjusted productivity measures for the UK</i></b> Matthew Agarwala, Bennett Institute for Public Policy, University of Cambridge, UK</li><li>• <b><i>Carbon pricing with co-benefits: Positive air quality and health effects from British Columbia's Carbon Tax</i></b> Lorenzo Sileci, PhD Candidate in Environmental Economics, London School of Economics and Political Science, UK</li><li>• <b><i>The Social Cost of Carbon with intragenerational inequality and economic uncertainty</i></b> Ben Groom, Dragon Capital Chair in Biodiversity Economics, University of Exeter, UK</li></ul>

# Agenda

Time (GMT)	Session
12:40 - 13:40	Lunch
13:40 - 15:20	<b>Session 3: Climate Change Impacts</b> <i>Chair: Ece Ozdemiroglu, eften</i>
	<ul style="list-style-type: none"><li>• <b>Assessing the impact of environmental variability on harvest in a heterogeneous fishery: A case study of the Canadian lobster fishery</b>  Dana Wright, Economist and PhD Candidate, Arctic University of Norway, Norway</li><li>• <b>The impact of wildfires on regional economies: Evidence from Southern Europe</b>  Sara Meier, Research Fellow in Geography, Earth, and Environmental Sciences, University of Birmingham, UK</li><li>• <b>The impact of weather shocks on exports</b>  Leanne Cass, PhD Candidate in Environmental Economics, London School of Economics and Political Science, UK</li><li>• <b>Rain follows the forest: Land use policy, climate change, and adaptation</b>  Florian Grosset, PhD Candidate in Sustainable Development, Columbia University, USA</li><li>• <b>The impact of extreme environmental events and urbanisation during the late Qing Dynasty</b>  Robert Elliott, Department of Economics, University of Birmingham, UK</li></ul>
15:20 - 15:40	Coffee Break
15:40 - 17:00	<b>Session 4: Energy</b> <i>Chair: James MacGregor, University of Exeter Business School</i>
	<ul style="list-style-type: none"><li>• <b>The relationship between energy and food security in Africa: A cross-country evidence from 37 countries</b>  Dalia Fady, Postdoctoral Research Fellow, Bioeconomics, KU Leven, Belgium</li><li>• <b>Who benefitted from the “gas tax holidays” in Europe?</b>  Julius Andersson, Researcher, Environmental Economics, Stockholm Institute of Transition Economics, Sweden</li><li>• <b>Do homebuyers value energy efficiency? Evidence from an information shock</b>  Arpita Ghosh, Lecturer in Economics, University of Exeter, UK</li><li>• <b>Decarbonising residential heating: what spatio-temporal factors drive heat pump uptake in the UK?</b>  Theodoros Arvanitopoulos, Research Fellow, Hellenic Observatory, London School of Economics and Political Science, UK</li></ul>
17:00 - 19:00	Reception

# Keynote

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## Tom Burke CBE Co-founder and Chairman, E3G (Third Generation Environmentalism)



*Tom's keynote will be titled '**Limits to Theory - Some Provocations**'. He will present us with a set of challenges by questioning economic thinking and its influence on climate policy, prompting us to consider how we can best use environmental economics to influence positive and lasting real-world change.*

Tom Burke is a seasoned environmentalist with extensive experience in various environmental organizations. He is the Chairman of E3G, Third Generation Environmentalism, and a Visiting Professor at both Imperial and University Colleges, London. He is also a Senior Associate at the Cambridge Institute for Sustainability Leadership, Chairman of the China Dialogue Trust, and a Trustee of Black-E Community Arts Project, Liverpool.

Tom's experience in the environmental sector spans several decades. He was formerly the Executive Director of Friends of the Earth and a member of the Executive Committee of the European Environmental Bureau (1988-91) amongst many other appointments.

Additionally, Tom was an Environmental Policy Advisor to Rio Tinto plc (1996-2016), and he served as Senior Advisor to the Foreign Secretary's Special Representative on Climate Change (2006-12). He was also an environmental advisor to BP plc (1997-2001) and was appointed by the Secretary of State for Northern Ireland to chair an Independent Review of Environmental Governance in Northern Ireland (2006-7). Tom was a member of the Council of English Nature, the statutory advisor to the British Government on biodiversity, (1999-2005), and a member of the OECD's High-Level Panel on the Environment (1996-98).

Tom's contributions to the environmental sector have been recognized through several awards and honours, including being appointed CBE for services to the environment in 1997 and being awarded Royal Humane Society testimonials on Vellum (1967) and Parchment (1970).

# Economic Valuation

Session 1 | 09:50-11:20



## Mike Christie

Mike Christie is a professor of Environmental and Ecological Economics at Aberystwyth University's Business School. His research specialises in the economic and social valuation of biodiversity and ecosystem services. He has utilised a wide range of non-market valuation methods including choice experiments, contingent valuation, contingent behaviour, and travel cost methods. These studies have addressed a wide range of natural resource and environmental issues including both marine and terrestrial ecosystems, water quality, biodiversity, agri-environmental schemes, recreation and tourism. He was a lead author of TEEB (2010), the UK National Ecosystem Assessment (2011) and the IPBES European and Central Asia assessment (2018) report, and co-chaired the recent IPBES 'Values' assessment.

### **The IPBES Values Assessment: The diverse values and valuation of nature for transformative change to a sustainable and just future**

The 'Values Assessment' provides a framework to better understand the relations between people and nature through the development of a comprehensive typology of nature's values. The typology highlights concepts including worldviews and knowledge systems, broad values (social norms and regulations), specific (instrumental, relational and intrinsic) values, and value indicators (monetary, bio-physical and socio-cultural). The assessment also reviewed over 50 valuation methods and approaches and provides guidance for designing and implementing valuation. The assessment also explores tools for embedding the diverse values of nature into decision-making and policymaking and highlights four leverage points that can help catalyse transformation towards sustainable and just futures.

## Russell Drummond



Russell is a Senior Consultant at eftec. His focus is the valuation of non-market goods and services for both private and public sector uses. In the past year he has worked on projects, primarily using a combination of deliberative and survey based methods. His work has covered housing development, housing performance, infrastructure projects, habitat and species recovery, and water services. Russell has also contributed to projects that integrate this valuation evidence into value frameworks and appraisal guidance. Russell completed his MSc in Economics at UCL. He was a research assistant at Portland State University where he completed a graduate course in environmental and resource economics, and he holds a BSc in Engineering from Colorado School of Mines. Russell was a practicing structural engineer for several years.

### **Valuing the benefits of species recovery through stated preference methods in a habitat quality framing**

We present a novel method for obtaining household preferences and valuations across a variety of species recovery outcomes for England using a stated preference approach. This method portrays species recovery in terms of incremental improvements to habitat quality across a variety of potential habitats and this framing can then be used to present choices to household respondents. Using a representative survey of 5,000 households in England as well as a series of focus groups, we find that people can both understand the habitat improvement scale used to represent species recovery outcomes and meaningfully differentiate between habitat types to provide considered responses to a choice task. Our results show that respondents place different values on the recovery of different types of habitats and prefer changes that improve more intact habitats (all else equal) versus improving low-quality habitats. Overall, our research represents a significant addition to the literature by presenting a method for obtaining national-level and transferable policy evidence for species recovery outcomes.





## Daniel Leppert

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Daniel Leppert is a 3<sup>rd</sup> year PhD student in Economics at Durham University, specialising in environmental economics and applying GIS in environmental policy evaluation. His research is funded by NERC, the ESRC and Durham University Business School. He has previously completed postgraduate work at the Swedish University of Agricultural Sciences and ETH Zurich.

### **Cost-benefit analysis of spatially coordinated land management**

Mounting evidence shows that fragmentation due to land use change threatens pollinator communities and that the UK places towards the bottom in European comparisons of pollinator stock capacity. Applying a spatially explicit model of pollinator visitation rates, we find that agricultural land scores significantly lower on habitat suitability than do woodland and grassland. As part of this project, we evaluate an environmental land management scheme allowing farmers to coordinate with neighbours to create ecological corridors across farm boundaries. Surveying 350 English farmers in a discrete choice experiment, we estimate the (preliminary) required bonus payment for coordination with two neighbours at around £54, while requirement with one neighbour was negligible. Previous participation in agri-environment schemes, higher educational attainment, and sharing farm equipment with neighbours were significant predictors of uptake.

## Chiara Sotis



Chiara is a Post-Doctoral Fellow in the Department of Economics at the London School of Economics and Political Science (LSE). She holds a BSc in Economics and Business (cum laude) from LUISS Guido Carli and an MSc in Economics from LSE. She previously worked on the joint use of liability rules and regulation in preventing environmental harm at the Rotterdam Institute of Law and Economics (RILE). In her PhD, Chiara is focussing on the behavioural drivers behind people's support for policies, and exploring how to incentivise pro-social behaviours in the health and environmental domains. She is also a member of the OECD Surveys on Willingness - to - Pay to Avoid Negative Chemicals-Related Health Impacts (SWACHE) group and has extensive teaching experience in postgraduate Microeconomics, Behavioural Economics, and Environmental Economics.

### **What is the willingness - to - pay to avoid IQ losses? Evidence from eleven OECD countries**

Exposure to chemicals has been shown to reduce IQ in children. In turn, a person's IQ is likely to affect their educational achievements, lifetime earnings, probability to commit a crime and, more generally, a person's quality of life. This study provides a framework to value IQ losses due to exposure to chemicals. We employ a double-bounded contingent valuation approach to estimate the willingness - to - pay (WTP) to avoid IQ losses in eleven OECD countries. Our study accounts for the impact of losing IQ points starting at different baseline IQ (below average, average, and above average) and scope sensitivity was tested for by valuing 5 and 1-point IQ losses. The survey was administered in eleven OECD countries with representative samples of the general population. Among the countries considered, the United Kingdom has the lowest WTP, whereas Poland has the highest average WTP. Men, those with higher education levels and with greater income state a significantly higher WTP.



## Stephanie Brockmann

Dr. Brockmann is an environmental and natural resource economist. Her research is issues-driven and motivated by identifying biases and inefficiencies that exist in policy assessments when heterogeneous space, agent responses, or processes across human and natural dimensions are oversimplified or unaccounted for in analysis. She builds and analyses bioeconomic models with a spatial lens in both developed and less developed economy settings to inform policy; recent work includes construction of large scale regional bioeconomic models to identify externalities associated with water, quality policy and invasive species mitigation, and smaller scale bioeconomic models to identify support for sustainable production and generation of ecosystem services.

### **Valuing biodiversity as an ecosystem service to agroecosystems through endogenous production decisions**

Often the values of ecosystem services for pest control in agroecosystems are measured by observing the differentials in yields – with and without the ecosystem service – and multiplying by a market price to monetize the value. However, this method of valuation relies on the critical assumption that a producer's production decisions remain the same in the presence or absence of the ecosystem service. Ignoring the potential endogeneity between the "quantity" of an ecosystem service produced and production decisions may undervalue ecosystem services, especially in low to middle income countries where pest control may alleviate required inputs or labour and allow for different allocations of cash, credit, and time constraints. To assess how ecosystem services affect producer decisions, we develop a general dynamic bioeconomic decision model in which a smallholder producer seeks to maximize expected profits of a crop that is susceptible to damage by a pest, by choosing labour allocation and an integrated pest management strategy. Pest dynamics and the implications of an infestation are dependent on a predator, that relies on surrounding natural forest for habitat. Our work lays the groundwork for further understanding the importance of ecosystem services at the microeconomic level and provides a more detailed framework for developing policy in the arena of conservation.

**Session Chair**

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## Allan Provins



Allan Provins is a Director at eftec. He is an economist who works with companies, government and NGOs to help them make better evidenced plans and decisions. This includes using revealed preference, stated preference, and subjective wellbeing analyses, and providing guidance and advice for the use of this evidence in the development of policies, pricing and business plans. Allan holds an MA in Environmental Economics (with Distinction) from the University of East Anglia, and a BSc Hons Economics from University of Nottingham.

# Climate Change Policy

Session 2 | 11:00-12:40



## Matthew Agarwala

Dr. Matthew Agarwala leads the Bennett Institute's Wealth Economy project at the University of Cambridge, is a member of The Productivity Institute, and Senior Policy Fellow at Yale University's Tobin Center for Economic Policy. His research covers natural and social capital, economic measurement, green finance, productivity, and wellbeing. Spanning sectors and disciplines, Matthew's collaborators include ecologists, social anthropologists, members of UK Parliament, and Nobel Laureates in peace, medicine, physics, and chemistry. Matthew works closely with the UN, World Bank, central banks, finance ministries, and businesses to highlight nature-related financial risks. He is a sought-after public speaker and regular media contributor (BBC, Bloomberg, Channel 4 News, FT, Guardian, NYTimes, Reuters, and The Times).

### Environmentally-adjusted productivity measures for the UK

Standard productivity measures follow a private goods perspective, assuming free disposal of bad outputs. But from a social welfare perspective, productivity measures would internalise production externalities. We explore four deviations from the standard measures, including: examining energy productivity; incorporating greenhouse gas (GHG) emissions as an input; incorporating GHG and non-GHG air pollutants as 'bad outputs'; and incorporating environmental protection as a 'good' output. Our contribution is two-fold: we believe we are the first to treat environmental protection expenditure as capital investment in the UK context; and, where previous studies have incorporated emissions into economy-wide productivity measures, we utilise the richness of UK data to construct sector-specific environmentally-adjusted productivity for up to 42 industries. UK energy-productivity has more than doubled since 1990, and emissions-productivity almost tripled. Incorporating emissions increases measured output and labour productivity growth, but not enough to explain the productivity puzzle. In some industries, incorporating emissions and pollutants turns GVA negative. Industry-level data indicates that these rapid growths are mostly due to increased efficiency within industries, with only 8-21% due to changing industrial composition since 1990. Incorporating environmental protection as a 'good' output raises the level of GVA by around 6-7%, but does not significantly alter its growth rate.

## Lorenzo Sileci



Lorenzo is an applied environmental economist. His PhD research focusses on the environmental impacts of deforestation and forest fires in tropical countries, and on the spatial and environmental effects of carbon taxation in developed countries. He joined the Grantham Research Institute as a Research Officer in the Economics of Biodiversity Additionality (BIOADD) project in February 2023. Lorenzo is completing his PhD in Environmental Economics at the London School of Economics and Political Science. He holds a MSc in Environmental Economics and Climate Change (LSE) and a BA in Economics and Trade from the University of Florence, Italy. During his PhD, he also held a Research Associate role at the European University Institute, working on the dynamic and spatial aspects of structural transformation in Sub-Saharan African Countries.

### **Carbon pricing with co-benefits: Positive air quality and health effects from British Columbia's Carbon Tax**

While extensively theorised by the economics literature, co-benefits arising from carbon pricing such as improvements in local air pollution have rarely been measured empirically. In this paper, the 2008 carbon tax implemented in British Columbia, Canada is investigated as a source of exogenous variation in order to evaluate the effect of a carbon pricing scheme on air quality. Combining a granular dataset at the census dissemination area level (corresponding to US census tracts), satellite observations of local pollutants, and a synthetic difference-in-differences methodology, I find that the carbon tax has reduced PM<sub>2.5</sub> emissions by 0.36-0.89  $\mu\text{g}/\text{m}^3$  in British Columbian metropolitan area compared to the rest of Canada, or 5.2-10.9% compared to pretax levels. The result is heterogeneously distributed across census dissemination units: areas which present lower levels of baseline pollution, less dense and in higher income brackets experience greater reductions, suggesting a spatial dimension of the regressive nature of climate policy. Mechanisms explaining the reductions, such as transport mode substitution to public transit, cycling, and walking, are underlying the results. Furthermore, the conversion of health hazard rates from air pollution into monetary values identifies large gains from carbon pricing, at \$198 per capita.



## Ben Groom

Session Chair

Ben works at the LEEP Institute, Department of Economics at Exeter, as the Dragon Capital Chair in Biodiversity Economics. He is also a visiting Professor at the Grantham Research Institute on Climate Change and the Environment. He is a member of the HM Treasury Biodiversity Working Group which is tasked with looking at how to ensure biodiversity is accounted for in Cost - Benefit - Analyses of public policy and investment. He also works on intergenerational equity and the environment and has written reports to HM Treasury, the Office of National Statistics, the Department of Transport, and international organisations such as the OECD and the US Environmental Protection Agency.

### **The Social Cost of Carbon with intragenerational inequality and economic uncertainty**

A tractable formula is presented for the social cost of carbon (SCC) taking account of intragenerational income inequality, economic uncertainty, and economic growth. The social discount rate is adjusted for intra- and intergenerational inequality aversion and risk aversion. If growth reduces intragenerational inequality, the SCC is lower than with inequality-neutral growth, especially if intra- and intergenerational inequality aversion are high. Calibrated to the observed interest rate and risk premium, the SCC in 2020 is \$125 per tCO<sub>2</sub> without considering intragenerational inequality, \$81 per tCO<sub>2</sub> if intragenerational inequality decreases over time, as in the Shared Socioeconomic Pathway (SSP) 2, and \$213 per tCO<sub>2</sub> if inequality increases (SSP4).

# Climate Change Impacts

Session 3 | 13:40-15:20

## Dana Wright



Dana Wright is a Ph.D. student in the Marine Resource Economics research group at the Arctic University of Norway (UiT) in Tromsø. Dana came to UiT in 2020 after working as an economist for the Department of Fisheries and Oceans in Canada for three years. She splits her time between Norway and England where she lives with her fiancé in West Sussex. She is working on her thesis which uses econometric modelling and other statistical techniques to assess the economic impacts of climate change on the lobster fisheries in Canada.

### **Assessing the impact of environmental variability on harvest in a heterogeneous fishery: A case study of the Canadian lobster fishery**

Global fisheries face significant challenges in the coming years due to anthropogenic climate change, and understanding the impacts is a necessity for implementing appropriate fisheries management. Using the American lobster (*Homarus americanus*) fishery in the Maritimes region of Canada as a case study, this paper explores the relationship between ocean bottom temperature and harvest. Using a generalized linear mixed model (GLMM), it attempts to disentangle temperature effects from other production inputs. Exploiting the hierarchical structure of the data, we are able to mitigate some of the common pitfalls that are often encountered in these modeling exercises, and we show that efficiency in estimation is improved.





## Sara Meier

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Sara Meier is a PhD student at the University of Birmingham. She previously completed an undergraduate degree in Economics, and a graduate degree in Climate Sciences with a specification in Economics. Sara is interested in the fields of empirical climate and environmental economics with a focus on natural hazards. Her research focuses on the intersection of economics and climate sciences, with an aim to discover causal relationships between human behaviour and the natural world. Her PhD focuses on the study of extreme events and economic impacts of wildfires by merging satellite data on a number of climate variables with economic data using applied econometrics.

### **The impact of wildfires on regional economies: Evidence from Southern Europe**

We estimate the impact of wildfires on the growth rate of Gross Domestic Product (GDP) and employment of regional economies in Southern Europe from 2011 to 2018. To this end we match Eurostat economic data with geospatial burned area perimeters based on satellite imagery for 233 Nomenclature of Territorial Units for Statistics (NUTS) 3 level regions in Portugal, Spain, Italy, and Greece. Our panel fixed effects instrumental variable estimation results suggest an average contemporary decrease in a region's annual GDP growth rate of 0.11–0.18% conditional on having experienced at least one wildfire. For an average wildfire season this leads to a yearly production loss of 13–21 billion euros for Southern Europe. The impact on the employment growth rate is heterogeneous across economic activity types in that there is a decrease in the average annual employment growth rate for activities related to retail and tourism of 0.09–0.15%, offset by employment growth in insurance, real estate, administrative, and support service related activities of 0.13–0.22%.

## Leanne Cass



Leanne is an applied environmental economist. Her PhD research considered the role of international trade in the economic impacts of climate change, and also explored avenues towards reduced meat consumption, including meat taxation and innovation in plant-based substitute products. In her work as a member of the PRINZ Project, she studies the role of green skills and jobs for an equitable transition to Net Zero. Leanne has a PhD in Environmental Economics from LSE, an MSc in Economics from the University of Warwick, and a BA from the University of Ottawa. She also has experience working as a steel market analyst at CRU International.

### The impact of weather shocks on exports

This paper brings together recent developments from the international trade and climate econometrics literatures to investigate the differential impact of weather shocks on exports relative to domestic sales. In contrast to previous empirical papers that study the impact of weather shocks on international trade, I use an empirical approach that includes domestic trade flows and controls robustly for multilateral resistance parameters. I find that agricultural exports are particularly sensitive to temperature increases relative to domestic market sales, especially in hot countries. Manufacturing sector exports are relatively resilient to weather shocks, except that precipitation increases in very rainy places lead to decreases in exports relative to domestic sales. Economists usually conceptualize the macroeconomic damages of climate change as productivity impacts, but these results provide some evidence that weather and potentially climate change can increase barriers to international trade, implying that the full economic damages of these shocks may entail not only productivity impacts at the farm or factory, but also disruptions along the supply chain once goods leave the site of production.



## Florian Grosset

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Florian Grosset is a Ph.D. candidate in Sustainable Development at Columbia University. His research interests are in Development Economics, with a primary focus on Labour and Environmental issues. A general theme in his work is how labour supply decisions in lower-income settings are driven by social and environmental factors. He usually approaches these questions by combining field work and applied microeconomic techniques. In recent work, he shows that pressure to share income with others distorts labour supply decisions, among factory workers in Cote d'Ivoire. Currently, he studies how network-based hiring affects job seekers' take-up decisions and productivity; how the economic damages from weather shocks can propagate through workers' social networks; and how the regional climate can be influenced by local policies. He holds an MA from the Paris School of Economics, and BAs from Sciences Po and the University of Lorraine.

### **Rain follows the forest: Land use policy, climate change, and adaptation**

Human actions can alter the local and regional climate, particularly via land use. We assess the impact of the Great Plains Shelterbelt, a large-scale forestation program in the 1930s which planted 220 million trees across six US Midwestern states. The program led to a regional increase in precipitation and decrease in temperature, with impacts persisting for several decades. The change in climate extended to adjacent unforested land up to 200km away—enabling us to directly study climate adaptation. In places facing more favorable growing conditions, crop yields increased by 43%. Adaptation accounts for up to half of the yield increase, with farmers switching to more water-intensive production. This paper highlights the endogeneity risk in using spatial variation in climate trends in estimating climate damages, as well as the potential for tree planting to mitigate climate change impacts.

## Robert Elliott



Professor Robert Elliott is an applied economist who works at the intersection of international, development, environmental and energy economics, economic history, and international business.

He has a particular interest in the Chinese economy, firm behaviour, natural disasters, and the impact of globalisation on the environment. He is an editor for the Sustainable Future Policy Lab, Director of the Trade, Environment, Development and Energy (TEDE) research group, a Co-I on ReLIB as part of the Faraday Institute, a member of Water Challenges in a Changing World IGI and an Affiliate of the Lloyds Bank Centre for Responsible Business. He has published over 85 papers in leading journals include Journal of Environmental Economics and Management, Journal of Development Economics, Journal of Urban Economics, Review of International Economics, and Energy Economics.

### **The impact of extreme environmental events and urbanisation during the late Qing Dynasty**

Recently a small but growing literature investigates the impact of environmental factors on China's historical development. Motivated by the interaction between environmental shocks and the economic transition from agriculture to non-agriculture of China, this paper focuses on the late Qing dynasty and tests a number of theoretical predictions. The theory simplifies the diffusion of the non-agricultural economy as an issue of rural-urban migration and adds possible environmental impacts into the two-sector Harris-Todaro model (Harris and Todaro, 1970). To test the theoretical predictions, cross-sectional regressions have been used with the increase in market towns taken as a proxy for the increase in population in urban areas. This research focuses on the links between the variations in rural-urban migrations and environmental events in the late Qing dynasty from 1820 to 1911.

We identify that different types of environmental events affect rural-urban migration separately. Since previous research on parametrisation for historical environment records typically considers floods and droughts, we also focus primarily on testing the impact of these two events. We then include parameters for cold and wind. The aim is to provide additional inputs into the explanation for the Great Divergence. Compared with previous studies, we apply a rural-urban migration framework to the late Qing dynasty to establish a link between urbanisation and environmental factors. To our best knowledge, the historic linkages between urbanisation and environmental impacts have seldom been tested quantitatively for any period prior to 1911 in China.



## Ece Ozdemiroglu

**Session Chair**

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Ece Ozdemiroglu is the founder and CEO of eftec. Her work focuses on interpreting economic value evidence for nature recovery and climate change adaptation policies and investments. Ece is also a member of the Scottish First Minister's Environment Council, and the Chair of the British Standards Institution's Assessing and Valuing Natural Capital Committee (SES/1/8). Ece holds an MSc in Environmental and Resource Economics from University College London and a BA in Economics from Istanbul University.

# Energy

Session 4 | 15:40-17:00

## Dalia Fadly



Dalia Fadly is a post-doctoral research fellow at the division of Bioeconomics at KU Leuven, Belgium where she works on various research projects related to energy transition and sustainable development. Her research is funded by the Research Foundations Flanders (FWO) and is primarily investigating the relationship and links between energy access and food security in developing countries. In addition, she investigates, at the microeconomic level, the multi-dimensional impacts of lack of access to clean cooking fuel, including health, education, and time use. Dalia has work experience in the private sector working in consultancies and in academia. She holds a PhD in Economics from Philips University of Marburg, Germany and holds a double MSC degree in Economic Development and Growth from University of Warwick, UK and Lund University in Sweden.

### **The relationship between energy and food security in Africa: a cross-country evidence from 37 countries**

Increased availability of and access to sustainable cooking fuel is seen as an important element in addressing food security. Simply put: without access to energy there is no food security. While malnutrition and access to clean energy are intertwined, this relationship received very little attention in empirical micro-economic studies. During the presentation, I will highlight the main findings of a research where I empirically estimate the effects of cooking fuel scarcity on food security in 37 African countries, using repeated cross section data of the Afrobarometer dataset (125 surveys with 166,103 households) for the years 2013, 2015, 2017 and 2019. Using several econometric methods, we find that fuel insecurity increases the probability of food insecurity and that this effect is large and significant. However, these impacts vary substantially across countries. From a policy-perspective, this therefore highlights that policies or investments that increase cooking fuel availability and affordability by households have the potential to help reducing food insecurity. This further highlights the importance of better understanding the linkages between energy and food security, especially in the African context where this literature is characterized by a paucity of data.



## Julius Andersson

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Julius is an Assistant Professor of Economics at Stockholm Institute of Transition Economics (SITE), a research and policy centre at the Stockholm School of Economics. He is also an affiliated researcher at the Mistra Center for Sustainable Markets (Misum). He holds a PhD in Environmental Economics from the London School of Economics (LSE). He conducts research in environmental and public economics, studying the effects of climate change mitigation policies in practice.

### Who benefitted from the “gas tax holidays” in Europe?

Against the background of fast rising gasoline and diesel prices in 2022, a number of European countries reduced fuel tax rates, often in the form of temporary “gas tax holidays”. We analyse how the benefit of these tax cuts were distributed across consumers and producers of gasoline. We quantify the pass-through rate to consumers by analysing the tax cut in Sweden, comparing the gasoline price in Sweden to that in Denmark. The results suggest a 100% pass-through rate, but this is corrected downwards considering the low price elasticity of gasoline supply in 2022 and spill-over effects pushing up gasoline prices outside of Sweden. The analysis then expands to the whole EU region, providing empirical support for the hypothesis that spill-over effects in countries without tax cuts drive a wedge between the national and the international tax incidence by analyzing changes in profit margins for gasoline producers.

## Arpita Ghosh



Dr Arpita is an applied microeconomist and her primary field of research is Economics of Crime and Political Economics. Currently, she is working as a Lecturer in Economics at the Department of Economics, University of Exeter Business School. Arpita completed her PhD in 2021 from the University of Leicester under the supervision of James Rockey and Giuseppe De Feo.

### **Do homebuyers value energy efficiency? Evidence from an information shock**

This study examines the housing market response to a nationwide policy that mandated the provision of energy efficiency information with all marketing material at the time of listing. Using the near universe of housing sales in England and Wales, we match in the energy efficiency status of the property from Energy Performance Certificates at the time of sale. We provide causal evidence of households' willingness to pay for a higher energy rated property, documenting a 1-3% premium to a higher energy efficiency rating at the national level, and a 3-6% premium in the London market. We consider two potential responses of homeowners to the policy – short-run gaming of the ratings, and longer-run property improvements – finding no support for the former, but some evidence of the latter.





## Theodoros Arvanitopoulos

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Dr Theodoros Arvanitopoulos is an economist interested in energy economics, economic growth, and applied econometrics. He holds a PhD in Energy Economics from UCL and a MSc in Economics from the University of Nottingham. He is a Research Officer at the Hellenic Observatory, European Institute, LSE. He has held research positions at the University of East Anglia and LSE, and teaching positions at King's College London and UCL. Dr Arvanitopoulos has engaged in research projects for the OECD, the European Commission, the UK Department for Business, Energy and Industrial Strategy, and the UK Climate Change Committee.

### **Decarbonising residential heating: what spatio-temporal factors drive heat pump uptake in the UK?**

Heat pumps are the principal alternative for the decarbonisation of residential heating. What are the factors driving the uptake of residential air source heat pumps? We present and examine for the first time highly disaggregated spatial data for heat pump diffusion throughout Great Britain at the local authority level, and longitudinally from 2010 to 2020. We examine the historical relationship between tenure and property characteristics, and cost and size dynamics in the diffusion of heat pumps. We further investigate the relationship between heat pump diffusion and local conditions at the local authority level using linear and spatial econometric models. We find that heat pump deployment to-date in Great Britain is a combination of (1) 'easy-to-reach' property and household characteristics, (2) low-carbon energy-related interest, capacity, and skills among households and communities, and (3) local suppliers and installer availability and experience. Pioneering areas benefitting from this combination of conditions have served as test beds for early deployment, in turn indirectly stimulating deployment of heat pumps in contiguous regions through spillover effects. These findings can function as a roadmap for future heat deployment by signposting the key challenges for achieving the UK Net-Zero target for residential heating decarbonisation.

**Session Chair**

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## **James MacGregor**



James is an advisor over development, energy, and sustainability issues to private sector and government clients globally. He supports investment decisions where a balance is needed to be struck among environmental, social, and economic considerations. He is widely published on energy, climate risk, and smart cities, and is currently researching the alleged 'sweet spots' among digital transformation, low-carbon transition, and global green finance.

# Thanks & Feedback

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envecon 2023

Thank you for joining us at envecon 2023!

We hope you found it enjoyable, informative,  
and energising.

We kindly ask that you spare a few minutes to  
complete a short feedback survey:

[Click here for the online delegate survey.](#)

[Click here for the in-person delegate survey.](#)

Read on for information on UKNEE's past events  
and the envecon 2023 delegates list.

# UKNEE 2022

## Last Year's Events

Below is a list of the events held by UKNEE during 2022. Click on the event title to be taken to the relevant UKNEE webpage, where more information is available.

Recordings of all of our events are available to UKNEE members.

### [envecon 2022](#)

Last year's envecon took place online on Friday, 18 March. The keynote speech was delivered by Emily McKenzie, Technical Director of TNFD (Taskforce on Nature Related Financial Disclosures). Panel discussions and presentations focused on: Economics for Nature. Power Lunch Sessions (including Power of Networking, Narratives and Visual Arts), Economics for Climate Change, Preferences and Economic Valuation and Working in a Multidisciplinary World.

### [Webinar 1: The Case of North Atlantic Plastic Pollution: Preferences and Cost Sharing in International Environmental Agreements](#)

This webinar was given by Dr Tobias Boerger, Professor at Berlin School of Economics and Law who gave a presentation followed by a Q&A session. This presentation covered the importance of equity preferences for the formation of international environmental agreements for transboundary pollution control.

### [Webinar 2: Valuing the Contribution of Blue Carbon to Small Island Developing States' Climate Change Commitments & Covid-19 Recovery](#)

This webinar was given by Ellen McHarg, an environmental economist at the Centre for Environment, Fisheries and Aquaculture Science (Cefas); and Elena Mengo an environmental social scientist. They presented the interdisciplinary research findings of their recently published paper which examined and valued the carbon impacts of four plausible scenarios of blue carbon habitat change in Grenada, over 10-, 20- and 50-year time horizons, following the Covid-19 pandemic.

### [Webinar 3: Beyond Individualistic Behaviour: Social Norms and Innovation Adoption in Rural Mozambique](#)

This webinar was given by Massimiliano Mazzanti, a Professor in Economic Policy, University of Ferrara, at the Department of Economics & Management. He talks presented the study which aims to contribute to a better understanding of this limited adoption by examining the drivers and obstacles to innovation by smallholder farmers in Sub-Saharan Africa, with a special focus on cultural and behavioural aspects. The webinar was chaired by Jason Beedell, Director of Research for rural management at Strutt & Parker, who was able to offer insight on the potential connections between Massimiliano's study in Mozambique and rural communities in the UK.

## **Webinar 4: Marine Natural Capital Accounting: Impacts of the Sandeel Fishery in the North Sea**

This webinar was given by Jo Bayes, a marine natural capital senior specialist at Natural England and Natalya Kharadi, an environmental economist and Senior Consultant at etfec. This webinar demonstrates how Jo, Natalya and their teams conducted a practical exploration of integrating ecological and economic evidence. To do this, they used modelled ecological data using Ecopath with Ecosim to populate an extended Natural Capital Balance Sheet for the North Sea Area IV and the impact of the industrial sandeel fishery.

## **Webinar 5: IPBES Values Assessment Overview**

This webinar was given by Mike Christie who is a Professor of Environmental and Ecological Economics at Aberystwyth University Business School. Mike provided an overview of the Values Assessment and its key findings. In doing so, he highlighted how the Values Assessment extends beyond the core focus of TEEB-style assessments and demonstrated how accounting for a wider range of nature's values can improve decision-making.

## **Webinar 6: A Conversation on the Economics of Energy, Climate and Nature Crises**

This webinar was a discussion between Prof. Paul Ekins OBE, UCL Institute for Sustainable Resources & UNEP IRP and Tom Burke, Co-Founder and Chair of E3G, hosted by Ece Ozdemiroglu of etfec. In the recent weeks, the public discourse in the UK had focused on the cost of living and energy crises. Rapid and controversial measures have been taken in the Chancellor's mini-budget. The implications for the nature and climate crises are not discussed. To discuss what our profession can offer we were joined by our guests, who brought their decades of experience advising and campaigning for better integrated economy, environment, and energy policies.

## **Webinar 7: Circular to Sustainable to Regenerative Business Models**

This webinar was given by Dr Tammi Sinha recently joined University of Southampton as IT Continuous Improvement Lead, working across the University to facilitate principles of continuous improvement, lean, and the circular economy within professional services. This webinar, explored the enablers and challenges for SMEs to adopt circular, sustainable, and regenerative business models and ways of working. She explored the challenges ahead for leaders, economists, and businesses to meet the challenges of climate change through her perspective as an expert in operations strategy.

# Delegates List

*The organisations who wish to be included in the delegate list are below as of 21<sup>st</sup> March*

## Organisations

- Aberystwyth University
- AECOM
- Agri-Food and Biosciences Institute
- Arcadis
- Arup
- Atkins
- KU Leven (Belgium)
- Broadway Initiative
- Colombia University (USA)
- Cyprus International University
- Department for Environment, Food & Rural Affairs
- Department for Energy Security & Net Zero
- Durham University
- Department of Work Pensions
- eftec
- Environment Agency
- FCC Environment
- Forest Research
- Forestry Commission
- Green Alliance
- Imperial College London
- London School of Economics and Political Science
- National Institute for Environmental Studies
- National Oceanic and Atmospheric Administration (USA)
- Natural England
- Natural Resources Institute, University of Greenwich
- NatureScot
- Newcastle University
- Orbital Applied Economics
- Ove Arup & Partners
- Oxford Economics
- PwC
- Queen Mary University of London
- Ricardo Energy and Environment
- The Royal Society for the Protection of Birds
- Scottish Forestry
- Scottish Water
- Scotland's Rural College
- Stockholm Institute of Transition Economics (Sweden)
- Technical University of Munich (Germany)
- Temple Group
- Terranomics
- The Arctic University of Norway (Norway)
- The James Hutton Institute
- The Chartered Institution of Water and Environmental Management
- The Nature Conservancy
- The University of Georgia (Georgia)
- University of Bologna (Italy)
- University of Cambridge
- University of East Anglia
- University of Exeter
- University of Ferrara (Italy)
- University of Haifa (Israel)
- University of Kent
- University of New Hampshire (USA)

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## Organisations

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- University of Western Australia (Australia)
- University of York
- Vivid Economics/McKinsey
- West Yorkshire Police
- World Resources Institute
- WSL Swiss Federal Research Institute (Switzerland)



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Environmental Economists