

**ROBUST POLICY:**  
DEVELOPING A ROBUST DECISION MAKING FRAMEWORK  
FOR CLIMATE CHANGE POLICY UNDER UNCERTAINTY

*Workshop on*

# Optimal Carbon Price under Climate Risk

**13 February 2018**

Fondazione Eni Enrico Mattei  
Corso Magenta 63, Milan

Climate change presents a new challenge for economic decision making in terms of impacts on different aspects of economic productivity and consumption, and also in terms of scale and speed of change in the environment and the economy. In order to control the negative impacts of climate change, the Paris Agreement asked the global community to work toward achieving 2°C and 1.5°C targets. A key instrument in achieving these targets is a global carbon price that will ensure the sufficiency of mitigation efforts and will provide policy makers with a unique indicator to measure the cost of reducing climate change in fossil fuel based economies.

The main aim of this workshop is to present the latest approaches to calculate the carbon price under uncertainties from the climate system. Key issues around carbon price and tax, risks and uncertainties, climate impacts, and relevant policy implications will be discussed. The aim is to foster collaboration among researchers in this field and eventually produce a review paper which describes present and future research on carbon price under uncertainty and climate risk.

## Invited Speakers

- **Prof. Valentina Bosetti**, Fondazione Eni Enrico Mattei and Bocconi University

Valentina Bosetti is senior researcher at Fondazione Eni Enrico Mattei under the Climate and Sustainable Innovation program.

She is full professor at the Department of Economics, Bocconi University, teaching environmental and climate change economics.

Valentina Bosetti holds a PhD in Computational Mathematics and Operation Research from the Università Statale of Milan and a Master Degree in Environmental and Resources Economics from University College of London.

She has published several papers in the field of economics of climate change and of clean technologies innovation.

She is one of the lead authors of the 5th AR IPCC (2014) and the Principal Investigator of a ERC Starting Grant on Innovation and clean technologies (ICARUS).

She is currently the Principal Investigator of a ERC Starting Grant on Uncertainty Perception and Climate Change (RISICO).

She was past president of the Italian Association of Environmental and Resource Economics (IAERE) and council member of the European one (EAERE).

During the 2014/2015 academic year Valentina was a Fellow at Center for Advanced Studies in Behavioral Sciences (CASBS), Stanford.

- **Prof. Simon Dietz**, London School of Economics and Political Science

Simon Dietz is Professor of Environmental Policy at London School of Economics and Political Science. He was Co-Director of the Grantham Research Institute on Climate Change and the Environment, along with Professor Samuel Fankhauser from March 31 2011 until 31 August 2017. Simon has worked at LSE since 2006, and joined the Grantham Research Institute upon its launch in 2008.

Simon also holds the following positions: Director of the Centre for Climate Change Economics and Policy; Professor at the Department of Geography and Environment at LSE; Co-Editor of the Journal of the Association of Environmental and Resource Economists.

Previously, Simon worked at the UK Treasury, as an economic adviser on the 'The Stern Review on the Economics of Climate Change'.

Simon holds a starred first class honours degree in Environmental Science from the University of East Anglia, and Masters and PhD degrees from LSE, specialising in environmental policy and economics.

His research interests include: decision-making under uncertainty; questions of equity/social justice within and between generations; the links between economic growth and the environment; and International environmental agreements.

- **Dr. Johannes Emmerling**, Fondazione Eni Enrico Mattei

Johannes Emmerling is a Senior Researcher in the research program on Climate and Sustainable Innovation of Fondazione Eni Enrico Mattei.

He holds a Ph.D. from the Toulouse School of Economics (France) and an M.A. in Economics from the Free University Berlin. He was a postgraduate fellow in Development Cooperation at the German Development Institute, Bonn. Prior to joining FEEM, he has been working amongst others at the Social Science Research Center (WZB) Berlin, as Consultant for the Organization of American States and the World Bank, and as Lecturer at Université Toulouse 1 Capitole.

He joined FEEM in 2012. His main areas of research include Climate change and Energy economics, Risk and Uncertainty, Welfare Economics and Development.

- **Mr. Christoph Hambel**, Goethe University Frankfurt

Christoph Hambel is research assistant at the Faculty of Economics and Business Administration of the Goethe University Frankfurt.

His research interests include: Portfolio Optimization with Biometric Risk, Environmental Economics and Asset Pricing.

- **Prof. Svenn Jensen**, Oslo Metropolitan University

Svann Jensen is Associate Professor of Economics at the Oslo Business School, Oslo Metropolitan University, and a scientific advisor at the Ragnar Frisch Centre for Economic Research. He is a member of the Network for Sustainable Climate Risk Management (SCRiM). Svann works in Environmental, Energy and Resource Economics, and his main research focuses on modeling dynamic decisions under uncertainty as applied to climate change. The purpose of his recent work is to help policy makers understand how to best respond to the uncertainties inherent in climate change.

In a paper published in 2014 in the *European Economic Review*, "Optimal climate change mitigation under long-term growth uncertainty" Svann and Christian Traeger show that considering uncertainty about economic growth leads to consistently higher abatement efforts (earlier work had suggested the opposite). They compare the standard risk preference specification to a more flexible type (Epstein-Zin), and show analytically that the uncertainty premium's size and direction depend in a tractable manner on preference characteristics (such as prudence or intertemporal risk aversion) and damage characteristics.

In ongoing work, "Pricing Climate Risk", Christian and Svann address the larger question how uncertainty about the sensitivity of the climate system to human emissions should influence policy. They develop an analytic formula for the uncertainty premium for a generic integrated assessment model. It shall enable policy makers to calculate an approximate uncertainty premium for complex models which cannot include uncertainty, and can facilitate debate on how we 'want to' specify uncertainty preferences and damages.

- **Prof. Holger Kraft**, Goethe University Frankfurt

Holger Kraft is professor at the Department of Finance, Goethe University Frankfurt; he is chair of the Department of Finance and Director of the PhD Program in Finance.

Holger is also a visiting Professor, Finance Area, at UCLA Anderson School of Management and Associate Editor of the Journal of Economic Dynamics and Control and Journal of Credit Risk.

He is principal Investigator of the Research Center "Sustainable Architecture for Finance in Europe" (SAFE), funded by the Hessian excellence initiative LOEWE

Finally, Holger is Research Fellow of the Center for Financial Studies.

- **Dr. Soheil Shayegh**, Fondazione Eni Enrico Mattei

Soheil Shayegh is a Marie Skłodowska-Curie fellow at FEEM. Prior to his fellowship he was a postdoctoral research scientist at Carnegie Institution for Science at Stanford University. He got his PhD in Industrial Engineering from Georgia Institute of Technology in Atlanta. His PhD thesis was on stochastic modeling for integrated assessment models of climate change and economy where he focused on developing new tools and approximation algorithms for optimal

greenhouse gas emission mitigation policies. During his postdoc, Soheil focused on designing integrated assessment models that include solar geoengineering as an alternative policy. He was also involved in a collaborative project with researchers at Brown University to develop an climate economic model with induced technological change and population growth. He has also worked on the adaptation side of response to climate change and has a research project on adaptation to rates of climate change. His current research project at FEEM is focused on robust climate policy in the face of various uncertainties in climate modeling and observations.

- **Prof. Massimo Tavoni**, Fondazione Eni Enrico Mattei and Politecnico of Milan

Massimo Tavoni is associate professor at the Department of Management, Politecnico di Milano, as well as coordinator of the Climate and Sustainable Innovation program research program at Fondazione Eni Enrico Mattei (FEEM). In 2014-2015, he is fellow at the Center for Advanced Studies in Behavioural Science (CASBS) of Stanford University (USA).

From 2008 to 2010 he was post doctoral research associate at Princeton University, and before then researcher at FEEM and CMCC.

His research is about energy and climate change economics, and specifically the modeling and evaluation of international climate mitigation policies. He is also interested in the interplay between energy, climate and environmental policies.

Massimo has published extensively in the peer reviewed literature, including work that was featured in "Time" magazine's list of "The 50 Best Inventions of 2009".

He is a lead author for the 5th assessment report of the IPCC, the co-director of the annual International Energy Workshop and deputy editor for the journal Climatic Change.

In 2013, he was awarded an European Research Council (ERC) starting grant.

Massimo holds a Laurea cum Laude in Engineering from the University of Bologna, an MSc in Mathematical Economics from the London School of Economics, and a PhD in Political Economics from the Catholic University of Milan.

- **Prof. Rick Van der Ploeg**, Oxford University

Rick van der Ploeg is Professor of Economics at the **University of Oxford** and Research Director of the Centre for the Analysis of Resource Rich Economies (**OxCarre**). Formerly, he was at **Cambridge, LSE, Tilburg, Amsterdam** and the **European University Institute**, Florence.

He is a research fellow in international macroeconomics at the Centre for Economic Policy Research. He directs the public sector economics programme, and is Chair of the Scientific Council of **CESifo**.

He has been a recipient of an Advanced Instigator Grant of the European Research Council on 'Combating Climate Change: The Political Economy of Green Paradoxes' together with Cees Withagen (2001-16). He has published extensively on macroeconomics, public finance, political economy, climate economics and resource economics, and also has an interest in the economics of culture.

He is former Chief Financial Spokesperson in the Dutch Parliament, State Secretary of Education, Science and Culture of the Netherlands and Elected Member of the Unesco World Heritage Committee, and has been on the board of various commercial and non-profit organisations. He has been a consultant for a variety of supra-national organisations.