

Workshop  
**Developments in Energy Economics**

Madrid, 15 February 2017

## Wednesday, 15 February

### 10.00 – 10.15 **Welcome and introduction**

*Xavier Labandeira, EfE; and Gonzalo Sáenz de Miera, AEEE*

### 10.15– 13.30 **Multilateral Versus Sequential Negotiations Over Climate Change: Are Gradually Expanding Regional Agreements a Better Option?**

*Alejandro Caparrós, CSIC; discussant Carolyn Fischer, RFF*

Coffee

### **Evaluating the Economic Impact of Decarbonisation Policies in Road Transport - Insights from Europe**

*Theodoros Zachariadis, Cyprus U., discussant Xavier Labandeira, EfE*

### **Extensive and Intensive Margins of Adaptation to Climate Change in the US Residential Sector**

*Matthieu Glachant, Paris Mines, discussant JP Montero, UPC*

### **Multilateral Versus Sequential Negotiations Over Climate Change: Are Gradually Expanding Regional Agreements a Better Option?** | *Alejandro Caparrós, CSIC*

We discuss a model of gradual coalition formation with positive externalities in which a leading country endogenously decides whether to negotiate multilaterally or sequentially over climate change. The sequential path implies gradually expanding regional climate agreements. We show that the leader may choose a sequential path, and that the choice is determined by the convexity of the game and the free-rider payoffs of the followers. Except in a few clearly defined cases, the outcome of the negotiation process is always the grand coalition, although the process may need some time. This holds for the standard IEA game with heterogeneous players even if the grand coalition is not stable in a multilateral context. We also analyse the role of a facilitating agency. The agency has an incentive to speed up intra-stage negotiations and to extend the period between negotiation stages in a sequential process. Implications for the linkage of the EU-emission trading scheme with other schemes are also discussed

### **Evaluating the Economic Impact of Decarbonisation Policies in Road Transport - Insights from Europe** | *Theodoros Zachariadis, Cyprus U*

Vehicle taxation based on CO<sub>2</sub> emissions is increasingly being adopted worldwide to shift consumer purchases to low-carbon cars, yet evidence on its effectiveness and economic impact is limited. We mainly focus on feebates, a special case of carbon-based vehicle taxes, which impose a fee on high-carbon vehicles and give a rebate to low-carbon cars. We show examples from case studies in Germany and Greece, where we estimate demand and supply for cars with the aid of detailed car market data. Then we explore trade-offs between environmental and economic impacts, simulating the effect of hypothetical carbon-based tax schemes on emissions, consumer welfare, public revenues and firm profits. We find that revenue-neutral feebates may be welfare decreasing; welfare can only increase with stringent tax schemes that increase tax revenues at the expense of consumer and producer surplus. Directions for future research are presented after reviewing the recent literature and identifying areas where more work is needed, both for improving the scientific analysis of carbon-based car tax reforms and for linking the modelling work more closely to the needs of policymakers.

### **Extensive and Intensive Margins of Adaptation to Climate Change in the US Residential Sector** | *Matthieu Glachant, Paris Mines*

Using household-level data from the American Housing Survey, this paper assesses the cost of adapting housing to temperature increases. We account for both short-term energy use adjustments (intensive margin) and capital adjustments through investments in weatherization and heating and cooling equipment (extensive margin). Our best estimate of the present discounted value of the cost for adapting to the A2 “business-as-usual” climate scenario by the end of the century is \$5,600 per housing unit, including both energy and investment costs. We also predict a major shift from gas to electricity consumption.

## **Alejandro Caparrós**

Alejandro Caparrós is Director and Senior Researcher at the Institute for Public Goods and Policies of the Consejo Superior de *Investigaciones Científicas* (CSIC), and lecturer at the University Carlos III in Madrid. He holds a PhD in Economics from the University Complutense. He was previously post-doc at the CNRS in Paris and lecturer at the University Paris Est. He has been visiting professor at the Universities of Berkeley, Paris II, Paris Est, Bordeaux, Göttingen, Exeter and Bath. He has participated in a large number of research projects funded by the European Commission and national agencies, and has worked as consultant for the World Bank and local entities. His research is focused on the micro-economic analysis of environmental public goods. His current research deals with international environmental agreements and game theory, analyzing the formation of environmental agreements using multilateral bargaining theory. He has published two books and, among other journals, in *American Journal of Agricultural Economics*, *Public Choice*, *Journal of the Association of Environmental and Resource Economists*, *Land Economics*, *Oxford Economic Papers*, *Environmental and Resource Economics*, *Ecological Economics*, *Environmental and Development Economics*, *Rationality and Society*, *Climatic Change* and *Energy Policy*.

## **Theodoros Zachariadis**

Theodoros Zachariadis holds a Diploma and a Doctorate in Mechanical Engineering from the Aristotle University of Thessaloniki, Greece. His postdoctoral work focused on the economic analysis of energy and environmental issues. He has worked as a researcher at the National Technical University of Athens and as a European Marie Curie Fellow at the Economics Research Centre (ERC) of the University of Cyprus. Currently he is an Associate Professor at the Cyprus University of Technology, teaching environmental economics and energy resource management, and a Dean of the University's Faculty of Geotechnical Sciences and Environmental Management. He is a member of the Scientific Committee of the European Environment Agency and an associate editor of the international Journal "Energy Economics". He is also an academic fellow at ERC, an advisor to the Cypriot Ministries of Finance and Energy on economic aspects of climate change and long-term energy planning, and a Board member of Green Budget Europe, a Brussels-based expert platform promoting environmental fiscal reforms. He is the recipient of the 2009 Research Prize of the Republic of Cyprus.

## **Matthieu Glachant**

Matthieu Glachant is head of CERNA – Centre for industrial economics and a professor of economics at MINES ParisTech. He is also a Visiting Professor at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics since 2012. Matthieu holds a PhD in economics from the Ecole des mines in Paris. Before joining MINES ParisTech in 2001, he was Jean Monnet Fellow at the European University Institute. His research is in the fields of environmental economics and energy economics. Specific areas of expertise include the economics of green innovation, renewable energy, the economics of Corporate Social Responsibility, waste policies, and climate change issues. He is an associate editor of the journal *Resource and Energy Economics*.

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