

Workshop

Economic Challenges for Energy

Madrid, 10-11 January 2013

Thursday, 10 January

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| 09.00 - 09.15 | Welcome address |
| 09.15 - 11.00 | Energy demand and energy efficiency Impact of Energy Policy Instruments on the Level of Energy Efficiency in the EU Residential Sector , <i>Massimo Filippini, CEPE-ETH</i> Active Demand Benefits and the Role of Consumers in Future Power Systems , <i>Pedro Linares, EfE and P. U. Comillas</i> |
| 11.00 - 11.30 | Coffee break |
| 11.30 - 13.30 | Energy security The Impact of Domestic Politics and Geopolitics on Energy Supplies from Russia , <i>Shamil Yenikeeff, Oxford Institute for Energy Studies</i> The Vulnerability of Energy Systems to Climate Change , <i>Anil Markandya, BC3</i> |
| 13.30 - 14.30 | Lunch |
| 14.30 - 16.30 | Innovation in energy Innovative Finance Mechanisms for Energy Efficiency in Buildings , <i>Peter Sweatman, Climate Strategy</i> Corporate Venture Capital: a Tool to Boost Innovation , <i>Iñigo Palacio, Repsol Energy Ventures</i> |
| 16.30 - 17.00 | Coffee break |
| 17.00 - 19.00 | Long-term Energy Prospective Energy Transitions: Future Prospects , <i>Vaclav Smil, U. Manitoba</i> The Transition to Low-carbon Transportation , <i>Thomas Longden, FEEM</i> |
| 21.00 | Dinner |

Friday, 11 January

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| 09.00 - 11.00 | Energy and Climate Policies What to Expect from the Third Phase of the EU ETS , <i>Denny Ellerman, FSR (EUI)</i> A New Generation of Energy Taxes and Green Tax Reforms , <i>Xavier Labandeira, EfE and U. Vigo</i> |
| 11.00 - 11.30 | Coffee break |
| 11.30 - 13.30 | Public Session Presentation of the Economics for Energy Annual Report: Energy Innovation in Spain |
| 13.30 - 14.00 | General Assembly, Economics for Energy |

Impact of Energy Policy Instruments on the Level of Energy Efficiency in the EU Residential Sector

The promotion of energy efficiency policy is seen as a very important activity by the International Energy Agency (IEA). In order to design and implement effective energy policy instruments, it is necessary to have information on energy demand price and income elasticities in addition to sound indicators of energy efficiency. In practical energy policy analysis, the typical indicator used is energy intensity, defined as the ratio of energy consumption to GDP. The weakness of this simple ratio is that it does not measure the level of 'underlying energy efficiency' that characterizes an economy or a residential sector; hence, it is difficult to make conclusions for energy policy based upon this simple measure. This research combines the approaches taken in energy demand modelling and frontier analysis in order to estimate, using an econometrics approach, the level of energy efficiency of the residential sector in 27 member states of the European Union (EU) from 1996 to 2009. The estimates for energy efficiency confirm that the EU residential sector indeed holds a relatively high potential for energy savings. Despite the common objective to decrease energy consumption, considerable variation in energy efficiency between the EU member states is established, implying that not all countries have been successful in achieving energy savings. Further, the results confirm lower than one values of price and income elasticities. To evaluate the impact of energy-efficient measures undertaken in the EU residential sector, additional energy policy variables are introduced in the model. In particular, financial incentives and energy performance standards are shown to play an important role in promoting energy efficiency improvements, while implementing informative measures do not prove to have a significant impact on energy efficiency.

Active Demand Benefits and the Role of Consumers in Future Power Systems

This presentation reviews the major benefits to be expected from active demand programs for power systems, and also the most recent results obtained in different ex-ante and ex-post studies, particularly from the US and Europe. A comparison of these results and an analysis of the major factors behind them is also undertaken. The allocation of these benefits and of the costs associated with these programs is a very sensitive and complex issue, which will also be considered. Finally, the implications of the cost-benefit analysis for consumers, and the role that can be expected from them will be addressed, deriving recommendations about how best to proceed in the Spanish and European settings.

The Impact of Domestic Politics and Geopolitics on Energy Supplies from Russia

The aim of this presentation is to examine how domestic politics and evolving geopolitics could shape oil and gas supplies from Russia. The "revolution" of unconventional hydrocarbons in the United States is poised to have a serious impact on commercial drivers and consumer-producer relations in traditional markets and in Europe, in particular. Gazprom is trying to adjust to the changing economic and commercial dynamics in external markets and to overcome regulatory pressures from the EU. Domestic politics is also changing the fortunes of Russian national champions, Rosneft and Gazprom. Rosneft could soon start using its new upstream assets and recently forged alliances with leading international oil companies for aggressive expansion into the gas sector. Although, at present Igor Sechin is backing Gazprom's gas export monopoly and is playing down Rosneft's gas and electricity ambitions, these two state oil and gas champions could soon find themselves at logger-heads. The future of Russia's oil and gas sector rests just as much on Vladimir Putin's role as a corporate arbiter as it does on the mounting difficulties of exploiting new frontier regions and dealing with emerging challenges in external markets and domestic politics.

The Vulnerability of Energy Systems to Climate Change

This presentation highlights key elements of how the energy sector can adapt to climate change and describes the rich variety of adaptation measures. Overall, it provides the necessary elements that lead to the design of a strategy for mainstreaming climate change adaptation in energy sector planning and policy-making. The second part of this presentation identifies the key short term actions that are justified as part of an adaptation strategy.

Innovative Finance Mechanisms for Energy Efficiency in Buildings

This presentation contains a brief summary of the complexities and issues facing the provision of finance for investment in the energy efficiency of buildings. It draws extensively from findings from the UK, Germany and the USA and will use these in the context of a case study of the UK Green Deal and how UK retail banks are working to provide Green Deal Finance.

Corporate Venture Capital: a Tool to Boost Innovation

Corporate Venture Capital (CVC) exists from decades, mostly in the pharma and tech sectors. But ultimately, we can see that many companies playing in different sectors like industry, telecom, media, machinery and, of course, energy, are developing corporate venture capital strategies. CVC has become a widely used tool to boost innovation and technology development, being something that complements in-house corporate R&D and Business Development, allowing big companies to put a foot in the “frontier businesses”, and helping start-ups to grow up, not just putting money on them, but other capabilities and synergies. Future R&D will not be something being done inside a 2.000 white-dressed people tech center, innovation will be everywhere worldwide, in small labs or garages, and therefore big but open-minded and flexible organizations with quick tools like CVC will be required to help new ideas get into the market. This presentation shows the point of view of one of the newcomers in the CVC world: Repsol Energy Ventures.

Energy Transitions: Future Prospects

Energy resources, uses, techniques and policies have been receiving a great deal of attention ever since the first oil “crisis” of 1973-1974, but four decades later the public discourse on energy is still beset by many misunderstandings, naive expectations and outright myths. This is true about almost every aspect of energy affairs, including potential contributions by wind- and solar-powered electricity generation, biofuels, nuclear power, electric cars, as well as about the relationship between energy, economic growth and quality of life and about the environmental challenges of modern energy conversion (above all the management of carbon dioxide emissions). The presentation reviews the most common misconceptions and myths surrounding modern energy affairs and offer some simple guidelines for better understanding and more realistic appraisal of our options.

The Transition to Low-carbon Transportation

Within FEEM we have been reviewing the possibilities for decarbonisation within road transportation under different mobility futures. As part of this research, forthcoming work has focused on scenarios of future research expenditures and imputed learning rates for batteries. Using estimates for the 2030 cost of batteries, sourced from an expert elicitation study conducted as part of the ICARUS project, the potential for the diffusion of electric drive vehicles (EDVs) is assessed given different rates of adoption, research expenditures and mobility demand. With a focus on long-term climate targets, we have also developed long-term projections of light duty vehicle use using the integrated assessment model WITCH. By modelling the demand for vehicles and the use of fuels we analyse the potential impact on the whole economy. We find that even when the capital cost of EDVs remains higher than that of traditional combustion engine alternatives, EDVs are likely to play a key role in the decarbonisation implied by stringent climate policy.

What to Expect from the Third Phase of the EU ETS

As the year 2013 begins, the EU ETS is mired in controversy, as it has been from the beginning. This year marks the beginning of Phase III with features that many have sought: a significant change in the distribution of allowances from free allocation to auctioning and an EU-wide cap that declines indefinitely into the future. Yet, the EUA price is lower than ever and claims that the EU ETS has failed, or is about to fail, because of continuing “over-allocation,” are not hard to find. Among all the discussions of various forms of regulatory intervention, little attention has been given to the phenomenon of banking and what it implies for allowance use and pricing. This presentation provides a preview of what to expect in Phase III with particular attention to the role of banking in explaining what otherwise seem contradictory phenomena.

A New Generation of Energy Taxes and Green Tax Reforms

In the last few years there has been a reinterpretation of the role of energy taxes and their integration in tax reform schemes. Although a shifting interest in the revenue-raising capacities, environmental properties and energy-dependence benefits of energy taxes has existed since the 1960s, the current economic crisis has been a major driver of changes in this area. Special attention is given to a new generation of the so-called green (mainly energy-related) tax reforms, where revenues are increasingly used for fiscal consolidation, distributional offsets or the promotion of renewables or energy efficiency. A discussion on the Spanish anomalous situation and potentials in this area concludes the presentation.

Vaclav Smil

Vaclav Smil does interdisciplinary research in the fields of energy, environmental and population change, food production and nutrition, technical innovation, risk assessment, and public policy. He has published more than 30 books and some 400 papers on these topics. He is a Distinguished Professor Emeritus at the University of Manitoba, a Fellow of the Royal Society of Canada (Science Academy), the first non-American to receive the American Association for the Advancement of Science Award for Public Understanding of Science and Technology, and in 2010 he was listed by Foreign Policy among the top 100 global thinkers. He has worked as a consultant for many US, EU and international institutions, has been an invited speaker in more than 300 conferences and workshops in the USA, Canada, Europe, Asia and Africa, and has lectured at many universities in North America, Europe and East Asia.

Massimo Filippini

Massimo Filippini is Professor of Economics at the Universities of Lugano and Zurich and at the Swiss Federal Institute of Technology Zurich (ETH). His research has been published in international scientific journals, mainly in the field of applied microeconomics, public economics and energy economics. Since his time at the Kennedy School of Government (Harvard University) he has been particularly interested and active in matters of regulation and the critical assessment of efficiency in public services (social frameworks, health care, transport services, distribution services of water, gas and electricity). He is director of the Institute of Economics (IdEP) at the University of Lugano and board member of the Centre for Energy Policy and Economics (CEPE) at ETH.

Pedro Linares

Pedro Linares is Associate Professor of Industrial Engineering at the ICAI School of Engineering and currently Vice-president for Research and International Affairs at Comillas Pontifical University, Madrid, research affiliate at the Institute for Technology Research (IIT) and the BP Chair on Energy and Sustainability, and Research Associate at the Harvard Kennedy School, and MIT-CEEPR. He is also the co-founder and Director of Economics for Energy. He holds a M.S. and Ph.D. in Agricultural Economics from U. Politécnica, Madrid. His research focuses on the relationship between energy, economics and environment, and specifically on sustainable energy, renewable energy and environmental policy, and multi-criteria methods applied to resource allocation. He has published about these issues in the most relevant academic journals in these fields. He has also been a consultant for several private and public institutions in Spain, Europe and Latin America.

Shamil Yenikeeff

Shamil Yenikeeff is a Research Fellow at the Oxford Institute for Energy Studies and a Senior Associate Member at the Russian and Eurasian Studies Centre, St Antony's College, University of Oxford. He holds a first class degree with honours in law from the Bashkir State University, Russia, and an MPhil and DPhil in Politics from the University of Oxford. In the 1990s he worked in the Russian Duma as advisor to the Chairman of the subcommittee for the organization of the state authority system in Russia. He has also been involved with a number of consulting companies in matter related to the Russian oil industry and regional development. His current research focuses on the political economy of the oil and gas sectors of Russia and Central Asia with an emphasis on economic policies, state-business relations, corporate strategies, political and economic risks. He writes and dissertates on Russian-European energy relations, Russia and OPEC, Caspian and Central Asian energy issues, and the development of Arctic hydrocarbons. His publications have appeared in various industry and academic journals. Shamil Yenikeeff is also the author of *The Battle for Russian Oil: Corporations, Regions, and the State*, a forthcoming book

on the politics of the Russian oil sector under Yeltsin, Putin and Medvedev, to be published by Oxford University Press in 2013. He runs the Geopolitics of Energy lecture series under the joint auspices of the Oxford Institute for Energy Studies and St Antony's College, University of Oxford.

Anil Markandya

Anil Markandya is a resource economist who has worked in this field for over thirty years and is acknowledged as one of the leading authorities. He graduated from the London School of Economics with a Master of Science in Econometrics in 1968 and was awarded his Ph.D. on the Economics of the Environment in 1975. Since then he has divided his time between academic and advisory work. On the academic side he has published widely in the areas of climate change, environmental valuation, environmental policy, energy and environment, green accounting, macroeconomics and trade. Some of his best-known works include, 'Blueprint for a Green Economy', 'Green Accounting in Europe', 'Reconciling Trade and Development' and 'Cleaning the Ganges'. He has held academic positions at the universities of Princeton, Berkeley and Harvard in the US and at University College London and Bath University in the UK. He was a lead author for Chapters of the 3rd, 4th and 5th IPCC Assessment Reports on Climate Change. He is the Executive Director for the Basque Centre for Climate Change. Professor Markandya has worked extensively on climate change and energy and environment issues and has received a number of awards. In 2008 he was nominated by Cambridge University as one of the 50 most influential thinkers on sustainability in the world. Professor Markandya has also been an advisor to many national and international organizations, including all the international development banks, UNDP, the EU and the governments of India and the UK. At the World Bank he was a Lead Advisor and worked closely on energy and environmental issues with many governments throughout the world.

Peter Sweatman

Peter Sweatman is the Chief Executive of Climate Strategy & Partners, a strategic consultant in Clean Energy, Clean Technology, Energy Efficiency and Climate Change Strategies. Before that, he was Managing Director responsible for Iberia and Latin America for Climate Change Capital, one of the world's leading specialist fund manager and advisors in the low carbon economy. He holds a Masters degree in Engineering and Management Studies from Cambridge University. In 1991 he joined JPMorgan in Corporate Finance where he spent nine years as responsible for client business. In 2000 he became a social entrepreneur joining with other ex-bankers to found and run three NGOs: Charity Technology Trust New Philanthropy Capital and Catalyst Climate Change Trust. Peter Sweatman is also a visiting professor at IE University in Madrid, an active member of the Ashoka Support Network, member of the JCI Institute for Energy Efficiency global Expert panel, lecturer at IIT-Comillas University and advisor to the UK Trade & Industry in Spain.

Iñigo Palacio

Iñigo Palacio is manager of Repsol Energy Ventures, a venture capital organization. Industrial engineer by the University of Oviedo, he has also studied at the IESE and Austral University. He is responsible for the development of capital-risk investments in new business areas within bioenergy, renewable generation, electric mobility, energy storage, carbon dioxide management and energy efficiency. Iñigo Palacio is also president of the investment committee of Invierte Repsol New Energies, a joint initiative with CDTI.

Thomas Longden

Thomas Longden started at FEEM in April 2010 and is currently working as a modeler for the Sustainable Development Program and with the ICARUS research group on alternative energy innovation. Whilst at

the University of New South Wales (Sydney, Australia), Thomas worked as a Lecturer of Environmental Economics and as a Research Officer at the Social Policy Research Centre. After leaving UNSW in 2009 and before joining FEEM, Thomas worked as an Economic Development Officer at the Vietnamese Institute of Fisheries Economics and Planning in Hanoi.

Denny Ellerman

Denny Ellerman, formerly a Senior Lecturer at MIT's Sloan School of Management (where he was for many years executive director of the Center for Energy and Environmental Policy Research and the Joint Program on the Science and Policy of Global Change), is Area Director of the Loyola de Palacio "Climate Policy Research Unit" at the European University Institute. Denny is an internationally recognized expert on energy and environmental economics with a particular focus on climate policy, emissions trading, and interactions with energy markets. He is a co-author of the leading books on the US SO₂ and the EU CO₂ Allowance Trading Programs, 'Markets for Clean Air: The US Acid Rain Program' and 'Pricing Carbon: The European Emissions Trading Scheme'. Prior to going to MIT, Denny spent 18 years in Washington, D.C., working for the US Government (primarily the Department of Energy and its predecessors), the National Coal Association, and Charles River Associates, an economic consulting firm. In 1990, he was President of the International Association for Energy Economics. He has a Ph.D. in political economy and government from Harvard University. Denny serves as member of the scientific committee of Economics for Energy since 2010.

Xavier Labandeira

Xavier Labandeira is Professor of Economics at the University of Vigo and member of Rede, a consolidated research group that deals with the main economic aspects of innovation, energy and the environment. His research lies in the boundaries between public, energy and environmental economics and has been published in the leading academic journals of his field and he regularly participates in conferences and workshops, in many cases as the organizing host. He has also led many research projects, both public and privately funded, and enjoyed several research stays at different international universities. At Vigo he teaches public and environmental economics and coordinates the Master's degree in Management of Sustainable Development whose objective is to train polyvalent professionals in private and public management of energy and sustainability. He is the co-founder and Director of Economics for Energy since 2010. He is also a lead author of the UN Intergovernmental Panel on Climate Change (IPCC) for the elaboration of its Fifth assessment report, which is due to be published in 2014.

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