

Workshop

Economic Challenges for Energy

Madrid, 15-16 February 2018

Thursday, 15 February

19.00 – 20.30	Open Session: The new geopolitics of energy <i>David Sandalow, Columbia U.</i>
21.00	Workshop Dinner

Friday, 16 February

Workshop: Economic Challenges for Energy

09.00 – 09.30	Welcome coffee
09.30 – 09.45	Introduction to the workshop and participants
09.45 – 11.00	Estimating energy efficiency and energy demand in households <i>Nina Boogen, ETH Zurich</i>
11.00 – 11.30	Coffee
11.30 – 12.45	Long-term scenarios to guide short-term policy choices <i>Michel Colombier, IDDRI</i>
12.45 – 14.00	Lunch
14.00 – 15.15	Threshold policy effects and directed technical change in energy innovation <i>Elena Verdolini, FEEM</i>
15.15 – 16.30	Climate policy from Paris to Trump and beyond <i>Thomas Sterner, U. Gothenburg</i>
16.30 – 17.00	Coffee
17.00 – 18.15	Geopolitics of renewable energy <i>David Sandalow, Columbia U.</i>
18.15 – 18.30	Summing up and farewell

The new geopolitics of energy | *David Sandalow*

The geopolitics of energy is changing. Renewable energy is reshaping power markets. US shale revolution is transforming oil and gas markets. The rise of China is altering the global economy. The lecture will explore these trends and others shaping the new geopolitics of energy.

Estimating energy efficiency and energy demand in households | *Nina Boogen*

Improving efficiency in the use of energy is an important goal for many nations since end-use energy efficiency can help CO₂ mitigation. Furthermore, since the residential sector in industrialised countries requires around one third of the end-use electricity, it is important for policy makers to estimate the scope for electricity saving in households to reduce electricity consumption by using appropriate steering mechanisms. This is especially important in Switzerland as, after the Fukushima incident, the Federal council decided to phase out nuclear power plants within a certain time span. How can we estimate the level of energy efficiency in households using a microeconomic approach? And if we know how large the potential is, would a price based instrument work in steering residential consumers in Switzerland? Further, in Switzerland, some utilities started implementing so-called demand side management (DSM) strategies. To what degree can DSM programs reduce the demand for electricity in the residential sector?

Long-term scenarios to guide short-term policy choices | *Michel Colombier*

With the Paris Agreement, countries have committed to deeply decarbonize their economies by mid century. This supposes a dramatic departure from current technology and economic paradigm, and all facets of this decarbonized future are not yet known. But at the same time, mitigating the potential negative impacts of this transition and maximizing the benefits request that we take advantage of all the time available and start acting now. How to define the adequate ambition for today's climate and energy policies, prioritize action, and avoid creating new lock-ins? IDDRI has developed long-term scenarios with more than 20 countries around the world, using them to foster stakeholder discussion and design operational and tailored approaches to energy transition consistent with the specific situation and socio economic aspirations of each country.

Threshold policy effects and directed technical change in energy innovation | *Elena Verdolini*

We analyze the effect of environmental policies on the direction of energy innovation across countries over the period 1990-2012. Our novelty is to use threshold regression models to allow for discontinuities in policy effectiveness depending on a country's relative competencies in renewable and fossil fuel technologies. We show that the dynamic incentives of environmental policies become effective just above the median level of relative competencies. In this critical second regime, market-based policies are moderately effective in promoting renewable innovation, while command-and-control policies depress fossil-based innovation. Finally, market-based policies are more effective to consolidate a green comparative advantage in the last regime. We illustrate how our approach can be used for policy design in laggard countries.

Climate policy from Paris to Trump and beyond | Thomas Sterner

There is an increasing over-utilization of public environmental resources. This applies not only to climate but a series of other environmental problems and the planet will face existential crises if we let economic activities increase exponentially. Focusing on the climate crisis, the most obvious economic instrument would involve setting a price on carbon – but this has proven almost hopelessly difficult. The best the world has produced so far is the Paris Agreement which is little more than an expression of good will. Since then the USA has decided to withdraw, so now we do not even have the good will! The only glimmer of hope is the rapid decline in prices of renewable energy. Combined with green finance and a strong commitment by countries and communities we have at least something to pin our hopes on. Still we need to realize that the forces against climate action are very strong.

David Sandalow

Sandalow is Inaugural Fellow at the Center on Global Energy Policy and co-Director of the Energy and Environment Concentration at the School of International and Public Affairs at Columbia University. He launched and directs the Center's U.S.-China Program and has written, most recently, on topics including energy diplomacy and energy finance. Mr. Sandalow has served in senior positions at the White House, State Department and U.S. Department of Energy. Prior to serving at DOE, Mr. Sandalow was a Senior Fellow at the Brookings Institution, as well as Energy & Climate Change Working Group Chair at the Clinton Global Initiative. His recent works include *The Geopolitics of Renewable Energy* (2017, co-author), *Financing Solar and Wind Power: Lessons from Oil and Gas* (2017, co-author), *Solar Together* (2016), *CO₂ Utilization Roadmap* (2016, project chair), *The History and Future of the Clean Energy Ministerial* (2016) and *Meeting China's Shale Gas Goals* (2014, lead author).

Nina Boogen

Boogen studied Environmental Sciences and Energy Technology at ETH Zurich. Afterwards, she did a PhD at the chair of Prof. Massimo Filippini in the field of applied microeconomics. All her three papers in her dissertation revolve around the the topic of energy efficiency in households. During her PhD she has been a Visiting Scholar at University of British Columbia. Since her graduation in 2016, she has been a research associate at the Center for Energy Policy and Economics (CEPE). She has published in journals such as *Energy Economics* and *Energy Strategy Reviews*. She has also been working in several projects funded by the Swiss Federal Office of Energy, and is currently project coordinator within CEPE concerning the project "Psychological social and financial barriers to energy efficiency" (PENNY) that is funded by the European Commission, Horizon 2020 Programme.

Michel Colombier

Colombier is co-founder and Scientific Director of IDDRI (Institute for Sustainable Development and International Relations) since 2001. He was before Director General of ICE (International Consulting on Energy) developing activities at both local (cities, regions) and international level (governments, international institutions and firms); Senior Advisor to the Minister of Energy; Head of the "Strategy and Evaluation" Department of Ademe (French Agency for Environment and Energy); and Programme Manager at the Ministry of Environment in Portugal. He has developed a wide operational expertise in the field of Energy and Environment but always maintained a strong connection with the University, teaching and developing research activities (now at SciencesPo Paris). He served as member of the Scientific and Technical Advisory Panel of the GEF (Global Environment Facility) and the FFEM (Fonds Français d'Environnement Mondial), negotiator in the UNFCCC process and director of the Board of Climate Strategies (London). He is now Chairman of the Expert Committee for the Energy Transition in France.

Elena Verdolini

Verdolini holds a degree in Political Science from the University of Pavia, a Master of Public Administration and a Master of Arts in International Studies from the University of Washington, Seattle and a PhD from Università Cattolica del Sacro Cuore, Milan. She focuses on applied analysis, with an interest in the dynamics of innovation, technology transfer, green growth, and the economic impacts of environmental and energy policies. She has been involved in several internationally funded research projects, most recently the H2020 project INNOPATHS, a major effort to characterise the EU energy transition, highlighting systemic barriers and enabling factors. She has published in several peer-reviewed journals, including the *Journal of International Economics*, the *Journal of Environmental Economics and Management*, the *Review of Environmental Economics and Policy* and *Risk Analysis*. She was one of the authors of the Deep Decarbonisation Pathways Project for Italy.

Thomas Sterner

Sterner is professor of environmental economics at the University of Gothenburg. His main areas of work are on discounting and on instrument design for climate and environmental policy. Within the latter subject applications range from general climate issues to more specific issues of carbon pricing, fuel taxes, carbon capture and storage, abatement of nitrogen oxides through refunded emission payments, policies in developing countries, natural resource issues including management of fisheries, buildings, transport, chemicals, plastics, antibiotics and biodiversity. In short, anything related to circular economy, sustainability or economics of the Anthropocene. Thomas Sterner has published more than a dozen books and a hundred articles in refereed journals. In 2012-2013 he served as visiting Chief Economist of the Environmental Defense Fund in New York. For the academic year of 2015-2016, Sterner was elected to the Collège de France.

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