

Introduction to Panel 1

Foundations of future energy policy: Cutting the Gordian knot

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Introduction

The task to create a sustainable future is much more demanding than any task we faced in the past. The pressure to reduce energy use keeps rising, but energy policy paradigms are not responding to the pressure.

We are in desperate need to reduce the exploitation of the resources of the world, especially the finite fuels, and to reduce energy-related climate emissions. Substitution with renewables is one part of the solution, but given increasing energy use to satisfy basic human services in developing countries, changing the nature of energy production will not be enough. Energy demand in Europe and the other rich regions of the world will have to be reduced. New technologies provide us with new opportunities, but policies and measures are locked in the old paradigms and business models.

Why are we not able to push the efficiency potential and its implementation further? And why can't we seem to reorient our thinking and our policies to the demands for reductions brought on by climate change?

A quote from Oscar Wilde has been frequently repeated lately in debates over how societies are managed: "***What is a cynic? A man who knows the price of everything and the value of nothing.***" Living in an economic era we have learnt to express what we are doing in fairly simple and appealing terms. We should optimise and maximise, we should get best return for the money and seek the highest financial value, but we have also discovered that it is not always as easy to do, as it is to say. There is a need for a more profound view on how things work and get a new perspective on the economy. We need to seek values – real values. How Gordian is this knot?

In the panel 1, the authors provide new thinking on economy, technology and reducing consumption. They are covering three cases of societal views, namely:

- **The political case:** People are prepared for change, but politicians are not. How can we provide them with the motivation and instruments to make the change?
- **The social case:** Energy efficiency vs. energy sufficiency; the theory and practice of (making) change. How do we deal with energy rebound in societies in which consumption is unbounded?
- **The business case:** How can we use the market as an instrument? Development of new business models that combine efficiency and renewables and that reward sustainability.

A new perspective on the economy

Ariel Verbruggen explores the complexity of investments decisions in order to overcome the "*spatial and temporal myopia*" that normally makes the good the worst enemy of the best in such decisions. Three dimensions – time, uncertainty, and irrevocability – in decisions on the Energy Performance Endowment (EPE) attributes and items of buildings are discussed. The importance of time sequential decision analysis and of irrevocability is argued. Catherine Cooremans has studied investment decisions in a number of companies from the perspective of investment categorization. The strategic character of investment projects is confirmed as the primary driver of investment choices, while investment profitability appears as a generally necessary but insufficient condition. For half of the companies surveyed, energy-efficiency investments do not even exist as a category. In order to successfully champion energy-efficiency investments need to highlight the strategic character of energy-efficiency investments. Jack Carrington notes that, in UK, energy price increases have consistently out-

stripped the inflation-linked increases most pensions receive, i.e. pensioners' income is eroded and more and more people fall into fuel poverty. He proposes a number of incentives to both pensioners and pension providers that could encourage investment in energy efficiency and give the next generation of pensioners the protection they need against volatile fuel prices.

New insights on reducing consumption

Margrethe Aune, Marianne Ryghaug and Åsne Lund Godbolt argue that reductions in energy use will not be achieved until we have a better understanding of the ways that energy cultures shape household energy use. They examine Norwegian energy consumption before and after the liberalization of the Norwegian electricity system in 1991 and find interesting changes in the understanding of global warming, energy security and price consciousness. Françoise Bartiaux, Kirsten Gram-Hanssen, Paula Fonseca, Liga Ozoliņa and Toke Haunstrup Christensen examine energy renovations in four European countries using a practice theory perspective. They attempt to account for variations in renovation practices across Europe and address the question of whether a European policy tool like the EPBD can efficiently address differences. Marlyne Sahakian examines the relationship between public policy and household consumption practices in Manila, Philippines. She explores the kinds of messages formulated for consumers about energy reduction and argues for a new approach which accounts for social capital and social networks.

Rebound effect: Is it real?

Horace Herring outlines the elements of the rebound effect and, based on experiences from the United Kingdom, how a focus on promoting low-carbon living rather than low carbon houses would dampen the effects of rebound. Benoit Allibe, Marie-Hélène Laurent and Dominique Osso discuss the limitations of efficiency-oriented policies and examine the effects of two measures which aim to limit the rebound effect for residential space heating, one involving a progressive energy tariff and the other a sharing of retrofit benefits between the energy utility and the household.

Traditional Business models under fire

Jan W. Bleyl-Androschin has further developed the concept of business models for energy services and discovers that general practice today, though marketed as being comprehensive, still has limitations and argues that Integrated Energy Contracting (IEC) in which energy conservation and (renewable) energy supply are both a part of the deal. Pilot work on this has been made in Austria. Andrew Satchwell, Peter Cappers and Charles Goldman analyze the financial impacts of an Energy Efficiency Resource Standard, EERS, on a large electric utility in the State of Arizona and demonstrate how a viable and comprehensive business model can be designed to improve the business case while retaining sizable ratepayer benefits. A successful business model for energy efficiency must take into account and balance the interests of all stakeholders and this study provides insights for those interested in pursuing aggressive EE goals.

Trawling for evidence

Claudia Kettner et. al. have used a technology wedges approach for Austria to illustrate emission reduction potentials of technological and behavioural changes. Two portfolios of technology wedges, one focusing mainly on energy efficiency and the other one on low carbon fuels, are quantified regarding their effects on energy flows and emissions as well as the economic impacts of investments required. Stefan Lechtenböhrer, Sascha Samadi and Clemens Schneider have analysed recent long-term low emission scenarios for Germany that all rely heavily on a massive scale up of energy efficiency improvements. In spite of the high potential huge uncertainty still exists in respect of where the efficiency potentials really lie. The paper also shows that the close connection between energy efficiency and non-technical behavioural aspects is still little understood. Natalia Zugravu has surveyed the green jobs literature and analysed its assumptions in a search for the implications for employment of the transition to a low-carbon economy. The transition to a low-carbon economy is supposed to generate net employment growth, along with improving energy security and reducing GHG emissions. The review of the literature highlights some key elements to be analysed while defining transition pathways towards a low carbon economy.

Technology: unrealized potentials

Mats Bladh examines how Sweden has achieved energy efficiency in cars, dwellings and lamps by examining two strategies, one in which a new technological path is taken (such as electric cars instead of petrol-driven cars) and the other in which greater efficiency is emphasized within a given technology path (such as fuel-efficient engines). He finds bigger efficiency gains from path changes. Carl Blumstein focuses on the potential for increased energy efficiency in the greater applications of information technologies in energy systems. He examines why the take up of information technology has been slow and argues for a significant energy savings potential in smart metering systems.

Renewables and non-European experiences: what can we learn?

Arthur Jobert argues that while energy saturated Europe is focused on reducing energy use, we must not forget that in developing countries there is still an urgent need to increase energy supply. He discusses the potential for renewable energies and decentralized systems, and relates experiences from Rural Energy Services Companies (RESCOs) in African countries. Andoni Hidalgo's focus is on why renewable energy has had greater success than energy efficiency in Europe and suggests lessons for energy efficiency based on the experiences thus far with renewables. Stephanie Oshita, Lynn Price and Zhiyu Tian analyze China's plan for allocating national energy targets to Chinese Provinces. They argue for the need for a more scientifically based methodology to allocate targets and suggest a methodology for both allocating targets and tracking physical and economic indicators for energy and carbon savings. Nina Zheng, Nan Zhou, Stephanie Oshita and Lynn Price point out that local governments in China are required to come up with

low carbon development plans but lack knowledge on possible policy actions and their consequences. They describe a guidebook developed to assist local governments in China in their low carbon planning.

Explorative policy making

Pedro Guertler has scrutinized how the least-cost energy planning (LCEP) and associated concepts (negawatts) and tools (integrated resource planning, demand-side management) has been applied. In doing so he show the rhetoric has shifted from least-cost to cost-effectiveness and cost-optimisation, but suggests that LCEP still presents a valid and viable method, in the emergent EU energy policy landscape, for empowering energy efficiency to reach its potential. Andrew Warren, Louise Sunderland and Darryl Croft assess that, based on experiences from the UK, the implementation of policies focussed on the achievement of a single target that fail to holistically consider energy efficiency and renewable energy generation together risks counterproductive outcomes. The end result distorts markets by creating perverse incentive and potentially promoting the inefficient use of energy. Nigel Jollands, Grayson Heffner,

Sara Pasquier and Aurélien Saussay reports the findings of an International Energy Agency study on energy efficiency governance based on the experience of over 500 energy efficiency experts in 110 countries making it the first comprehensive attempt to gather experience on energy efficiency governance throughout the globe. This paper provides guidelines to governments and stakeholders interested in creating and improving energy efficiency governance systems.

Short papers – posters

Aurélien Saussay, Nigel Jollands and Sara Pasquier discusses, based on an IEA evaluation of the progress made with implementing the 25 energy efficiency policy recommendations in IEA member countries in 2009, the methodology and the main findings of this evaluation. It points out some of the weaknesses in the methodology used and describes the revisions that were made for the upcoming 2011 evaluation. The evaluation notably found that while there were many positive examples of energy efficiency policy implementation, IEA member countries still have significant room for further energy efficiency action.