

EEEEP@10—An Introduction

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✎ 1. EEEP@10 ✎

A cordial welcome to this anniversary issue of EEEP, Economics of Energy and Environmental Policy! As we are celebrating the first decade of the journal, we reflect on some of the major issues driving policy, industry, and academia. We look back a decade (and more), but also look forward, towards emerging issues, new topics, and shed light on the ongoing energy transformation.

Economics of Energy & Environmental Policy (EEEEP) has been established in 2011 as a new IAEE publication in order to nurture the dialogue between academics, business and public authorities. As a policy-oriented journal, it aims to provide a scholarly and research-based, yet easily read and accessible source of information on contemporary economic thinking and analysis of energy and environmental policy.

Energy and the environment often do not go along well with each other, and this is the challenge for the journal. In fact, when EEEP was initially conceived, it was because many traditional energy economists concluded that the environmental aspects of what was then called “our industry” were insufficiently taken into account, both, in the policy process, and the academic literature. Climate change had become a ubiquitous topic, spurred by the global success and controversies of Lord Stern’s (2007) Review of the Economics of Climate Change. In fact, all of a sudden, all energy economists had become, explicitly or implicitly, climate economists. At the same time, other pollutants had also gained in importance, such as nitrous oxides (NO_x), dust and fine particles, and mercury (Hg). In essence, all energy economists had also become environmental economists...

A decade into the existence of EEEP, it is useful to take stock and look into the future of the Economics of Energy & Environmental Policy, and to sketch out elements of a research and policy agenda, both for the Journal itself, but also for the profession that is undergoing a structural change: In fact, one observes the proliferation of environmental topics in all fields of energy, so that no real distinction can be made any longer between the two. The objective of this symposium, therefore, is to take stock of recent linkages between energy and environmental issues, as well as the relation between energy and policy.

✎ 2. THE PAPERS IN THIS SYMPOSIUM ✎

To do so, the papers in this issue analyze different aspects of the energy-environmental nexus, from global climate considerations down to localized peer-to-peer-trading. Most papers

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also address the economics-policy nexus. The papers also reveal that we are standing on the shoulders of giants, and quote the most recent trends and authors that merit attention. All papers identify research and policy issues going forwards, and go well beyond current day-to-day analysis.

In the first contribution, Michael Davidson (University of California at San Diego), Valerie J. Karplus (Carnegie Mellon University), and Da Zhang and Xiliang Zhang (Laboratory of Energy, Environment, and Economy, Tsinghua University) assess a special case of climate policy, i.e. “Policies and Institutions to Support Carbon Neutrality in China by 2060”. China’s leadership has recently announced the aim to achieve CO₂ neutrality by 2060 in the world’s largest emitting nation, and the article examines the extent to which current policies and institutions would need to change to support decarbonization of the country’s energy system. The core of the argument is that policies, institutions, and attitudes will need to evolve in tandem, with greater progress needed in some areas than in others. The paper highlights different institutional challenges to climate policy, and the respective roles of market and hierarchies therein.

The second paper, by Michael G. Pollitt and Chi Kong Chyong (Energy Policy Research Group at the University of Cambridge), looks at a different climate and energy policy challenge, in a different jurisdiction: “Modelling Net Zero and Sector Coupling: Lessons for European Policy Makers”. This paper discusses some of the policy implications which arise from the modelling of Net Zero within a sector coupling approach, with massive electrification and interdependencies between the transport and heating sectors. The paper draws on a study of the EU-UK energy system in 2050, involving stakeholders from both electricity and gas sectors in a year-long modelling exercise of the European energy system. In their model specification, total electricity production is significantly higher than today in 2050 and this is achieved by large increases in electricity from wind, solar, nuclear and biomass. Depending on relative costs and the depth of decarbonization, electricity is required to be transformed into gaseous or liquid fuels, which implies significant transformation losses compared to the route of direct electrification. The authors conclude that the successful scale-up of multiple technologies supported by appropriate policies will be critical for the achievement of any Net Zero scenarios.

Papers three to five cover institutional and regulatory details in what is considered the most important sector, electricity. In their paper “New transactions in electricity: Peer-to-Peer and Peer-to-X”, Jean-Michel Glachant and Nicolo Rossetto from the Florence School of Regulation (European University Institute, Italy) consider peer-to-peer and peer-to-X relationships that open up a new world of transactions in the electricity sector. There can be no doubt that a new world has been born for electricity transactions, combining new players which are of a consumption unit size and non-professional, and new products originated from behind the meter. These transactions seem very sensitive to many constraints and to the actual behavior of strongly positioned decision-makers like regulators, grid operators and market operators. The authors identify four families of transactions with ‘peers’ as operational forms able to manage the particularities of these new transactions. The variety of forms in new transactions and the uncertainty about their evolution in the future should not surprise. It could even become true that the ‘business-to-business’ and the ‘business-to-consumer’ worlds will learn how to create a ‘peers-to-business’ type of integration as the peer-dominant business model.

In another of his classical papers on electricity transmission, Paul L. Joskow from the MIT Sloan School explores “Facilitating Transmission Expansion to Support Efficient Decarbonization of the Electricity Sector”. He observes that many governments, electric utilities, and large electricity consumers have committed to deep decarbonization of the electricity sector by 2050

or earlier, and will have to replace most fossil-fueled generators with zero carbon wind and solar generation along with energy storage to manage intermittency and for balancing more broadly. Studies have found that achieving decarbonization targets in a cost-efficient manner will require significant investments in new intra-regional and inter-regional transmission capacity, however, there are numerous barriers to planning, building, compensating, and financing this transmission capacity. These barriers are identified and potential reforms to reducing them are discussed. The focus is on the U.S. and Europe. Comparing and contrasting U.S. and European responses to similar challenges yields suggestions for institutional, regulatory, planning, compensation and cost allocation policies.

In a more theoretically grounded paper on transmission, Mohammad Reza Hesamzadeh (KTH Royal Institute of Technology), Darryl R. Biggar (Australian Competition and Consumer Commission, ACCC), Juan Rosellón (CIDE, División de Economía), and Hossein Hesamzadeh (Amirkabir University of Technology) explore challenges for “Transmission Network Investment in a Time of Transition”. The industry is in the process of adjusting from traditional fossil-fuel to renewable generation, from large-scale to distributed generation and from vertically-integrated monopolies to vertically separated industrial structures under diverse forms of competition. The authors start by reviewing the task of the theoretical well-intentioned network planner, and the complications that arise when transmission investment is separated from generation investment. They then review the issues associated with governing the transmission planner, including the question whether it is possible to design a financial mechanism which delivers correct incentives, a long-standing topic that has also been addressed by previous EEEP papers. The authors also discuss the question of whether it is possible to design a mechanism which allows transmission investment to be left entirely to the private sector and finish with a summary of the key future challenges facing the sector in this time of transition.

Last but not least, the role of natural gas, too, is changing in the context of the low-carbon energy transformation. In their contribution entitled “Fossil natural gas exit – A new narrative for the European energy transformation towards decarbonization”, Christian von Hirschhausen, Claudia Kemfert, and Fabian Praeger (DIW Berlin, and TU Berlin) discuss the potential role of fossil natural gas in the process of the energy transformation in Europe on its way to decarbonization. When considering the ambitious climate targets of the EU and the subsequent need for far-reaching decarbonization, in combination with technical constraints and the results from own energy system modeling, the authors conclude that the disappearance of fossil natural gas and its corresponding infrastructure is the next logical step of the transformation process in Europe. The phase-out of fossil natural gas in Europe needs to be completed towards 2040 in order to comply with climate targets and provide planning reliability for policy-makers and industry.

✎ 3. OUTLOOK: A PERIOD OF TRANSFORMATION FOR EEEP ✎

As we celebrate EEEP@10, the journal is undergoing transformation itself, to serve its readership even better.

First of all, we want to mention the regular turnover of the members of the Editorial Board, which is one of the key factors of success of the journal. We are very thankful to the outgoing members of the Editorial Board for long-standing and reliable service: James B. Bushnell, Ottmar Edenhofer, Paolo Frankl, Benjamin F. Hobbs, Ignacio J. Pérez-Arriaga, Mine K. Yucel. And we welcome the new Editorial Board Members very cordially: Chiara Lo

Prete (Pennsylvania State University, USA), Roula Inglesi-Lotz (University of Pretoria, South Africa), and Jacquelyn Pless (Massachusetts Institute of Technology (MIT), USA).

Second, after five years of service, Christian von Hirschhausen has completed his term as Editor-in-Chief, and the new EiC will take position in September 2021. Christian is thankful for an outstanding experience and support from all sides, Managing Editors, IAEE staff and Council, Board Members, etc., and excellent cooperation with fellow EEEP Editors that continue service in this time of transformation, Valerie Karplus and Juan Rosellon.

Third, IAEE Council will soon decide on some structural issues supporting the development of EEEP. So watch out for these developments as you enjoy reading this jubilee issue of EEEP@10!