Dynamics of low-carbon energy finance

On September 21 Utrecht University School of Economics (U.S.E.) hosted the workshop "Dynamics of low-carbon energy finance" as part of the EU commission sponsored Horizon 2020 project INNOPATHS. In three consecutive sessions, 18 participants from the financial sector, international organisations and academia discussed the financial implications of a European low-carbon transition.

1. Defining what's needed: Exploring the innovation financing gap for the energy transition

Representations of the investments needed until 2050, cost assumptions and the underlying technology mix to decarbonise the European energy sector vary considerably and in many scenarios climate targets are not reached (effectively or efficiently) as research carried out by Utrecht University displays. Financial industry representatives take these projections into account although they "discount" certain numbers in their internal analyses due to high uncertainty and bias of the publishing organisations (e.g. IEA). For long-term investors, anticipating innovative technologies and discontinuities in the models is reportedly difficult. It was stressed that these scenarios have implications for long-lived assets and investments/lending to fossil-fuel based industries. For example demand for electric vehicles influences the demand for oil refineries. Climate related risks are being taken into account in project-level analyses – a learning process that began recently. Mandatory disclosure requirements from the Financial Stability Board helped this regard.

Participants agreed that many studies focus on renewable electricity, but energy efficiency contributes significantly to achieve the transition. Due to small tickets, a fragmentation of the market, uncertain returns and high transaction costs, these investments are less attractive for professional investors and banks. A solution might be the pooling of investments and standardisation of lease arrangements for these projects, tax incentives for small high-risk funds or sharing of best practices across project sponsors and financiers (e.g. hospitals).

Generally debt-providers called for more risk-bearing equity for innovative energy (efficiency) projects. Hence to bridge this equity financing or entrepreneurship gap, early stage sources of finance need to be mobilised to enable learning (for example through demonstration projects). Storage and energy efficiency are considered especially uncertain as these technologies might even become redundant once the electricity grid is expanded appropriately. Pricing such deep uncertainty is almost impossible.

Financial industry participants also agreed on the fact that policy instruments are driving force behind their engagement and that these should be established with a long-term investment horizon in mind. INNOPATHS research gives a good overview about the mechanisms employed by governments in Europe. Detailed discussions about incentives and disincentives through taxes revealed that only a small of share of the emitted carbon emissions is actually taxed. Also current tax systems are biased towards fossil fuel based energy generation as variable costs (which are negligible in renewable power generation) can be immediately deducted while fixed costs are subject to depreciation plans.

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2. The role of finance: Dynamics of investment risks and financing conditions for renewable energy

Banks and investors increasingly (have to) consider fossil risk in their portfolios due to potential ambitious climate policies in the future. At the same time, renewable energy projects are becoming competitive with regards to both risk and return. INNOPATHS research explores the dynamics in project finance in mature European markets as the dominant form of finance for renewables. Financial market representatives confirmed that renewable power is a mature project finance market with strong competition for projects. Project scale is becoming more important as larger investors move into the market and attracting finance is becoming tougher for small projects. A participant from a lending institution highlighted that aggregation and securitization of RE investment project drive down financing costs. In addition, the experience with a number of diverse renewable projects contributes to a better understanding and consequently lower risk premiums.

When investing in renewable power, political risks are decreasing but still an issue. Risk dynamics are binary as industry participants highlighted: “Either everyone wants to do it or no one is considering it”. Consequently, market participants called for predictable policy measures that follow the reduction of technology costs (dynamic pricing). Technology performance risk still plays an important role in the daily investment business, because technology development and deployment plays out differently across regions (for example corrosion of wind turbines in Irish Sea). Beyond technology, it became apparent that structural and behavioural aspects are important. In this regard both the quality of the project sponsors, the developer, the management of the project, as well as uncertainty about future energy prices play a crucial role.

Our market participants further acknowledged the important role of state investments banks in creating a private sector friendly investment climate for renewable energy in the past. They highlighted especially the importance of the KfW in creating a domino effect by proving new technologies and business models. Outside of Western European countries, multi-lateral development banks fulfil this role and provide the basis for an engagement of private banks and investors. By and large they confirmed (preliminary) results presented by ETH Zurich.

3. Looking into the future: Finance aspects in modelling the energy transition (“moving the trillions”)

During the last session finance aspects in integrated assessment models have been discussed which lies at the core of PIK research. It was agreed upon with industry representatives that it is important to include (behavioural) feedback loops in models, e.g. "herd effects" of announced policy changes and a cycle of insufficient number of projects and low market expectations.

Furthermore, large-scale technology options for decarbonizing other sectors than the power sector (biofuels, CCS) are very risky and uncertain from a financiers’ perspective. It was suggested that it might be essential to pick winners and create market for them beyond the lab. But the challenge is to agree on who the winners will be in advance. Existing models report a variety of technology mixes in the scenarios (some including hydrogen, and solar fuels. Investors risk stranded assets in the energy transition if they bet on the wrong technology. This is another aspect that might be included in the modelling.

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Participants

Name	Organisation
Matthias Jäger	Allianz Climate Solutions
Lisa Reile	Allianz Climate Solutions
Tobias Schmidt	ETH Zürich
Bjarne Steffen	ETH Zürich
Florian Egli	ETH Zürich
Stephen Hibbert	ING Bank
Wouter Verster	Nederlands Investerings Agentschap (NIA)
Luisa Dressler	OECD
Corine van Heijningen	PGGM
Michael Pahle	PIK Potsdam
Oliver Tietjen	PIK Potsdam
Kai Lessmann	PIK Potsdam
Rens van Tilburg	Universiteit Utrecht & Sustainable Finance Lab (SFL)
Ernst Worrell	Universiteit Utrecht, Energy, materials and technological change
Cristina Penasco	University of Cambridge
Gert-Jan Kramer	Universiteit Utrecht, Sustainable energy supply systems
Friedemann Polzin	Universiteit Utrecht & Sustainable Finance Lab (SFL)
James Vaccaro	Triodos Bank

Contact

Friedemann Polzin

Utrecht University School of Economics (U.S.E.), Sustainable Finance Lab (SFL), Kriekenpitplein 21-22, 3584 EC Utrecht, The Netherlands, f.h.j.polzin@uu.nl, +31(0)302537280

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