

The Nordic Model: Beneath the Calm

The Nordic power sector is typically held up as an exemplar of a deregulated yet integrated and competitive market. It is also thought to be favourably positioned to tackle the climate challenge with its flexible hydro assets that facilitate the penetration of variable renewable energy, such as wind and solar power. The Nordic countries want to lead by example to achieve carbon neutrality. Sweden has, for example, a target of net-zero CO₂ emissions by 2045, and Denmark has committed to 100% renewable energy use by 2050. Nevertheless, the Nordic region is not immune from the difficulties plaguing other electricity markets, in particular the missing-money problem, market-design flaws, and market power. In fact, some of the Nordic region's very advantages could expose it to market failures during the sustainable-energy transition. This webinar will peel back the façade and probe these thorny issues in order to distil insights to guide future energy policy in the Nordic region and elsewhere.



Speakers



[Johannes Mauritzen](#) is an Associate Professor in the Department of Accounting, Auditing and Business Analytics at BI Norwegian Business School and Adjunct Associate Professor in the Department of Business and Management Science at NHH Norwegian School of Economics. His research interests are primarily in empirical studies of energy markets.

- Title: The Wind Power Trap
- Abstract: In the Nordic market, producers are strictly required to bid their true marginal costs in the day-ahead market. For the increasing amount of wind power in the region, this implies a near-0 bid. In normal times, wind power will not be the marginal generation source, and therefore wind power will be able to cover its substantial fixed cost. But in periods of suppressed demand, such as the current pandemic, wind power will more often become the marginal generation source in some areas and drive prices towards 0 or even negative. The effect is strengthened by the tendency of wind power to be more highly correlated in the upper quantiles of wind power production and the pattern of congestion in these higher quantiles. The unforeseen high frequency of 0 prices can lead to heavy losses for producers and can reduce the incentive to further invest in carbon-free generation. At the same time, it may present opportunities to invest in storage assets given the right market mechanisms and regulations.



[Chloé Le Coq](#) is a Professor in the Department of Economics at the University Paris 2 and a Research Fellow at SITE (Stockholm School of Economics). She has held visiting positions at Purdue University, the University of California Energy Institute at Berkeley, and the National University of Singapore. Her research investigates topics related to antitrust policy, industrial organisation, and experimental economics, with a particular focus on energy markets and their regulation. Her recent work includes empirical studies on forward markets, energy security issues, and experimental studies of electricity auctions.

- Title: Market Transparency Through a Common Data Platform: Evidence from Nord Pool (joint work with Ewa Lazarczyk)
- Abstract: Information structures are particularly dense in electricity markets. As electricity storage is limited, demand and supply must match at all times; up-to-date information about available capacities as well as forecasted and actual grid conditions are therefore essential to market participants. Against this background the European Union has implemented the *Transparency Platform* which stores data provided by each member state on physical grid conditions and generation capacities. We estimate the platform's effect on the zonal prices in the Nordic market. Increasing information about import capacities do not necessarily lead to more competitive outcomes: at times of congestion, the competitive effects of transparency appear to be zone specific.



[Afzal S. Siddiqui](#) is a Professor in the Department of Computer and Systems Sciences at Stockholm University. He is also an Adjunct Professor in the Department of Mathematics and Systems Analysis at Aalto University. Previously, he was Professor of Energy Economics in the Department of Statistical Science at University College London and a Visiting Professor in the Department of Decision Sciences at HEC Montréal. His research interests are

in the application of operational research methods to analyse decision making under uncertainty and competition in the energy sector. Besides participation in and coordination of several research projects, Afzal has also served as a consultant to Berkeley Lab and the European Commission.

- Title: [Market Power with Combined Heat and Power Production in the Nordic Energy System](#) (joint work with Vilma Virasjoki, Behnam Zakeri, and Ahti Salo)
- Abstract: The trend towards increasing energy efficiency and variable renewable energy (VRE) production has implications for combined heat and power (CHP) plants, which operate in both the price-driven power market and the district-heating (DH) sector. Since CHP will be important in VRE integration, we develop a complementarity model to analyse CHP producers' roles in integrated markets. We use a Nordic case study to gain insights into, first, the effect of the link between CHP and DH on market power and, second, market power's impact on operations in the DH sector. The results indicate that, first, the link of CHP to DH supply can increase market power and, second, market power can induce shifts in DH production from heat only to CHP.