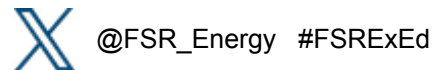


Executive Training

Executive Course to Master Electricity Markets 2024



14-15 October 2024

Residential training - Villa Schifanoia, Via Boccaccio 121 - Florence

Course Directors

Thomas-Olivier Léautier | Total Energies, Toulouse School of Economics and Florence School of Regulation/RSCAS/EUI

Fabien Roques | Compass Lexecon, University Paris Dauphine and Florence School of Regulation/RSCAS/EUI

Training Coordinator

Marina Cascella | Florence School of Regulation/RSCAS/EUI

Introduction

The Florence School of Regulation's executive course to master Electricity Markets discusses the microeconomics and ongoing evolutions of wholesale electricity and carbon markets and their implications for energy policies.

The course gathers a group of senior practitioners to discuss and share experiences about both the economic and political forces that drive the debate on the evolution of power and carbon markets to enable and support the decarbonisation of the power sector. The course builds on key economic principles and an interactive approach to discuss current policy debates on the reform of electricity and carbon markets, with a particular focus on the high penetration of Variable Renewable Energy sources (VREs), and recent evolutions in Europe following high energy prices resulting from the war in Ukraine.

Development of wholesale electricity markets has started in the 1990s, to unleash the benefits of competition onto the previously monopolistic and regulated electricity industry. Since the early 2000s, fighting climate change has risen on top of the political agenda in Europe (and to a lesser extent in other regions). Green electrification of the economy, i.e., electrification of final energy demand and decarbonization of electricity generation, mostly through VREs, is a necessary first step to achieve the EU objective of Net CO₂ neutrality by 2050. Facilitating large-scale VRE penetration has been added as an objective of electricity policies. In addition, a CO₂ emissions market (EU Emissions Trading System, EU ETS) has been created, to induce emitters to abate their emissions (which is economic as soon as the price of an emission exceeds its abatement cost).

By and large, these policies have been successful: European CO₂ emissions have been reduced to 2.7 Gt in 2002 from their 2006 peak of 3.7 Gt, the European wholesale spot electricity market is integrated and reasonably



competitive, guaranteeing that at every hour European electricity demand is served (almost) at the lowest possible cost, and VREs represent a significant share of electricity generation in most countries.

Policy makers today face a challenging set of circumstances:

- First, high shares of VREs (a success from the previous policies) generate new electricity price dynamics of with periods of low/negative prices and high volatility, the reduced captured prices for solar and wind in some areas, and increase the need for flexibility, i.e., electricity available when the sun does not shine or the wind does not blow. In addition, congestion on the transmission grid is increasing (in large part due to the connection of VREs), which leads to de facto price separation within some countries.
 - Second, the massive 2022 gas-then-electricity-prices increase has heightened the need for long-term contracts providing insurance to market participants. The resolution of the crisis has shown the limitations of the European governance of the electricity industry.
- Third, free CO2 emissions allowances granted to industrial companies are progressively scaled down, and the EU CBAM is implemented, which has a major impact on the EU ETS market and prices.

Designing electricity markets to simultaneously meet these challenges is a daunting task. This course aims to provide participants with a profound yet practical understanding of the necessary trade-offs involved.

Before the course, participants will receive access to an online platform where they will review materials on the theory of power markets and carbon pricing. The residential part will then focus on a range of lectures and group activities to discuss and deepen the understanding of the key economic concepts and how they confront in practice with policy makers' objectives.

Programme

30 September **Online preparatory activities**

Introduction to the course, and sharing of access to online material

14 October **The microeconomics of power markets**

14:00 - 14:30 *Welcome coffee*

14:30 - 15:00 Welcome remarks and introduction to residential course

15:00 - 16:30 Adam Smith's invisible hand: the spot market game and debrief of the game

16:30 - 17:00 *Coffee break*

17:00 - 18:00 The microeconomics of electricity markets and market integration

18:00 - 19:00 The microeconomics of carbon markets and policies to support clean technologies

19:00 - 19:30 Pre-read for the following morning

19:30 Group Dinner

15 October **Power markets and carbon trading in practice**

9:00 - 10:30 Analysis of the recent policy developments – the EU reform of electricity markets

- Policy responses during the energy crisis
- Market dynamics with high shares of Renewables
- Flexibility needs and associated business models

10:30 - 11:00 *Coffee Break*

11:00 - 12:00 Key design issues associated with the new electricity market design:

- How to design long term contracts, and their interface with the market: CfDs, PPAs, capacity mechanisms
- Toward more granular price signals? Network constraints, and real time pricing
- How to reform carbon pricing towards deep decarbonisation?

12:00 - 13:00 Breakout session focusing on case studies: key issues for reform and policy interventions

13:00 - 14:00 *Lunch break*

14:00 - 15:30 Collective debrief on lessons from case studies and policy interventions

15:30 - 16:00 Course wrap up and closing remarks