

**Online Training Course**

# Summer School for young researchers on Energy Systems: Hydrogen and electricity in the future energy system

 @FSR\_Energy #EnergySystemsSchool**28 September - 1 October 2021**

Online Training

Course Directors:

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## Introduction

The Florence School of Regulation and the Fraunhofer Cluster of Excellence “Integrated Energy Systems” are organising the 2nd edition of the Summer School on Energy Systems for Young Researchers. This year, the focus will be on the role of different energy vectors, notably hydrogen and electricity, in a sector-coupled energy system and the policy and regulatory issues that they raise.

The Summer School on Energy Systems will focus on the economic, policy and regulatory aspects of sector coupling in the European Union and the possible ways to model and investigate them quantitatively. During the four days of the school, lectures presenting the economic, policy and regulatory aspects will alternate with lectures dedicated to modelling and research skills. In this way, participants will gather a general overview of current developments in the European energy policy and the importance of integrating different energy end-uses and vectors to achieve the energy transition. Further, participants will have the opportunity to learn how to explore relevant regulatory and policy issues from concrete modelling exercises and exemplary applied research. Participants will also have the possibility to present their current research on the topic and receive accurate feedback from peers and the course faculty.

## **Draft Programme**

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### **28 September**

#### *Morning Session*

9.30 - 10.00 Welcome address and introduction to the Summer School

**Mario Ragwitz** | Fraunhofer Cluster of Excellence – Integrated Energy Systems  
**Nicolò Rossetto** | Florence School of Regulation, RSCAS, EUI

10.00 - 11.00 Overview of the policy landscape: the European Green Deal and the quest for deep decarbonisation

**Andris Piebalgs** | Florence School of Regulation, RSCAS, EUI

#### *Afternoon Session*

14.00 - 15.00 The technical and economic aspects of hydrogen: production costs and use cases

**Ronnie Belmans** | KU Leuven  
**Pieter Vingerhoets** | KU Leuven

### **29 September**

#### *Morning Session*

9.30 - 10.30 Modelling the decarbonisation of the energy system

**Frank Sensfuß** | Fraunhofer ISI

10.30 - 11.00 *Coffee break*

11.00 - 12.00 Electrification of end-uses: prospects for heating

**Mathilde Fajardy** | University of Cambridge, Judge Business School

#### *Afternoon Session*

14.00 - 15.00 How to perform applied research in energy? The FSR recipe

**Leonardo Meeus** | Florence School of Regulation, RSCAS, EUI

### **30 September**

#### *Morning Session*

9.30 - 10.30 Regulatory challenges for an integrated energy sector

**Alberto Pototschnig** | Florence School of Regulation, RSCAS, EUI

10.30 - 11.00 *Coffee break*

11.00 - 12.00 Multi-energy grids: modelling and applications

**Tanja Kneiske** | Fraunhofer IEE

*Afternoon Session*

14.00 - 15.30 Examples of modelling applied to energy problems

- Introduction to complementarity modelling

**Tim Schittekatte** | Florence School of Regulation, RSCAS, EUI

- Bilevel optimisation of DSOs investment planning considering explicit demand-side flexibility

**Athir Nouicer** | Florence School of Regulation, RSCAS, EUI

- Modelling welfare and price effects of sector coupling with power to gas: a complementarity approach

**Martin Roach** | Vlerick Institute

- Q&A

**1 October**

*Morning session*

9.00 - 10.30 Students' presentations

10.30 - 11.00 *Coffee break*

11.00 - 12.30 Students' presentations

*Afternoon Session*

14.00 - 15.30 Students' presentations

15.30 - 16.00 Wrap-up of the school and participant feedback

**Mario Ragwitz** | Fraunhofer Cluster of Excellence – Integrated Energy Systems

**Nicolò Rossetto** | Florence School of Regulation, RSCAS, EUI