FLORENCE SCHOOL OF REGULATION

ROBERT SCHUMAN CENTRE

Online Training

Clean Molecules for the Energy Transition

2 - 20 June 2025

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Introduction

Despite a big 'electrification first' push in the EU, molecules still account for nearly 80% of the total energy mix. In pursuit of climate targets, strategic autonomy, and industrial reinvigoration, these largely fossil molecules are increasingly being replaced by electrolytic and bio-based 'clean molecules'. The speed and depth of the transformation is creating significant complexity and uncertainty for business, governments, and citizens.

Clean molecules often require new technological value chains, new regulatory frameworks, and new business models. Moreover, in an era of rapid geopolitical change, the pace of policymaking and the strategic role of these versatile energy vectors is evolving more quickly than ever. The traditional energy trilemma of sustainability, security, and affordability has become more and more interconnected in the process, pushing clean molecule value chains into the focus of key industrial and security policy agendas.

The 2025 'Clean Industrial Deal' provides a clear framework to link decarbonisation with economic resilience and competitiveness. By accelerating the deployment of clean energy and manufacturing, fostering lead markets, and promoting renewable and low-carbon hydrogen, it aims to scale both supply and demand. Moreover, bio-based gases have become much more competitive since the energy crisis, whilst their local availability and links to circular economy objectives have repositioned them as an important means of supporting various cross-sectoral objectives. Understanding the strategic role, regulatory context, and business case for these energy products is challenging but extremely stimulating and timely.

The 'Clean Molecules for the Energy Transition' course at the Florence School of Regulation is designed to bring you up to speed. Over three weeks – two weeks of independent study followed by one week of live sessions – you will gain in-depth insights into EU and global strategies, engage with real-world case studies, and participate in expert-led discussions and high-level panel debates, ensuring you stay ahead in this fast-moving field.

Course structure

Week 1 & 2 (2-15 June 2025) | Offline preparation to the course
Week 3 (16-20 June 2025) | Online live classes

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Draft Programme

2 June	**Welcome Class**
09:30-10:30	Welcome Class.
2-15 June 2025	*Go through the online materials and complete the relevant activities on the course platform.*
16 June	**Clean Molecules in EU Policy**
09.15-09.30	Welcome and housekeeping.
09.30-10.30	Lecture: EU Vision and Energy Challenges.
10.30-10.45	*Coffee break*
10.45-11.45	Lecture: ETS and CBAM.
11.45-12.00	*Coffee break*
12.00-13.00	Lecture: EU Scenario Planning.
13.00-14.30	*Lunch break*
14.30-15.30	Expert Panel: Industrial Competitiveness.
15.30-15.45	Questions and closing.
17 June	**Hydrogen and Synfuels**
09.15-09.30	Welcome and housekeeping.
09.30-10.30	Lecture: Producing Hydrogen and Synthetic Fuels.
10.30-10.45	*Coffee break*
10.45-11.45	Lecture: The Cost of Producing Hydrogen.
	Lecture: What does ‘clean’ mean?
11.45-12.00	*Coffee break*
12.00-13.00	Lecture: EU Hydrogen Bank.
	Lecture: H2 Global.
13.00-14.30	*Lunch break*
14.30-15.30	Expert Panel: National Perspectives for a Hydrogen Economy.
15.30-15.45	Questions and closing.
18 June	**Supply Chains and Justice**
09.15-09.30	Welcome and housekeeping.
09.30-10.30	Lecture: Technology leadership: NZIA, Clean Industrial Deal, CRM Act.

10.30-10.45	*Coffee break*
10.45-11.45	Lecture: Security of Supply for Renewable Energy Supply Chains.
11.45-12.00	*Coffee break*
12.00-13.00	Lecture: Transportation of Clean Molecules.
	Lecture: CCS Networks.
13.00-14.30	*Lunch break*
14.30-15.30	Expert Panel: Social Implications of a Clean Molecule Economy.
15.30-15.45	Questions and closing.
19 June	**Biogas and Externalities**
09.15-09.30	Welcome and housekeeping.
09.30-10.30	Lecture: EU Regulatory Framework for Clean Molecules.
10.30-10.45	*Coffee break*
10.45-11.45	Group Work: Clean Molecule Investment Game.
	Lecture: Emissions from Clean Molecules.
11.45-12.00	*Coffee break*
12.00-13.00	Lecture: Biogas and Biomethane.
	Lecture: Prospects for Biogas Market Growth in Europe.
13.00-14.30	*Lunch break*
14.30-15.30	Expert Panel: Food vs Fuel? Competition for Resources in Bio and Circular Economy.
15.30-15.45	Questions and closing.
20 June	**Implementation and Scale**
09.15-09.30	Welcome and housekeeping.
09.30-10.30	Lecture: Learning from an Innovator.
	Group Work: Clean Molecule Investment Game.
10.30-10.45	*Coffee break*
10.45-11.45	Group Work: Clean Molecule Investment Game.
11.45-12.00	Feedback session.