

Decarbonising Hard-to- Abate Transport Modes

technical & policy perspectives



spring school

CARS@POLITO
COVIVIO Room
Floor #3
Corso Ferrucci 112
Torino

26-29 May 2025



**Politecnico
di Torino**

Dipartimento Energia
"G.Ferraris"





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Transport is undergoing a rapid transformation, moving away from fossil fuel dependence towards a more complex and diversified energy supply. Proposed by the Politecnico di Torino - DENERG Excellence Department, the Spring School aims to provide students with the knowledge and tools to drive forward the decarbonization of transport, addressing both technical challenges and regulatory frameworks. Through expert-led sessions, case studies, and interactive discussions, participants will gain a comprehensive understanding of sustainable transport solutions for a low-carbon future.

Join the PhD Spring School on Decarbonization Strategies for Hard-to-Abate Transport Sectors!
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This intensive program explores innovative technical and regulatory solutions for reducing emissions in freight transport (road HDV and maritime) and aviation. Organized under the Department of Excellence project, the Spring School emphasizes renewable and low-carbon fuels, including hydrogen, contributing to a sustainable energy transition. Participants will engage with experts, case studies, and interactive discussions to gain cutting-edge insights into smart and efficient transport systems.

Don't miss this opportunity to be part of the future of sustainable mobility!

Program

D1: Policy context (6h)

Morning (10:30-12:30)

- Participants Registration
- Prof. M. Prussi (DENERG-POLITO) - Introduction to the School

Afternoon (13:30-17:30)

- Dr. L. Lonza (DG-CLIMA) - The EU policy context
- Prof. M. Prussi (DENERG-POLITO) - The technical solutions for decarbonising the Hard-to-Abate sectors: the role of alternative fuel for HDV, maritime and aviation



D2: Alternative fuels technologies (8h)

Morning (8:30-12:30)

- Prof. D. Chiaramonti (DENERG-POLITO) - Alternative fuels production technologies
- Dr. Wanda Gugliucci and Dr. Cristina Bonanomi (ENU): Creating a sustainable alternative fuel in practice: the experience of a large scale producer

Afternoon (13:30-17:30)

- Prof. M. Prussi (DENERG-POLITO): LCA tool for alternative fuels GHG saving accounting: examples from IMO and ICAO/CORSIA

D3: Decarbonising freight transport (8h)

Morning (8:30-12:30)

- Prof. F. Millo (DENERG-POLITO) - Alternative powertrains for maritime
- TBD (EU Expert) - Marine engine and technology provider

Afternoon (13:30-17:30)

- Prof. E. Spessa (DENERG-POLITO) - Decarbonising HDV and LCA implications
- TBD (IT Expert) - HDV engine and technology provider

D4: Decarbonising Aviation Sector (8h)

Morning (8:30-12:30)

- Prof. R. Malina R. (HASSELT UNIVERSITY) - Decarbonising international aviation

Afternoon (13:30-17:30)

- Prof. M. Prussi (DENERG-POLITO) - Wrap-up session and feedback gathering from the audience



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Speakers' bio

Matteo PRUSSI



Prof. Matteo Prussi is an Associate Professor at the Energy Department of Politecnico di Torino, specializing in renewable energy conversion technologies. With nearly 15 years of experience, his research focuses on the environmental impact of transport modes and the potential of alternative fuels, particularly in aviation and maritime sectors. He serves as an expert for the European Commission, UN GESAMP and EASA, contributing to policy development and methodological advancements in carbon accounting. Previously, he worked as a scientific officer at the European Commission and directed the RE-CORD research consortium.

Laura LONZA



Dr. Laura Lonza is a dedicated Policy Officer at DG CLIMA, specializing in legislative acts concerning international maritime and civil aviation sectors. With a robust technical background honed over an extensive career at the European Commission's Joint Research Center (JRC) in Seville and Ispra, she brings unparalleled expertise to her role. Dr. Lonza is the author of numerous studies and research works, including contributions to the technical annexes of the Fuel Quality Directive and the Renewable Energy Directive (I and II), as well as the influential JEC v4. Her work demonstrates the commitment to advancing scientific understanding and policy development in the areas of climate action and sustainable transport.

David CHIARAMONTI



Professor David Chiamonti is a Full Professor at the Department of Energy (DENERG) at Politecnico di Torino, specializing in bioenergy, biofuels, and the bioeconomy. His research encompasses anaerobic digestion, aviation and maritime fuels, biochar, energy policy, hydrothermal processing, life cycle assessment, marginal land utilization, and pyrolysis and gasification. He chairs the Renewable Energy Consortium for R&D (RE-CORD). Professor Chiamonti has authored over 180 publications and has been involved in numerous EU projects related to biofuels and bioeconomy. He is a member of the Accademia dei Georgofili and has received the Linneborn Prize from the European Biomass Conference and Exhibition. Additionally, he is an editorial board member for several journals, including "Applied Energy" and "Biomass & Bioenergy."

Wanda GUGLIUCCI



Wanda Gugliucci holds a degree in Agricultural and Environmental Sciences from the University of Florence, a Master's degree in Agri-environmental Biotechnology from the University of Naples Federico II, and a PhD in Sustainable Agricultural and Forestry Systems and Food Security. Her research, co-financed by Eni, focused on the use of wastewater for the cultivation of oilseed plants.

Cristina BONANOMI



Cristina Bonamoni is an R&D Agri and Bio Energy Business Partner. Graduated in Chemistry from the University of Milano-Bicocca and holding a Master's degree in "Energy Innovation" from Politecnico di Milano, I have been working at Eni since 2018. Throughout my career at Eni, I have held various roles in the downstream sector, ranging from quality control and analytical method development to project manager for research projects focused on the valorization of biomass into bio-based products, with a particular focus on biofuel production. Currently, as part of the R&D Agri and Bio Energy Business Partner function, I act as a liaison between research centers and the Business Unit, with the aim of supporting the business in achieving its strategic objectives.

Federico MILLO



Professor Federico Millo is a Full Professor at the Department of Energy (DENERG) at Politecnico di Torino, specializing in internal combustion engines and automotive powertrains. His research focuses on alternative fuels, vehicle emissions, and the development of control strategies for both conventional and hybrid powertrains. He serves as Vice Director of the Department of Energy and is a member of the Interdepartmental Center CARS@PoliTO - Center for Automotive Research and Sustainable Mobility.

Professor Millo coordinates partnership agreements with DUMAREY, FERRARI, and FEV ITALIA. He has published over 150 articles, primarily in international journals, and has supervised more than 400 graduate theses and over 20 Ph.D. dissertations.

In recognition of his contributions, he was named an SAE Fellow in 2015 and has received several awards, including the SAE McFarland Award in 2013.
<https://www.polito.it/personale?p=federico.millo>

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Robert MALINA



Prof. Malina is a Full Professor for Environmental Economics at Hasselt University and Director of the Centre for Environmental Sciences (CMK), a multidisciplinary institute with >200 researchers from a broad set of academic disciplines (environmental biology, epidemiology, zoology, toxicology, applied chemistry, nuclear engineering, environmental economics, environmental law). He is also a Research Affiliate in the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT). Prof. Malina is the co-leader of the ICAO/CAEP/Fuel Task Group CoreLCA. The group is made of >100 international experts and target the development of the ICAO/CORSIA LCA methodology for aviation alternative fuels.

Ezio SPESSA



Professor Ezio Spessa is a Full Professor at the Department of Energy (DENERG) at Politecnico di Torino. His research focuses on hybrid and electric powertrains, internal combustion engines, renewable fuels for transport, and sustainability assessment of transport systems. He is a member of the Interdepartmental Center CARS@PoliTO - Center for Automotive Research and Sustainable Mobility, and serves on the Spin-Off and Patent Commissions. Additionally, he coordinates the partnership agreement with OFFICINE CORNAGLIA.

Professor Spessa is actively involved in the scientific community, serving on the steering committee of AIMSEA and the scientific committee of the National Transport Cluster. He is also an associate editor for "Frontiers in Future Transportation" and represents Politecnico di Torino in the 2ZERO/EGVIA partnership.

The event in a nutshell

**Class schedule**

8:30-12:30

13:30-17:30

**Target group**

Masters degree students

PhD student

Young professional (already graduated)



Credits: 3CFU

Certificate of attendance will be issued at the end of the course.



Language: English



Free of charge

**Reference Person:**

Prof. Matteo Prussi - matteo.prussi@polito.it



Center for
Automotive Research
and Sustainable Mobility