

Sustainable Innovation

School 2

TITLE

Integrated Energy and cross-sectorial modelling for the sustainable transition

RESPONSIBLE PARTNER

Politecnico di Milano

OVERVIEW

The Summer School is aimed at providing a general overview of the various aspects related to the Energy Transition in the light of Sustainable Development paradigm. Students will be equipped with enhanced understanding of the global challenges related to the energy sector with a specific focus on its implications at national economy level and on Climate Change from a Life Cycle Assessment perspective.

Specific goals include:

to explore the rationale underpinning global resource management and the ensuing implications when managing sustainable transition with the final aim of providing a broad context to enable school's students to frame their research approach in compliance with the Sustainable Development paradigm.

to equip the school's students with an ensemble of (open and transparent) modelling tools that can be used to test the effectiveness of integrated solutions and the economic and environmental implications of the transition policies.

to provide the school's students with practical tools for translating modelling outcomes into relevant information at the disposal of policy and decision makers.

LEARNING OUTCOMES

students are expected to acquire a theoretical background on the integrated framework of Sustainable Development and its declination in the UN 2030 and AU 2063 Agendas. Specific topics will be addressed related to major energy challenges and their implication on the economy and environment. Finally practical hands-on sessions will allow students to approach the use of open-software modelling tools needed to frame effective strategies to address transition-related challenges. More specifically students will be introduced to the usage of energy modelling tools coupled with meso-economic impact assessment methods for the integrated analysis of energy strategies both at sectoral and economy-wide level. Group works are included with the final aim of producing policy briefs to summarize relevant information derived from the modelling exercise.

LOCATION

Strathmore University, Nairobi (Kenya)

DURATION

30h, 5 days, full-time in presence



PERIOD

20 - 24 November 2023

MODALITY

In presence with frontal lectures, practical hands-on sessions and group work, asynchronous individual work will be requested based on the MOOC materials available on the Polimi Open Knowledge (POK) Platform

LANGUAGE

English

SCHEDULE

Introductory module: 2 days for frontal lectures. Practical module: 3 days for hands-on sessions, group-work and final presentations

LESSON HOURS

18

GROUP WORK HOURS

12

TOPICS

- *The paradigm of Sustainable Development*: Trends in development models from Marshall plan to the 2030 Agenda; Natural resources and human activities; Fundamentals of Design for Sustainability and Social Innovation.
- *The Energy Challenge*: Introduction to the planetary boundaries' conceptual framework; Energy trends and forecast; Resource availability and technological roadmaps to decarbonization; Energy implications in Water and Food management.
- *Principles of Quantitative Sustainability Assessment*: Current challenges in quantitative sustainability assessment; Principles of Industrial Ecology and Life Cycle Assessment; Impact assessment: practical examples and real case studies.
- *Principles of the Scientific Evidence-Based Policy-Making process*: Introduction to Science Diplomacy; The role of science diplomacy within the EU-AU partnership; The phases of the policy making process; Introduction to policy brief preparation.
- *Integrated Energy and cross-sectoral modelling*: Practical hands-on and project work development by using different energy modelling tools integrated with impact assessment frameworks to provide information for policy makers about impact of different policy choices; Final presentations and Policy briefs drafting.

LECTURERS (TBC)

Emanuela Colombo (Polimi – Department of Energy); Diana Shendrikova (Polimi – Department of Energy); Nicolò Golinucci (Polimi – Department of Energy)

