Course: Economy for the Sustainable Society — credits: 5

Course code	ESVM21ESS
Name	Economy for the Sustainable Society
Study year	2025-2026
ECTS credits	5
Language	English
Coordinator	W.P. van der Gaast
Modes of delivery	Education
Assessments	Economy for the Sustainable Society - Assignment

Learning outcomes

Learning outcomes:

1. The student, in a role of energy market decision maker, is able to explain and assess the different elements of the energy market organisation from an economic perspective, including balancing energy demand and supply and price setting in different electricity balancing markets.
2. The student, in a role of investor, is able to conduct a business case analysis for multiple energy market solutions, thereby identifying the costs and benefits for each solution.
3. The student, in a role of policy maker, is able to monetise environmental impacts of a clean energy solution, such as putting a price on CO2-emissions or valuing circular economy actions.
4. The student is able, in a role of policy maker, to indicate efficient and effective economic policy instruments for multiple energy market problems.
5. The student is able, in a role of analyst, to critically reflect on existing literature on economic aspects of the energy transition.

Content

Content of the module

The energy transition implies that energy will increasingly be produced via decentralised capacity based on intermittent sources. This requires a different market organisation to balance the electricity market, implying new responsibilities for market actor and new business models for strategic electricity market behaviour. Furthermore, as per the energy transition the traditional division of services (electricity, heat and transport) will change whereby clean electricity will increasingly service heat and mobility markets, thereby integrating traditionally separate energy systems. In addition, new energy carriers, such as hydrogen and storage technologies, such as batteries, will be integrated in the energy system. Next to technical challenges, this system integration will pose economic challenges, to be addressed by the changing market organisation. This module will enable students to practice with the transition in the energy market organisation.

At the level of individual businesses and households, investment decisions will have to be made on clean energy services. For that, these market actors need to be able to clearly assess costs and benefits, including associated risks. This module will enable students to practice with business case assessments for clean energy solutions.

In order to stimulate the energy transition in terms of direction (towards zero CO-emissions) and time (for a decarbonised society by 2050), policy makers have at their disposal a range of policy instruments varying from stimulation (subsidies) to restrictive (carbon emission caps) ones. Choosing which instrument to apply when under what circumstances in light of challenges of the energy transition is a key responsibility for the governments and student will be enabled in this module to practice with that based on actual cases.

Included in programme(s)

Energy for Society

School(s)

Institute of Engineering

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