University of Cologne

Department of Economics – Chair of Energy Economics – Prof. Dr. Marc Oliver Bettzüge

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Project "Roadmap for carbon neutrality 2050: Long-term strategies and transformation paths"

Winter Term 2022/23

Credits	6
Language	English
Examiner	Dr. Marcus Eul
Allocated Modules	[1289SMEC00] Schwerpunktmodul Energy, Climate Change and Sustainability

1. Roadmap for carbon neutrality 2050: Long-term strategies and transformation paths

Reducing greenhouse gases – e.g., in Germany by 80 to 95 percent by 2050 - requires not only a strong expansion of renewable energies and a further increase in energy efficiency, but also a fundamental restructuring of the entire energy system and an integration of all producers and consumers across sector boundaries. Therefore governments, especially those which signed the Paris Agreement - examine the influence of the energy sectors of power generation and distribution, buildings, mobility and industry and their mutual interactions and dependencies, to be able to derive an overall cross-sector strategy for an integrated energy transition. So far, there are a few studies available – like the dena Leitstudie in Germany or the RNC 2050 study in Portugal - that consider all sectors and their interactions. This is necessary, however, since the various sectors are increasingly interconnected, e.g., due to increasing electrification. The perspective, practical knowledge and strategic development of the companies are generally neglected. There is also too little knowledge about infrastructure requirements, acceptance, and costs for effective restructuring of the energy system. To address this, the mentioned studies have developed possible transformation paths and recommendations for action.

Governments must as soon as possible consider how to make the outlined transformation happen. They need to have a clear understanding whether the designed measures are effective and what priorities should be set. These are questions will be answered in the seminar – by the participants in their assumed roles as consultants to the government.

2. Schedule

Date	Time	Room	Course
Thursday, Oct 20th	17:00 – 20:00	Seminarraum S 244	Kick-off: Seminar organization, Energy basics Subject areas and research topics Expectations for proposal / results presentations
Sunday, Oct 23rd	17:59	Students apply for research topics	
Monday, Oct 23rd	18:00	Research topic allocation via ILIAS	
Sunday, Nov 13rd	17:59	Students submit questions via ILIAS	
Friday, Nov 18th	9:00-11:00	Zoom	Q&A meeting performed Meeting moderated by the respective teams
Thursday, Dec 1st	17:00-19:00	Seminarraum S 244	Slide drawing and presentation skills
Sunday, Dec 11th	23:59	Deadline for Proposal/ pitch presentations submission via ILIAS	
Thursday, Dec 15th	17:00-19:00	Seminarraum S 244	Proposal/ pitch presentations by students Feedback given for further analyses (“project execution”)
Sunday, March 5th	23:59	Deadline for seminar presentation submission via ILIAS	
Thursday, March 9th	16:00-19:00	Seminarraum S 244	Project result presentations by students
Friday, March 10th	16:00-19:00	Seminarraum S 244	Project result presentations by students

Seminarraum S 244 is within the Philosophikum. In case of an online semester the course will be offered via ZOOM.

3. Requirements and Expectations

The seminar is designed for students who have already taken courses in Energy Economics and are thinking about writing their Bachelor thesis in this field. Students will work on an energy related topic independently but also together in teams.

The seminar is a kind of role play with the students acting as consultants replying on a fictive Request for Proposal (RfP) of the government to assess the results of an energy transition

study – either dena Leitstudie in Germany or the RNC 2050 study in Portugal. The role play will work as follows:

- The Government wants to clarify subject areas (like “Renewables”) of a given study (here: the dena Leitstudie in Germany or the RNC 2050 study in Portugal) that consists of several research topics (like “Extension of renewable generation capacities” or “Security of supply during dark lulls”). The research topics will be presented in the seminar’s kick-off meeting.
- The students apply for their preferred research topic. 3-4 research topics are bundled to a subject area, the respective students act as a team.
- The students develop a **proposal** – study results, objective of the analyses, approach - for their research topic and present it, aligned with “their” team to the audience. The proposal document is a slide deck (e.g. PowerPoint) consisting of 15-20 pages.
- Based on that feedback for the proposal the analyses will be done as the major part of that seminar. The students write a summary **results document** for their research topic and present it, aligned with “their” team to the audience. The results document is a slide deck (e.g. PowerPoint) consisting of 30-40 pages.

Although group work for the presentations is expected, the individual performance counts for the final grade. Bonus points can be achieved if the team is well aligned and a consistent, cross-research topic perspective for one subject area has been given.

4. Application

The registration for examination should be done using KLIPS. The registration is binding and students who do not hand the required contributions will receive a failing grade.

5. Mode of Examination

Combination of

- 20% - Pitch slide deck
- 80% - Research results slide deck
- 10% bonus points as an upgrade if the team presentation performance is outstanding

All examinations must be graded at least 4,0 (ausreichend) to pass the course!

6. Organisation

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Please do not hesitate to contact me in case of further questions.