



**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”**

Summer Term 2024

<b>Credits</b>	6
<b>Language</b>	English
<b>Examiner</b>	Dr. Marcus Eul
<b>Allocated Modules</b>	[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, examination results are available summarized in some country-specific studies– like the dena Leitstudie in Germany or the RNC 2050 study in Portugal - that consider all sectors and their interactions. This is necessary since the various sectors are increasingly interconnected, e.g., due to increasing electrification. The perspective, practical knowledge and strategic development of the companies on the other hand are generally neglected. There is also only 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.

Countries and their respective 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 which will be analysed in the seminar.

## 2. Requirements and Expectations

The seminar is designed for students who have an interest in the energy transition, ideally already taken courses in Energy Economics and who think about writing their Bachelor thesis in this field. They will receive information about how to write an academic paper and how to prepare and to give a scientific presentation. Based on the input, students are expected to choose a topic from one of the provided studies, narrow down a research question and compose a literature review. Agile methods with focus on design thinking will be applied to shape and work out the seminar topics in a structured, sequential way to develop “spot on” seminar results.

## 3. Schedule

The seminar starts April 25<sup>th</sup> with a first block providing information content-wise about the energy transition and methodology-wise about how to prepare a presentation and to write seminar thesis. In the second block May 28<sup>th</sup>/29<sup>th</sup> students present their ideas in a pitch and will receive feedback for their thesis writing. In the last block on July 25<sup>th</sup>/26<sup>th</sup> students present their analyses results.

Date	Time	Room	Course
<b>Thursday, April 25<sup>th</sup></b>	<b>17:00 - 19:00</b>	KFR1	Course Introduction: Energy transition
<b>Friday, April 26<sup>th</sup></b>	<b>10:00 - 12:00</b>	KFR1	Course Introduction: Seminar organization
Sunday, April 28 <sup>th</sup>	17:59		Students apply for research topics by email to <a href="mailto:meul2@uni-koeln.de">meul2@uni-koeln.de</a>
Monday, April 29 <sup>th</sup>	18:00		Research topic allocation via ILIAS
<b>Thursday, May 2<sup>nd</sup></b>	<b>16:00-17:30</b>	KFR1	Slide drawing and presentation skills
Thursday, May 24 <sup>th</sup>	23:59		Deadline for pitch submission via ILIAS
<b>Tuesday, May 28<sup>th</sup></b>	<b>14:00-17:00</b>	KFR1	Proposal/ pitch presentations by students (1/2)
<b>Wednesday, May 29<sup>th</sup></b>	<b>10:00-12:00</b>	KFR1	Proposal/ pitch presentations by students (2/2)
Sunday, July 14 <sup>th</sup>			Deadline for seminar paper submission via ILIAS
Sunday, July 21 <sup>st</sup>			Deadline for seminar presentation submission via ILIAS
<b>Thursday, July 25<sup>th</sup></b>	<b>16:00-19:00</b>	KFR1	Seminar thesis presentations by students (1/2)
<b>Friday, July 26<sup>th</sup></b>	<b>10:00-13:00</b>	KFR1	Seminar thesis presentations by students (2/2)

## 4. Mode of Examination

Combinations of examination components:

- 10% Pitch ppt (max 10 slides) and presentation (10 mins)
- 60% Seminar Paper (3,000 words)
- 30% Seminar paper ppt (max 15 slides) and presentation (15 mins)

All examinations must be graded at least 4,0 (ausreichend) to pass the course! Further details about examination criteria will be provided in the seminar.

## **5. Application**

The registration for examination should be done using KLIPS. The registration is binding and students who do not hand in a pitch document, seminar paper or who do not present their paper will receive a failing grade.

## **6. Organisation**

Dr. Marcus Eul, [meul2@uni-koeln.de](mailto:meul2@uni-koeln.de)

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