



Universität zu Köln

Department of Economics – Chair in Economics, Energy and Sustainability

Prof. Dr. Marc Oliver Bettzüge

Project “Energy Transition”

Summer Term 2024

Allocated Modules	[1287BAPVL1] AM Projektkurs Volkswirtschaftslehre
Credits	6
Language	English
Examiner	Prof. Dr. Bettzüge
Cooperation partners	Rheinenergie
Organization	Cordelia Frings (cordelia.frings@uni-koeln.de)

Energy transition in the German building stock

Germany has set ambitious climate targets, including climate neutrality by 2045 and a reduction of emissions compared to 1990 by 65% by 2030. To achieve these climate targets emissions have to be reduced in all sectors. In Germany, the operation of buildings accounts for around 35 per cent of final energy consumption and around 30 per cent of CO₂ emissions. In this project, students will review our current understanding of the emission reduction challenge in the German building sector, with a particular focus on existing multifamily buildings and options for home energy management systems. In particular, students will be asked to work on projects in teams, to present their results to the group, and to critically reflect on the contributions of their peers. The projects are realized in cooperation with RheinEnergie AG. RheinEnergie is a majority publicly owned energy and water supplier for Cologne and its region. Together with their partners, it is directly responsible for the sustainable supply of drinking water and energy to around 2.5 million people, industry, trade and commerce. The company is also active in energy sales nationwide and offers highly specialized energy services for industry and the housing sector. RheinEnergie is also an important driver of the energy transition in the region and throughout Germany: Since 2022, all household and commercial customers have been supplied with green electricity, and a complete decarbonization of the electricity and heat supply is planned by 2035. RheinEnergie is also focusing on the massive expansion of renewable energies and energy efficiency measures.

Topics for the projects will be assigned by the chair and may cover aspects such as, e.g.:

- Energy transition in existing multi-family buildings - lessons learnt from single and double family housing and their application to multi-family buildings
- Consumer perspectives on smart home energy systems – Comparative case studies for typical multifamily households

- Consumer perspectives on smart home energy systems – a survey among Rheinenergie customers (Cologne and its surroundings)
- Business models for smart home and home energy management in German multifamily buildings – a review
- Regulatory barriers for home energy management system integration in Germany – a review focussing on existing multifamily buildings

Schedule

09.04.2024; 10:00-11:30	105 Hörsaal G	Introductory meeting Organizational Issues & Topic Introduction
09.04.2024; 12:00-13:30	105 Hörsaal G	Guest Lecture - Rheinenergie
11.04.2024; 23:59	<i>Klips</i>	Deadline to Register for the Examination
12.04.2024	ILIAS	Topic allocation
25.04.2024; 23:59	<i>Klips</i>	Deadline to Withdraw from the Examination
26.05.2024; 23:59	<i>ILIAS</i>	Deadline Submission of Intermediate Feedback Presentation Slides
28.05.2024; 10:00-13:30	105 Hörsaal G	Intermediate Feedback Presentations..... Mandatory
07.07.2024; 23:59	ILIAS	Deadline Submission of Final Presentation Slides
09.07.2024; 10:00-13:30	105 Hörsaal G	Final Presentations..... Mandatory

Application

A maximum number of 20 applicants can be admitted to the course. Please register on KLIPS for the project course during the first registration period.

After you receive a seat in the course, please make sure to register for the examination on KLIPS as well (use the Lehrveranstaltungsprüfung). Only those, who have a seat in the course can register for the examination! Once you have registered for the examination, the registration is binding, and **students who do not give a hand in one part of the examination in time will receive a failing grade**. Thus, please make sure that you are able to hand in all documents within the deadline and attend the mandatory sessions before registering for the course.

Examination

The final grade consists of multiple written examination parts. The participation in all examination parts and dates is mandatory in order to successfully complete the course.

The final grade for this course will be a weighted average of (the quality of):

- A) Intermediate Feedback Presentation Slides (50 %)
- B) Final Presentation Slides (50%)

High presentation quality and fruitful contributions to the sessions can have a positive impact on the final grade, up to 0,3 increase of the final grade.

Presentations - 5 to 7 slides per student:

Once allocated the topics, students are asked to work in groups of maximum four students on their project. Students need to narrow down the scope of their project by choosing a research objective. Further they will provide a brief overview of the literature, work in their project groups and present their project results. Students will be graded on the quality of their presentation slides. Each group will present one slide deck, at each of the presentation dates. Students will have to mark their contribution to the slides for each individual student, such that individual grading can be granted. Students are asked to present at an interim state to allow a feedback session. Further the final presentation should incorporate the feedback and include the final project results. Each student is required to present 5 minutes, i.e. about 20 minutes per group. A discussion will follow the presentations.

General Requirements

The project course 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 together in teams but will be graded on their individual contribution.