



Universität zu Köln

University of Cologne

Department of Economics – Chair in Economics, Energy and Sustainability

Prof. Dr. Marc Oliver Bettzüge

Seminar in Energy, Resource and Environmental Economics

Summer Term 2023

Green House Gas Emissions in the German Building Sector

Germany has set ambitious climate targets, including climate neutrality by 2045 and a reduction of emissions compared to 1990 by 65% by 2030. The building sector, comprising residential and non-residential buildings, directly accounted for 15 % of Germany's greenhouse gas (GHG) emissions in 2021. Most of these emissions arise from the transformation of energy carriers within the buildings (esp. for heating). Additional emissions arise indirectly e.g. from the use of electricity or throughout the building life-cycle, e.g. from construction or disposal. Such indirect emissions are induced by the building sector, but attributed to other economic sectors in the official statistics according to international UNFCCC accounting standards.

Reducing carbon emissions in the building sector poses various issues and challenges. On the one hand, technical efficiencies can be increased, which requires time and effort. On the other hand, building space and comfort levels have continuously increased – at least partially compensating for the efficiency gains obtained.

In this seminar, students will review our current understanding of the GHG reduction challenge in the building sector, with a particular focus on the German case. In particular, technical, economic, regulatory, and ethical aspects will be discussed.

The seminar is designed to replicate the full cycle of a master thesis, with slightly reduced scope in line with the confines of a seminar. In particular, students will be asked to work on an individual research project, to present their results to the group, and to critically reflect on the contributions of their peers. Topics for the projects will be assigned and may cover aspects such as e.g. empirical analysis of GHG emissions, comparative discussion of alternative future energy carriers and other relevant technologies, policy options, or the potential role of decent living standards. A full list of topics will be presented in the introductory meeting on April 5th, 2023.

PLEASE NOTE: It is envisaged to combine the students' presentations on May 24th and 25th with an overnight field trip to a corporate partner approx. 160km outside of Cologne. Confirmation and details will be given prior to the *Deadline to Register for the Examination via KLIPS* on April 6th, 2023.

Schedule

05.04.2023 10:00-11:30	118 - S268	Introductory meeting Organizational Issues & Topic Introduction
05.04.2023 12:00-13:30	118 - S268	Presentation and Writing Skills Seminar
06.04.2023 23:59	<i>Klips</i>	<i>Deadline to Register for the Examination via KLIPS</i>
07.04.2023	ILIAS	Topic allocation
20.04.2023 23:59	<i>Klips</i>	<i>Deadline to Withdraw from the Examination via KLIPS</i>
11.05.2023 10:00-13:30	118 - Reserve 3.03	Guest Lecture
16.05.2023 10:00	<i>ILIAS</i>	<i>Deadline Submission of Presentation Slides to ILIAS</i>
17.05.2023 10:00-13:30	118 - S268	Presentations (alternative date)..... Mandatory
24.05.2023	tba	Presentations..... Mandatory Possibly Field Trip with overnight stay
25.05.2023	tba	Presentations..... Mandatory Possibly Field Trip (cont.d)
13.07.2023 10:00-11:30	118 - Reserve 3.03	Guest Lecture
31.07.2023 23:59		<i>Deadline Submission of Final Seminar Paper</i>

Application

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

After you receive a seat in the seminar, please make sure to register for the examination on KLIPS as well (use the Lehrveranstaltungsprüfung "Seminar in Energy, Resources and Environmental Economics"). Only those, who have a seat in the seminar can register for the examination! Thus, if you decide not to take the seminar, please make sure to deregister from the course, so your peers are able to enrol for the remaining spots before the exam registration phase ends. Once you have registered for the examination, the registration is binding, and **students who do not give a presentation or do not hand in a seminar paper 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 an oral and two written examination parts. To pass the examination, students are required to participate in all parts of the examination.

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

- A) presentation (40 % - 10 minutes)
- B) written peer feedback discussion of a peer's presentation (20 % - 500 words)
- C) seminar paper (40% - 4500 words)

The participation in all examination parts and dates is mandatory in order to successfully complete the course. Fruitful contributions to the sessions can have a positive impact on the final grade.

Examination part A: a presentation:

This is the oral part of the examination. The aim of this part is to provide and receive an overview of different facets of the GHG challenge in the building sector. Students will individually work on a literature review resulting a specific topic definition and a design for a research approach. Review, topics and research approach have to be presented to the other peers and discussed with industry experts. Each student is required to present 10 minutes. A discussion will follow the presentation.

Examination part B: peer feedback:

Students will summarise and complement the feedback given to a peer. Students are asked to reflect on the peer's contribution in a fruitful and constructive manner. The peer feedback should be 500 words (+-10%).

Examination part C: a seminar paper:

The written paper should be 4500 words (+-10%). Students need to narrow down the scope of their paper by choosing a research question, providing an overview of the literature, and critically analysing their research question in depth.

General Requirements

The seminar is designed for students to prepare for a Master thesis in Energy Economics. The seminar participants are expected to gain in-depth insights into their topic independently. Thus, **we expect students to already have a solid foundation in Energy Economics** before taking the seminar.

While the seminar topics will be distributed by the chair, students are expected to determine the main focus of their presentations and seminar paper themselves. The emphasis within the own topic as well as the draft structure of the paper, shall be discussed with the mentor at an early stage. Furthermore, students should deal critically with the contributions of other participants. Active participation in the seminar discussion is expected. Attendance during all presentation days is therefore required. We provide a guideline for the preparation of seminar papers. This includes all design requirements. (https://energie.uni-koeln.de/sites/energie/pdf/Guideline_English.pdf)

Further Information

Allocated Modules	<ul style="list-style-type: none">• Seminar in Energy, Resource and Environmental Economics• Remaining seats can be allocated to students in the IMES program
Credits	6
Language	English
Examiner	Prof. Dr. Bettzüge
Cooperation partners	to be announced from the industry EWI
Field Trip	Scheduled for May 24 th and 25 th , to be confirmed.
Organization	Cordelia Frings (cordelia.frings@uni-koeln.de)