



University of Cologne

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

Bachelor Seminar in Energy Economics

Winter Term 2019/2020

Decentralized Energy Systems

Credits	6
Language	English
Examiner	Prof. Dr. Bettzüge
Allocated Modules	[1287BSVo00] Bachelorseminar Volkswirtschaftslehre [1287BSVo01] Bachelorseminar Volkswirtschaftslehre sozialwissenschaftlicher Richtung

1. Topic - Decentralised Energy Systems

While renewable energy sources such as wind power and solar energy became more important in the context of the political efforts towards energy transition, their fluctuating feed-in not only increases the temporal volatility of energy prices, but also imposes new challenges to the stability of the grid. Further, the transition from few large-scale conventional power plants connected to the high-voltage grid to multiple electricity generating (from renewable sources) units connected to lower voltage grid levels can lead to different grid utilisation values and thus bottlenecks. In light of these challenges, “flexibility”, meaning the ability to increase, decrease or shift demand or generation from one time to another, gains increasing importance. Naturally, flexibility requires incentives such as pricing, subsidies or fee reduction as well as platforms and technologies that allows decentralized consumer such as households and industry to participate in the large scale system. Therefore the topic of decentralised energy systems is closely related to a lot of questions regarding market designs and regulatory conditions.

Focusing on topics in the realm of the German energy supply, this seminar will analyse issues and trends in a modern world shifting to a more decentralised energy system.

Demand Side Management (DSM) is aiming to incentivize adjustments of energy demand from private households and industrial enterprises. For example, considering the industrial side, the introduction of buffer capabilities such as product storage could be used to shift production to times of energy surpluses. On a consumer level, flexibility could be provided by Vehicle to Grid (V2G) and Power to Heat (P2H) technologies.

Market structures allowing decentralised flexibility options are widely discussed. Market layouts come with the question which flexibility provision mechanisms would be used and how the strategic behaviour of market participants in flexibility markets would look like.

The seminar is intended to give a broad overview over flexibility markets, demand side management and individual choice in energy systems. Students are expected to build and deliver in-depth knowledge of one specific energy market field, and to develop and answer a research question.

2. Schedule

Date	Time	Room	Course	Instructor
Wednesday, October 9 th	12:00am – 12:45am	KFR1	Introduction and Seminar Organization	Prof. Dr. Bettzüge
Wednesday, October 9 th	12:55am – 3:30pm	KFR1	Topic Introduction	Expected Berit Czock, Amelie Sitzmann and Broghan Helgeson
Sunday, October 13 th	11:59pm	Deadline for Research Idea/Topic by email to cordelia.frings@uni-koeln.de		
Topic Allocation				
Thursday, October 17 th	2:00pm- 5:30pm	XVIII	Skills Session for Seminar Presentation & University Library	Cordelia Frings
No Class –time to research your topic and prepare the presentations				
December 2 nd – December 6 th	tba	KFR1	Student Presentations - own presentation is mandatory	-
Thursday, December 12 th	4:00pm- 5:30pm	S85	Skills Session for Seminar Paper	Cordelia Frings
No class – time to finalize your paper				
Sunday, January 26 th 2020	11:59 pm	Deadline for paper submission via ILIAS.		

KFR1 is at the Institute of Energy Economics (ewi), Vogelsanger Str. 321a, 50827 Cologne

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. Students will receive information about how to write an academic paper in Economics and how to give a scientific presentation. Based on the input, students are expected to choose a topic provided by the chair, narrow down a research question and compose a literature review.

4. Application

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

5. Mode of Examination

Kombinierte Prüfung:

- 50% Paper Presentation (10 mins)
- 50% Seminar Paper (3000 words)

Both examinations have to be graded at least 4,0 (ausreichend) in order to pass the course!

6. Organisation

Cordelia Frings (M.Sc.), cordelia.frings@uni-koeln.de

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