E.ON Energy Research Center

fcn Institute for Future Energy Consumer Needs and Behavior

RWTH AACHEN UNIVERSITY

Prof. Dr. Reinhard Madlener, Chair of Energy Economics and Management

Lecture: "Economics of Technological Diffusion" (13ws-18471, 13ws-19057)

Description

For various reasons (such as emerging new technologies, problems related to resource supply and use, changes in consumer needs and habits, climate change, etc.) it is expected that in the coming decades significant technical change will happen. Thus, the challenges faced by engineers, economists, and natural scientists involved in business management, plant operation or administration will rise to understand, adequately describe and - subject to certain assumptions regarding the framework conditions - to accurately predict the diffusion dynamics and market potentials of new technologies and products. To this end, a significant basic knowledge in the fields of technology assessment, market analysis, cost reduction potentials, and the theories of innovation diffusion is needed.

In the underlying course (comprising lecture and exercise unit) a basic knowledge in economic theory and methods related to the study of the diffusion of new technologies will be acquired and applied to innovative energy technologies. In this way the student receives a useful overview on the subject, which in many occupational areas (e.g., product development, market analysis, marketing, technology assessment, and policy-making) is of increasing relevance in everyday business.

Learning Goals

- To understand why diffusion may take a long time and often exhibits an S-shaped diffusion curve;
- To know what is meant by the term "diffusion of (technological) innovation" and to understand the difference between the terms "adoption" and "diffusion";
- To be able to understand diffusion research and phenomena from different perspectives;
- To learn about economic modeling of technological adoption and diffusion processes;
- To understand how competing technologies influence each other's diffusion processes;
- To better understand energy/climate policy-making based on considerations of optimal speed of technological diffusion;
- To learn about empirical research topics and approaches (through selected literature).

Course Outline

- Diffusion of technological innovation - an overview
- History of diffusion research in economics
- The intertemporal demand for stand-alone technologies
- Risk and uncertainty of multiple technologies
- Multiple technologies
- The supply side of the market
- Diffusion modeling approaches
- Policy and financing aspects

Core Literature

Stoneman P. (2001), The Economics of Technological Diffusion, Blackwell Publishers, Oxford, ISBN-13: 978-0-631-21976-7

Requirements: Basic knowledge in Microeconomics.

Language

English

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Organization

Date and Location: Lecture: Tuesday, 16:15 - 17:45 hrs, Be 225; Exercise Unit: Thursday, 10:30 - 11:30 hrs, SG 13.

	Lecture		Exercise Unit
1	15.10.2013	1	17.10.2013
2	29.10.2013	2	31.10.2013
3	05.11.2013	3	07.11.2013
4	19.11.2013	4	21.11.2013
5	26.11.2013	5	28.11.2013
6	03.12.2013	6	05.12.2013
7	10.12.2013	7	12.12.2013
8	17.12.2013	8	19.12.2013
9	14.01.2014	9	16.01.2014
10	21.01.2014	10	23.01.2014
11	28.01.2014	11	30.01.2014
12	04.02.2014	12	06.02.2014

To participate successfully you have to register via CAMPUS and pass the exam (60 minutes) at the end of the course. Course materials will be made available for download on the e-learning platform (L^2P).

Exam I: Tue 25.02.2014 (12:30 – 13:30) (H218)
Exam II: Tue 01.04.2014 (10:30 – 11:30) (H218)

Target Audience

This course is dedicated to diploma and master students in economics and engineering economics (BWL, WiWi-Zusatzstudium, Wirtschaftsingenieurwesen).

Further Information

FCN website (www.eonerc.rwth-aachen.de/fcn) or
via e-mail to Yasin Sunak, M.A. (ysunak@eonerc.rwth-aachen.de)