

Prof. Dr. Reinhard Madlener, Chair of Energy Economics and Management, Head FCN
(V2/Ü2 81.18471)

Lecture / Exercise Unit: “Economics of Technological Diffusion”

Description

For various reasons (such as emerging new technologies, problems related to resource supply and use, 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 management, plant operation or administration will rise to understand, adequately describe and – subject to certain assumptions regarding the framework conditions – to better understand and predict the diffusion dynamics and 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 and other) technologies. In this way the student receives a useful overview on the subject, which in many occupational areas (e.g., product development, market observation, 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 shows 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 classify / understand diffusion research from different angles pursued in different research disciplines;
- To learn about economic modeling of technological diffusion;
- 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 examples from the literature).

Organization

Weekly lecture on Tuesday, 14:30 – 16:00 hrs, Room 219 C.A.R.L Claßenstraße 11. A two-hour weekly exercise unit will complement the lecture on Wednesday 12:30 – 14:00 hrs, Room 220 C.A.R.L Claßenstraße 11. To participate successfully you have to register via RWTHOnline and pass the written exam (60 min) at the end of the course. Course materials will be made available for download on the e-learning platform RWTHmoodle.

Target audience

This course is dedicated to master’s students in economics, engineering economics, georesources management, and selected other related fields. In order to find out whether you are allowed to take this course, please get in touch with your study advisor.

Requirements

Basic knowledge in Microeconomics.

Main Literature

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

Further information

For questions concerning topics, please write an e-mail to Dr. Barbara Glensk (bglensk@eonerc.rwth-aachen.de; office hours on Tuesday at 11:00 – 12:00 hrs, E.ON Energy Research Center, 1st floor, Room 10.28). For general information about the Chair of Energy Economics and Management please visit the [FCN Website](#).