Navigating the Roadmap for Clean, Secure and Efficient Energy Innovation

SET-Nav
Strategic Energy Roadmap

Top-down bottom-up hybrid modelling

Workshop 1 in the SET-Nav Capacity Building Work Package
Trondheim 24-25 Nov, 2016

WP10 Coordinator Franziska Holz (DIW Berlin)
Workshop Host: Ruud Egging (NTNU)

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Wireless Networks

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- EDUROAM

- NTNUGUEST - How to connect to NTNU guest #
  - Click on the wireless icon, Select ntnuguest and click Connect (Koble til).
  - Open web browser, fill in your email address and click submit.

- ONLINE FOLDER OwnCloud: https://oc.diw.de/index.php/s/LfLzN2FrqSEU1gD

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What is SET-Nav?

SET-Nav

Navigating the Roadmap for Clean, Secure and Efficient Energy Innovation.

- Modelling and policy and pathway analysis concerning strategic decision making in Europe's energy sector.
- Enhancing innovation towards a clean, secure and efficient energy system.
- Enabling governments and regulators to facilitate the development of optimal technology portfolios by market actors.

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WP10 – Modelling workshops/Capacity building

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❖ OBJECTIVES

- Develop competencies & new approaches across existing modelling methodologies, drawing on approaches from different frameworks and economic concepts
- a series of five workshops on specific challenges with regard to modelling
- Focus on modeling methodology, convening internal and external experts
- Whenever practicable, outcomes, insights & lessons learned summarized in articles

❖ WORKSHOPS

- Nov 2016: "Top-down bottom-up hybrid modelling" at NTNU Trondheim
- Mar 2017: "Modelling of risk & uncertainty in energy systems" at ETH Zurich
- Sep 2017: "Aggregating power sector model load profiles for use in large-scale energy-system and integrated assessment models" at Pontifica de Comillas Madrid
- Mar 2018: Topic TBD at DIW Berlin
- Sep 2018: Topic TBD at TU Vienna

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PROGRAM

TOP-DOWN BOTTOM-UP HYBRID MODELLING

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	THURSSDAY 24 NOV 2016
8:30 - 9:00	Welcome and introduction - Franziska Holz (coord) & Ruud Egging (host)
9:00 - 12:00	Christoph Böhringer *Energy-Economy Models - Integration and Decomposition*
12:00 - 13:00	Lunch
13:00 - 15:30	Jan Abrell *Bottom-up/Top-down modeling - Applied Aspects and Large Scale Applications*
15:30 - 16:00	Coffee break
16:00 - 18:00	Ulrich Fahl *Hybrid modelling – Some practical applications - Tentative*
19:00 -	Dinner at restaurant Tulla Fischer. Kongens gate 8, 7011 Trondheim

	FRIDAY 25 NOV 2016
8:30 - 9:30	Per Ivar Helgesen & Gerardo Perez-Valdes *Hard-linking regional CGE REMES and energy systems model TIMES-Norway*
9:30 - 9:45	Coffee break
9:45 - 10:45	Philipp Härtel *Area-based decomposition of energy system model*
10:45 - 11:00	Coffee break
11:00 - 12:00	Round table discussion: *Future research directions in hybrid modelling* (Jan, Ulrich, Per Ivar, Franziska)
12:00 - 13:00	Lunch

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BREAKS AND LUNCHES

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Delivery of ...	Where	Thu 24 Nov	Fri 25 nov
Coffee, tea, etc.	U33 (this room)	kl. 8:20	kl. 8:20
Fruit	U33	kl. 10:20	kl. 10:20
Lunch	cantina	kl. 12:00	kl 12:00
Coffee, tea, etc.	U33	kl. 13:00	
Norwegian treat	U33	kl. 15:00	

There are several drinking fountains with a tap for refilling water bottles in the hallway on this floor

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INTRODUCTION

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- Quick round, 30 seconds each:
  - Name
  - Affilliation / Background
  - Why interested in this workshop?

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Bottom-up vs. Top-Down

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❖ Bottom-Up (BU)

- sectoral / partial / engineering
- relatively detailed descriptions of technological aspects (e.g., of the energy system), user choice behaviour, ...
- optimization, partial equilibrium, (discrete) choice models, ...

❖ Top-Down (TD)

- macroeconomic
- describe the economy as a whole
- emphasize the possibilities to substitute between production factors (in order to optimize social welfare)
- often CGE

❖ Hybrid modelling

- indicates a mix of bottom-up and top-down modelling perspectives

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SOFT/HARD/INTEGRATED...?

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❖ Soft-linking

- processing and transfer of information is controlled by the user.
- The user evaluates results from the models and decides if and how the inputs of each model should be modified to bring the two sets of input data assumptions and model results more in line with each other.

❖ Hard-linking

- all information processing and transfer is formalized and handled by computer programs.
- In areas where the models overlap, an algorithm may be used to negotiate input data and results.

❖ Integrated

- one common format with a single model formulation (instead of exchanging information between separate models)

PROGRAM – COPY OF SLIDE 5

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Thank you!

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