Technology Opportunities in Nordic Energy System Transitions

TOP-NEST

Kick-off event for Sustainable Energy Systems 2050

Helsinki

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Challenges

• A major transition is necessary to meet the 2050 energy and climate policy goals in the Nordic energy and transport systems

• Main challenge: to find potential configurations of industrial stakeholders and institutional set-ups to facilitate both environmental sustainability and economic competitiveness

• Incremental innovation not enough: a win-win scenario requires renewal of networked value chains, patterns of use and consumption, infrastructures and regulations

• Current path-dependencies and inertia must be considered, as existing energy and transport systems are deeply embedded in industrial and societal structures
Objectives

1. Prospective sustainable energy systems 2050: identify viable combinations of technological configurations, stakeholder constellations and institutional set-ups for three technology platforms: 1) electricity systems, 2) liquid and gaseous biofuels, and 3) hydrogen systems, based on:
   - combination of quantitative (energy modelling, social network analysis, bibliometric and patent analysis) and qualitative methods (interviewing and focus groups)
   - future energy and road transport scenarios for each technology platform
   - strategic plans developed by IEA, the European Commission and Nordic projects

2. Viable transition pathways: identify options for change in organisational and institutional conditions with focus on:
   - governance implications in terms of industrial strategies, public policy and public-private cooperation
   - focus on the potential need for coherence and integration across different policy domains and countries
Goals

• To guide industrial strategies and governments in
  • making the transition to sustainable Nordic energy and transport systems 2050
  • enhancing the competitive position of Nordic industries in the international market for clean technologies

• Research questions
  1. What are the main path-dependencies and potential new value chains arising from the three technology platforms when applied in sustainable energy and transport systems?
  2. What changes in organisational and institutional conditions are needed to facilitate sustainable transition pathways?
  3. What are the governance implications, in terms of industrial strategies, public policy and public-private cooperation?
Project overview

Nordic Energy Research

Steering Committee

Klitkou
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Coenen/ Nilsson
Univ. of Lund

Holst-Jørgensen
Risø-DTU

Wessberg
VTT

TOP-NEST project team

Scientific experts advisory group

Industrial advisory group

WP0: management, coordination, quality control

WP1: develop conceptual/analytical framework

WP2: energy future modelling

WP3: analysis of path dependencies

WP4: prospective study of new value chains

WP5: Assess viable transition pathways/required changes in conditions

WP6: Assess governance implications

WP7: Integration and dissemination of results

Stakeholders & general public

Website

Newsletter

Workshops

Conference

Reports

Publications