



Sustainable Energy
Systems 2050
NORDIC ENERGY RESEARCH PROGRAMME



norden

Nordic Energy Research



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



- 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
NIFU

Coenen/ Nilsson
Univ. of Lund

Holst-Jørgensen
Risø-DTU

Wessberg
VTT

TOP-NEST project team

WP0: management, coordination, quality control

WP1: develop conceptual/analytical framework

WP 0&1 feed into all other WPs

WP2:
energy future
modelling

WP3:
analysis of path
dependencies

WP4:
prospective
study of new
value chains

WP6: Assess
governance
implications

WP5:
Assess viable
transition pathways/
required changes in
conditions

WP7: Integration and dissemination of results

Scientific
experts
advisory
group

Industrial
advisory
group

Website

Newsletter

Workshops
Conference

Reports
Publications

Stakeholders & general public

