Finding Nordic transition pathways

Joined-up thinking on sustainable energy and transport…

The Nordic countries are aiming to go beyond European targets and to achieve fossil independence or carbon neutrality in the energy sector by 2050. This will require the identification of technical solutions to cut fossil usage. These countries must also find strategies that acheive a transition which acts to strengthen, rather than hinder, their competitiveness.

Sustainable transport – a key piece of the puzzle

Transport systems remain a major challenge for reducing fossil fuel use. They demand huge amounts of energy via systems and technologies built up at great expense, over very long periods. Transport systems also tend to involve a tangled web of national infrastructure and private sector services and investment.

All of this makes it unlikely that any piecemeal solution, policy intervention or incentive will work. Indeed, any truly sustainable transport system will have to emerge through considerable system innovation and 'creative destruction' – precisely the sort of change that might intimidate policymakers and major industrial actors – perhaps leading to paralysis. Furthermore, future transport systems will be expected to meet national and regional demands for ongoing improvements in mobility of people and goods.

The answer, as Researcher Antje Klitkou sees it, is to look for transition pathways that combine environmental sustainability and economic competitiveness.

The TOP-NEST project

Klitkou and co-leader Lars Coenen from CIRCLE, Lund University, along with their partners from research organisations across four Nordic countries are aiming to do just that. Their recently launched project TOP-NEST draws together social scientists' insights on innovation and social change with expertise on energy technologies. The team hope their analyses will not only help key actors weigh up the potential of various interventions and changes, but will establish an approach that helps stakeholders in different settings make more informed decisions.

Mapping the present to understand the future

The project focuses on three technology platforms for the development of sustainable transport solutions:

- Electricity systems based on renewable solutions;
- Hydrogen systems;
- Liquid and gaseous bio-fuels.

The project will answer following research questions:

- 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?
- What changes in organisational and institutional conditions are needed to facilitate sustainable transition pathways?
- What are the governance implications, in terms of industrial strategies, public policy and public-private cooperation?

The example of biofuels (which have huge potential in the densely forested Nordic region) can clarify the approach taken. The team will use a Nordic-wide model for current production, supply chains and use, drawing on previous national analyses and input from a wide range of experts and stakeholders. This analysis can then provide a dynamic, guiding tool to investigate industry initiatives, policy steps and systems changes that will be most effective. The team will seek out 'win-win' scenarios that support rapid change and opportunities for clean energy suppliers and services to flourish in the region.

Fundamental change is needed

Lars Coenen notes that the challenges involved can't be seen as a matter of incremental change: "This may well require fundamental social and technological changes – almost reminiscent of an industrial revolution. To achieve the shift, both industry and policymakers will need insights and analyses to help guide their decision-making process." He hopes their project will provide just the kind of robust insights and suggestions needed.

The project team

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Sustainable Energy Systems 2050

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