

ENERGY TRANSITION NAVIGATION TOOLS FOR SOCIETAL DIALOGUE

The Kopernikus Project ENavi fosters the societal dialogue with navigational aids of the energy transition



ENavi partner Carlo Jäger, Chairman of Global Climate Forum, during Decision Theater on sustainable mobility strategies (picture: © IASS; C. Camier)

Kopernikus Project ENavi

The Kopernikus Project ENavi, short for Energy Transition Navigation System, understands the transition of the energy system into a largely CO₂-free and renewable energy-based system as a process involving all of society. ENavi combines scientific analysis with policy directives and social expectations. The project's key product is a navigational aid that the researchers will use to gauge the effects and side effects of economic, political, legal and social measures in advance. ENavi brings together systemic knowledge (what causes what?), orientational knowledge (where to go?) and transformation knowledge (how do we best get there?) The 58 ENavi partners include 23 research institutes, 18 university institutes, three non-governmental organisations, nine commercial enterprises, three municipal utilities and two local authorities. Over 20 competence partners additionally contribute their practical experience. As one of the four Kopernikus Projects for the Energy Transition, ENavi is funded by the Federal Ministry of Education and Research (BMBF). For fostering the societal dialogue the ENavi partners Global Climate Forum and Reiner Lemoine Institut developed interactive databased tools for supporting discussions with visualisations in real-time.

Decision Theater

The Decision Theater, ENavi's interactive format for multi-person dialogue, developed by the Global Climate Forum, visually supports discussions with empirical data and model simulation results in real-time. This allows discussion participants to compare baseline scenarios with a variety of solution options as pathways towards a sustainable energy system. Participants can compose scenarios from a choice of policy options and visually explore consequences of their policy packages.

The Decision Theater methodology was originally developed at Arizona State University. Data and simulations are displayed on several large screens surrounding the group and can be interactively changed depending on how the discussion progresses.

The Mobility Transition Model "MoTMo", developed by the Global Climate Forum, simulates scenarios of private mobility demand in Germany for 2005-2035. Stakeholders from science, politics, civil society and business can interactively explore answers to questions like: What will millions of individuals do when they are confronted with an electric mobility subsidy? Or with a restriction for heavy cars such as SUVs in cities? Some

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might turn in their car for an electric vehicle or buy a smaller car for the city, while others might switch to car sharing or public transport. The overall outcome is modelled as depending on people's individual choices that are in turn influenced by information they obtain from others and by their common environment, for example local charging station availability, or global market developments.

Stakeholders can compare a business-as-usual scenario (leading to higher emissions in 2035) versus the effects of ten different policies, events and investment options, for example falling world market prices for electric vehicles or investment into bike infrastructure. Consequences of these options in terms of the mobility choices of households, emissions and, for example, the distribution of conventional cars or electric cars in regions and cities can be observed over time and with their spatial extent on maps. It is possible to zoom in on different regions or view results for specific household types.

With the help of tablet computers, groups of stakeholders can create their own mobility transition scenarios, by combining different policies and then analysing their results interactively on the large screens. This helps to also discuss unintended consequences of policies, such as a higher supply of car sharing that increases emissions, because people who formerly used bikes and buses jump on a car instead. Also, digitalisation just by itself not necessarily reduces emissions, and may need to be supported by other measures to enhance sustainability in the mobility sector.

Interacting with the model, stakeholders can in turn contribute their experience and practical expertise to improving it, thus enhancing scientific results and methods.

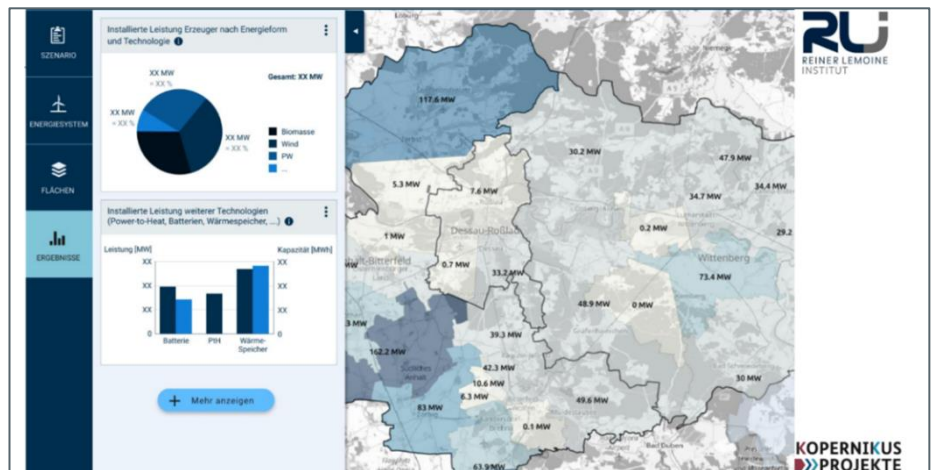
The Global Climate Forum continuously furthers the Decision Theater approach to sustainability transitions in interactions with a broad range of stakeholders, stimulating creative discussions in different locations – ranging from town halls to big climate change conferences. For the mobility sector, specific regions could be modelled in more detail for discussing local or regional mobility transitions. Further, the underlying simulation model structures and the Decision Theater method can be applied to other challenges of sustainability transitions, such as

the risks of crashes in computerised electricity markets or the challenge of inequality in sustainability transitions.

Stakeholder empowerment tool for renewable energy plants

ENavi partner Reiner Lemoine Institute developed digital, simulation-based tools (stakeholder empowerment tools) visualising at a regional level and interactively displays effects of building regenerative energy systems.

Building regenerative energy systems involves multiple factors whose complexity is a challenge even for experts. Regional energy balance visualisation tools link the knowledge created in an energy system model to the various issues. A user-friendly web-based control system guides users through the individual decision-making phases, providing answers and further information.



Regional energy balance visualization tool developed by Reiner Lemoine Institut (© Reiner Lemoine Institut)

The regional energy balance visualisation tools support actors in real laboratories and model regions to work on and discuss energy questions in their own community or region. In the Living Lab Saxony-Anhalt, Reiner Lemoine Institute developed an interactive stakeholder empowerment tool for participation, democratisation and regionalisation of the energy transition. The tool visualises the depicting availability of land, land use and requirements. It allows parameter variation, development of scenarios and comparison with national targets.

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Coordination Office Kopernikus Project
Energy Transition Navigation System | ENavi
Institute for Advanced Sustainability Studies e. V. (IASS)
Berliner Straße 130, 14467 Potsdam, Germany

Contact

Telephone: +49 (0) 331 - 2 88 22 - 408
Email: stefan.stueckrad@iass-potsdam.de
www.kopernikus-projekte.de/enavi
Twitter: @ENavi_de