



The roles and impacts of active end-users and DSOs during the transition towards smart distribution grids

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Challenge and objectives

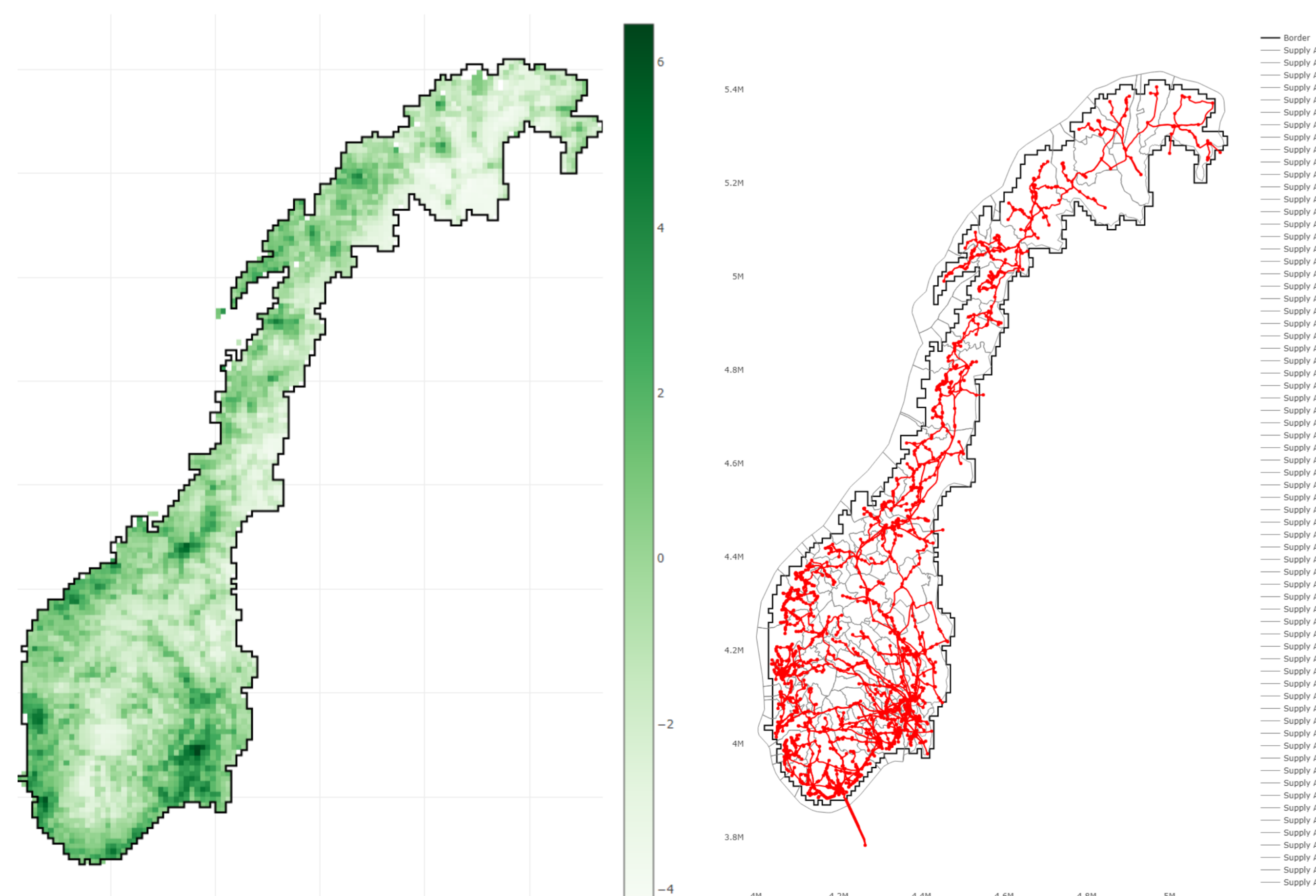
Transition of the smart distribution grid requires coordination between different actors, including system operators of various levels (TSOs, DSOs) and end-users. Their roles and impacts on the transition remain relevant during the process.

Research tasks

- Identify the flexibility services needed for the power system to achieve energy transition.
- Identify where active end-users and better coordinations between various levels of system operators can contribute to these services.

Approach

A power system model for Norway was set up for the research tasks.



Inference of mean electricity demand field with high resolution population density data and hourly electricity demand data from ENTSO-E.

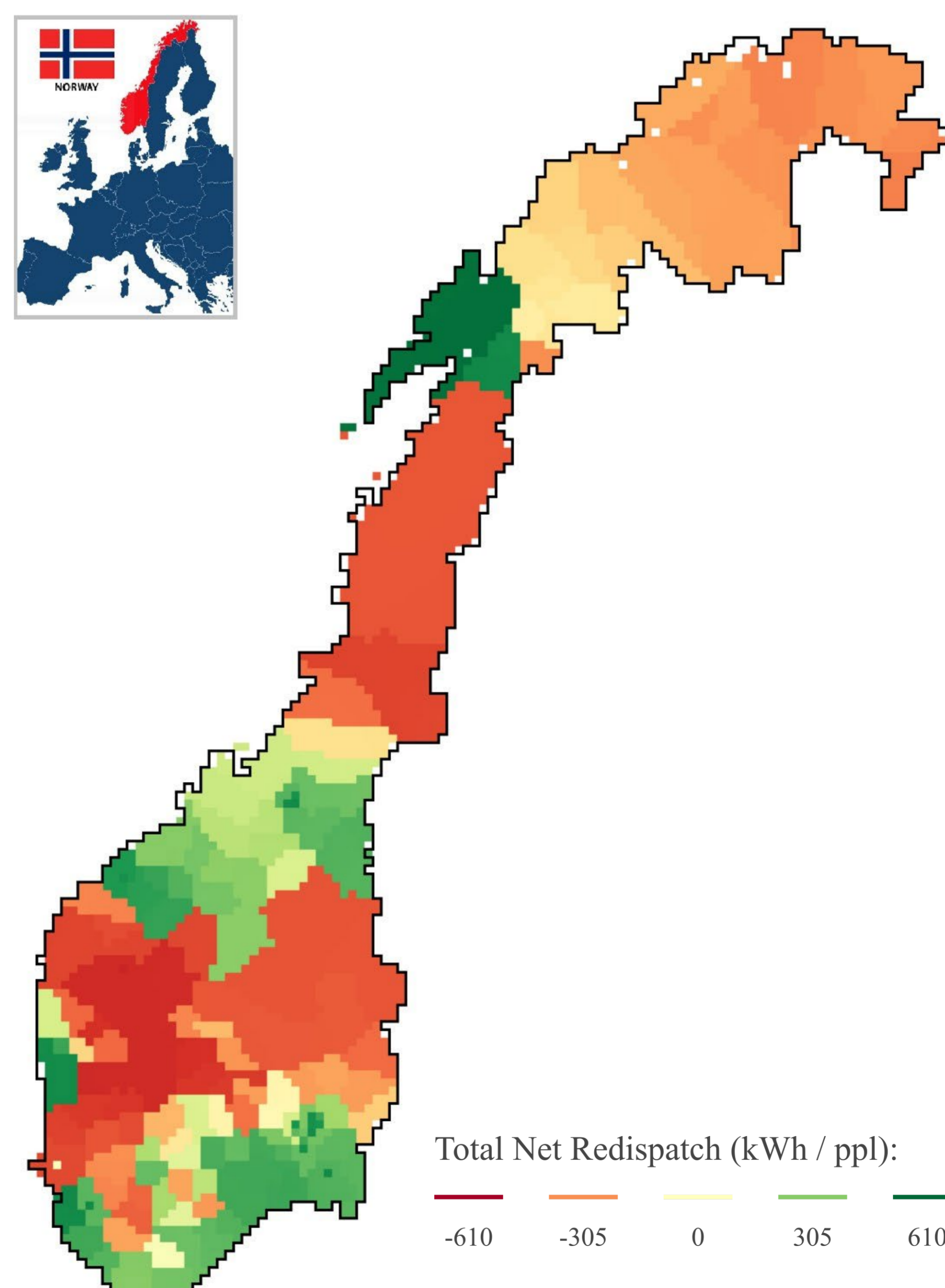
High resolution transmission network modeling.

Significant results

We modeled how end-users could participate and contribute to flexibility services on the transmission power network under normal operational conditions. How they would affect power system reliability is under investigation.

We are planning to take a closer look at the distribution power network level where novel market and regulation frameworks can enable more active end-users. To this end, we are formulating a more decentralized and democratized energy community concept.

Illustration



See details of the power system model with the QR code:



See initial concept for a more decentralized and democratized energy community with the QR code:

