Regional aspects and social acceptance effect of energy transition

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15.50 – 16.20 Uhr
Kongress 1

Referent

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Kurzbeschreibung

This presentation will present a new model, MyPyPSA-Ger, an open source myopic optimization model designed to represent the German energy system with a highly disaggregated level, spatially and temporally, as well as presenting new outlooks on the federal government emissions goals by means of a scenario analysis with the required energy system transformation measures and the associated system costs. This study will discuss the regional differences in Germany, their role in the energy transition, and which states will mainly drive the renewable energy utilization forward. The developed model points out the major keystones of the energy transition path from 2020 to 2050. The economic development, technologies and social constraints are taken into consideration while ensuring security of supply and mitigating the environmental impacts.
The model will be studied through a scenario-based analysis, in which different aspects of the energy transition will be quantitively investigated. Short and long-term storage technologies are integrated into the model to asses the renewables deployment. Storage flexibilities are implemented to measure the needed flexibility in the grid. Solar, onshore wind, and gas-fired power plants will play a fundamental role in the future power systems. Energy storage systems (ESS) are fundamental line to line with the renewables integration in order to have a feasible energy transition. The hypothesis that solar and onshore wind are to be installed in the southern and northern regions of Germany, respectively, is no longer valid, as they will be installed mostly everywhere in Germany. With the current emission reduction strategy and without a strong presence of large scale ESS into the system, it is unlikely that the 1.5 °C target in Germany by 2050 will be achieved. Energy strategies and decision makers will have to resolve great challenges in order to achieve the emissions reduction. The aim of this research is to provide an insight into the expansion of the German energy system with the CO_2 targets of the climate action plan 2050.

At the time of submission, the used model will be published in a journal paper and as an open-source model. Some results will overlap between the paper and this planned presentation.