



Climate adaptation challenges and opportunities for the European energy system

Hans-Martin Füssel

European Environment Agency, Climate, energy and transport, Denmark (martin.fuessel@eea.europa.eu)

Background

Europe is transforming its energy system with a view of decreasing carbon emissions and other pollutants, while ensuring a safe and affordable energy supply for all. This clean energy transition implies a shift in the composition of the energy mix, with a much greater role for renewable energy sources. Available scenarios also agree on an increasing role of electricity as energy carrier. A changing climate affects all components of the energy system. Hydropower, wind and solar power generation as well as thermal power plants are sensitive to water availability, temperature and other climate variables. Electricity networks and other infrastructure will also be affected, as patterns of demand change, and reliability of supply is threatened, by the impacts of extreme weather events, including marine and coastal hazards. It is necessary to ensure that the substantial investments in long-lived infrastructure that are being made in the context of the clean energy transition are also climate-resilient.

Objectives

The European Environment Agency (EEA) has recently published a report on adaptation challenges and opportunities in the European energy system. This report assess climate-related risks on the European energy system, with a particular focus on those technologies and components that play a key role in the clean energy transition. It then discusses adaptation challenges and opportunities for different regions and actors. It also gives an overview of the relevant policy framework and of adaptation activities by the European Union, national governments, international organisations and other public and private actors, including various adaptation case studies. Finally, the report identifies opportunities how public policies and the regulatory context can support adaptation action in the energy system.

Findings

Mainstreaming climate change considerations in EU and national sector policies on energy has increased substantially in recent years. Almost all European countries have performed climate change vulnerability assessments covering the energy system. Most of them also address energy in their national adaptation strategies and/or action plans. However, the level of detail and specificity varies substantially. There is also substantial evidence for implementing adaptation actions by infrastructure providers in the energy sector, in particular by power companies and electricity network providers. However, a full overview is not possible because few countries have reporting requirements for private infrastructure providers on climate change risks and actions.

Conclusion

Climate change impacts increasingly affect energy production, transmission and transport, and demand. The most suitable adaptation actions in a particular country or region depend on the physical and management structure of the energy system and the specific climate change impacts it is exposed to. The development of the European Energy Union provides many opportunities for addressing the challenges of climate change mitigation and adaptation in the energy system jointly, by facilitating and streamlining relevant planning and reporting processes at European and national level.