

Climate Recon 2050: Dialogues on Pathways and Policy

Topics of interest in context of modelling for 2050 long-term strategies in the EU and its MS

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1 Introduction

The requirement of developing national long-term climate strategies arises from the Paris Agreement Article 4.19. For a successful low-carbon transformation, long-term climate strategies are indispensable. To start the discussion on transformation, several countries of the European Union have developed ambitious decarbonization scenarios. By the end of 2017, 15 member states had published long-term scenarios (Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden and the United Kingdom). Due to the national circumstances, the political orientation and different national starting points, differences occur in the target ambition, the methodological approach and the sectoral coverage of the studies (Duscha et al., 2017).

When developing decarbonization scenarios, assumptions need to be made, future developments anticipated and technological and economic potentials evaluated. To increase transparency regarding the requirements of the models and to enable an exchange among modelers, the Technical Dialogue was established under the Climate Recon 2050 project. The project wants to support the national process of developing long-term strategies by bringing together a community of policymakers, technical experts and modelers. This happens within two dialogue fora - the Policymaker Platform and the Technical Dialogue. In these fora, government officials, research organizations, modelers and scenario builders from across Europe exchange their experience on long-term planning, generate knowledge to strengthen validity and robustness of the member states' decarbonization scenarios and build a bridge between policy and science. A first technical dialogue was held on April 11, 2018 in Berlin, two more meetings will take place in October 2018 and March 2019.

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This project is part of the European Climate Initiative (EUKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

2 Topics of interest

One part of the first meeting of the technical dialogue in April was the identification of topics relevant to the participants of the workshop series. To identify these topics of interest, an open discussion took place among the participants with introductory talks presented by the project team. 18 topic clusters for future workshop subjects came up.

The relationship of modelling at the EU level and at the level of member states

Strategy development and modelling activities take place at different levels. On the one hand, the European Commission publishes scenarios (e.g. the reference scenarios) and roadmaps (low-carbon economy roadmap of 2011, energy roadmap of 2011)/ long-term strategies (announced for the beginning of 2019) for the EU based on intensive modelling activities. At the same time, many member states use models to develop their own national energy and climate policy targets and strategies. In this context it is relevant to discuss in how far - or if at all - national assumptions can be reflected in EU-wide scenarios and vice versa. While the Commission extensively consults with member states on the assumptions underlying the different scenarios, specific national strategies so far have not been widely reflected in the EU-wide scenarios. Developing better understanding for the role of the different scenarios, expectations of different modelling and user groups of scenarios, but also developing points of reference for better compatibility of the different modelling activities becomes more and more relevant in light of the overall ambition needed to fight climate change. It is of high interest to identify to what extent interaction between the two different scenario levels can take place and to consider the possibility of mutual benefits.

Communication of results to policymakers: developing narratives

As scenarios become more and more relevant in the process of developing EU as well as national policies, communication of modelling results from modellers to stakeholders becomes more and more important. Good modelling requires years of experience, while policy makers and other stakeholders may only be interested in clear statements and do not possess deep understanding of the model and modelling process as well. The development of good narratives can help to ensure correctly interpreted and beneficial results for policymakers. But what are important aspects in developing a common understanding of modelling results and how to tell the story to policymakers?

Transparency: availability of data and models (open, not open)

With the increase in use of models for policy making, the need for higher transparency within the modelling process increases. In addition, it is particularly interesting to learn about where to find data and suitable models for member states that do not yet have specific knowledge and experience in the use of models for policy making. Open source models, open data bases and licenses for models can help to provide better access to models. It may also help to foster joint model development and hence further increase the ability of models to answer specific questions. On the other hand, modelling requires experience and it is important to make sure that models are applied responsibly. Easier access may also increase the number of unexperienced users and hence the risk of making decisions based

on flawed model applications. In this area of tension it is important to discuss what level of transparency can and should be reached in modelling. How transparent can and should models be used? What are crucial challenges for increasing transparency in energy modelling? What needs to be done and by whom?

Financial perspective: who is paying

A key question in the development of policy instruments, is the question of who is paying the costs for the transition. Models with a specific perspective on different agents (different households, firms, government) and with a macroeconomic dimension can help to answer those questions.

Carbon neutrality, carbon budgets and negative emissions: approaches taken and challenges encountered

The number of scenarios picturing carbon-neutrality on the member state level is so far still very limited. Also, the role of carbon budgets, benefits and challenges from negative emissions (e.g. from the combination of bio-energy and CCS technology or direct air capturing) are relevant questions in that context and open up new ways for policy makers for a successful transformation of their economies.

Low-carbon footprint of the industry

A sector, in which a large number of questions on how to reach low-carbon scenarios are still unanswered, is the industry sector. Due to the high complexity of the industry sector, modelling approaches are less sophisticated compared to e.g. the electricity sector. An exchange between modelling groups can help to learn more about benefits and challenges for decarbonization in industry.

Cross-border dimension "my country is no island"

National scenarios have a specifically national perspective on decarbonization strategies, often neglecting that in many sectors, strategies from other, in particular neighboring countries are also highly relevant and a harmonization of approaches can help to lower overall costs.

Advising policymakers: how to represent uncertainty and policy implications

When modelling, uncertainty and their implications for policy making play an important role. How to integrate these factors in the analyses and how to communicate them to policy makers is another interesting subject for the following technical dialogues.

Sufficiency and behavioral change

Often scenarios focus on technical solutions to reduce emissions. However, changes in behavior is another very important aspect when looking at the development of emissions. Therefore a discussion on how to include sufficiency and behavioral change in scenarios, but also how to address the potential for emission reductions in policy making are interesting subjects for a technical exchange.

Social transition in modelling

More generally, changes in society and peoples way of live significantly influence emissions, but are

often completely neglected in scenarios due to difficulties in making educated assumptions on future developments.

Employment and GDP effects

When looking at transition scenarios, GDP and employment effects are important information to identify winners and losers and design policies in a way to help those who have to carry the burden of transition.

Resource use and efficiency dimension: embedded carbon

Most scenarios follow the approach taken by national GHG emission statistics and only look at direct emissions of CO₂. However, consumption patterns may account for much higher emissions when taking into account carbon embedded in the products consumed.

Differences in assumptions on development of technology costs

Technology costs are a driving factor in many of the scenarios. Therefore it is important to learn more about assumptions on today's, and in particular about the development of future technology costs.

Agriculture

Agriculture, in contrast to other sectors, has a level of emissions that cannot be reduced. Nevertheless, reducing that level as far as possible is important, to limit the need for carbon sinks and negative emissions.

Stakeholder involvement in discussing model assumptions

Stakeholder involvement can help to justify the assumptions made in modeling and make it easier for policy makers to justify decisions based on scenarios. However, finding good ways of involving important stakeholders in such processes can be difficult.

Sustainability of biomass

The use of biomass is one option to provide a storable source of carbon-neutral energy. However, it has to be taken into account that not all biomass available is necessarily sustainable and that usage competition exists between biomass for energy and biomass use in other sectors such as agriculture and nutrition.

Low-emission heat

The provision of low-emission heat is, along with decarbonization of the electricity and transport sectors, one of the key elements to reduce emissions. Different concepts exist on the production side as well as on the demand side to reduce emissions in the heat sector.

Policy advising: how to adapt models and tools to answer key questions of policymakers and stakeholders

The use of models to answer specific questions asked by policymakers can require a certain amount of adaptations in the model.

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3 Technical notes

Technical notes will be developed on the topics of interest covered within the workshops to provide insights into the state of art of modelling and communication of results to policy makers. Further technical notes will be available on the following topics:

- Low emission transport and mobility (TD1)
- Relationship of modelling at the EU and MS level (TD2)
- Transparency of modelling - What models do and don't do (TD2)
- Communication of results to policy makers (TD2)
- Financial perspective and distributive effects (TD3)
- Sufficiency, behavioral change and social transition in modelling (TD3)
- Net-zero - Going carbon-neutral (TD3)

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