EU energy Policy review for modelling

Brief abstract

In this project, students will engage in a climate policy assessment of EU countries, focusing on gathering policy data related to renewable energy targets as well as future electricity demand. Students will be responsible for reading, maintaining and compiling a comprehensive dataset that will later be used for simulations of policy scenarios with high spatiotemporal electricity model as a part of ongoing projects within Energy Systems Modelling Group. If time permits, students will also prepare a brief report.

Name of supervisor(s)

Associate professor Marianne Zeyringer, Energy system modeller
Postdoc Muhmmad Shahzad Javed, Energy System modeller
Postdoc Guillermo Valenzuela, Energy system modeller

Preferred background of candidate(s)

Renewable Energy Systems, Computational Science, Mathematics, Physics, Economics or equivalent. Students having experience with coding (for data visualization/compiling) will be preferred but not necessary.

Number of available projects

This is a project for two students.

Preferred project period

Part-time April-November

Background of the project

The world is embarking on a clean energy transition driven by large scale installations of renewable energy technologies. This rapid transition is prompted by the urgent need to address climate change and is likely to continue and accelerate over the coming years, as many countries have pledged to reach net-zero targets. In the context of these global efforts, the European Union (EU) has been at the forefront, committing to ambitious climate goals in line with the Intergovernmental Panel on Climate Change (IPCC) directives. The EU's Green Deal outlines a comprehensive plan for achieving carbon neutrality by 2050, focusing on increased renewable energy capacity and electrification, enhanced energy efficiency, and reduced greenhouse gas emissions.

The purpose of this project is to evaluate the targets established by EU member countries and to assess their progress towards these goals. By reviewing policy commitments and analyzing the extent of renewable energy installations across the EU, we aim to provide a clear picture of how well countries are adhering to their pledged targets and identify any gaps that may exist. Through this study, we aim to address the following questions:

1. What specific net-zero including renewable energy targets have been set by EU countries to align with overall EU objectives?
2. What is future electricity demand from electrification of industry? What are targets for deployment of electric cars and heat pumps?

3. Are EU countries on track to meet these targets, and what progress have they made in terms of renewable energy installations?

This project offers students the opportunity to engage with current policy frameworks and contribute to a greater understanding of the EU's role in the global climate transition.

Outline of project work including expected outcomes/deliverables

Throughout this project, you will collaborate closely with your supervisors to compile comprehensive data and produce a brief report. Your primary task will be to build a comprehensive climate commitments database across EU countries, ready to use for policy scenario simulations with an electricity system model. Additionally, you will evaluate the climate pledges made by EU member states and assess their current progress toward these commitments.

Expected Deliverables:

1. **Database of Climate Targets**: An organized database capturing the climate commitments of each EU country to facilitate further analysis and modeling efforts.
2. **Database of electricity demand:** An organized database of electrification targets set out by each EU country to facilitate further analysis and modeling efforts.
3. **Data Visualization**: Graphical representations of the compiled data, such as charts, highlighting key insights and comparisons among EU states.
4. **Brief Report**: A well-structured report detailing the findings of your evaluation, including analyses of pledges, progress, and future plans of EU countries.

By completing these deliverables, you will contribute valuable research that informs policy modeling and supports the EU's ongoing efforts to achieve its climate objectives. Based on performance and students research interests, there will be a possibility of continuing as a research assistant in the ongoing group projects.