Chair of Renewable and Sustainable Energy Systems
Department of Electrical and Computer Engineering
Technical University of Munich

TUM

Research Internship (Forschungspraxis)

Open-source model framework comparison

Background

The field of energy system modelling (ESM) usually consists of handling large amounts of data used by highly complex models. In turn, the policy statements reached through ESM rely largely on the numbers that are used as well as the structure of the model. This gives high importance to transparency in the ESM workflow, in terms of both the model equations and data. This led many research institutes to develop open-source ESM frameworks with accessible code and exclusively open data.

The aim of the open_MODEX project is thus to compare five such frameworks of various institutes, where the chair ENS contributes with the in-house framework *urbs*[1]. The comparison is taking place in

- mathematical level, where the model equations are compared in theoretical basis to identify fundamental differences or possible synergies and
- application level, where multiple scenarios are modeled using each framework to then analyze the differences in the model results.

Goals

You will assist the open_MODEX workflow from *urbs* side, where we are currently

- contributing to the mathematical comparison by adapting the *urbs* documentation,
- collecting data for the selected scenarios (German power system, 2030 & 2050) and
- processing the collected data in a harmonized input data form.

Learning outcomes

By completing this research internship, you will
- get acquainted with the open source model framework ecosystem and
- get familiar with the workflow of a research project in TUM.

Requirements

- Interest in energy system modelling
- Experience with urbs (not a must, yet very desirable)
- Knowledge of Excel and basic knowledge of Python
- Please attach your CV and grade report to your application

Contact

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[1] github.com/tum-ens/urbs