Master Thesis Proposal: Contribution to the PyPSA Earth energy planning model for developing countries

Advisor: Prof. Sylvain Quoilin

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Highlights of the work

1. Participate in an ongoing modeling effort for developing countries
2. Participating to the development of the Pypsa Earth model
3. Collect specific data for the countries of the Global South
4. Define future scenarios

Context

The is currently a lack of energy planning capacity in most African countries. Recently, the University of Liège, KU Leuven and the JRC (EU Commission) developed the first open-source power dispatch model covering the whole continent: DispaSET Africa. The purpose was: a) to examine current and future electricity situation together with the potential of power trading between countries and b) to investigate the relationship between water and energy.

The model is developed for the current situation, but needs to be coupled with long-term planning scenarios to simulate possible future evolutions of the African systems.

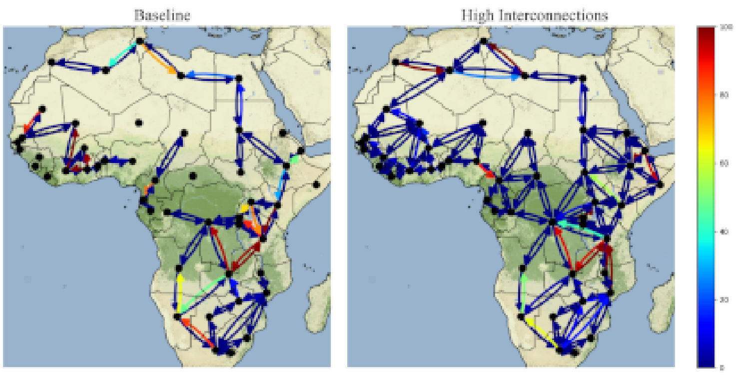

Figure 1: Modeling power exchanges between African countries

Objectives

The proposed Master Thesis will contribute to the development of the relevant models for various coutries of South America. In particular, it will rely on the PyPSA Earth modeling framework.

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Requirements

The candidate should have a Bachelor in engineering and a background in Electrical/Electromechanical/Energy engineering. Knowledge or experience in, Python, linear programming and in energy markets is a plus.

Location

This final thesis will be performed mainly within ULiege, but with a possibility of internship in partner universities (TU Berlin, Universidad Mayor de San Simon, Bolivia). This constitutes a unique opportunity to get experience within top-ranked European energy research institutions, and to work in a motivating, multicultural and highly professional environment.

Informations

Further information can be obtained by directly contacting S. Quoilin by e-mail.

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