Non-Profits in the World of Open Energy Planning

A Glimpse into OET projects

March 25th, 2024

Open Energy Transition
from the creators of PyPSA meets Earth

IMPACT THESIS

“Open energy modelling accelerates the transition towards 100% sustainable energy”

https://unsplash.com/@von_co

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WHAT WE DO

1. Perform **reproducible** best-practise **studies**
2. Support global **adoption** (training, support, tech, …)
3. Advance **open-source software** and **open data**

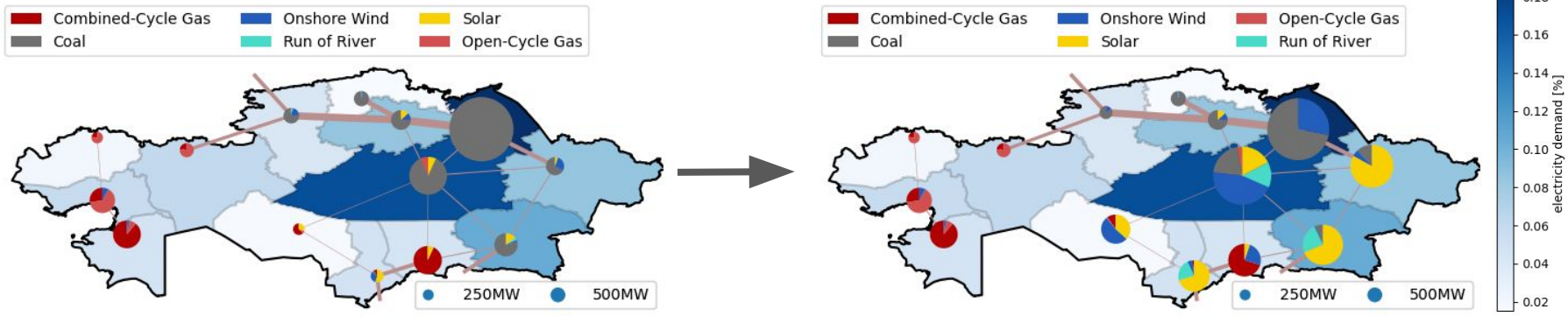
https://unsplash.com/@von_co

Example - Supporting NGO/ Think Tanks

OET worked with non-profit **Agora Energiewende** to create a policy study advocating for more ambitious RES goals in Kazakhstan. Why? Their modelling resources were limited and we provided affordable, high-quality and easy to reproduce study results.

carrier	PyPSA [TWh]	national report [TWh]	error [TWh]	PyPSA [%]	national report [%]	error [%]
gas	20.358883	21.73	1.371117	18.753352	20.103617	1.350265
coal	74.573022	74.47	0.103022	68.692087	68.896290	0.204203
onwind	1.718037	1.08	0.638037	1.582550	0.999167	0.583383
hydro	10.862888	9.51	1.352888	10.006225	8.798224	1.208001
solar	1.048470	1.30	0.251530	0.965786	1.202701	0.236915

carrier	installed capacity [GW]	capacity projection (2030) [GW]
Combined-Cycle Gas	3.48000	3.480000
Open-Cycle Gas	1.62540	1.625400
Coal	12.96700	12.967000
Onshore Wind	0.64870	8.239741
Run of River	0.06278	2.132999
Solar	0.82182	4.568450



Example - Supporting Transmission System Operators

OET works with **German TSO, TransnetBW,** to improve their open energy system modelling setup. **Why?** Our work promises quicker updates, better software quality, easier OS contributions and costs savings.

Example - Supporting Openmod and Training People

OET was invited for a training at **Stanford University**. Why? We have more than a handful “world-class” open-source maintainers and creators. We took the opportunity to also revive openmod in US.

Stanford Doerr School of Sustainability

Stanford | ENERGY
Bits & Watts Initiative

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openmod open energy modelling initiative

Example - A lot of open-source software and open data hacking

ENERGY DATA

- atlite
  global, hourly **time series** for solar pv, solar thermal, on/offshore wind, heat demand & land use potentials
- powerplantmatching
  global database for **generation assets** for both conventional and renewable technologies
- earth-osm
  global **distribution** and **transmission system** data

ENERGY SYSTEM MODELS

- PyPSA
  a general python modelling framework for energy planning
- Data Integration:
  adds default data (transmission grids, generation units, time series, …) assumptions covering different regions
  - PyPSA-Eur
  - PyPSA-USA
  - PyPSA-Earth **(anywhere)**

SOLVER

- HiGHS
  open source **solver** to solve small and large instances of the energy planning model
- linopy
  fast python interface to pass optimisation problems to major solvers (both commercial and open ones

USER AND DEVELOPER COMMUNITY

SOFTWARE APPS

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Join us

and support the global adoption of open energy planning

(we double/triple until 2025)