

Multi-Vector Simulator: Planning the energy supply system of the future

Target group:

- Energy system planners employed at the end user site
- Energy system planners for consulting
- Research
- NGOs for green transition

Decentral renewable technologies promise sustainable energy supply for local energy system operators. Thus, it becomes increasingly attractive to invest into more **self-supply** and **autonomy** while reducing the consumption from the central grid. Both can be supported by implementing **sector-coupled energy systems**. To determine **optimal investment options** into power generation and storage assets, a simulation tool is needed to solve complex optimization tasks.

To address these needs, the **Multi-Vector Simulator (MVS)** was developed: It allows users to define their personal multi-vector energy systems with a **couple of input files**, and then performs an optimization of the energy system. This results in the **optimal capacities and dispatch** at that project site as well as other **economical and technical performance evaluation**. The MVS is an **open-source** (GPLv2) python tool based on the Open Energy Modelling Framework (oemof). The Energy Planning Application provides a graphical user interface for the MVS.

KEY FEATURES



Evaluation of the current energy system's operation and performance, to determine its costs, efficiency and renewable share. Planning future investments into power generation or storage assets to achieve least-cost supply of electricity.



Planning the integration of emerging technologies also helps to meet sustainability goals and decrease adverse climate effects, e.g. through high renewable energy shares or electric mobility.

KEY BENEFITS



Quick pre-feasibility analysis:

Provided with the system parameters, potential investment options can be explored with low effort. Capacity estimation: Trajectory of future assets capacities, necessary for sales inquiries.



Avoiding costs: Internalizing the pre-feasibility analysis - the decision process within a company to invest into future supply options is sped up, while costs otherwise necessary to pay for an external review are skipped.

REASONS TO GET ENGAGED



Low-effort and low-cost

Pre-feasibility analysis of investment options for complex sector-coupled energy systems.



Determine your CO2 reduction potential and possible renewable share of your energy island.



Interested in our Multi-Vector Simulator Tool?
You can join our community platform and find out more:

<https://e-land-h2020.tribe.so/>

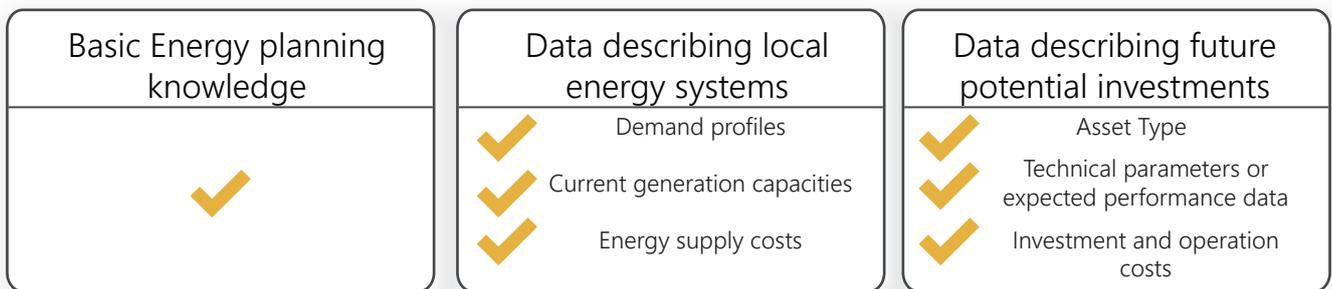


Effective Technologies for Business Success:

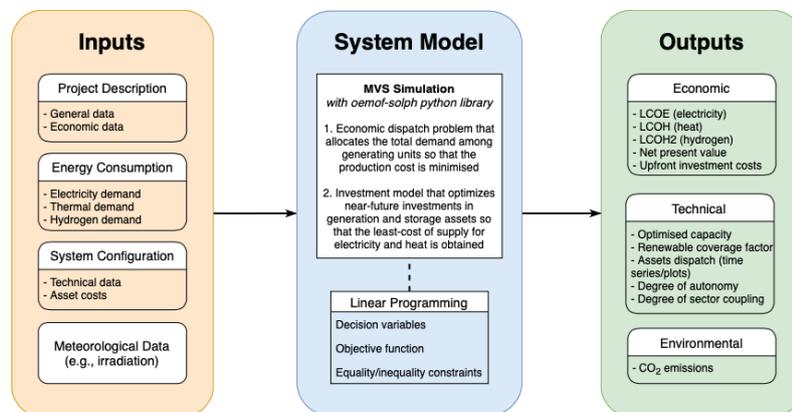


Investment decisions towards an energy-island

REQUIREMENTS



The Multi-Vector Simulator



The Multi-Vector Simulator (MVS) is an investment planning tool for the **optimization of multi-vector local energy systems**. The sector-coupled energy systems may include the energy carriers electricity, heat, gas or others. The energy system assets as well as their topology can be defined using a number of csv files, which allows for high adaptability.

Provided with all **simulation inputs**, ie. technological, cost and timeseries data, the energy system then can be optimized. The objective is to **minimize the annual energy supply costs** of the system with an by optimizing the each asset's capacity and dispatch. Finally, an evaluation of the technical and economical **performance** of the optimal system is performed.



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