

Step 1. Select the technology:

For the following four applications, [the BeWhere model](#) optimizes the locations and capacities of the selected renewable energy production plants based on the minimization of the cost of the supply chain. The target is to reach the highest electricity production at minimal cost. In that respect, the price of the actual electricity used in each country as well as the emission factors based on the energy mix plays a major role for the development of each technology.

Bioenergy

Based on the minimization of the full supply chain, the model optimizes the location, technology and capacity of the bioenergy production plants. The bioenergy production plants can either be large combined heat and power, or local heat production units. The location and amount of feedstock needed for the production plants are also optimized and presented on the application.

The emissions of the supply chain are also considered. When a carbon cost is applied, the cost of the supply chain becomes the sum of the cost of the supply chain and the emissions of the supply chain times the carbon cost.

Wind power

The model optimizes the locations of wind mill parks. The turbines used in this study have a 5MW capacity. It is based on the wind potential at each grid point, which has been derived from The European Academy of Bozen/Bolzano (EURAC). The locations of the wind parks are principally based on the cost of the accessibility to the electric grid or/and the extension of the grid.

Hydropower

Possible hydropower sites can be identified in the optimization. Extension of the electric grid is possible when the catchment is in a remote area.

Solar Photovoltaic (PV)

The locations of potential Solar PV plants are identified based on cost minimization of the supply chain. The cost for the extension of the electric grid can be added to remote area if needed. It is assumed the solar plants cannot be installed on forest areas, but on agricultural areas to a certain extent (e.g., 1% of the land), and 20% of the urban areas can be used.

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