

## **Abstract: “The Global PtX Atlas – global potentials for Power-to-X”**

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Electricity-based fuels from renewable energies are regarded as a key instrument for climate protection: These Power-to-X (PtX) products are intended to replace fossil fuels in sectors where it is not possible to use electricity directly from renewable energies. Steel manufacturers, for example, can use hydrogen instead of coal; in aviation and shipping, synthetic fuels replace kerosene or heavy oil and diesel. The balancing power plants needed for a secure power supply can be operated with synthetic natural gas or hydrogen instead of fossil fuel. Electricity-based fuels from renewables enables the decarbonization of these sectors and thus offers a major opportunity to implement greenhouse gas-neutral energy systems in 2050.

Many regions of the world are well suited to the production of green hydrogen and PtX products, as the Global PtX Atlas by Fraunhofer IEE shows. The atlas is the first survey of its kind worldwide and was compiled in the framework of the DeVKopSys project, funded by the Federal Environment Ministry, and can be accessed at the following link: <https://maps.iee.fraunhofer.de/ptx-atlas/>

The study conclude that outside Europe 69,100 TWh of hydrogen or 57,000 TWh of electricity-based liquid fuels can be generated in the long term. The atlas shows in detail the regions and countries where climate-friendly fuels can be produced under strict sustainability criteria, at which costs and in which volumes. For example, the largest suitable areas are to be found in the United States and Australia, while the lowest costs for PtX generation will be possible in Chile and Argentina. The assessments of the technical and economic potential are based on comprehensive analyses, including available land and prevailing weather conditions. Factors such as local water availability, nature conservation aspects, investment certainty and transport costs to Europe were also taken into account.

In my proposed presentation, I will present the main results of the project and give a brief overview of the underlying methodology. Finally, I will show upcoming further developments of the PtX Atlas in 2022.