

Power to X and the energy transition

Together with the other EU member states, Germany has set itself the goal of becoming climate neutral by 2045.

Achieving this goal requires a complete decarbonisation of the energy system. The coupling of sectors, i.e. linking the electricity sector with other areas such as industry and transport, will play an essential role in this endeavour.

Power to X (PtX) technologies are an important tool for coupling sectors. PtX means that electricity from renewable energies is transformed into heat energy (PtH) or chemical energy - for example green hydrogen - and subsequently into different fuels or base materials, for example producing fuels through power to gas (PtG) or power to liquid (PtL). PtX products can only contribute to national and international climate targets if the electricity used is generated from renewable energy sources. In aviation and marine transport, for example, there is an urgent need for action. In these areas,

renewable electricity cannot be used at all or only to a limited extent. In the long run, PtX technologies are the only environmentally friendly alternative to fossil fuels in these sectors. In order to reach the climate targets in aviation and marine transport, sufficient amounts of sustainable synthetic fuels (SAFs) have to be made available swiftly. For this reason, production capacities for sustainable fuels need to be expanded significantly over the next few years. The same applies to base materials for the chemicals industry that are based on green hydrogen. The global increase in demand for PtX products offers great economic opportunities for German industry.

PtX Lab Lausitz in Cottbus

The Zukunft – Umwelt – Gesellschaft (ZUG) gGmbH has established the PtX Lab Lausitz in Cottbus in March 2021. The basis for this is the Act on Structural Change in Coal Mining Areas (StStG). The Lab's work will focus on studying the options for creating and using PtX products



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in an environmentally friendly and sustainable way. The construction and operation of a PtL demonstration plant is also being planned in the Lausitz region to test the theoretical findings.

A platform for sharing knowledge

The aim of the PtX Lab Lausitz is to assist industry and society on the road towards climate neutrality and support industry, decision makers and science by providing a platform for sharing knowledge, giving impetus and serving as a contact. One task is to work on the economic and legal framework conditions for a successful and rapid market scale-up for PtX Products. The entire value chain of the relevant technologies and sectors as well as their incorporation into the circular economy need to be taken into account. Societal and social impacts of the required and swift market scale-up for PtX products also play a role.

Flagship projects such as the PtX Lab Lausitz and the planned demonstration plant will provide key actors from science and industry with an opportunity to test new service systems, learn from them and develop and gradually introduce new business models. This needs to be organised in close cooperation with research institutions, industrial enterprises and national and International actors.

In doing so, the Lausitz can become a model region for PtX Production in Germany and a post-fossil energy region of the future.

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