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P2G as a tool for sector coupling and energy transition in Germany

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Energy storage plays a crucial role in the countries with high level of renewable energy generation and penetration. Intermittency of wind power, and transport of increasing masses of produced renewable energy to the consumers challenge modern energy systems with a growing trend. It is very challenging to find a relevant technology to apply for large-scale storage needs and to appropriate costs. Power-to-Gas (P2G) represents a way to produce hydrogen and inject it into the grid, with or without a process of methanation. P2G is of a special interest for the North Sea region's countries (especially) due to their widely developed onshore and gradually evolving offshore infrastructures. This technology is being widely discussed in both targeted countries, but Germany has been a frontrunner regarding a number of existing pilot projects. The biggest advantage of this technology is that the infrastructure can be immediately facilitated, including transport, storage and distribution. It can diminish a

number of new power lines required. However, P2G is not competitive until now with natural gas (biomethane) due to its cost factor. For further deployment, it is recommended to combine different business cases (such as mobility, balancing services, etc.). In a nutshell, P2G is one of the existing concepts, commanding a sector-coupling character. It enables optimisation of different sectors, from heating to mobility, utilising renewable production surplus and providing flexibility. For this, P2G should be included into the Energiewende programme as it can serve not only as a broad storage system but can also contribute to low-carbon consumption of many sectors. Market access barriers in the current legal framework should be abolished by recognising PtG products and eliminating system drawbacks for sector coupling technologies. In the context of political discourse, a model for further harmonisation of coupled sectors should be discussed and planned.

Biography

Irina Stamo holds a Bachelor's degree in Economics with a major focus on the European Economy. She expanded her knowledge by receiving her Master's degree in Political Economy of European Integration from the Berlin School of Economics and Law. She is currently a Research Associate at the Institute for Climate Protection, Energy and Mobility (IKEM), working on projects dealing with energy efficiency, sector coupling, and urban renewal. Before joining IKEM, she has gained experience amongst others at the German Energy Agency (dena), German Solar Association and Arepo Consult. She has been involved in different projects and scientific activities, dealing with energy efficiency, European Energy Policy drafts, LNG, energy storage as well as the National Solar Market. She has done extensive scientific research dealing with the Norwegian energy market, which she intensifies in her ongoing PhD thesis at the University of Flensburg as well as Environmental Research Center in Berlin.

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