National and international hydrogen strategies

(1) Energie-/Klimapolitik, Versorgungssicherheit

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Motivation and questioning

WIVA P&G is an important Austrian representative at international cooperation in the field of hydrogen. WIVA P&G and its members are involved in ten international networks, such as Renewable Hydrogen Coalition, World Energy Council, Hydrogen Council, Hydrogen Europe, ERIG, IEA TCP Hydrogen, Clean Hydrogen Partnership, Horizon Europe: Clean Hydrogen Europe and Hydrogen Europe Research. Based on this position, it is important for WIVA P&G to have an overview of hydrogen strategies on the global level.

Central questions are: What developments can be expected with regard to hydrogen in different countries? Which strategies are being pursued? Which market potentials result from this? How should Austria position itself in this environment?

Methodology, results, and conclusion

The insights into the international hydrogen strategies are based on literature research on the one hand and on the other hand on the participation in international networks, in particular IEA Hydrogen TCP.

The Austrian Renewable Energy Expansion Act (EAG) [1] is intended to set the framework for the expansion of Green Energy over the next years. The law is a necessary building block for the energy turnaround until 2030. The Austrian hydrogen strategy was published this year [2] with the main goal of reaching climate neutrality until 2040. Green hydrogen from renewable energy sources, blue (utilizing the CCUS technologies) or turquoise hydrogen (produced with methane electrolysis or pyrolysis) are utilized to achieve this goal. The extension of the electrolysis capacity to 1 GW until 2030 is connected to an increase in renewable electricity production.

Hydrogen use has priority in the fields of industry (chemical and steelmaking); mobility (aviation and shipping), and the energy system – balancing peak load for fluctuating renewable energy by making use of daily balancing and seasonal storage solutions.

Since the Austrian demand for climate neutral hydrogen is expected to be far beyond the possible national hydrogen production, imports represent an important pillar of the future hydrogen economy. It is necessary to cooperate with international partners to implement this in a timely and efficient manner.

According to IEA TCP Hydrogen [3], 17 governments have released hydrogen strategies, and 20 more announced they are in development. The global hydrogen demand in 2020 was 80-90 Mt, supplied mainly from fossil sources: 76% from natural gas, 23% from coal gasification, and 1% by electrolysis [4].

In a net-zero emissions scenario, hydrogen from low-carbon sources will account to 33 EJ (10%) of total final energy consumption according to IEA’s Net Zero by 2050 Roadmap for the Global Energy Sector [5]. By mid-2021, 300 MW of electrolyser capacity was installed, which could reach 54 GW by 2030 if all currently announced projects are realised. Yet, this will come up for about 8 Mt of electrolytically produced hydrogen only. Hydrogen from fossil sources using carbon capture, utilization, and storage (CCUS) is currently produced at 0.7 Mt annually, with a foreseen potential of 9 Mt by 2030 [3].

For Austria and other European countries, it is crucial to identify the international potential for hydrogen production to be able to form appropriate alliances for imports.

Literatur

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