Status-quo of Hydrogen Utilisation in NG COM Member Countries

Roundtable input by Austria

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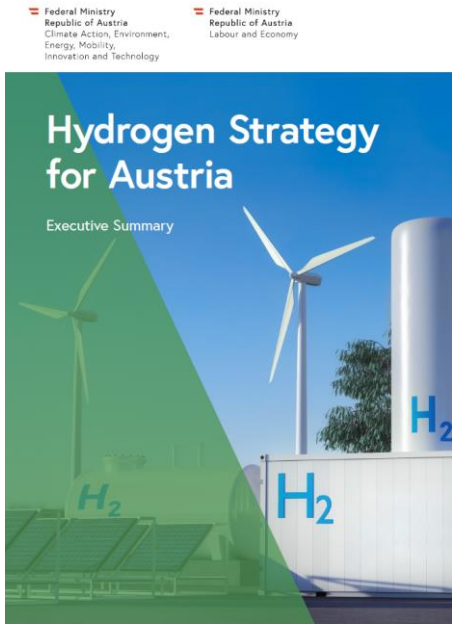
Policy Level

Hydrogen Strategy for Austria since 2022

- Guiding principles of the hydrogen strategy for Austria
  - Target: Climate neutrality 2040
  - Climate neutral hydrogen
  - Hydrogen use in strategic priority sectors
  - Efficiency and Cost-Effectiveness
  - Hydrogen Infrastructure



Policy Level

Targets of the hydrogen strategy for Austria

- Replacing fossil-based hydrogen with climate neutral hydrogen in energy intensive industries: 80 % until 2030
- Installation of 1 GW electrolyser capacity by 2030
- Creation of a supporting framework for the production of renewable hydrogen
- Establishing the production of hydrogen as an integral part of the energy system
- Development of a targeted hydrogen infrastructure
- Enhancing international partnerships for climate neutral hydrogen
- Strengthening the innovation and technology potential in Austria through focused development of hydrogen-technologies

Policy Level

Policies for implementation

- Enabling a timely market ramp-up through flagship projects
- Support and incentives for the production of renewable hydrogen
- Incentivising marked-based business models and the targeted application of climate neutral hydrogen in industry
- Establishing an infrastructure for hydrogen and creating import opportunities
- Targeted advancement of hydrogen-technologies in the area of mobility
- Intensifying research and development activities
- Creation of the national hydrogen-platform
- Austria's priorities on European and international level

Policy Level

Hydrogen Partnership Austria (HyPA)

- Hydrogen platform for exchange between companies, researchers, public administration and civil society
- Tasks of the partnership
  - Create evidence for the implementation and further development of the hydrogen strategy
  - Facilitate dialogue between stakeholders
  - Communicate and categorise, separate facts from positions
  - Supporting and advising industry and research

Regulatory Level

- Gas decarbonization package just agreed by EU policy makers in December 2023 and national implementation pending.
- E-Control approved only planning projects but no implementation projects in the latest Coordinated Network Development Plan.
- But, the Integrated Network Infrastructure Plan by the ministry includes a hydrogen grid.

Regulatory Level

Starting point for the development of an H2 system

	Current CH_4 system	Possible future H_2 system
Political goal	> Cheap energy	> Climate neutrality > Focussed and efficient usage
Production	> Declining importance	> Certain quantities
Imports	> Strong dependence	> Certain dependence
Transport capacity	> Historically important role in transit > Huge capacity	> Less transit > Low capacity
Storage	> Huge capacity	> Some capacity
Trading platform	> Physical hub with regional importance	> Depending on market maturity
End users	> Many > Industrial consumption	> Few > Industrial consumption
Regulation	> Sophisticated and adequate	> Depending on market maturity

The regulatory system can be (relatively) easily adapted and adjusted to future H2 requirements once the legal basis is in place.

Regulatory Level

Market design for developing the H2 market

Liberalised area

- Production from surplus electricity
- Production from RFNBO electricity
- Production from pyrolysis and CCS
- Imports

Regulated area

- Transmission
- Distribution
- Seasonal storage
- Flexibility instruments

Flexibility in market development

Liberalised area

- Industrial consumption
- Mobility consumption
- Reconversion to electricity

Functioning, cross-border competitive markets

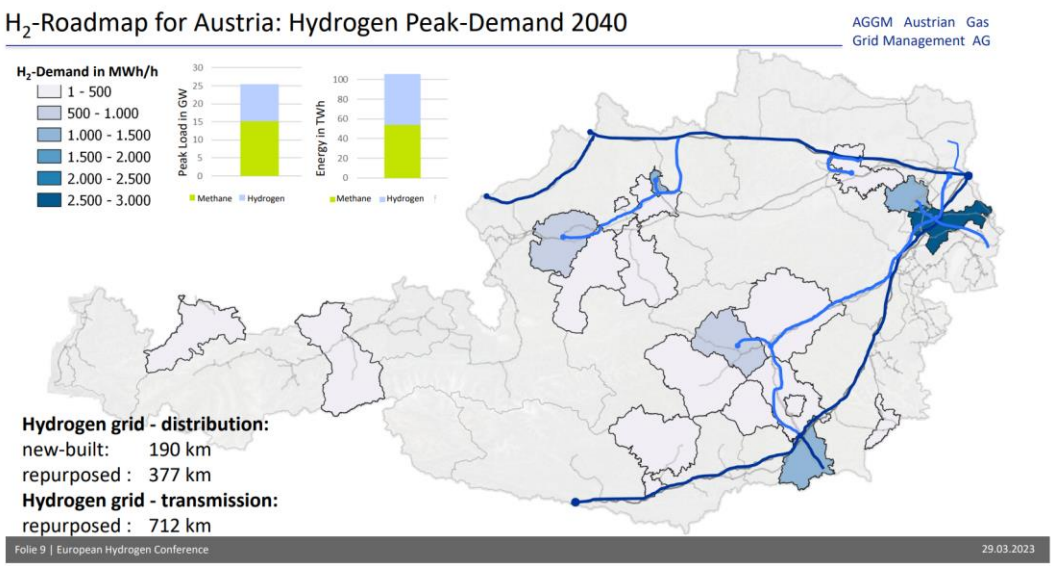
Regulatory Level

Principles for future regulation

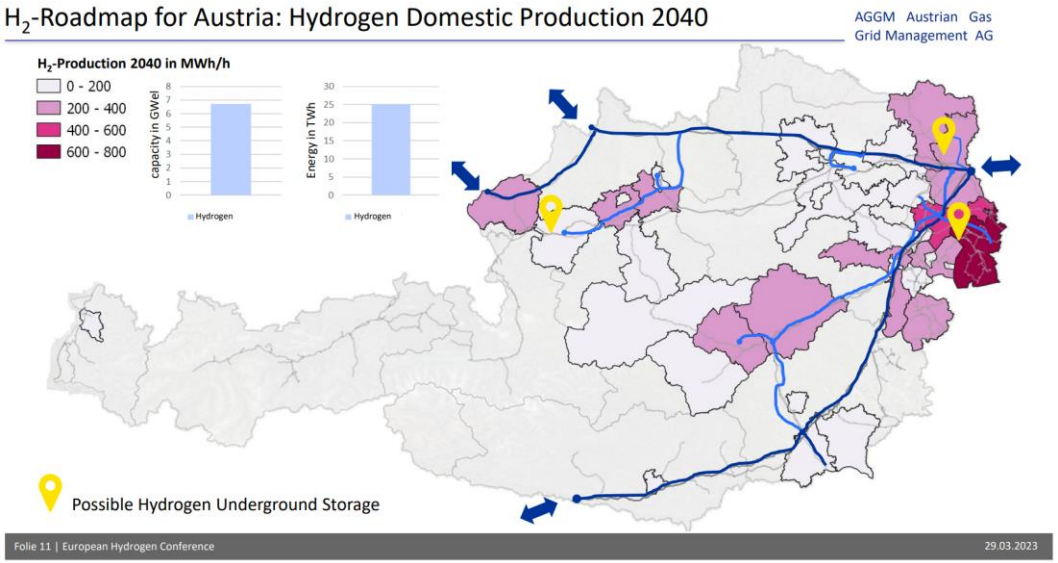
- Non-discrimination principle
- Third party access (regulated/negotiated)
- Transparency
- Regulated grid charges
- No cross-subsidisation
- Co-operation (incl. grid development)
- (vertical and horizontal) unbundling

Industry/Market Level

- General interest of the market
- Waiting for legal and regulatory framework
- Expectations by the Austrian Gas Grid Manager (AGGM)



Few consumption areas for climate neutral hydrogen storage



Networks (including imports), production and storage

Industry/Market Level

Insights of a study on the role of gas infrastructure

- Concentration of hydrogen demand on the major consumption centres leads to a spatially concentrated hydrogen network in 2030.
- Increase in hydrogen consumption in other sectors after 2030 leads to a regionally larger hydrogen network in 2035.
- "Completion" of the hydrogen network in 2035 leads to an overlap with the remaining demand for the methane network in 2035 and limits the repurposing potential.
- With temporal and regional coordination, a greater repurposing potential can be realised.
- The results of the network modelling suggest that parallel structures cannot be completely avoided.
- Estimates of the investment costs for the hydrogen network lead to the conclusion that parallel structures can also be accepted for the ramp-up of the hydrogen economy.

Industry/Market Level

Electrolysers in operation (9 with 15 MW)

- Underground Sun Conversion (0,5 MW)
- H2Future (6 MW)
- HotFlex (0,15 MW)
- Renewable Gasfield (1 MW)
- Fronius SolHub (0,3 MW)
- DEMO4GRID (3,2 MW)
- Underground Sun Storage (2 MW)
- HySnow/HyFleet (10 kW)
- H2Pioneer (2 MW)

Industry/Market Level

Electrolysers in planning/construction (8 with 203 MW)

- Power2X (5 MW)
- UpHy II (10 MW)
- LAT Nitrogen (60 MW)
- Wien Energie (3 MW)
- Plansee (4 MW)
- IFE (1 MW)
- PanHy (60 MW)
- RAG (60 MW)

Links

- Hydrogen Strategy for Austria
  https://www.bmk.gv.at/themen/energie/energieversorgung/wasserstoff/strategie.html
- Integrated Network Infrastructure Plan
  https://www.bmk.gv.at/themen/energie/energieversorgung/netzinfrastrukturplan.html
- Coordinated Network Development Plan *https://www.e-control.at/konsultation-2022*
- Study on the role of the gas infrastructure in a climate neutral Austria
  https://www.bmk.gv.at/themen/energie/publikationen/rolle-gasinfrastruktur.html
- Hydrogen Partnership Austria (HyPA) *https://www.hypa.at/*
- Hydrogen projects in Austria *https://www.hypa.at/umsetzung/elektrolyseure*
- H2 Roadmap by AGGM *https://www.aggm.at/energiewende/h2-roadmap/*

THANK YOU FOR YOUR ATTENTION!

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