

OGE H₂ – Newsflash

Updates on efforts for a decarbonized Europe

OGE Live 2021, Tobias Schlimgen

Customers.Knowledge.Contacts.

June 23rd, 2021



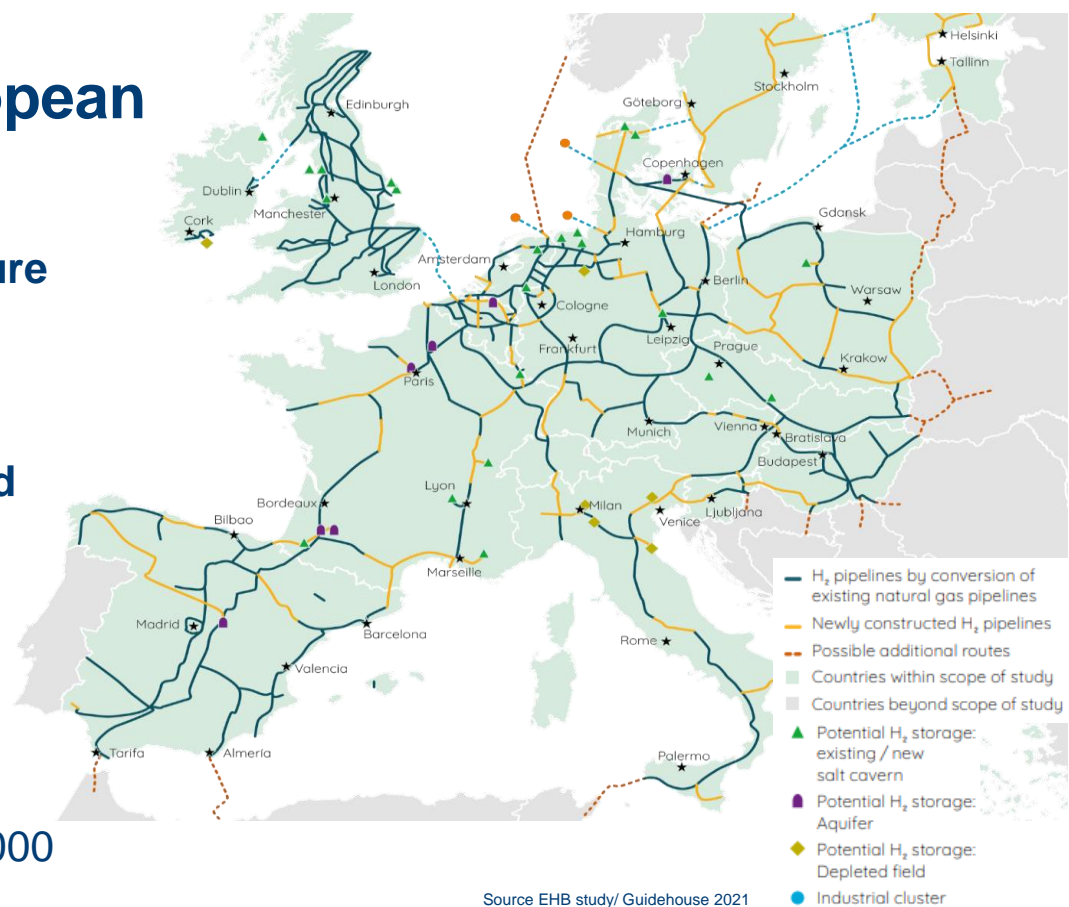
Agenda

- Decarbonizing Europe: H₂ for all of us!
- Update on OGE's H₂ Projects
- Legal and regulatory status Germany & EU
- Status of the H₂ & Green Gases demand survey

H₂ for all of us!

H2 for all of us! The European Hydrogen Backbone

- Repurposed **existing gas infrastructure** as a foundation for a **cost-efficient hydrogen supply** on a large scale
- About **70%** of the future **hydrogen grid** based on **converted natural gas pipelines**
- Geographical extension: **23 TSO from 21 Countries**
- **Grid length: 2040 extended** from 23.000 **up to 39.700 km** - 11.600 km by 2030
- Cost of transport **€0.11-0.21/kg/1,000 km**



Hydrogen is crucial to Europe's energy transition

2050: H₂-demand in EU & UK 2.300 TWh
(≈ 25% of the end energy consumption)



Green and blue **hydrogen crucial for the decarbonization** of the **industry**, especially with regards to the iron & steel, chemical and fuel production



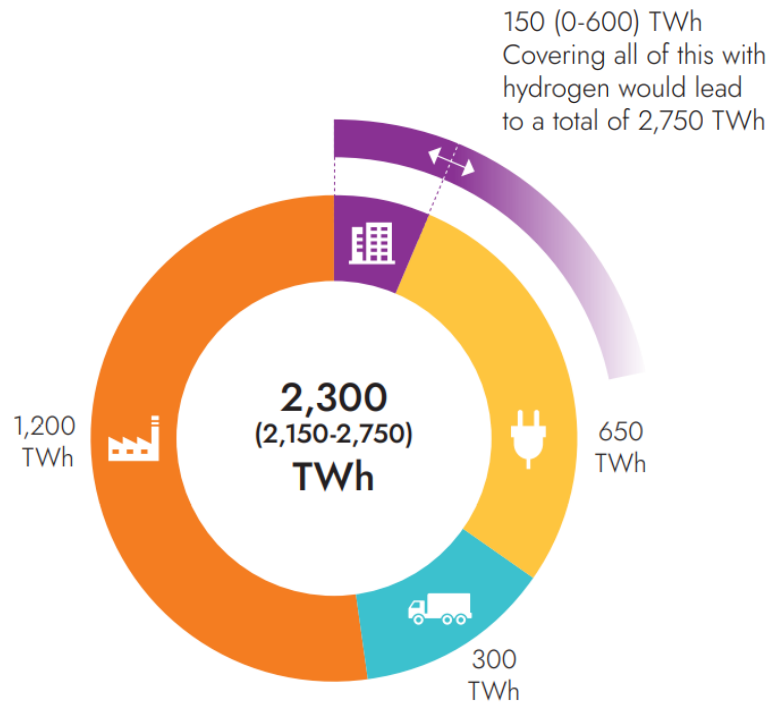
Implementation of hydrogen into a future net-zero energy system feasible with cost-efficient investment offering a **high level of reliability**



H₂ plays a crucial role in transport (esp. heavy-duty traffic) as a fuel or hydrogen-derived synthetic fuels



Gas demand in buildings sector can be covered with bio-methane and hydrogen (at accelerated renovation rates).

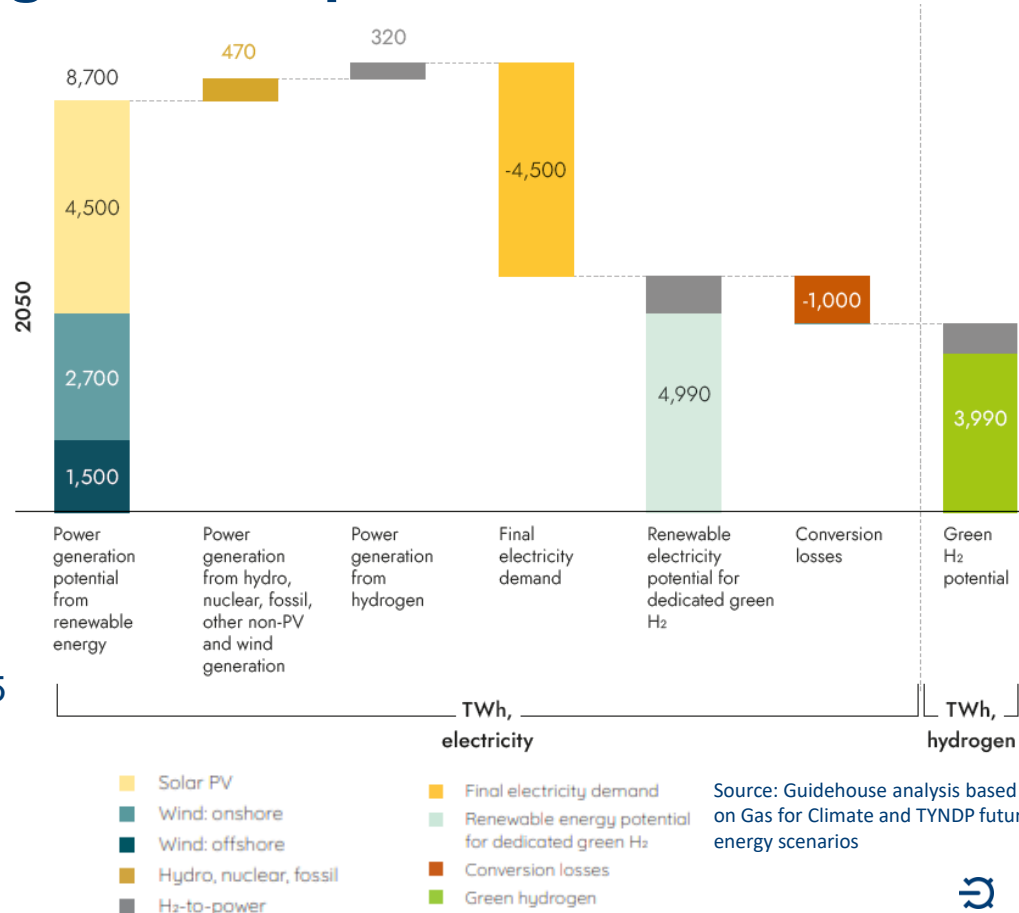


Figures are expressed in TWh/year in 2050. As a result of the chosen methodology, incl. technology assumptions, demand figures represented in this infographic may differ from other (national) decarbonisation scenarios. Source: Guidehouse analysis.



H₂ might not be the champagne some predict it to be...

- **EU+UK green hydrogen supply potential:**
 - 450 TWh by 2030
 - 2.100 TWh by 2040
 - 4.000 TWh by 2050
- **Europe also can also produce large quantities of blue hydrogen:**
 - Supply is virtually unlimited
 - Natural gas supply and CO₂ storage potential exceed total foreseen hydrogen demand by far
 - Blue H₂ projects announced to date add up to 230 TWh by 2030 and 380 TWh by 2035 and onwards – with 70% from the UK and NL



Source: Guidehouse analysis based on Gas for Climate and TYNDP future energy scenarios



OGE H₂-Projects Update

GET H2 IPCEI – One of 62 shortlisted domestic projects!

- Merger of the GET H2 Nukleus, Green Octopus and Salcos projects
- Start of the hydrogen economy with the production, transportation, storage and supply of green H2 to industry as early as 2024
- By 2030, an H2 network is to be built stretching from Lingen to Gelsenkirchen and from the Dutch border to Salzgitter
- Electrolysis by 2026: 300 MW planned in Lingen and 100 MW in Salzgitter
- One of 62 shortlisted IPCEI projects in Germany



NIKOLA & IVECO collaborating with OGE



- Development and manufacturing of zero-emission battery- and hydrogen-powered electric trucks
- Fueling station infrastructure for hydrogen



IVECO

- Development, manufacturing and distribution of a wide range of commercial vehicles
- Approx. 21,000 employees
- 7 production sites worldwide



- Development of a pipeline network for hydrogen transport
- Transport infrastructure as an essential role in the development of hydrogen fueling stations



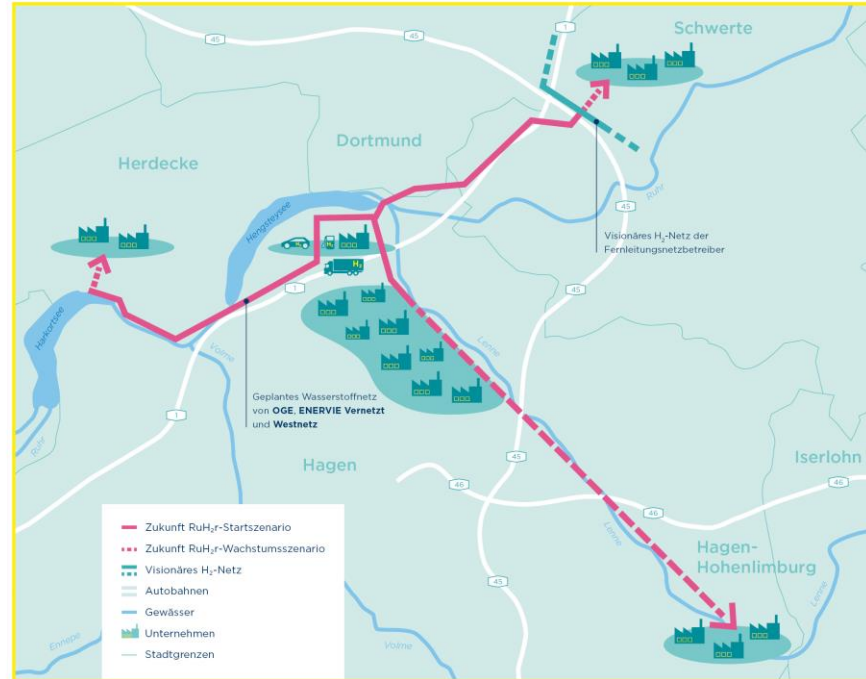
Objectives:

- Collaborate in the establishment of a number of heavy-duty hydrogen fueling stations in Germany
- Agree on a business model that maximizes value for all parties
- Maximize opportunities for OGE existing and future hydrogen pipeline network for distribution of hydrogen
- Pursuit of government incentives to support any proposed investments
- Focus on “speed to market” – parties intend to identify possible stations and **reach definitive agreement(s) by July 2021**

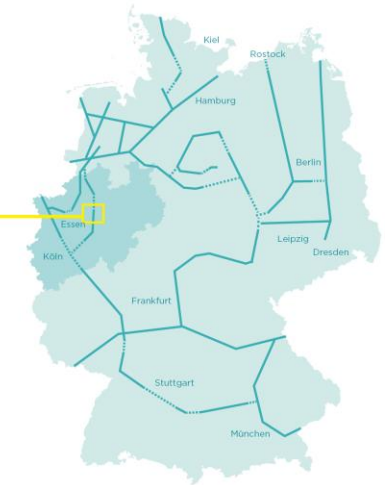


"Zukunft RuH2r": Developing a regional H₂-cluster

- Pipeline companies plan to create a hydrogen infrastructure in the key region between the Ruhr area and southern Westphalia
- Climate-neutral energy supply for interested consumers in industry, transport and the buildings sector
- Further project partners are welcome



Visionary domestic H₂-Grid



Quelle: FNB Gas e.V.

H2EU+Store – Green Hydrogen for Europe

- Project design by an international industry partnership: Bayerngas, bayernets, Eco-Optima, OGE and RAG AG
- Establishment of capacities for renewable electricity and hydrogen production in Ukraine
- Expansion of storage volumes in Austria and Germany
- Phased step plan up to 2050 with significant dimensions, enhancing security of supply for Europe with green hydrogen!

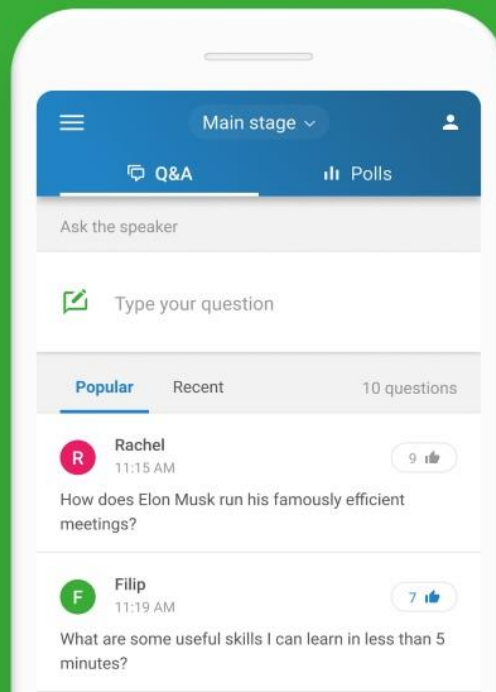


Slido survey – we are curious about your answers

Join the conversation

**Ask questions &
vote in live polls**

slido



Legal and regulatory status

Legal and regulatory status - Germany



- EnWG Amendment Act about to pass federal council before summer
- Entry into force July / August 2021...

- § Hydrogen needs to become part of the grid-based energy supply
- § The purpose and objectives of the EnWG also apply to (grid-bound) hydrogen
- § Existing legal authorizations with regards to natural gas will remain in force after a grid conversion towards hydrogen
- § Granted trespass rights will also be valid for hydrogen grids
- § Hydrogen network operators shall be obliged to cooperate, e.g. for network access similar to today's common practice
- § Hydrogen grid operators can opt-in into a regulated world (once for all, irrevocable decision)

Legal and regulatory status - EU

- Announcement of a “**Hydrogen & Gas Market Decarbonization Package**” for the revision of the gas internal market package
- Revision of the Gas Directive, the Gas Transmission Ordinance and, if applicable, the network codes; Question about independent H2 regulation still open
- Key topics of the package:
 - Regulation of hydrogen infrastructure and the hydrogen market
 - Incentives / support mechanisms for renewable / decarbonised gases
 - Consumer rights, competition and transparency (mirroring the corresponding regulations from the Clean Energy Package)
 - Integrated infrastructure planning

Feb.-Mar: Roadmap consultation

Mar-Jun.: Impact Assessment consultation

Q4.: Legislative proposal

Q1 2021

Q2 2021

Q3 2021

Q42021

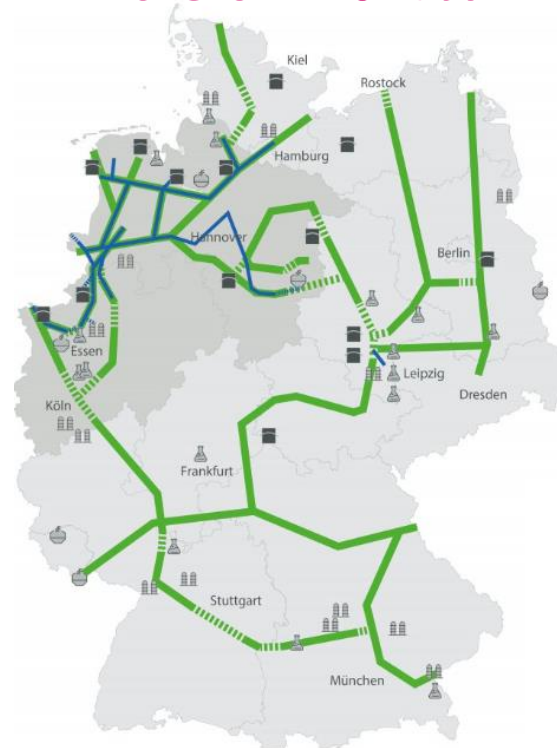


Status of the H₂ & Green Gases demand survey NDP 2022-2032

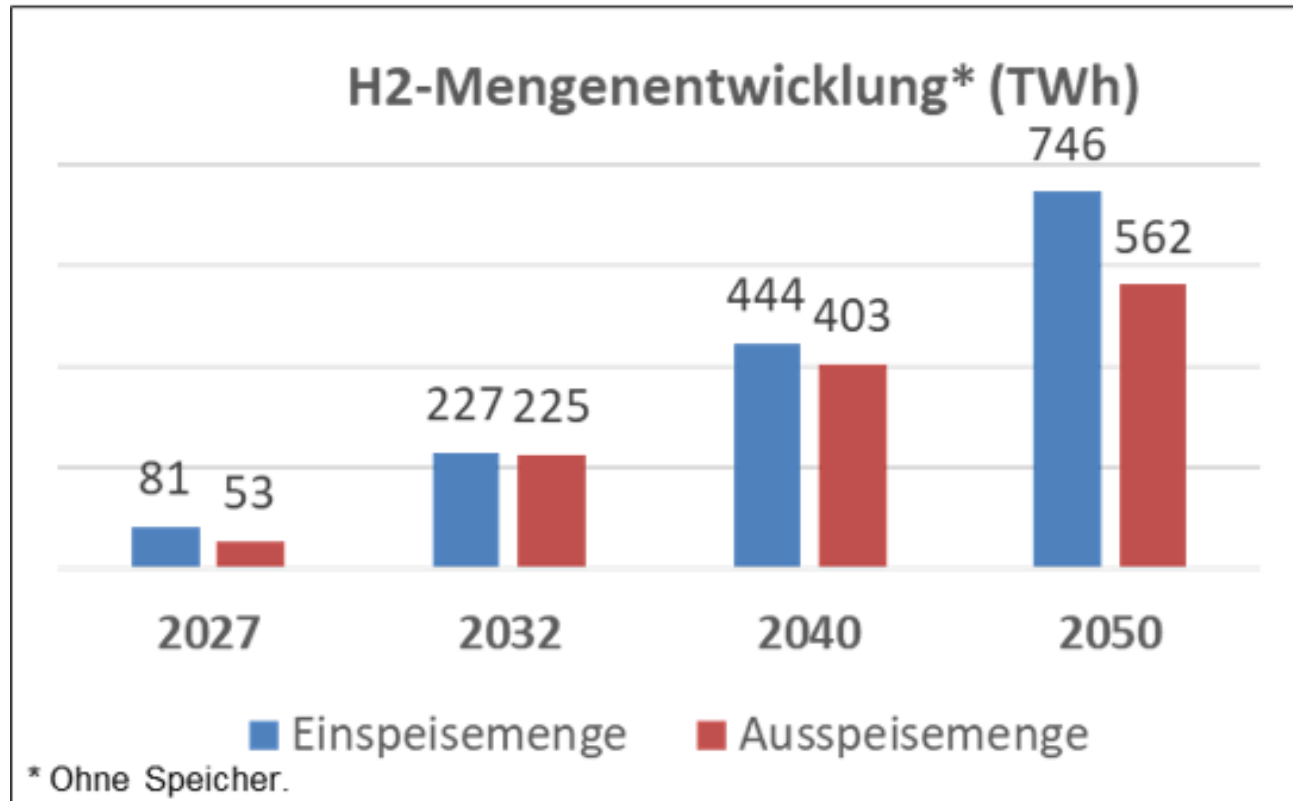
We want you! 2nd hydrogen and green gases query

- Gas NPD becomes German transparency platform for hydrogen market ramp-up
- Second market survey for producers and consumers of hydrogen and green gases until 16 April
- Vast Number of project submissions exceeded all expectations
- TSO have published the consulting document of the scenario framework on 21 Juni 2021.
- Web-based workshop to mark the consultation of the scenario framework for the NPD Gas 2022-2032 on **1 July 2021**
9 am to 1 pm. Registration **no later than June 28 by email**
→ info@fnb-gas.de
- scenario framework is the basis for the modelling of the NDP Gas 2022–2032 including an **Update** of the **green gas variant**

Version 2.0! tba



500 projects: Supply exceeds demand straight away

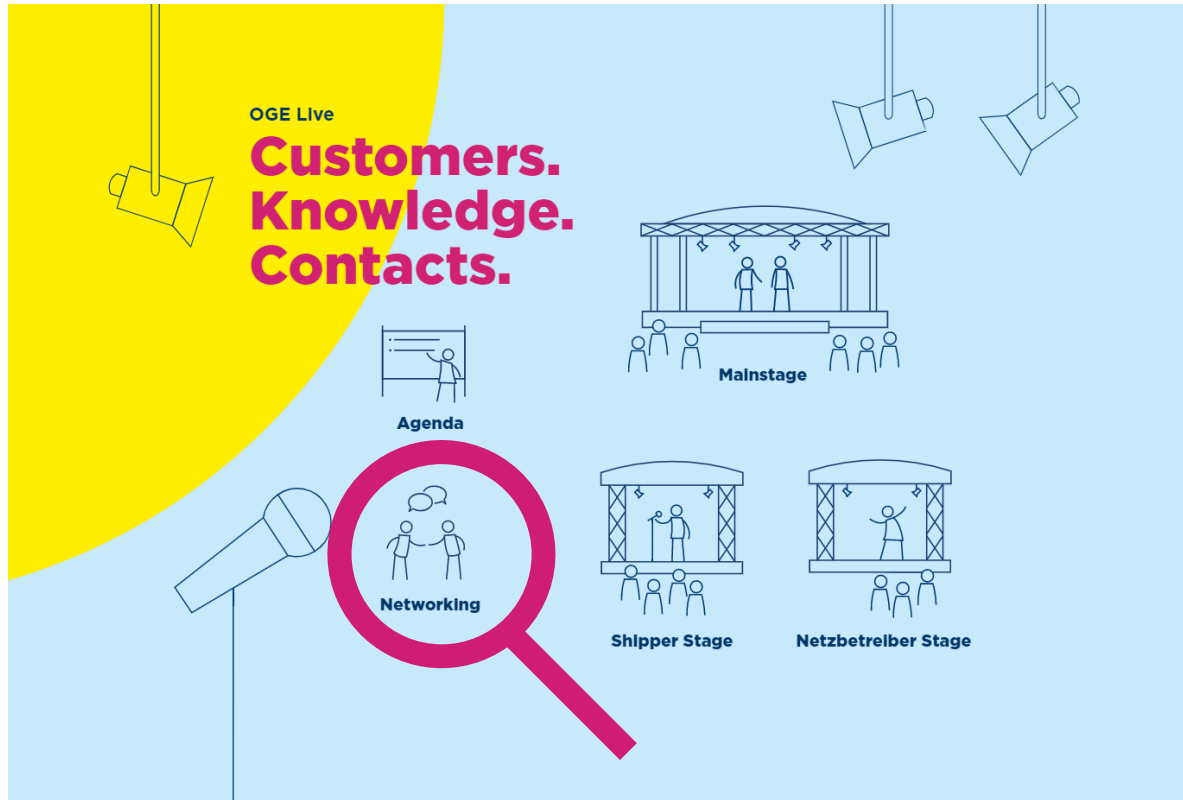


Source: H₂ & green gases market survey NDP 2022-2032

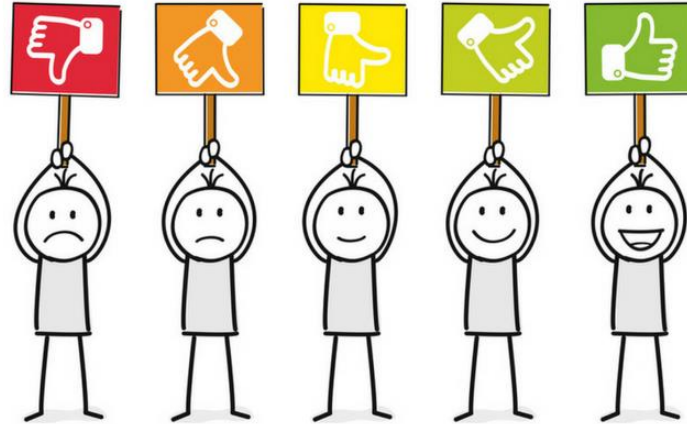
We are always happy to talk about your new projects!



Personal contact and the opportunity to ask questions



Feedback is much appreciated



**We enable energy supply.
Today and in the energy mix of the future.**

