

A Hydrogen Ecosystem in the Greater Region



A decarbonizing economy
needs hydrogen

Own local hydrogen production
is probably not the most efficient
and economical

A whole new market needs to
be developed with

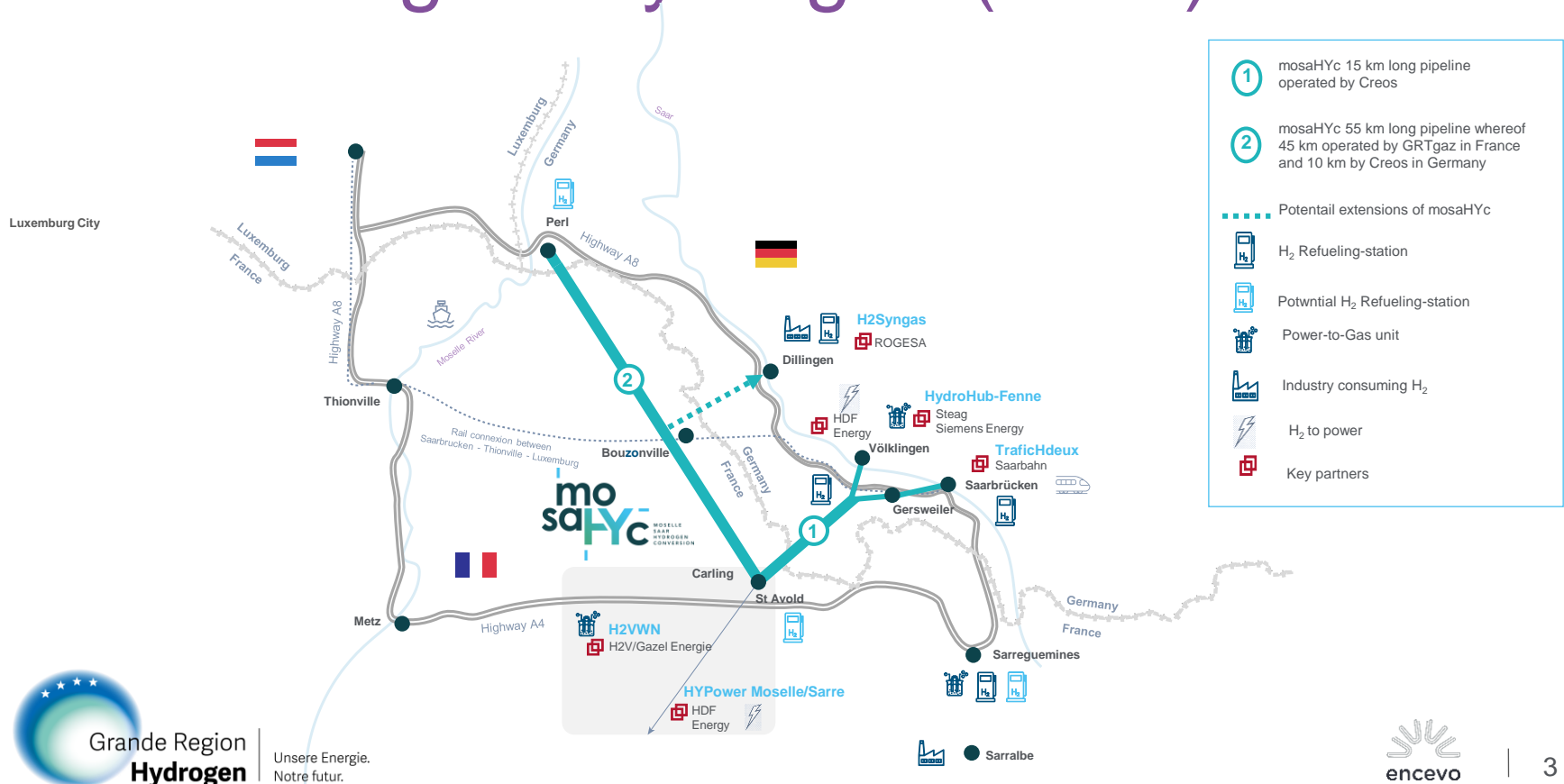
Producers

Consumers

Infrastructure



Grande Region Hydrogen (GRH)



Grande Region
Hydrogen

Unsere Energie.
Notre futur.



H2 Production & Sector coupling

HydroHub Fenne

The HydroHub Fenne project (2 x 17.3 MWel or 664 kg H2 per hour, equivalent to approx. 5,800 t H2 per year) pursued by STEAG and Siemens Energy, which has already been selected as a “Living lab for the energy transition”, is to be the first PEM (proton exchange membrane) electrolysis plant of significant scale. The plant is to be built in Völklingen in the Saarland on the site of an existing STEAG power plant, taking a brownfield approach and making continued use of existing structures without any far-reaching changes or environmental impact. The plant will use electricity from renewable sources (“green electricity”) for electrolysis, producing green oxygen and green hydrogen.



steag

SIEMENS
Ingenuity for life

GazelEnergie



H2VWN & HyPower

GazelEnergie together with H2V have a project to produce up to 400 MW of green hydrogen on the site of the Emile Huchet power plant.

HyPower by HDF are multi-MW fuel cell power plants producing electricity from hydrogen. HyPower helps the energy transition by producing green electricity on demand, complementing intermittent renewable energy sources.



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Industry

H2SYNgas

The Saarland steel industry, with the companies Dillinger and Saarstahl, plays a key role as an industrial consumer in the strategic development of the regional cross-border hydrogen value chain. Use of hydrogen is required to reduce emissions from processes in the steel industry. Within the scope of the “H2SYNgas” innovation project, a technology is being developed at a blast furnace operated by ROGESA Roheisengesellschaft Saar mbH, a joint subsidiary of Dillinger and Saarstahl, which will enable the use of the company's own process gases and, in addition, substantial quantities of hydrogen for the blast furnace process. The synthesis gas generated from the company's own process gases will be enriched with hydrogen. This hydrogen-rich mixed gas will then be used as a reducing agent for the reduction of iron ore, replacing coke in the blast furnace process and thus avoiding CO₂ emissions.



 saarstahl **DILLINGER** 

 **PAUL WURTH**
SMS group


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Mobility



TraficHdeux

The Saarbahn project TraficHdeux aims to build up the infrastructure for operating cross-border public transport with hydrogen-powered fuel cell trains and buses. The core of this project is the reactivation of non-electrified or only partially electrified rail lines across national borders. In addition, the construction of a filling station infrastructure at the STEAG power plant site in Völklingen is planned. By 2030, Saarbahn will replace around 85 solo and articulated buses by zero-emission vehicles. In order to make optimum use of the excess capacity available during the start-up phase, the filling station is therefore also to be made accessible to other municipal companies and commercial users.

Transport of H2

mosaHYc

The mosaHYc project, jointly undertaken by the distribution grid operators Creos and GRTgaz, aims to use an existing gas infrastructure to develop a cross-border high-pressure grid for the transport of hydrogen. The aim is to create infrastructure of 100 kilometers that will enable hydrogen producers and consumers in the “Grande Région” to develop business models in industry, the heat market and the transport sector. Account has to be taken here of the interplay between the various pipeline sections in the Völklingen (Germany), Carling (France), Bouzonville (France) and Perl (Germany) area in the Saarland and in France, as well as safety aspects. In the context of a feasibility study, the existing pipelines are being examined and prepared for conversion to hydrogen.



IDEA

mosaHYc (**mo**selle-**saar**-**Hydrogen**-**con**version) is a crossborder project in the greater region of Saarland (Germany), Grand Est (France) and Luxembourg.

Here an hydrogen grid with a length of 70 + 30 kilometers is planned. The infrastructure will connect hydrogen consumers and producers which complement each other perfectly in this area.

mosaHYc is a project by the two grid operators Creos Deutschland GmbH and GRTgaz.



KEY FIGURES

From a pipeline network of a total length of 100 km between Völklingen and Perl in Saarland and between Bouzonville and Carling in the Moselle department, some 70 km will be converted from natural gas to hydrogen.

Approximately 30 kilometers will be added directly as new hydrogen pipelines.

Depending on the operating pressure the maximal capacity of the pipeline reaches up to 120.000 m³/h.

In 2030 there will be more than 50.000 t of hydrogen transported per annum.

As the network is operated by independent grid operators the access to the grid will be open to all actors.

Target for start of operations is the year 2026.

100 km

Whereof 70 km of repurposed natural gas pipelines

120.000 m³/h

Maximal capacity for pure hydrogen

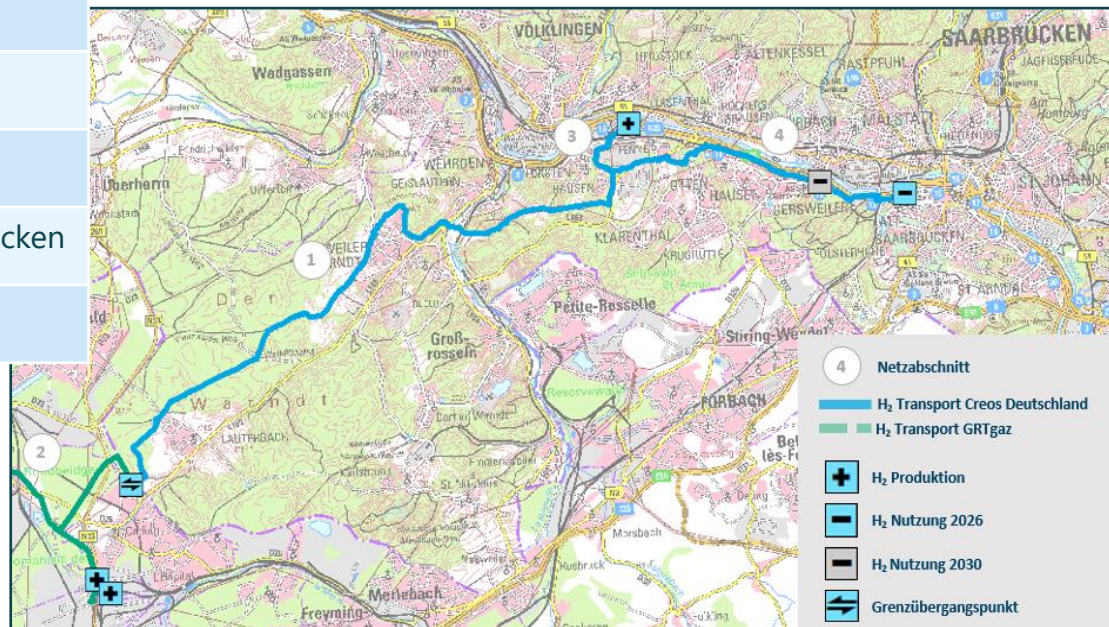
2026

Start of operations

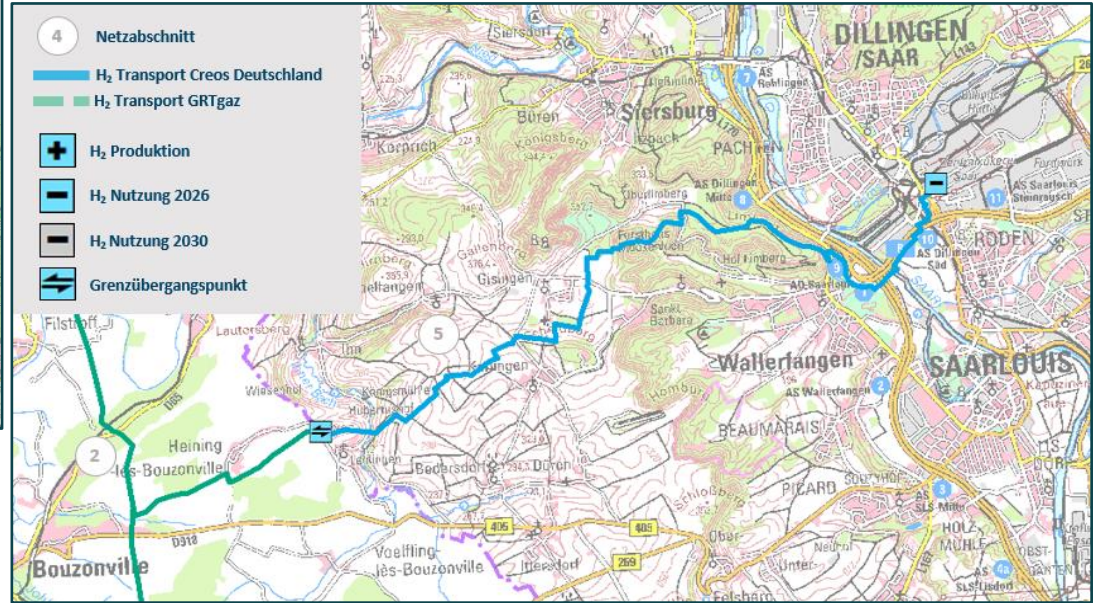
NETWORK-SECTIONS MOSAHYC

Networksection

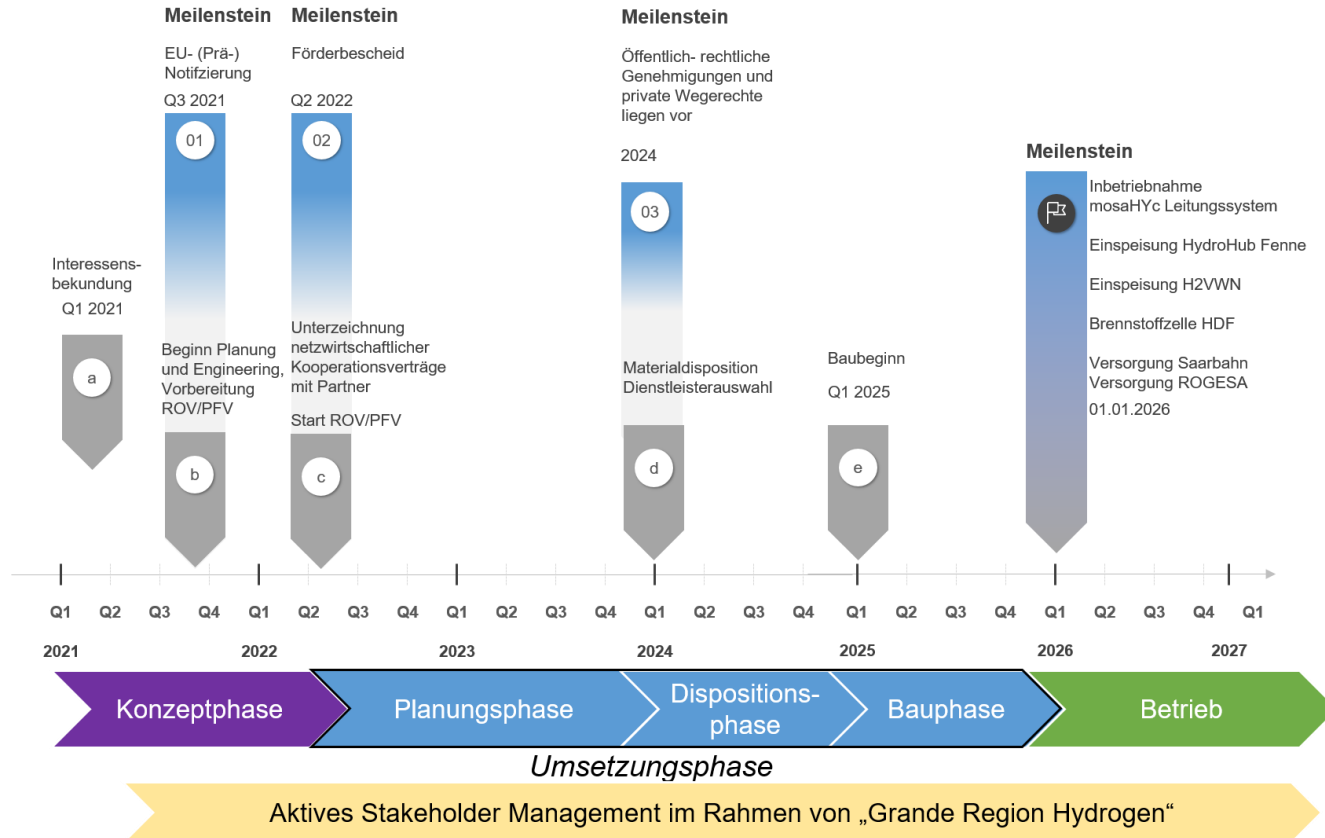
- 1 Fürstenhausen - Carling
- 2 Carling - Besch
- 3 Fenne - Fürstenhausen
- 4 Fürstenhausen - Burbach + Saarbrücken
- 5 Bouzonville - Dillingen



NETWORK-SECTIONS MOSAHYC

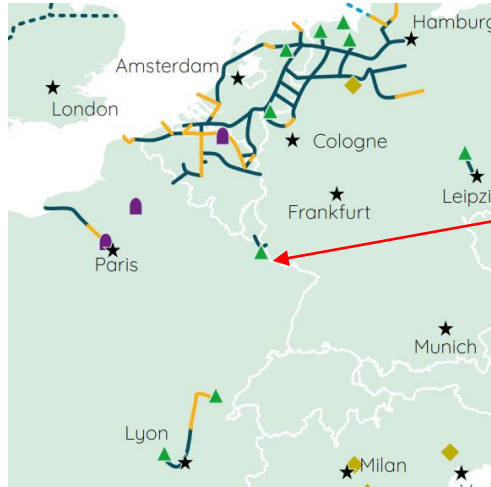


TIMELINE AND MILESTONES

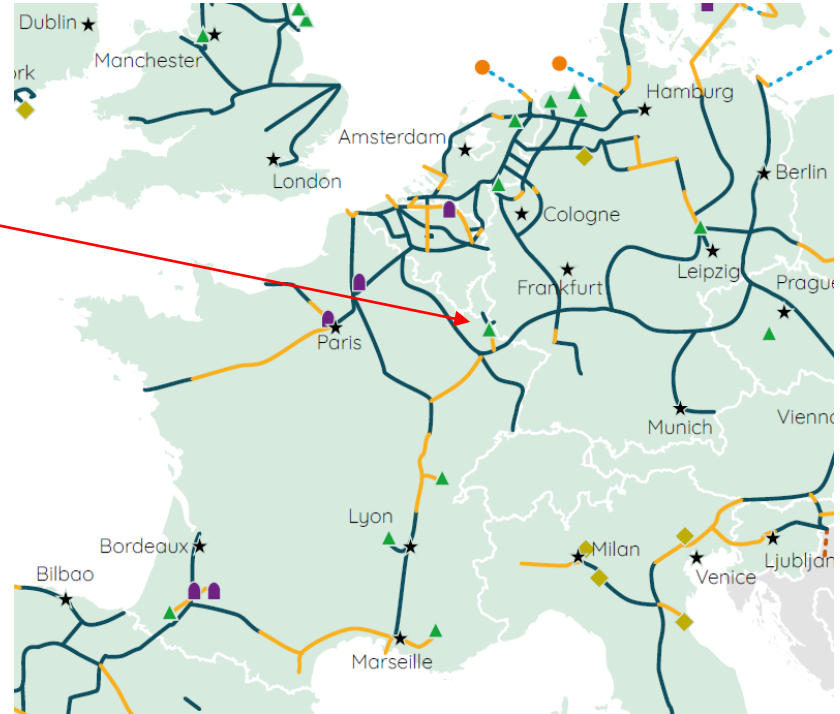


EUROPEAN HYDROGEN BACKBONE

Time horizon 2030



Time horizon 2035

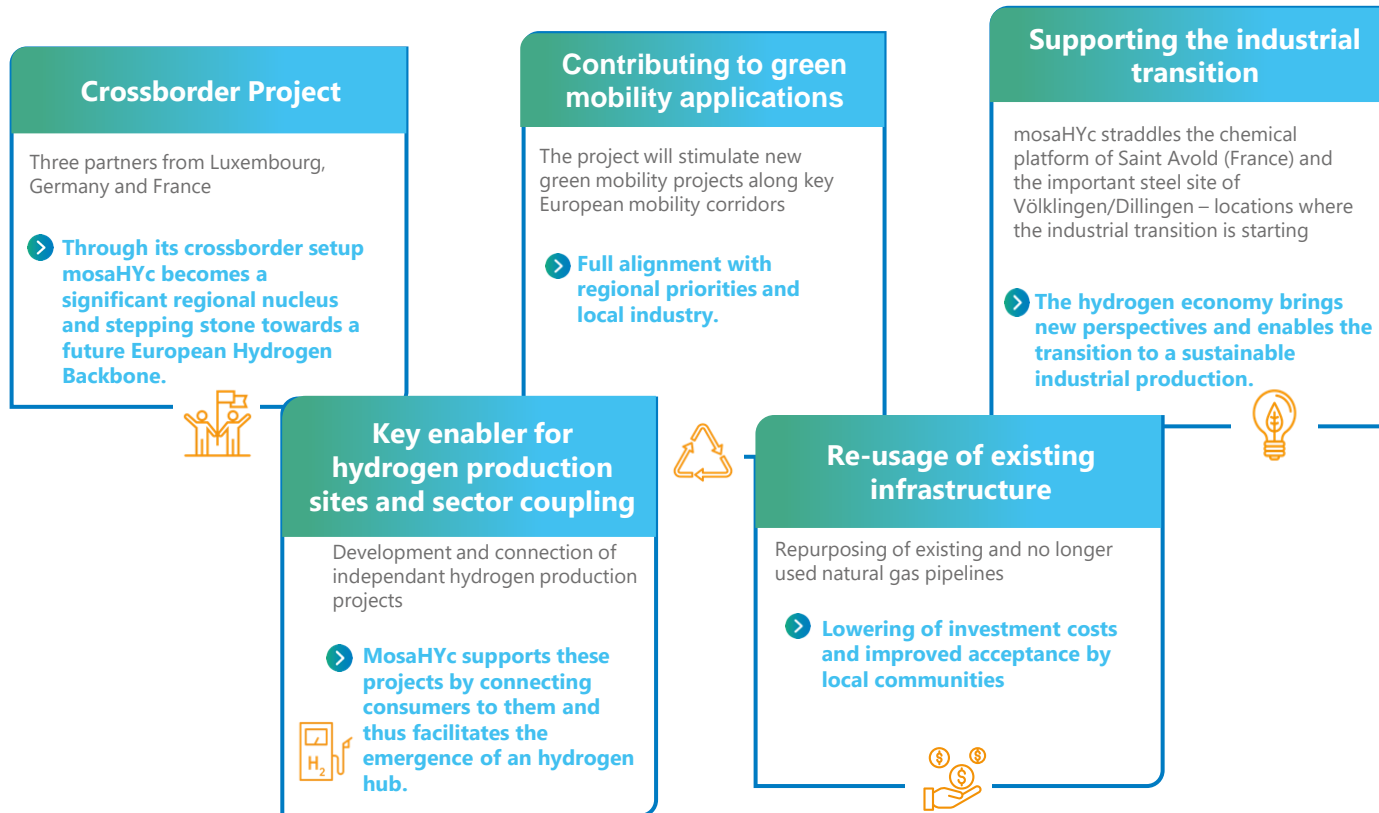


mosaHYc

- H₂ pipelines by conversion of existing natural gas pipelines (repurposed)
- Newly constructed H₂ pipelines
- ▲ Potential H₂ storage: Salt cavern
- Potential H₂ storage: Aquifer

Source:
https://gasforclimate2050.eu/sdm_downloads/extending-the-european-hydrogen-backbone/

SUMMARY: HIGHLIGHTS OF MOSAHYC





Thank you.

We embrace energy transition

