NRW.GLOBAL BUSINESS
Trade & Investment Agency

Hydrogen in Rheinisches Revier

In the west of NRW, all signs point to H_2

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Germany's Rheinisches Revier has set a clear plan of becoming climate-neutral while remaining an industrial center. While that may seem like a contradiction at first, the pioneers at Rheinisches Revier have every certainty that it will succeed. After all, a strong hydrogen ecosystem is growing in the west of North Rhine-Westphalia. And it offers plenty of space and potential for international investors.

1. Be part of an emerging international H_2 hub

With around 460,000 employees, the energy-intensive industry sector is the key to North Rhine-Westphalia's leading economic role in Europe. A large-scale expansion of the hydrogen economy is needed to ensure that it is able to maintain its position after the coal phase-out. With the largest pipeline network in Germany, NRW is well on its way. And with Rheinisches Revier, itself a center of energy-intensive industry, it's making a decisive contribution to this transition.

The region already enjoys a very prominent position in the hydrogen value chain. Forward-looking projects and initiatives are being developed throughout the region in collaboration with politicians, researchers and companies. It will therefore come as no surprise that a study from the end of 2022 indicates enormous job and sales potential for the H_2 industry in Rheinisches Revier.[1]

Hydrogen in NRW and Rheinisches Revier: Facts & Figures

240 km

pipeline network in North Rhine-Westphalia – set to double by 2030

17 TWh

of hydrogen **currently used** in NRW's industry

11,000

H_2-powered trucks and 3,800 buses by 2030

>100 TWh

of hydrogen in industrial use **by 2050**

[1] Zukunftsagentur Rheinisches Revier, „Wasserstoffwertschöpfungskette im Rheinischen Revier – Kurzstudie", October 2022

RHEINISCHES REVIER

Be part of Europe's most exciting industrial hub.
rheinisches-revier.com

Supported by:
Federal Ministry for Economic Affairs and Climate Action
on the basis of a decision by the German Bundestag

700

million euros in **turnover,** 4,500 jobs possible in the H_2 industry

860

million euros in funding for the **Helmholtz Hydrogen Cluster**

460,000

employees in NRW's energy-intensive sector

93,000

employees in the energy-intensive industry sector in Rheinisches Revier

2. Be part of a region committed to the hydrogen ramp-up

Strengthening the hydrogen value chain is a central pillar of transformation in Rheinisches Revier – and therefore a high-priority political project. This is demonstrated not only by the funding, but also by the large number of initiatives and clusters that have emerged in the region.

Sustainable promotion for a sustainable energy source

Even though Rheinisches Revier already has a great deal of hydrogen expertise, political decision-makers are aware of the expertise that international companies can contribute. For this reason, they are using two funding programs to provide targeted incentives for companies from the sector to settle here:

- **The federal STARK program** promotes the establishment and investment of companies that are shaping the transition to a climate-neutral economy. Such companies include manufacturers of electrolyzers.
- **Produktives.NRW** is bringing the EU's Just Transition Fund to Rheinisches Revier. Those eligible for funding include expanding companies that develop hydrogen technologies.

Both programs offer companies attractive conditions:

up to **200**

million euros for individual funding

Investment share **eligible for funding** up to

40 %

Strong initiatives and clusters

The German federal government and the state of North Rhine-Westphalia have set aside a total budget of 14.8 billion euros for the transformation of Rheinisches Revier. Hydrogen also features prominently in the funds that have already been approved. 860 million euros alone will be added the Helmholtz Cluster for a Sustainable and Infrastructure-compatible Hydrogen Economy (HC-H2) by 2038. Purely municipal initiatives also demonstrate a commitment to the hydrogen transition.

Helmholtz Hydrogen Cluster (HC-H2)	The HC-H2 aims to accelerate the development of a sustainable and infrastructure-compatible H_2 economy in Rheinisches Revier through large-scale demonstration projects with companies and municipalities.
HYDROGEN HUB Aachen	In the hub, the city and city region of Aachen and the districts of Düren, Heinsberg and Euskirchen want to form an H_2 model region with the Aachen Chamber of Industry and Commerce. The foundation of which is a holistic strategy and a strong partner network.
H2R – Hydrogen Rhineland	The H2R initiative unites the cities of Hürth, Brühl and Wesseling, the Rhein-Sieg district, the Rhein-Bergisch district and the metropolis of Cologne. The aim is to pool expertise and usher in an energy and transport revolution, e.g. with a joint hydrogen pipeline.

3. Be part of business-related research

Hardly any other region in Germany offers companies in the hydrogen sector a more practice-oriented scientific landscape than in Rheinisches Revier. Internationally renowned institutions quickly implement cutting-edge research in close cooperation with the private sector. An overview:

RWTH Aachen	The German university of excellence has always cooperated with leading industrial companies. It has a Center for Sustainable Hydrogen Systems and a Fuel Cell Industrialization Center (FCI). RWTH is also behind the Zukunftscluster Wasserstoff (Future Cluster Hydrogen).
FH Aachen	Aachen University of Applied Sciences is also working intensively on the energy carrier of the future. For example, at the Solar Institute Jülich, which has its own focus on "energy storage and hydrogen".

Forschungszentrum Jülich	The FZJ enjoys an excellent international reputation and is dedicated to H_2 at its Institute of Energy and Climate Research (IEK) and the Institute for a Sustainable Hydrogen Economy (INW). It is also involved with the Helmholtz Hydrogen Cluster.
Fraunhofer Institute for Production Technology (IPT)	The Fraunhofer IPT wants to make hydrogen technologies more efficient, also in production. The keys to this include automation and in-depth expertise in the construction of special machines.
DLR Institute for Future Fuels	This Jülich Institute is working on concepts to produce hydrogen economically from renewable energy sources.

4. Be part of a vital industry network

In addition to top research, Rheinisches Revier also has innovative companies that serve various stages of the H_2 value chain. Including:

Production	**HyDN GmbH**	This company manufactures an electrolyzer that produces hydrogen from wind and solar energy for local public transport in Düren.
Storage	**NPROXX GmbH**	This company produces composite pressure vessels for hydrogen storage.
Mobility	**AE Driven Solutions**	An Aachen-based company manufactures fuel cell systems for vehicles.
Various sectors	**Neuman and Esser Group**	A long-established company from Übach-Palenberg near Aachen covers various stages of the H_2 value chain. It constructs electrolyzers, compressors, buffer storage tanks and even filling stations.

5. Current projects in the Rheinisches Revier

In addition to the HC-H2, an anchor project for structural change in Rheinisches Revier, there are a whole series of other hydrogen projects. Six examples:

- **H2 Bedburg:** In collaboration with RWE, the city of Bedburg is planning an electrolyzer with an initial capacity of 5 MW, a green hydrogen filling station, and a fueling station. This project will serve the local economy and public transport.
- **H2Revier** is set to make a quantum leap in H_2 mobility. RWTH Aachen University and the Center for Fuel Cell Technology in Duisburg are cooperating on

the project with Neapco Europe GmbH from Düren and AE Driven Solutions GmbH. Their aim is to manufacture fuel cell systems profitably in series production.

- At **MAPEVA,** Neuman & Esser wants to manufacture highly innovative, modular electrolyzers. The production line is intended to help to reduce costs and will create 400 new jobs.
- The **HECTOR** project revolves around the “storage of green hydrogen in LOHC on a ton scale at the Dormagen site” (HECTOR in German). Every day, five tons of green hydrogen are to be stored in the carrier liquid benzyltoluene at the local Chempark. It can then be conveniently transported to the port of Rotterdam for further use.
- The first HC-H2 demonstration project is called **Multi-SOFC at the Hermann-Josef Hospital** in Erkelenz. A state-of-the-art fuel cell system will convert hydrogen from an LOHC storage unit into electricity and heat, making the hospital’s energy supply more climate friendly.
- The purpose of the **HyTech** project is to use innovative biohydrogen technology to produce hydrogen from renewable sources.

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