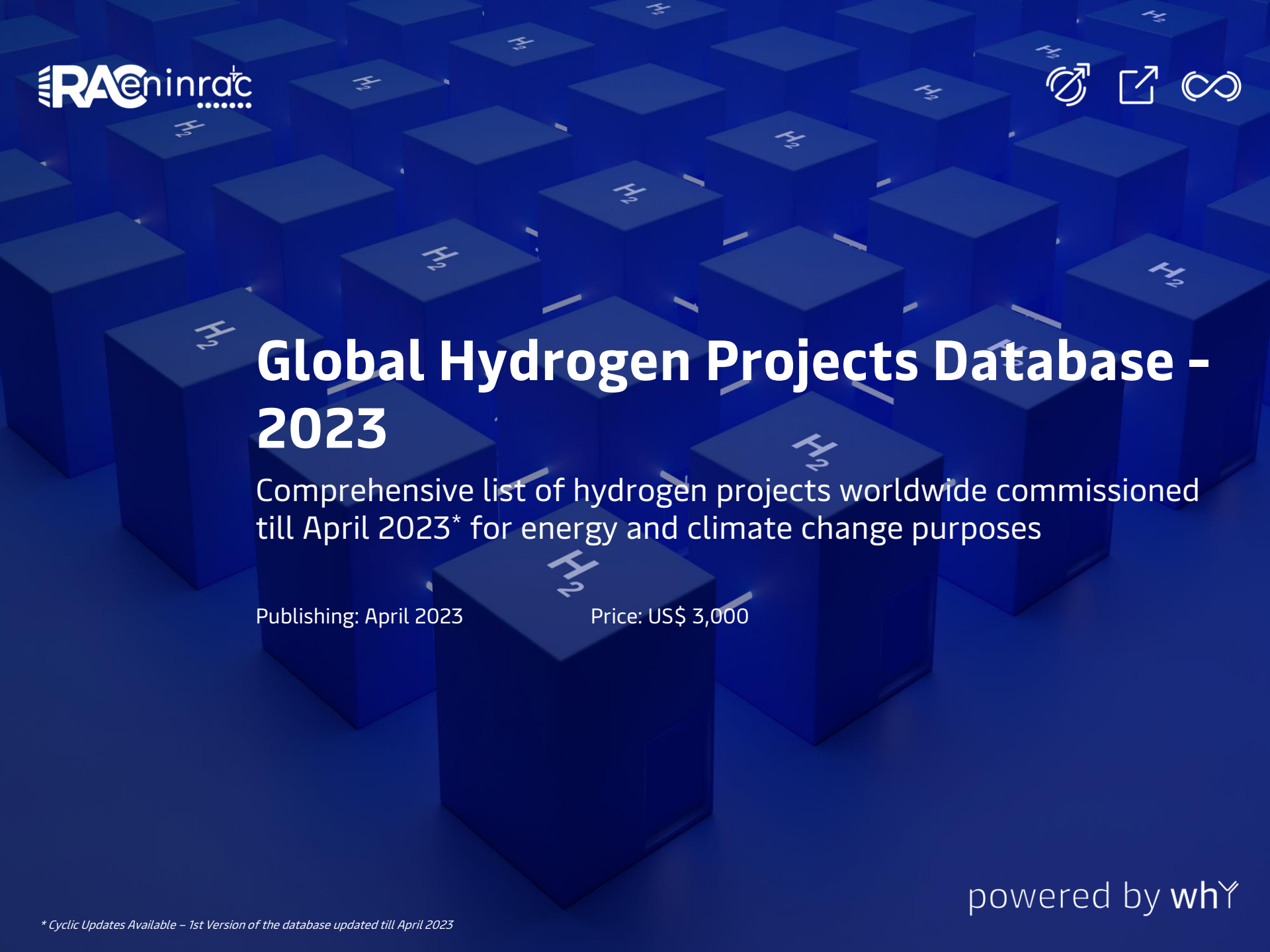

Global Hydrogen Projects Database - 2023

Comprehensive list of hydrogen projects worldwide commissioned till April 2023* for energy and climate change purposes

Publishing: April 2023

Price: US$ 3,000

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** Cyclic Updates Available – 1st Version of the database updated till April 2023*

Global Compilation of Hydrogen Projects: A Comprehensive Database

An essential factor in developing the hydrogen project database is to evaluate the market potential for hydrogen and how it has evolved after 2005, with a focus on the following aspects:

- Demand build-up
- Production sources
- Infrastructure as an enabler
- Trade possibilities
- Policy and regulation landscape
- Interests and extent of investors – global and domestic both
- Research and development in H_2 space – private and state-based centers
- Role of hydrogen changing energy landscape & its future
- H_2 to be vital part of net-zero equation quest
- Versatility of hydrogen to be adapted under different end-use applications like transport & mobility, industry & power

Global Hydrogen Projects Dataset: Comprehensive Coverage of Low-Carbon Technology Initiatives for Energy and Climate Change Mitigation

The development of a global hydrogen project database is necessary to keep track of the growing number of hydrogen projects worldwide. The hydrogen industry is rapidly expanding, and governments, investors, and industry stakeholders need reliable and up-to-date information on the location, size, and status of various hydrogen production projects around the world.

Additionally, a comprehensive database of hydrogen projects can help identify opportunities for investment and research, promote collaboration between industry stakeholders, and monitor progress toward decarbonization goals. By providing insights into the feasibility and potential demand for hydrogen-based products, a global hydrogen project database can also help accelerate the growth of the industry and bring down the cost of producing hydrogen, making it a more viable option for a range of applications.

In summary, **the development of a global hydrogen project database is essential** to support the growth of the hydrogen industry, promote collaboration, and monitor progress toward decarbonization goals.

This dataset encompasses all **hydrogen production projects** commissioned worldwide since 2005 with the purpose of either reducing emissions associated with existing hydrogen production applications or introducing hydrogen as a low-carbon technology option for new energy and industrial feedstock applications.

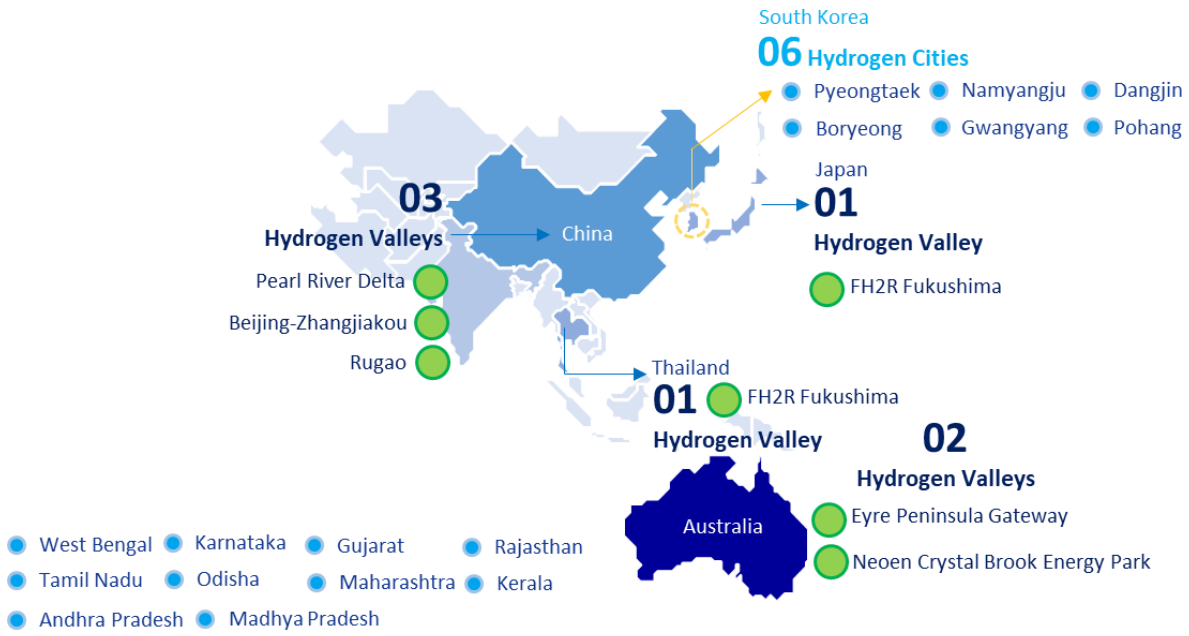
The projects, including those in **planning or construction**, are categorized according to the **production technology used** (such as electrolysis, fossil fuels with carbon capture, utilization, and storage, or other technologies), **the type of hydrogen-based fuel produced** (such as hydrogen, methanol, ammonia, methane, or synthetic hydrocarbons), and **the applications** for which the fuel is intended.

Global Compilation of Hydrogen Projects: Companies Mentioned

The global hydrogen project database includes around **2000+ projects** from leading original equipment manufacturers (OEMs) and other major players/developers in the hydrogen industry worldwide. These projects are located across various regions and cover a range of hydrogen production technologies, from electrolysis to steam methane reforming and gasification. The companies include:

- Fronius Energy Cell
- Hitachi Zosen
- DNV GL
- HARP System
- Synthetic Energy
- Reliance Industries Limited
- ACME
- Gas Authority of India Limited
- National Thermal Power Corporation
- Linde
- Air Liquide
- Siemens
- Air Products and Chemicals, Inc.
- Praxair, Inc.
- Nel ASA
- Hydrogenics Corporation
- McPhy Energy S.A.
- Mitsubishi Power, Ltd.
- Plug Power Inc.

Asia-Pacific region is likely to be home of 07 hydrogen valleys. Australia is anticipated to have see maximum hydrogen production projects getting commissioned by 2030



Source: eninrac research, FCH JU, Inycom, Roland Berger, GEM, EI Project Monitor

Asia-Pacific region is likely to be home of 07 hydrogen valleys. Australia is anticipated to have see maximum hydrogen production projects getting commissioned by 2030. **The Neoen Crystal Brook Energy Park in Crystal Brook**, South Australia is a hybrid renewable energy project with the ability to provide firm, reliable, 24-hour power to South Australian consumers. The project will combine around 235 MW of wind and solar generation and 130MW/400MWh of battery storage. It is 23 kms to Port Pirie. Nearly **106 hydrogen projects** are likely to see commissioning in Australia by 2033.

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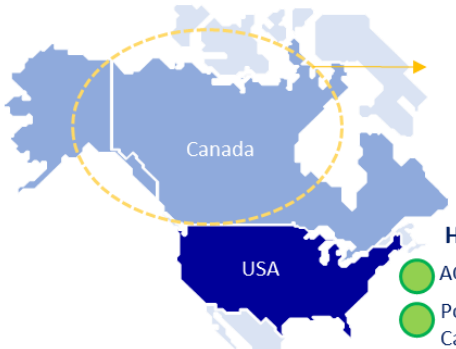
Hydrogen Valleys – Americas & Europe



04
Hydrogen Clusters
- Alberta
- British Colombia
- Quebec
- Ontario

02
Hydrogen Valleys
- ACES, Utah
- Port of LA, Shore to Shore Project, California

01
Hydrogen Valleys
- Hydrogen Facility Initiative

Nearly **169 hydrogen projects** are likely to see commissioning in **American countries till 2033**. Of this, about 67 projects are spread across Central & South American countries and 102 projects will be commissioned in North America. Canada has proposed four hydrogen clusters to be developed across **Quebec, Ontario, Alberta & British Colombia**. Quebec shall be developed at hydrogen production hub majorly; Ontario shall see hydrogen production & its transmission activities through pipelines. British Colombia to be developed at hydrogen hub for the transportation sector. Alberta shall be also be developed as transmission hub for hydrogen.

United Kingdom
02
Hydrogen Valleys
- Hy Net Northwest England
- BIG HIT Orkney Island

Netherland
02
Hydrogen Valleys
- HEAVNN
- Hydrogen Delta

Italy
01
Hydrogen Valley
- South Tyrolean Hydrogen Valley

Spain
01
Hydrogen Valley
- Green Hysland Mallorca

Spain anticipates 89 hydrogen projects to be commissioned **by 2033**. Recently, British Petroleum (BP) has inaugurated the green hydrogen cluster of the Valencia region (HyVal) at its 5.4 Mt/year Castellón refinery in Spain. This BP-led public-private collaborative initiative aims to deploy up to 2 GW of electrolysis capacity by 2030 for producing green hydrogen at the British company's refinery.

Germany
05
Hydrogen Valleys
- H2 Rivers/H2 Reinecker
- Hy Bayern
- Norddeutsches Reallabor
- e Farm
- Hyways4future

EU IPCEI
05
Hydrogen Valleys

Denmark
01
Hydrogen Valley
- Hy Balance

France
04
Hydrogen Valleys
- Zero Emission Valley, Auvergne-Rhone-Alpes
- Normandy Hydrogen Development
- Hydrogen Territory Bourgogne
- CEOG French Guiana

Austria
01
Hydrogen Valley
- WIVA P&G

Approximately 608 hydrogen projects are likely to see commissioning in European countries till 2033, with over 22 hydrogen valleys. In Europe, Germany to hold maximum number of upcoming hydrogen projects in the coming decade with a count 101. Hydrogen production in Germany has been initiated under four different geographic clusters - **Northern Germany, North Rhine-Westphalia, Central Germany and Berlin-Brandenburg-Lausitz to the east**. The country plans to produce 10 GW of hydrogen per annum by 2030

Source: eninrac research, FCH JU, Inycom, Roland Berger, GEM, EI Project Monitor

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Key Signposts – Importance of Global Hydrogen Project Database: Facilitating Investment Decisions, Advancing Research and Development, and Monitoring Decarbonization Goals

Key Signposts – Importance of Global Hydrogen Project Database	
1. Facilitating investment decisions	The hydrogen industry is still in its early stages of development, and investment decisions can be challenging without access to accurate and up-to-date information. A comprehensive database of global hydrogen initiatives can help investors identify potential opportunities, track the progress of projects, and assess the feasibility of different technologies. This information is essential for making informed investment decisions and reducing the risks associated with investing in new, emerging industries.
2. Advancing research and development	Developing new hydrogen technologies and production methods requires extensive research and development efforts. By analyzing the data and information available in a global hydrogen project database, researchers and developers can identify areas for improvement and develop more efficient and cost-effective production methods. This, in turn, can help accelerate the growth of the industry and bring down the cost of producing hydrogen.
3. Monitoring progress toward decarbonization goals	Hydrogen is an important component of many countries' plans to decarbonize their energy systems. By tracking the number, size, and location of hydrogen production projects worldwide, a global hydrogen project database can help monitor progress toward these decarbonization goals. This information is crucial for policymakers and industry stakeholders, as it provides insights into the growth and potential of the hydrogen industry and helps to identify opportunities for further development.

Source: eninrac research & Channel Checks

Contents & Coverage – Key Highlights

- **Project Information:** The database includes detailed information on each project, such as project name, location, commissioning date, production technology, and capacity.
- **Production Technology:** Projects in the database are categorized based on the production technology used, including electrolysis, fossil fuels with carbon capture, utilization, and storage (CCUS), and other emerging technologies.
- **Fuel Produced:** The database categorizes projects based on the type of hydrogen-based fuel produced, including hydrogen, methanol, ammonia, methane, synthetic hydrocarbons, and other hydrogen-based fuels.
- **Use of Fuel:** The database includes information on the use of the fuel produced, such as transportation, industry, power generation, and heating.
- **Status:** The database includes information on the status of each project, whether it is in planning, construction, or operation.
- **Geographic Coverage:** The database covers projects from all regions of the world, including North & South America, Europe, Asia, Asia Pacific, and the Middle East.

Table of contents – In Focus

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