



**POLITICAL
INTELLIGENCE**

Update on Germany's Hydrogen Strategy

By Lorenz Kramer



Introduction

Germany was already at the forefront of efforts to develop hydrogen as a source of environmentally friendly energy before the invasion of Ukraine, but the war has added even greater urgency to the country's search for viable alternatives to Russian fossil fuels. The country's National Hydrogen Strategy published in mid-2020 was one of the first national-scale blueprints in Europe to show how imported and domestically-produced so-called green hydrogen produced using renewable energy sources could contribute to the country's drive to achieve net zero by 2045. Chancellor Olaf Scholz has since pledged to update the strategy to make it more ambitious and binding and said he wants to trigger a boom in the hydrogen industry. "Green hydrogen is the key to decarbonising our economies, especially for hard-to-electrify sectors such as steel production, the chemical industry, heavy shipping and aviation," he [said](#) during a discussion on green hydrogen at the COP27 UN climate change conference in Egypt in November, 2022.

This [Dods Political Intelligence](#) report, the first in a two-part series produced by our German-language team, provides an update on Germany's hydrogen energy strategy, including domestic developments since the launch of the landmark national plan and recent efforts to secure international supply. The second report in the series will focus on the development of hydrogen use in Germany's transport sector.

National Hydrogen Strategy Sets Ambition

The German government has supported research into the use of hydrogen as an energy source for many years. However, it was the publication of the [National Hydrogen Strategy](#) in June 2020 followed by the Hydrogen [action plan Germany 2021-2025](#) which staked its claim to be a global frontrunner in the use of hydrogen in a range of sectors from energy to industry and transport.

The German government considers that only "green" hydrogen, produced using electricity from renewable sources to electrolyse water and separate hydrogen and oxygen, to be sustainable in the long term. However, it has also said CO₂-neutral so-called blue or turquoise hydrogen will also have a role in the German market and may be used on a transitional basis. On the hydrogen colour spectrum, grey hydrogen is the most common form of hydrogen production, formed by using natural gas or methane and without capturing the greenhouse gases produced in the process.

Under the "Zukunftspaket" stimulus package, the national strategy includes €7 billion investment in domestic green hydrogen technology development and an additional €2 billion to help develop international partnerships in the hydrogen market in Europe and further afield. This investment is also being bolstered by support at the regional level, with several German states also developing hydrogen roadmaps and related legislation.

Although hydrogen energy demand in Germany is estimated at around 57 terawatt-hour (TWh) per year, mainly for the chemical and petrochemical industry, a relatively low figure, it is expected to increase to 90-110 TWh by 2030. The government has set a target of 10 gigawatts (GW) of installed domestic capacity in 2030, for which it is estimated that the country will have to import around 60 percent of the hydrogen required. To support domestic production, the government waived the renewable energy fee for electricity used to produce green hydrogen under the Renewables Energy Services Act, or EEG, tariff law in late 2020.

Russia's invasion of Ukraine has provided further momentum in the funding and implementation speed of national hydrogen projects. Following Russia's curbing of natural gas exports to Germany, Berlin has moved to construct additional natural gas terminal and pipeline infrastructure in Germany's northern port cities. Should technological and logistical demand for hydrogen overtake natural gas on the European energy market, the new pipelines could be re-purposed to transport hydrogen.

In conjunction with the German federal states, 62 German Important Projects of Common European Interest (IPCEI projects) were selected to provide funding for the first approximately 1,700 km of hydrogen pipelines. IPCEIs are strategic instruments for the implementation of the European Union (EU) Industrial Strategy and mainly include large scale infrastructure and industrial projects to accelerate the green transition across the bloc. One of Germany's most important hydrogen IPCEIs involves a €1 billion measure to help steel producer Salzgitter Flachstahl GmbH decarbonise its production processes by using hydrogen, including renewable hydrogen produced on site at a new facility.

Further IPCEI-related expansions of Germany's national hydrogen network seek to connect additional industrial hubs, such as the [Bavarian Chemical Triangle](#) with industrial sites in Eastern and Northern Germany, following approval by the Federal Network Agency. These state aid measures aim to support the [EU Hydrogen Strategy](#) and [European Green Deal](#) targets, while also helping reduce Europe's dependence on Russian fossil fuels and accelerate the bloc's green transition, in line with the [REPowerEU](#) Plan.

Germany's [National Hydrogen Council](#) (NWR) published a [position paper](#) on the roll-out of the national hydrogen strategy, laying out five key demands for an improved market ramp-up:

- **Creation of a certification and trading system to establish a financially solvent hydrogen market**
- **Rapid development and expansion of the hydrogen infrastructure, including storage facilities**
- **Rapid ramp-up of the availability of climate-neutral hydrogen and its derivatives via domestic production and early imports from other European and non-European countries**
- **Creation of a coherent (support) framework for the development of sales markets for hydrogen**
- **Research and development for a sustainable hydrogen evolution with a focus on the realisation of large-scale and holistic demonstration projects.**

Private sector firms have also made strides to develop their hydrogen capacity in recent years. In June 2022 German multinational energy company RWE and steel producer ArcelorMittal announced that they planned to work together to develop, build, and operate offshore wind farms and hydrogen facilities to produce renewable energy and green hydrogen for the production of low-emissions steel. The steelmaker has said it needs renewable energy on a large scale to decarbonise production at sites in Bremen, Hamburg, Eisenhüttenstadt, and Duisburg. The firms said the progress of the Wind Energy at Sea Act (WindSeeG) would be critical for shaping the cost structure in the German offshore wind sector.

However, despite the ambition, there are signs Germany's hydrogen plans have suffered after the country was forced to rely on more polluting forms of energy following the economic upheaval and disrupted gas supplies caused by Russia's invasion of Ukraine. Industry figures have said the

high price of energy remains a key obstacle for the development of the hydrogen market and voiced concern about investment in hydrogen infrastructure.

E.ON, Germany's biggest utility, said in November that it could not focus on hydrogen investments without a clearer legal framework and financial support for infrastructure. "It is not clear whether or not the creation of a new hydrogen market, away from a niche, is possible by 2030," Patrick Lammers, the firm's chief operating officer, was reported saying. An E.ON-sponsored study from Cologne energy research institute EWI showed planned German electrolysis plants would result in 5,607 gigawatts (GW) of green hydrogen capacity by 2030, a little more than half the government target. [Inga Posch](#), Managing Director of energy company FNB Gas, has also urged the government to not postpone construction plans for the country's hydrogen infrastructure network. "Without a grid there can be no hydrogen market," she [said](#).

Business groups have delivered similar messages calling for the government to go further. [Siegfried Russwurm](#), President of the Association of German Industries (BDI), has urged the government to introduce price cuts on carbon neutral energy sources to provide greater incentive and economic certainty for investors and industries in speeding up their transition towards green hydrogen. The German Association of Energy and Water Industries (BDEW) said in December that more was needed to boost investments in hydrogen, including a Hydrogen Act to cut red tape. "2023 must provide new impetus for investments in renewable energies, hydrogen, hydrogen-capable gas-fired power plants and energy networks," Kerstin Andreae, the president of the country's largest energy industry association, [was](#) reported as saying.

Dods Political Intelligence reached out to Germany's Hydrogen Fuel Cell Association and H2Global Stiftung for an up-to-date assessment of Germany's national hydrogen strategy for this report but neither responded.

Partnerships in Europe and Further Afield

As part of the National Hydrogen Strategy, Germany set out plans to establish a network of partnerships in Europe and further afield to produce green hydrogen for the German market. The first pilot projects for production of green hydrogen are to be implemented in the [Federal Ministry of International Development's](#) (BMZ) partner countries. Demonstration projects with Australia and countries in West and Southern Africa aim to lay the groundwork for international hydrogen trade and create new export and/or import opportunities and markets for innovative technology companies from Germany.

The BMZ is also putting together "[green hydrogen atlases](#)" to present the potential for green hydrogen production in partner countries and highlight opportunities for sustainable development in Africa. In September 2022, a group of German researchers published a [list](#) of potential partner countries in Europe and further afield that could produce green hydrogen for the German market, including: The Netherlands, Spain, Portugal, Norway, and the UK, and also Australia, Chile, Morocco, the UAE, and Namibia.

Under the National Hydrogen Strategy, the BMZ has already entered an alliance with Morocco for the development of the Power-to-X sector which channels surplus electric power from electricity networks to feed them into other industries. Under the partnership with Morocco, the first step will be to build Africa's first industrial plant for green hydrogen and PtX derivatives. The two sides are planning to establish some 100 megawatts in hydrogen electrolysis capacity. The BMZ has

stressed that the energy and water resources required be used sustainably, while also avoiding competition for resources with the local community.

As part of a visit to Namibia and South Africa in early December 2022, Robert Habeck, Germany's Economic Affairs and Climate Action Minister, underlined Germany's strategic interest in the region given that local wind and solar energy capacities present excellent conditions for green hydrogen generation. In Windhoek, Habeck [stressed](#) that African countries would emerge as "important partners in the diversification of global value chains and in decarbonising global energy systems." In advance of the visit, RWE and Namibia's Hyphen Hydrogen Energy signed [a joint declaration of intent](#) for the production and export of 1 million tons of green ammonium per year produced in Namibia starting in 2027, of which a third is to be delivered to RWE to repurpose into green hydrogen.

The German government has funded other incentives for international partnerships in hydrogen research: On October 4th 2021, it announced its [funding guideline](#) for international hydrogen projects, with grants of up to €350 million for green hydrogen production, storage, transport, and application as well as research projects. The call for funding was published in various chambers of industry and commerce around the globe. In December 2021, the German government also launched the [H2Global Initiative](#), which is designed to test an efficient funding program for a rapid market ramp-up and import of green hydrogen and power-to-X products with an initial financial allocation in excess of €900 million. As part of the recently announced 2023 [federal household budget](#), the government plans to make another €3.5 billion available for new bidding rounds with terms running up to 2036.

There have been more private sector and national hydrogen deals since the start of the war in Ukraine. In March 2022, E.ON said it had signed a preliminary [agreement](#) with Fortescue Future Industries, a unit of Australia's Fortescue Metals, to look at ways to ship up to five million tonnes of green hydrogen to Europe by 2030, as part of ongoing efforts to secure greener energy sources and diversify away from Russian fossil fuels. The deal followed the signing of the Germany Australia Hydrogen Accord in mid-2021, which aims to bolster hydrogen production and trade between the two countries.

More recently, Germany signed an agreement on hydrogen cooperation with India in May 2022, and an [agreement](#) with Canada in August 2022 to ship green hydrogen to Germany by 2025. Scholz and Canadian Prime Minister Justin Trudeau met in the province of Newfoundland and Labrador where US-owned World Energy is planning a multibillion-dollar project to export ammonia, a favoured method for transporting hydrogen. Habeck said the Canada-Germany Hydrogen Alliance was a "significant milestone as we accelerate the international market rollout of green hydrogen".

However, it has not all been smooth sailing for Germany's hydrogen plans. New EU laws governing the production of renewable hydrogen were reportedly [delayed](#) after the incoming Scholz administration raised questions about the legislative framework and regulations for imports, a key concern in Berlin's desire to establish a global supply chain. Germany and France have also disagreed about whether hydrogen produced using electricity generated by nuclear power stations—France's main energy source—can be labelled as green.

Germany reiterated its commitment for international hydrogen partnerships during the 27th [UN Climate Change Conference](#) (COP-27) in Sharm el-Sheikh, announcing the world's first platform for tailored financing of infrastructure for green hydrogen and its derivatives. Under the initiative,



German state-owned investment and development bank KfW will establish two new hydrogen funds worth €550 million: A Development Fund will foster hydrogen investment in developing and emerging economies, whilst a Growth Fund will contribute to accelerating the global market and infrastructure development for green hydrogen across all countries.

The German government is due to revise and update its National Hydrogen Strategy in early 2023. According to media reports, a draft government [paper](#) indicated the target of doubling of Germany's electrolysis capacity to 10 gigawatts by 2030 would be enshrined in law. The update would also include plans for the construction of 1,800 km of hydrogen pipeline infrastructure by 2027 and setting up a part state-owned hydrogen network company to help ensure a grid is affordable and fit for purpose. The draft plan also sees the use and import of blue hydrogen, produced using natural gas with carbon capture and storage, during a transition period towards green hydrogen. The government plans to revise its national hydrogen strategy on a three-year basis to keep up with market developments.

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