INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update November 2021: Germany

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1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

The Federal Ministry of Transport and Digital Infrastructure (BMVI) is funding the development of **renewable fuels** with a total of €640 million. The two-stage application process was opened in August 2021. More information can be found here.

Germany takes part in the EU program Important Project of Common European Interest (**IPCEI**) in the hydrogen sector. For some of the preselected projects the prenotification process started in September 2021. Other projects are currently looking for matchmaking partners in the EU.

In June 2021 the **H2Global** foundation was established. Through the H2Global concept green hydrogen production sites and export H2 to Germany (and Europe) are to be supported by compensating the difference between hydrogen supply cost and the highest bidding price at the demand side. H2Global is currently in the launch phase.

Germany has joined the **Clean Hydrogen Mission** which was launched in Chile on June 2nd, 2021, as a new global coalition to support the clean hydrogen economy: The goal of the Mission is to reduce the costs of clean hydrogen to the end user to $US2 per kilogram by 2030 and to deliver at least 100 large-scale integrated hydrogen valleys worldwide.

2. Hydrogen and Fuel Cell R&D Update

In September 2021 the result of the competition to determine locations for the Hydrogen **Innovation and Technology Centre (ITZ)** was announced. Learn more about the different locations and their individual focus areas here.

In September 2021, the **EnaBle** project commenced. It includes the development and improvement of a 250 kW power train based on hydrogen and fuel cells for smaller aircraft. The project is funded by the BMWi's aeronautics research programme with around €8 million.

The **H2LeakDect** project is ongoing and develops a novel testing method for detecting and locating leaks in hydrogen components and systems. More information can be found here. It is funded by the BMVI.

The results of the **HydroFlow** project, which is about the development of a calibratable, high-precision Coriolis mass flow meter for hydrogen filling stations, were presented in September 2021. More information can be found here.

In October 2021 a call for project outlines for **German-Chinese** research and development cooperation projects in the field of hydrogen and fuel cell vehicles was published (open until end November).

3. Demonstration, Deployments, and Workforce Developments Update

In July 2021, Europe's largest **PEM green hydrogen electrolyser** (10 MW) started operation at Shell's Rhineland Refinery in Wesseling as part of the *REFHYNE* project.

Also, in July, the funding approval notice for the construction of a **20 MW electrolyser** for the production of green hydrogen by Air Liquide Germany in Oberhausen was handed over. The project has a volume of €10.9 million. More information can be found here.

In September 2021, the Federal Government published the first progress report on the **implementation of the National Hydrogen Strategy** which was originally launched in June 2020. The progress report can be found here (German only). The National Hydrogen Strategy is available in English here.

In September 2021, the winners of the second phase of the **HyLand programme** were officially announced in the HyStarter and HyExperts categories. Fifteen regions won each category, so a total of 30 regions were announced. Details can be found here.

4. Events and Solicitations

No updates on upcoming events this time.

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

New funding guidelines for alternative drive trains were published for trains (June 2021), trucks (August 2021), buses (September 2021), as well as for fuel cell cars in fleets (July 2021) and for refuelling infrastructure for heavy duty vehicles (October 2021)

6. Regulations, Codes & Standards, and Safety Update

A website with information on fuel cell and hydrogen RCS topics is currently in preparation.

Summary Country Update November 2021: Germany

Transportation	Target Number	Current Status (through September 2021)	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles[1]		1347		Subsidy for purchase for fleets (NIP II 3rd Call) incl. construction of refuelling infrastructure
FC Bus		54	Joint procurement in Europe, funded by JIVE, FCH-JU and NIP I and II	Subsidy for purchase (NIP II call 2018) incl. construction/installation of refuelling infrastructure. New funding guideline for deployment awaiting notification.
Fuel Cell Trucks[2]		20		R&D activities of NIP. New funding guideline for deployment awaiting notification.
Forklifts		117 plus 167 approved for funding.	Industry Network Clean Intralogistics Net (CIN)	NIP market activation, additional procurement call
H_2 Refueling Stations	**Target Number**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
70 MPa On-Site Production	No target	n.a.		

[1] Includes Fuel Cell Electric Vehicles with Range Extenders

[2] As above

70 MPa Delivered	100 by 2020 (basic network)	91 plus 15 in planning or under construction	H2 Mobility, others	Subsidy for construction/ installation for publicly accessible stations for road transport
35 MPa On-Site Production	No target	n.a.		
35 MPa Delivered	400 by 2025 (depending on vehicle roll-out) 1000 by 2030 (depending on vehicle roll out)	10 plus 9 in planning or under construction	H2 Mobility, others	Subsidy for construction/ installation for publicly accessible stations for road transport
Stationary	**Target Number[3]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Small[4]	No target	18,251 units approved for funding		KfW programme 433 of the Federal Ministry for Economic Affairs and Energy (BMWi), a combination of fix rate and capacity-related subsidies
Medium[5]	No target	n.a.		
Large[6]	No target	n.a.		

[3] Targets can be units installed and/or total installed capacity in the size range indicated
[4] <5 kW (e.g., Residential Use)
[5] 5kW – 400 kW (e.g., Distributed Residential Use)
[6] 0.3MW – 10 MW (e.g., Industrial Use)

District Grid[7]	No target	n.a.		
Regional Grid[8]	No target	n.a.		
Telecom backup	No target	700 in operation (558 additionally approved for funding)		Subsidy for procurement (NIP II call)
H_2 Production	**Target[9]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Fossil Fuels[10]				
Water Electrolysis[11] (PEM, Alkaline, SOEC)	5 GW by 2030. Additional 5 GW by 2035-2040	58 MWel (50 projects) plus >2 GWel planned or proposed as part of IPCEI		Subsidy for procurement (NIP II call) specifically for mobility applications minimum size 250 kWel 7th energy research program by BMWi (applications for >300 MWel within “Reallabore” programme) HyLand Initiative by BMVI supports regional H2 production. Support through IPCEI currently in the European match-making phase.
By-product H_2				

[7] 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)
[8] 30MW plus (e.g., Grid Storage and Systems Management)
[9] Target can be by quantity (Nm^3, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target
[10] Hydrogen produced by reforming processes
[11] Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)

Energy Storage from Renewables	Target[12]	Current Status	Partnership, Strategic Approach	Support Mechanism
Installed Electrolyser Capacity	As above	As above		As above
Power to Power[13] Capacity	No target			
Power to Gas[14] Capacity	No target			

[12] Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity

[13] Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity

[14] Operator has the opportunity to provide the stored energy in the form of hydrogen back to the energy system through multiple channels (e.g., merchant product, enriched natural gas, synthetic methane for transportation, heating, electricity)