



International Partnership  
for Hydrogen and Fuel Cells  
in the Economy

## *IPHE Outreach Forum*

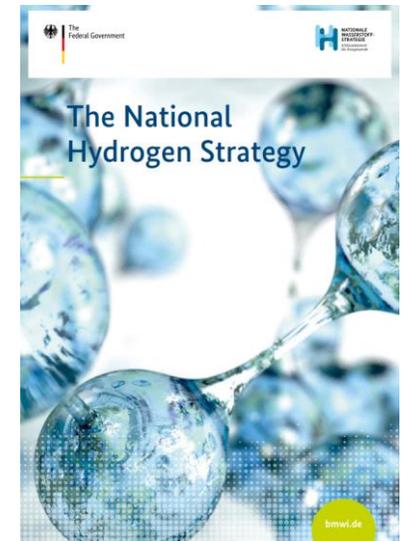
# **Visions & Actions on Hydrogen: GERMANY**

28 November 2022

Center for High Technology, San José, Costa Rica

# Governance and Policies – *Germany*

- Germany has the goal and is aligning its policies to be a **climate-neutral economy by 2045**.
- The Federal Government considers only hydrogen that has been produced using renewable energy (**green hydrogen**) to be sustainable in the long term.
- The coalition treaty of the government pledges to make Germany a **lead market for H2 technology by 2030**
- **Immediate Climate Action Programme for 2022:** Promoting use of green H2 in the industry and amending the National H2 Strategy to include the promotion of offshore electrolysis plants
- German coalition government pledged to **double the 2030 electrolyser deployment target from 5 to 10 gigawatt**
- **Update of 2020`s National Hydrogen Strategy** (planned for end of 2022): The national H2 strategy shall be updated in an ambitious manner to enable a swift market ramp-up



# Market ramp up: Government & Collaborative Funding for Mobility Applications – *Germany*



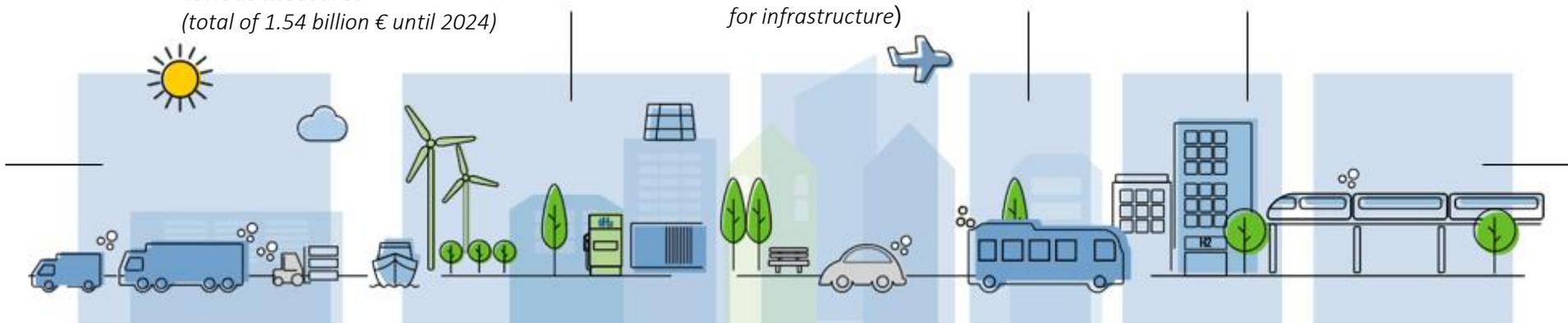
**Commercial vehicles**  
Funding guideline for commercial vehicles (N1-N3) with alternative powertrains (1.3 billion € until 2024 plus funding for infrastructure)

**Hydrogen production and electricity-based fuels**  
Funding guidelines for various measures (total of 1.54 billion € until 2024)

**Buses**  
Funding guideline for buses with alternative powertrains (1.2 billion € until 2024 plus funding for infrastructure)

**Hydrogen Technology and Innovation Centers**

**Rail transport**  
Guideline for the promotion of alternative drivetrains in rail transport (224 million € in first call for funding)



Support across applications

HyLand – Hydrogen regions in Germany  
IPCEI (Important Project of Common European Interest)



Legend: R&D Funding, Investment Funding, Both R&D and Investment Funding

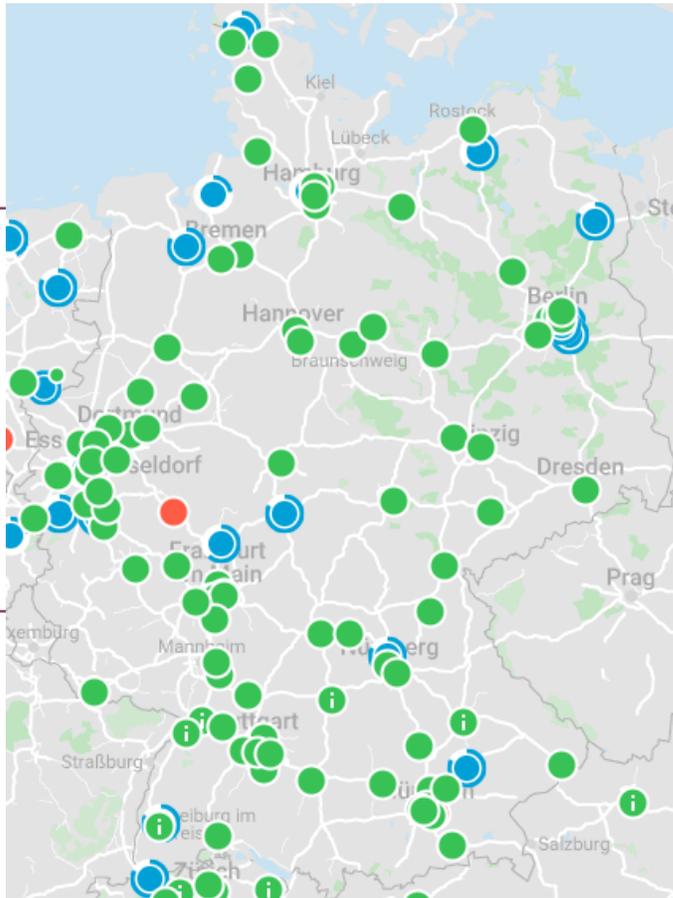
BMDV: Federal Ministry for Digital and Transport



# Market ramp up: Government & Collaborative Funding for Mobility Applications / HRS Infrastructure – *Germany*



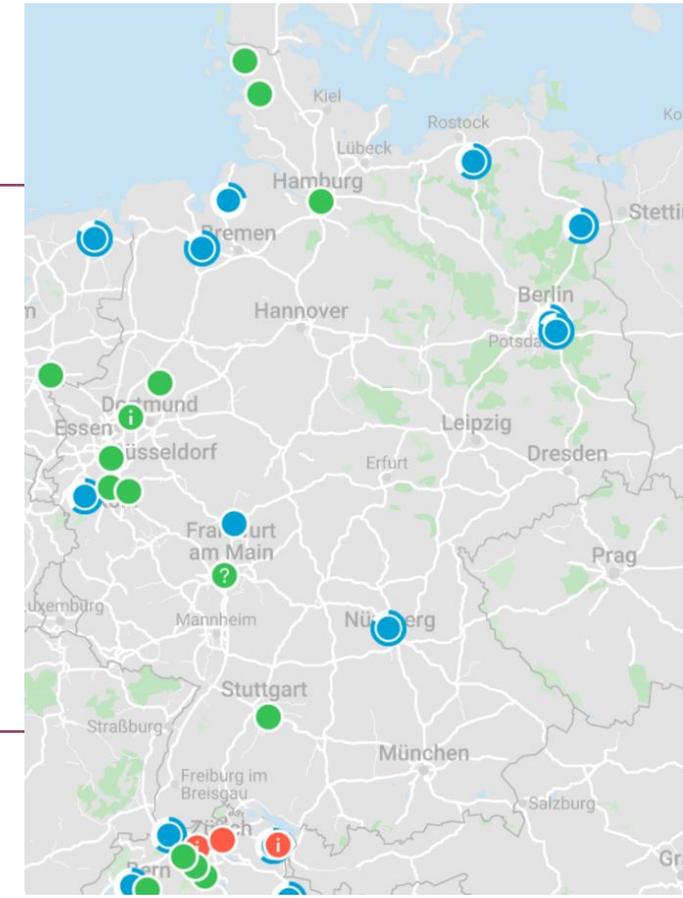
700 bar: For passenger vehicles & waste collection vehicles



## Current status

- 95 in operation (H2 MOBILITY 90)
- 8 in planning or under construction

350 bar: For busses, LDV & HDV



## Current status

- 12 in operation (H2 MOBILITY 5)
- 5 in optimization mode (refueling already possible, but not yet officially opened)
- 10 in planning or under construction



# Market-ramp up: Government & Collaborative Funding – *Germany*



## **HYLAND I & II** Support for initiation, planning and implementation of integrated H2 concepts

With the HyLand concept, municipalities are accompanied on their way to the hydrogen economy as **HyStarters, HyExperts or HyPerformers**, depending on their level of knowledge.

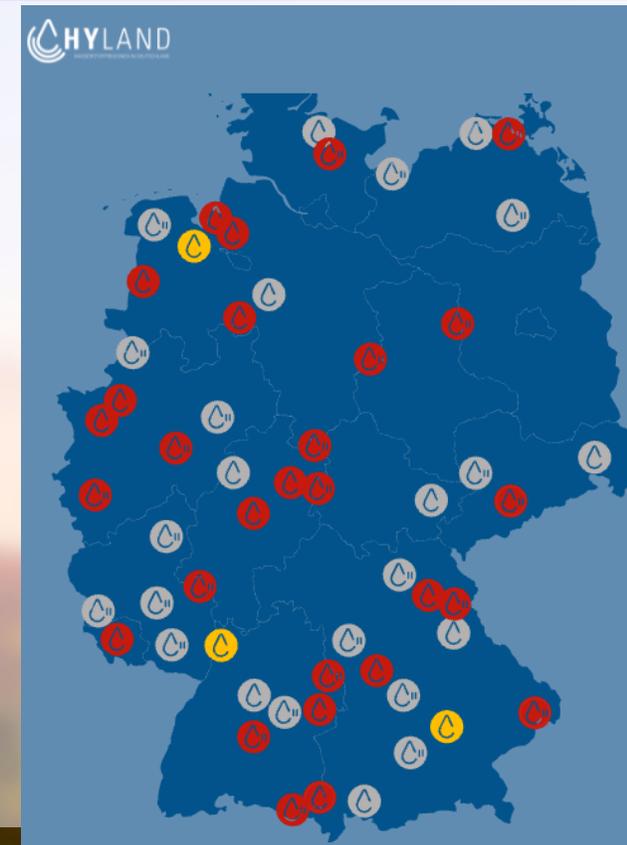
From 2019 to 2021, **25** regions in Germany have been supported with around **€ 67 m**

**30** more regions have been chosen for HyStarters and HyExperts

Call for additional HyPerformer regions currently open



[www.hy.land](http://www.hy.land)



# Market-ramp up: Government & Collaborative Funding for Hydrogen Production – *Germany*



Example:  
H2Global



# Numbers of Deployment and Infrastructure – *Germany*

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles		2,049 (Nov. 2022)		Subsidy for purchase for fleets (NIP II 3rd Call) incl. construction of refueling infrastructure.
FC Bus		71 (Nov. 2022)	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 refueling infrastructure. New funding guideline for deployment awaiting notification.
Fuel Cell Trucks		29 (Nov. 2022)		R&D activities of NIP. New funding guideline for deployment awaiting notification.
Forklifts		180 (Nov. 2022) plus 152 in implementation	Industry Network Clean Intralogistics Net (CIN)	NIP market activation, additional procurement call.
H <sub>2</sub> Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
70 MPa Delivered	100 by 2020 (basic network)	95 (Nov 2022) plus 8 in planning or under construction	H2 Mobility, others	Subsidy for construction/ installation for publicly accessible stations for road transport.
35 MPa Delivered	400 by 2025; 1000 by 2030 (depending on vehicle roll out)	12 in operation + 5 in optimization mode (refueling already possible, but not yet officially opened), 10 in planning or under construction	H2 Mobility, others	Subsidy for construction/ installation for publicly accessible stations for road transport.



# Numbers of Deployment and Infrastructure – *Germany*

Stationary	Target Number <sup>16</sup>	Current Status	Partnerships, Strategic Approach	Support Mechanism
Small	No target	20,810 units approved for funding (2016 through August 2022)		KfW programme 433 of the Federal Ministry for Economic Affairs and Climate Action (BMWK), a combination of fix rate and capacity-related subsidies.
Telecom backup	No target	850 (Nov. 2022) plus 608 in implementation	Industry Network Clean Power Net (CPN)	Subsidy for procurement (NIP II call).
H <sub>2</sub> Production	Target <sup>17</sup>	Current Status	Partnerships, Strategic Approach	Support Mechanism
Water Electrolysis (PEM, Alkaline, SOEC)	10 GW by 2030. (pledged by new government)	78 MWel plus >2 GWel planned or proposed as part of IPCEI		Various support schemes.



# International Collaboration – *Germany*



# Sources – *Germany*

- **H2Global Foundation:** <https://www.h2-global.de/>
- **Regulations, Codes and Standards** for the field of hydrogen and fuel cell technology: <https://rcs.now-gmbh.de/en/>
- **Deployment numbers and transport sector:** [www.now-gmbh.de](http://www.now-gmbh.de)
- **HRS Infrastructure:** <https://h2-mobility.de/> ; <https://h2.live/en/>
- **BMBF Hydrogen Flagship Projects:** <https://www.wasserstoff-leitprojekte.de/home>
- **Hydrogen Regions:** <https://www.hy.land/>
- **Energy partnerships** and energy dialogues: <https://www.bmwk.de/Redaktion/EN/Artikel/Energy/international-energy-policy-2.html>
- **H2 Compass:** <https://www.wasserstoff-kompass.de/en/h2-kompass>
- **Export Initiative Environmental Protection:** <https://www.exportinitiative-umweltschutz.de/>



# Thank you



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# Market-ramp up: Government & Collaborative Funding – *Germany*



- **PtX Growth Fund & PtX Development Fund:** Investment cost subsidies (approx. 300 million euros) to leverage loan financing of green H2 projects outside the EU (with participation of GER companies). The PtX Development Fund (approx. 250 million euros) focuses complementarily on investments to strengthen local H2 value creation in Official Development Assistance-eligible countries (announced at COP27).
- **H2Upp:** Accompanies and supports the market ramp-up of green H2 and PtX applications in developing and emerging countries in cooperation with the private sector. Focus on project identification, training and promotion of pilot projects in public-private partnerships (funding volume 16 million euros).
- **Export Initiative Environmental Protection:** Since 2016, the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection has been supporting German green tech companies in the internationalization of their "green" innovations, products and services with its "Export Initiative Environmental Protection" (EXI for short) funding program, including fuel cells and hydrogen for decentralized power supply.



# Market ramp up: Government & Collaborative Funding – *Germany*



## IPCEI Hydrogen

- Wide range of project types and technologies as well as large number of submitted applications
- **Clustering** of thematically related projects across Europe in waves



**TECHNOLOGY**  
(Hy2Tech)

➤ Technology development of various applications towards first commercial use



**INDUSTRY**  
(Hy2Use)

➤ Industrial application of H2 (chemical and steel industry)  
➤ Driving the demand for hydrogen



**MOBILITY & TRANSPORT**  
(Hy2Move)

➤ Various mobility applications (road, rail, marine & aviation).  
➤ Development of H2 propulsion technologies



**RHATL**  
(Regional Hubs & Their Links)

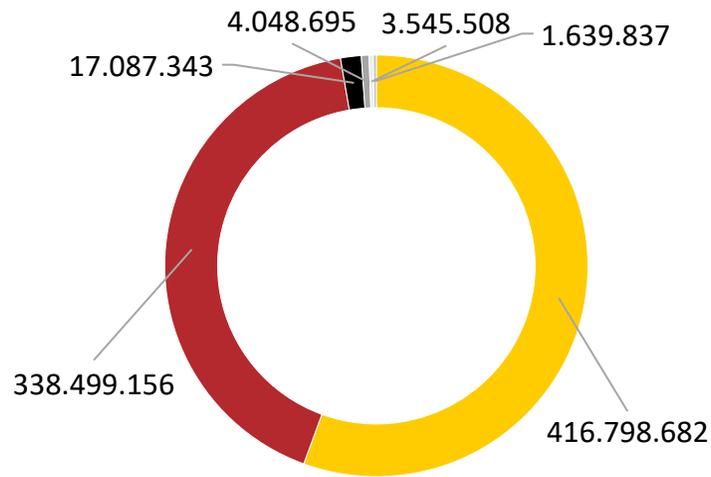
➤ Expansion of H2 infrastructure (European H2 backbone)  
➤ Linking producers with purchasers



# Market ramp up: Government & Collaborative Funding for Mobility Applications – *Germany*

General overview - funding and number of funding objects  
(as per September 2022)

## Transport Ministry (BMDV) Funding NIP €



- Market Activation
- R&D
- Hyland
- Studies
- Cluster
- Int. Cooperation

