



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update June 2021: The Netherlands

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Covered Period	November 2020 - June 2021

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

- [Letter to the Dutch Parliament over the progress of the implementation of the Dutch Hydrogen strategy released in March 2020](#). (December 2020)
- [Market consultation on hydrogen production via electrolysis](#) (January 2021). This consultation was organized by the Ministry of Economic Affairs and Climate Policy to allow companies to deliver their input on the development of a financial instrument for the support of the construction of electrolyzers to produce green hydrogen.
- [The Dutch Council for the Environment and Infrastructure \(Rli\)](#) published an advisory report on hydrogen where they establish the significance and strategic importance of climate-neutral hydrogen as feedstock, fuel, and energy carrier as part of a sustainable Dutch economy. (January 2021)
- New cluster within the [Partners for International Business Programme](#) to strengthen collaboration with Japan on hydrogen technologies.
- The Cross Sectoral Hydrogen Working Group ([CSWW](#)) was temporarily established in January 2021 and until July 2021 to set up the working plan of the National Hydrogen Programme (NWP) to be implemented from 2022-2025. The working plan will describe the concrete activities that will fall within the NWP for the whole hydrogen chain.
- [Green Deal “H2-Wijken”](#) between the national government, regional governments, and market parties to work together on the technical, legal, and social aspects of hydrogen use in residential heating (March 2021)
- [International guide](#) published to promote the Netherlands as a partner in hydrogen technology, showcasing Dutch hydrogen companies looking for international collaborations and trade opportunities. (April 2021)
- [German-Dutch joint innovation approach to green hydrogen and green chemistry](#) (April 2021)
- [International Hydrogen Platform](#). Platform organized by the Dutch government and the employer’s organization for the technology industry (FME) to bring together companies and knowledge institutes that want to interact with international partners. The first session was held on 20th May with over 80 participants.
- IPCEI match making procedure (June 2021)

2. Hydrogen and Fuel Cell R&D Update

There is no specific information on cost reduction and enhanced performance of FCH technologies at our disposal. In December 2020, TKI New Gas published an analysis on hydrogen projects subsidized the last 8 years. In the period from 2012-2020, 76 projects were subsidized, amounting to €27,916,303. The total investment is estimated to be approximately €46.5; 13% of the total budget was awarded to 32 projects in concept phase (research of ideas and new products), and 87% of the budget was destined for technology development projects where the TRL of a specific product was improved. The report (in Dutch) can be found [here](#).



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3. Demonstration, Deployments, and Workforce Developments Update

There are numerous projects undertaken by Dutch industry, small and medium enterprises, research institutes, consultants, NGOs and regional governments aiming at realizing the potential role of hydrogen as established in the National Hydrogen Strategy. TKI New Gas has recently published an update of the projects overview with over 130 active Dutch pilots and demonstration projects on hydrogen. This overview can be found [here](#).

4. Events and Solicitations

Provide information on upcoming hydrogen-related events that will include international participants. Also, please provide any information regarding solicitations¹ that can lead to collaboration among IPHE members.

- Joint Hydrogen TCP- IEA workshop on Power-to-Hydrogen and Hydrogen-to-X. 1st of July 12-14 CEST. Register [here](#).
- [World Hydrogen Congress](#), 4 – 6 October 2021 at the PTA Congress Centre in Amsterdam, The Netherlands.
- [European Green Ammonia & Hydrogen Decarbonisation Summit](#), 21-22 September, Rotterdam, The Netherlands
- [Hydrogen Industrial series 2021- Europe](#), 7th July 2021, Virtual
- [H2 Event](#): Hydrogen innovations and the European and national support, 2nd July, online

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

- Within the [National Growth Funds](#) the “Greening the Dutch Economy” project was awarded designed to accelerate the implementation of green hydrogen applications in industries such as the chemical industry, the transport industry and heavy industry by using innovative production methods and green hydrogen. The Growth Fund will inject up to €338million into this project. €73million will be allocated subject to conditions, and another €265million will be set aside for the project.
- [Subsidy for Hydrogen Technologies](#) to stimulate low-cost and efficient hydrogen production and to improve the combustion process burners and gas turbines. The total budget is €3million and each project can get a maximum funding of €250,000
- [Subsidy TSE Industry](#) to stimulate sustainable industry and fuels for aviation and maritime applications. Hydrogen projects may apply. The total budget is €6,36 million. The maximum budget per project is €500,000.

6. Regulations, Codes & Standards, and Safety Update

The National Climate Agreement mandates statutory and regulatory flexibility for experiments to allow regional and national network operators to gain experience in the transport and distribution of hydrogen. It has been announced that the Gas law will be amended to allow gas network operators to distribute hydrogen, given that the conditions of security of supply and safety are guaranteed. This work will start soon and could take up to 1.5 years until it can be implemented.

The Netherlands is facing a great reorganization of the environmental laws per July 2022, which also include the Hydrogen Refueling Stations (HRS) safety regulations. An unofficial translation of this “Environment and Planning Act” is available [here](#). Together with the

¹ Can include *Requests for Information* and *Calls for Proposals* and other requests that may or may not involve funding support but looks to address issues that may be of interest to IPHE members



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implementation of the Environment and Planning Act the determination of safety distances might change: it is expected that fixed safety distances will be obligatory for HRS rather than requiring Quantitative risk Assessments (QRA).

At the start of 2020, the Netherlands launched the four-year Hydrogen Safety Innovation Programme, which is a public-private partnership between the national government, network operators, emergency services, knowledge institutes and companies. The programme identifies safety issues in the area of hydrogen and proposes policies and agreements that allow these issues to be adequately addressed.

The Safety Programme focuses on the national level but aims to implement international developments. The work concentrates around six working packages:

1. WP1: harmonization of the permitting process for HRS by developing guidelines
2. WP2: risk and incident management
3. WP3: legal aspects, including the finding of white spots
4. WP4: safety risks inventory for production, storage, transport, and hydrogen use
5. WP5: HAZID-studies on the use of hydrogen in public spaces
6. WP6: International knowledge and lessons learnt

The Dutch government also works on a temporary safety policy framework for hydrogen demonstration and pilot projects.



Summary Country Update June 2021: The Netherlands

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles ²	2.000 by 2020 15.000 by 2025 300.000 by 2030	390 as of March 2021	<ul style="list-style-type: none"> • New National strategy to be developed in 2021 for hydrogen in mobility • The province of Utrecht has recently signed a covenant with business developers, knowledge institutes, regional governments to stimulate the use of green hydrogen in the province. There are targets established for the period from 2021-2025 that cover 10% of the national ambitions from the Dutch Climate Agreement. 	• No new updates since update from Dec 2020
FC Bus	100 by 2020 300 by 2025	12 as of March 2021		• No new updates since update from Dec 2020
Fuel Cell Trucks ³	500 by 2020 3500 by 2025	11 as of March 2021		No new updates since update from Dec 2020
Forklifts	No target	0		• No new updates since update from Dec 2020
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
70 MPa On-Site Production	20 by 2020 50 by 2025 (target on total HRS)	1 as of June 2021 (Helmond, dual 70/35 MPa)	<ul style="list-style-type: none"> • The total 7 stations in 2021 include two that are not open to the public, but are for private use. (Groningen en Delfzijl.) • 25 have already received financing for constructing and are on the way. 	<ul style="list-style-type: none"> • Up to 100% subsidy of the investment costs for a public HRS. No subsidy for operation.
70 MPa Delivered		1 as of June 2021 (Amsterdam)		

² Includes Fuel Cell Electric Vehicles with Range Extenders

³ As above



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35 MPa On-Site Production				
35/70 MPa dual Delivered		5 as of June 2021		
Stationary	Target Number ⁴	Current Status	Partnerships, Strategic Approach	Support Mechanism
Small ⁵	No Target	0	-	-
Medium ⁶	No Target	0	-	-
Large ⁷	No target	0	-	-
District Grid ⁸	No Target	0	-	-
Regional Grid ⁹	No Target	0	-	-
Telecom backup	No target	0	-	-
H ₂ Production	Target ¹⁰	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fossil Fuels ¹¹	Climate neutral H ₂ by 2050	175 PJ/year (Total hydrogen supply in NL)		

⁴ Targets can be units installed and/or total installed capacity in the size range indicated

⁵ <5 kW (e.g., Residential Use)

⁶ 5kW – 400 kW (e.g., Distributed Residential Use)

⁷ 0.3MW – 10 MW (e.g., Industrial Use)

⁸ 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)

⁹ 30MW plus (e.g., Grid Storage and Systems Management)

¹⁰ Target can be by quantity (Nm³, kg, t) and by percentage of total production; also, reference to efficiency capabilities can be a target

¹¹ Hydrogen produced by reforming processes



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Water Electrolysis ¹² (PEM, Alkaline, SOEC)	500 MW by 2025 3-4 GW by 2030	1 MW (HyStock)	National Climate Agreement and H ₂ Programme	EIA (45 % fiscal deduction), DEI+, SDE++ & new upscaling instrument
By-product H ₂	No target	A small part of the 175 PJ/ year	Production based on chlorine-alkali production process where H ₂ comes as by product in Rotterdam and Groningen harbour area.	
Energy Storage from Renewables	Target¹³	Current Status	Partnership, Strategic Approach	Support Mechanism
Installed Electrolyser Capacity	500 MW by 2025 3-4 GW by 2030	1 MW (HyStock)	National Climate Agreement and H ₂ Programme	EIA (45 % fiscal deduction), DEI+, SDE++ & new upscaling instrument
Power to Power ¹⁴ Capacity	No target	-	-	-
Power to Gas ¹⁵ Capacity	No target	-	-	-

¹² Please indicate if targets relate to a specific technology (PEM, Alkaline, SOEC)

¹³ Can be expressed in MW of Installed Capacity to use the electricity from renewable energy generation, and Annual MWh of stored energy capacity

¹⁴ Operator has an obligation to return the electricity stored through the use of hydrogen back to electricity

¹⁵ 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)