



INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update April 2023: Japan

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Covered Period	November 2022 to April 2023

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

- The Subcommittee for hydrogen policy published their interim report - January 2023 on Support scheme for narrowing the price gap between clean hydrogen and counterfactual fuels for a set period and on Support scheme for developing infrastructure
https://www.meti.go.jp/shingikai/enecho/shoene_shinene/suiso_seisaku/20230104_report.html
- “Basic Policy for Realizing GX” was approved by the Cabinet – February 2023
<https://www.meti.go.jp/press/2022/02/20230210002/20230210002.html>
- Focus discussion committee for Hydrogen Safety Strategy published their interim report – March 2023
<https://www.meti.go.jp/press/2022/03/20230313001/20230313001.html>
- The Renewable energy and Hydrogen related Ministerial Meeting has officially started to review the National Hydrogen Strategy – April 2023
https://www.cas.go.jp/jp/seisaku/saisei_energy/kaigi_dai3/gijisidai.html

2. Hydrogen and Fuel Cell R&D Update

Research and development project for utilization of innovative fuel cell technology for realization of hydrogen society – 2023FY budget: JPY 7.9 billion
https://www.meti.go.jp/main/yosan/yosan_fy2023/pr/en/shoshin_taka_07.pdf

3. Demonstration, Deployments, and Workforce Developments Update

DENSO and TOYOTA

DENSO started a demonstration project at DENSO Fukushima in March 2023 to produce and use green hydrogen at its plant in collaboration with Toyota Motor Corporation as part of the initiative to realize carbon-neutral manufacturing. Through the demonstration project, the two companies aim to build a model of local production for local consumption of hydrogen and realize carbon-neutral plant. DENSO will embark on a demonstration project in collaboration with Toyota to produce green hydrogen at DENSO Fukushima’s plant and use the produced hydrogen in the plant gas furnace. In terms of producing hydrogen, Proton



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Exchange Membrane (PEM) electrolyzer system equipment developed by Toyota will be introduced to produce hydrogen through the electrolysis of water. Renewable energy derived from private power generation at DENSO Fukushima will be used to produce hydrogen. The PEM electrolyzer system offers high reliability and durability and low initial costs by using the same stack-related components as Toyota's FCEV "MIRAI," making it possible to produce hydrogen more cheaply than before.

<https://www.denso.com/global/en/news/newsroom/2023/20230309-g01/>

<https://global.toyota/en/newsroom/corporate/38917359.html>

SUMITOMO Rubber Industries

SUMITOMO Rubber Industries started mass production with hydrogen boiler for vulcanization process of FALKEN FK520 which is high-performance tire at their Shirakawa Factory in Fukushima Prefecture of Japan. Sumitomo Rubber Industries aims to develop tires whose manufacture involves zero CO2 emissions, including through the use of electricity from the photovoltaic power generation facility.

<https://www.sumitomo.gr.jp/english/act/social-issue/srigrup/>

4. Events and Solicitations

G7 Sapporo Excursion

The liquefied hydrogen carrier "Suiso Frontier" tour at Otaru Port, hosted by Kawasaki Heavy Industries and METI. H.E. Kadri Simson (EU), The Rt Hon Mr. Grant Shapps (UK), H.E. Jennifer Mulhern Granholm (US), and NISHIMURA Yasutoshi (JP) participated.

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

2022FY Supplementary Budget

- High-Efficient Boiler Subsidy, including stationary residential fuel cells: JPY 30 billion

2023FY Budget

- Fuel Cells R&D: JPY 7.9 billion
- H2 Supply Chain RD&D: JPY 8 billion
- H2 Hub demonstration: JPY 6 billion

Green Innovation Fund

- Large-scale H2 supply chain: JPY 300 billion
- Large electrolyzer development: JPY 70 billion

6. Regulations, Codes & Standards, and Safety Update

Nothing new to report in this period.



Summary Country Update April 2023: Japan

Transportation	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fuel Cell Vehicles ¹	40,000 by 2020 200,000 by 2025 800,000 by 2030	7,692 As of Feb. 2023		<ul style="list-style-type: none"> • Subsidy for purchase (national and local government initiative)
FC Bus	100 by 2020 1,200 by 2030	132 As of Feb.2023		<ul style="list-style-type: none"> • Subsidy for purchase (national and local government initiative)
Fuel Cell Trucks ²	N/A	N/A		<ul style="list-style-type: none"> • Subsidy for R&D, demonstration (national government initiative)
Forklifts	500 by 2020 10,000 by 2030	397 As of Feb. 2023		<ul style="list-style-type: none"> • Subsidy for R&D, demonstration (national government initiative) • Subsidy for purchase (national government initiative)
H ₂ Refueling Stations	Target Number	Current Status	Partnerships, Strategic Approach	Support Mechanism
70 MPa On-Site Production	160 by 2020 320 by 2025 1000 by 2030 (including delivered)	29 operational As of Mar. 2023 (1 in progress)	<ul style="list-style-type: none"> • Initially focusing on four major metropolitan areas • Establishing Japan H2 mobility LLC, (JHyM) for development of a hydrogen station network • Regulatory reform of HRS 	<ul style="list-style-type: none"> • Subsidy for CAPEX/OPEX (national government and partially local government initiative)

¹ Includes Fuel Cell Electric Vehicles with Range Extenders

² As above



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70 MPa Delivered	160 by 2020 320 by 2025 1000 by 2030 (including on-site production)	138 operational As of Mar. 2023 (11 in progress)	<ul style="list-style-type: none"> Initially focusing on four major metropolitan areas Establishing Japan H2 mobility LLC, (JHyM) for development of a hydrogen station network Regulatory reform of HRS 	<ul style="list-style-type: none"> Subsidy for CAPEX/OPEX (national government and partially local government initiative)
35 MPa On-Site Production	N/A	N/A		
35 MPa Delivered	N/A	N/A		
Stationary	Target Number ³	Current Status	Partnerships, Strategic Approach	Support Mechanism
Small ⁴	3,000,000 by 2030	480,373 units As of Mar. 2023	<ul style="list-style-type: none"> Establishing ENE-FARM Partners (manufacturers, gas companies and constructors) Commercializing fuel cells(PEFC) for application by 2019 Commercializing fuel cells(SOFC) for application by 2021 	<ul style="list-style-type: none"> Subsidy for purchase (national and local government initiative)
Medium ⁵	N/A	N/A		
Large ⁶	N/A	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)



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District Grid ⁷	N/A	N/A		
Regional Grid ⁸	N/A	N/A		
Telecom backup	N/A	N/A		
H₂ Production	Target⁹	Current Status	Partnerships, Strategic Approach	Support Mechanism
Fossil Fuels ¹⁰	JPY30/Nm ³ by 2030 JPY20/Nm ³ by 2050	N/A	<ul style="list-style-type: none"> • Japan-Australia Hydrogen Supply Chain pilot project • Green Innovation Fund 	<ul style="list-style-type: none"> • Subsidy for R&D, demonstration (national government initiative)
Water Electrolysis ¹¹ (PEM, Alkaline, SOEC)	JPY30/Nm ³ by 2030 JPY20/Nm ³ by 2050	N/A	<ul style="list-style-type: none"> • 10MW Alkaline water electrolyser project in Fukushima. • Integrated 16MW PEM water electrolyser project in Yamanashi. • Green Innovation Fund 	<ul style="list-style-type: none"> • Subsidy for R&D, demonstration (national government initiative)
By-product H ₂	N/A	N/A		
Energy Storage from Renewables	Target¹²	Current Status	Partnership, Strategic Approach	Support Mechanism

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 (Nm³, 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)

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



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Installed Electrolyser Capacity	N/A	N/A		• Subsidy for R&D, demonstration (national government initiative)
Power to Power ¹³ Capacity	N/A	N/A		
Power to Gas ¹⁴ Capacity	N/A	N/A		• Subsidy for R&D, demonstration (national government initiative)

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)