INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update October 2023: Japan

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Covered Period	May 2023 to September 2023

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

- "Basic Hydrogen Strategy" was updated – June 2023
  https://www.meti.go.jp/shingikai/enecho/shoene_shinene/suiso_seisaku/pdf/20230606_5.pdf

2. Hydrogen and Fuel Cell R&D Update

- Research and development project for utilization of innovative fuel cell technology for realization of hydrogen society – 2024FY budgetary request: JPY 8.0 billion [Not fixed]
  https://www.meti.go.jp/main/yosangaisan/fy2024/pr/en/shoshin_taka_03.pdf

3. Demonstration, Deployments, and Workforce Developments Update

- ENEOS is working to increase the size of its electrolyzers using Direct MCH technology and operating the demonstration plant toward the mass production of renewable energy-derived MCH (Green MCH). MCH has been manufactured and demonstrated in Brisbane, Queensland, Australia, and transported to Japan and Hydrogen extracted from MCH was filled into a small fuel cell bus at Yokohama in June 2023.
  https://www.city.yokohama.lg.jp/mayor/photodiary/2023/202306/20230626-2.html

4. Events and Solicitations

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- **G7 Hiroshima Excursion**
  The liquefied hydrogen carrier "Suiso Frontier" tour at Itsukaichi Port was hosted by Kawasaki Heavy Industries and METI. Prime Minister Pham Minh Chinh and the Vietnamese delegation participated.
  https://www.vietnam.vn/en/thu-tuong-chinh-phu-tham-cong-vien-tuong-niem-hoa-binh-hiroshima/

- **Middle East Excursion**
  The liquefied hydrogen carrier "Suiso Frontier" tour in Saudi Arabia, UAE, and Oman was hosted by Kawasaki Heavy Industries and METI. Ministers from each country participated.

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

2024FY budgetary request [Not fixed]

- Fuel Cells R&D: JPY 8.0 billion
- H2 Supply Chain RD&D: JPY 8.6 billion
- H2 Hub demonstration: JPY 6.2 billion

6. Regulations, Codes & Standards, and Safety Update
Nothing new to report in this period.

Summary Country Update October 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	7,851 As of Jul. 2023		• Subsidy for purchase (national and local government initiative)
FC Bus	100 by 2020 1,200 by 2030	134 As of Apr. 2023		• Subsidy for purchase (national and local government initiative)
Fuel Cell Trucks[2]	N/A	N/A		・Subsidy for R&D, demonstration (national government initiative)
Forklifts	500 by 2020 10,000 by 2030	417 As of Mar. 2023		・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	37 operational As of Aug. 2023 (6 in progress)	• Initially focusing on four major metropolitan areas	• Subsidy for CAPEX/OPEX (national government and partially local government initiative)

[1] Includes Fuel Cell Electric Vehicles with Range Extenders

[2] As above

	(including delivered)		• Establishing Japan H2 mobility LLC, (JHyM) for development of a hydrogen station network • Regulatory reform of HRS	
70 MPa Off-Site	160 by 2020 320 by 2025 1000 by 2030 (including on-site production)	142 operational As of Mar. 2023 (8 in progress)	• Initially focusing on four major metropolitan areas Establishing Japan H2 mobility LLC, (JHyM) for development of a hydrogen station network Regulatory reform of HRS	• 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	485,972 units As of Jun. 2023	・Establishing ENE-FARM Partners (manufactures, gas companies and constructors) ・Commercializing fuel cells(PEFC) for application by 2019	• Subsidy for purchase (national and local government initiative)

[3] Targets can be units installed and/or total installed capacity in the size range indicated

[4] <5 kW (e.g., Residential Use)

			・Commercializing fuel cells(SOFC) for application by 2021	
Medium[5]	N/A	N/A		
Large[6]	N/A	N/A		
District Grid[7]	N/A	N/A		
Regional Grid[8]	N/A	N/A		
Telecom backup	N/A	N/A		
H_2 Production	**Target[9]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Fossil Fuels[10]	JPY30/Nm3 by 2030 JPY20/Nm3 by 2050	N/A	• Japan-Australia Hydrogen Supply Chain pilot project • Green Innovation Fund	・Subsidy for R&D, demonstration (national government initiative)
Water Electrolysis[11]	JPY30/Nm3 by 2030	N/A	• 10MW Alkaline water electrolyser project in Fukushima.	・Subsidy for R&D, demonstration (national government initiative)

[5] 5kW – 400 kW (e.g., Distributed Residential Use)
[6] 0.3MW – 10 MW (e.g., Industrial Use)
[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)

(PEM, Alkaline, SOEC)	JPY20/Nm3 by 2050		• Integrated 16MW PEM water electrolyser project in Yamanashi. • Green Innovation Fund	
By-product H_2	N/A	N/A		
Energy Storage from Renewables	**Target[12]**	**Current Status**	**Partnership, Strategic Approach**	**Support Mechanism**
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)

[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)