INTERNATIONAL PARTNERSHIP FOR
HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update June 2021: Japan

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Covered Period	December 2020 – June 2021

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

- "Green Growth Strategy Through Achieving Carbon Neutrality in 2050" was Formulated. This strategy is an industrial policy to lead the challenging goal of achieving carbon neutrality (incl. hydrogen technology) by 2050, a vision that is upheld by the Prime Minister Suga administration and aims toward a positive cycle of economic growth and the environmental protection.

2. Hydrogen and Fuel Cell R&D Update

- Nothing new to report in this period.

3. Demonstration, Deployments, and Workforce Developments Update

- Nothing new to report in this period.

4. Events and Solicitations

- Nothing new to report in this period.

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

- We established a large-scale hydrogen supply chain project, for which a budget of ¥300billion ($2.7billion) is planned in order to demonstrate a large-scale hydrogen supply chain using liquefied hydrogen/methylcyclohexane, and large-scale hydrogen power generation systems, with a view to establishing a commercial scale hydrogen supply chain by 2030.
- Also, we established a project which had a budget of ¥70billion ($530million) in order to scale up and modularize of electrolysers R&D, to implement leading technologies and to demonstrate decarbonization of basic chemicals and heat demand, with a view to establishing a foundation to hydrogen production using renewable energy in Japan and reducing cost of electrolysers (up to about 1/6 of the current cost).
- These above are currently in a process of selecting project implementers.

6. Regulations, Codes & Standards, and Safety Update

- Nothing new to report in this period.

Summary Country Update June 2021: 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	5,492 As of April 2021	• -	• Subsidy for purchase (national and local government initiative)
FC Bus	100 by 2020 1,200 by 2030	104 As of April 2021	-	• Subsidy for purchase (national and local government initiative)
Fuel Cell Trucks[2]	No target	-	-	・Subsidy for R&D, demonstration (national government initiative)
Forklifts	500 by 2020 10,000 by 2030	326 As of April 2021	-	・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	24 operational As of May 2021 (4 in progress)	• Initially focusing on four major metropolitan areas	• Subsidy for CAPEX/OPEX (national government and partially local government initiative)
70 MPa Delivered		122 operational As of May 2021 (16 in progress)	• Establishing Japan H2 mobility LLC, (JHyM) for development of a hydrogen station network • Regulatory reform of HRS	• e.g., No Subsidy for installation • e.g., Subsidy for operation

[1] Includes Fuel Cell Electric Vehicles with Range Extenders

[2] As above

35 MPa On-Site Production	-	26 operational As of October 2020	・Municipality lead instruction as official vehicles	• e.g., Subsidy for installation through a tax measure of an annual 50% capital expenditure write-off
35 MPa Delivered	-	-		
Stationary	**Target Number[3]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Small[4]	5.3 M by 2030	352,593 As of March 2021	・Establishing ENE-FARM Partners (manufactures, gas companies and constructors) ・Commercializing fuel cells(PEFC) for application by 2019 ・Commercializing fuel cells(SOFC) for application by 2021	
Medium[5]	No target	SOFC:8 As of September 2020		
Large[6]	No target			
District Grid[7]	No target			

[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)
[7] 1MW – 30 MW (e.g., Grid Stability, Ancillary Services)

Regional Grid[8]	No target			
Telecom backup	No target			
H_2 Production	**Target[9]**	**Current Status**	**Partnerships, Strategic Approach**	**Support Mechanism**
Fossil Fuels[10]	Procure 300,000 ton of Hydrogen annually by 2030 Reduce the cost of hydrogen to JPY30/Nm3	During the demonstration project	• Japan-Australia Hydrogen Supply Chain pilot project • Japan-Brunei Hydrogen Supply Chain pilot project	・Subsidy for R&D, demonstration (national government initiative)
Water Electrolysis[11] (PEM, Alkaline, SOEC)	Energy consumption (kWh/Nm3): (Alkaline) 4.5 by 2020 4.3 by 2030 (PEM) 4.9 by 2020 4.5 by 2030	(Alkaline) 4.3 - 5.0 As of March 2020 (PEM) 5.0 (catalog spec), 4.6 – 4.8(demonstrated spec) As of March 2020	・10MW Alkaline water electrolyser project in Fukushima. ・1.5MW PEM water electrolyser project in Yamanashi.	・Subsidy for R&D, demonstration (national government initiative)
By-product H_2	No target			

[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	No target			・Subsidy for R&D, demonstration (national government initiative)
Power to Power[13] Capacity	No target			
Power to Gas[14] Capacity	No target			・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)