



International Partnership
for Hydrogen and Fuel Cells
in the Economy

Japan Update

35th IPHE Steering Committee Meeting
22 – 23 June 2021
Virtual Meeting

Announcements / New Initiatives *Japan*

Green Growth Strategy Toward Carbon Neutrality by 2050

Goals

- ✓ Cost (\$/kg): \$3/kg by 2030 & less than \$2/kg by 2050
- ✓ Hydrogen demand : up to 3 Mts by 2030 & around 20 Mts by 2050

Hydrogen utilization

- ✓ Deploy FCVs & demonstrate FC trains and FC trucks
- ✓ Demonstrate large scale hydrogen power generation
- ✓ R&D for zero-carbon steel & chemicals
- ✓ Fuel Cells development & incentives for production facility

Production

- ✓ Scale up electrolyzers R&D to reduce cost (PEM & AEM)
- ✓ Innovative R&D to further reduce cost of hydrogen

Transportation/Infrastructure

- ✓ Scale-up international hydrogen supply chain
- ✓ Develop H2 station for FC trucks

Cross- cutting issues

- ✓ Create regional models through demonstration projects
- ✓ Foster international collaborations, including with potential H2 suppliers



FC Truck



Hydrogen Gas Turbines



Zero-carbon steel



Power to Gas



Liquefied H2 carrier



MCH carrier



Approx. \$19 billion Green Innovation Fund established

Examples of Lessons Learned and Impact *Japan*

Program initiative, policy, regulation or mandate	Lessons Learned/Outcomes
Basic Hydrogen Strategy	<ul style="list-style-type: none"> • The first national strategy on Hydrogen. • Investment will be accelerated by sharing visions with industries.
Strategic Roadmap for Hydrogen and Fuel Cells	<ul style="list-style-type: none"> • In order to achieve the goals set in Basic Hydrogen Strategy, detailed targets and action plans have been set by government collaborated with industry.
Strategy for Developing Hydrogen and Fuel-Cell Technologies	<ul style="list-style-type: none"> • In order to achieve the goals set in Strategic Roadmap for hydrogen and fuel cell, identified three fields and ten related priority areas for technological development.

Japan – Profile June 2021

Status of Deployments

- Fuel Cell Vehicles: 5,492 as of April 2021
- FC Bus: 104 as of April 2021
- Forklifts: 326 as of April 2021
- 70MPa HRS: 146 operational as of May 2021

Leading Government Initiatives

- Formulated "Green Growth Strategy Through Achieving Carbon Neutrality in 2050"

Goals or Focus Areas

- Cost (\$/kg)
\$3/kg by 2030
less than \$2/kg by 2050
- Hydrogen demand
up to 3 Mts by 2030
around 20 Mts by 2050

Deployment Goals

- Fuel Cell Vehicles 800,000
- H₂ Refueling Stations 320
- Fuel Cell Buses 1,200

Funding

JPY 300 billion (\$2.7 billion) project to establish large-scale hydrogen supply chain
 JPY 70 billion (\$530million) project to produce hydrogen using renewables in Japan and to reduce cost of electrolyzers
 *currently in a process of selecting project implementers.

Thank you



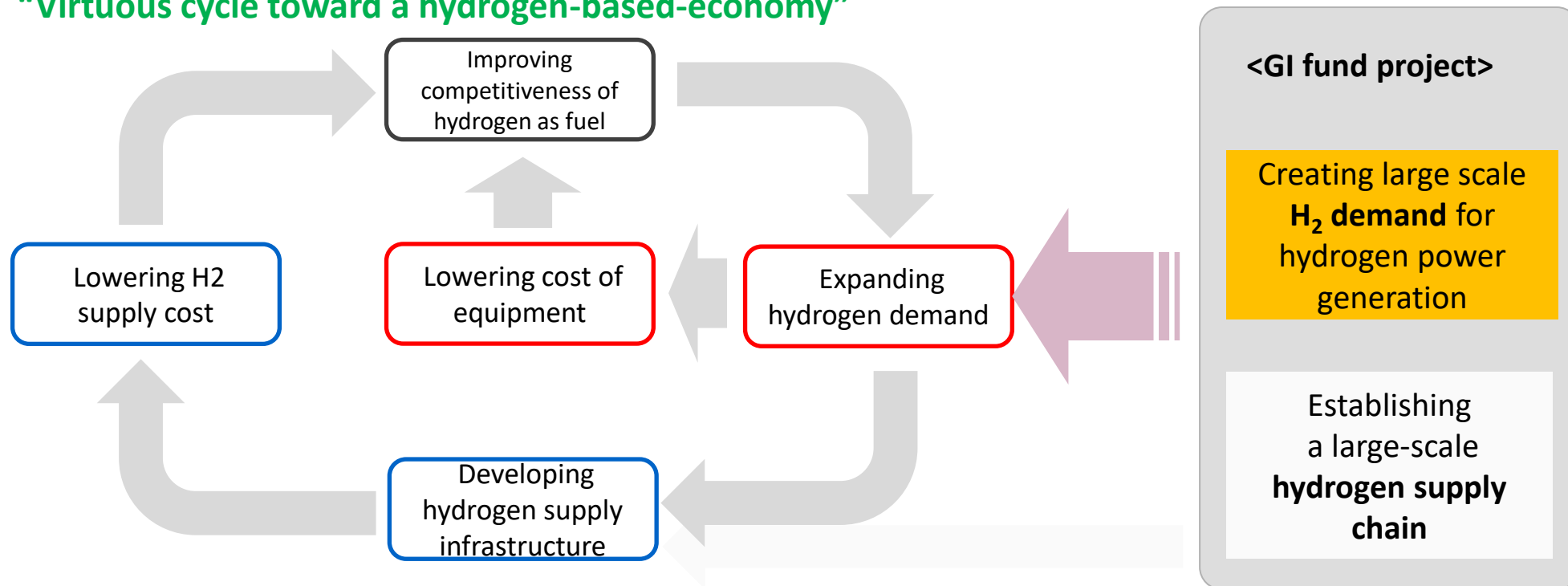
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Detail of Large-Scale Hydrogen Supply Chain Project (1) *Japan* IPHE



- A budget of **JPY 300 billion (\$2.7 billion)** is planned for the project to:
 - ✓ Demonstrate **a large-scale hydrogen supply chain** using liquefied hydrogen/methylcyclohexane
 - ✓ Demonstrate **large-scale hydrogen power generation systems**with a view to **establishing a commercial scale hydrogen supply chain by 2030.**

“Virtuous cycle toward a hydrogen-based-economy”



Detail of Large-Scale Hydrogen Supply Chain Project (2) *Japan* IPHE

- A budget of **JPY 70 billion (\$530 million)** is planned for the project to support:
 - ✓ *Scale up and modularize of electrolyzers R&D*
 - ✓ *Implement of superior element technologies*
 - ✓ *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 electrolyzers (up to about 1/6 of the current cost).**

