Japan's Vision and Actions Towards Hydrogen and Ammonia Economy

10 June 2024

Agency for Natural Resources and Energy, METI

Japan's Policy Moves

- **Japan is the first country to have formulated a national hydrogen strategy (2017).**
- The Prime Minister set “2050 carbon neutral” declaration (2020). **$15bn Green Innovation Fund**.
- Positioned **hydrogen as one of the priority areas** in the Green Growth Strategy.
- **Key part of achieving green transformation economy plan (2023).**

Milestones

2017
Basic Hydrogen Strategy

2020
PM's 2050 CN Declaration
Green Growth Strategy

2021
Green Innovation Fund
Revised Strategic Energy Plan

2023
GX Promotion Act
Basic Hydrogen Strategy updated

2024
Hydrogen Society Promotion Act

Targets (Set in the Basic Hydrogen Strategy on Dec. 26, 2017 – updated in 2023)

Supply & Demand volume:
Current（Approx. 2Mt） → 2030（**Approx. 3Mt**） → **2040 (Approx. 12Mt)** → 2050（**Approx. 20Mt**）

Hydrogen cost:
Current（JPY100/Nm3） → 2030（**JPY30/Nm3**） → 2050（**Less than JPY20/Nm3**）

station retail price (=USD2.1/kg-H2*) (=USD1.4/kg-H2*) ※1USD = JPY155

Basic Policy for Realization of GX(Green Transformation)

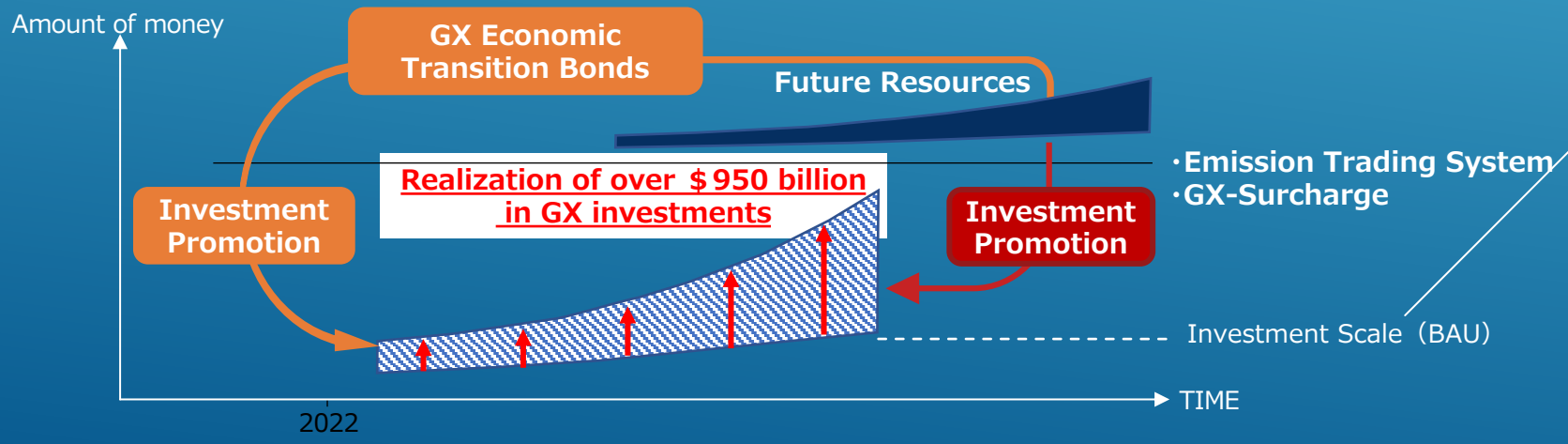
- Government support will be provided for **upfront investment of ＄120 billion** to achieve carbon neutrality by 2050 while strengthening industrial competitiveness and realizing economic growth, **aiming for more than ＄950 billion of public and private investment over the next 10 years**.

To promote the GX investment as described above, a **"Growth Oriented Carbon Pricing Scheme"** will be embodied and implemented as soon as possible.

① **Government support for bold upfront investment** by issuing **"GX Economic Transition Bonds"** (＄120 billion over the next 10 years)

② **Introduction of carbon pricing to give incentives for GX investment**
(1) Full-scale operation of **emissions trading system** in high emission industries [**from FY2026**].
+ Allowance auctioning is phased in gradually to **power generation companies** [**from FY2033**]
(2) Introduction of a **GX-Surcharge** on fossil fuel importers [**from FY2028**]

③ Strengthen financial support through public-private partnership



Government support and regulation

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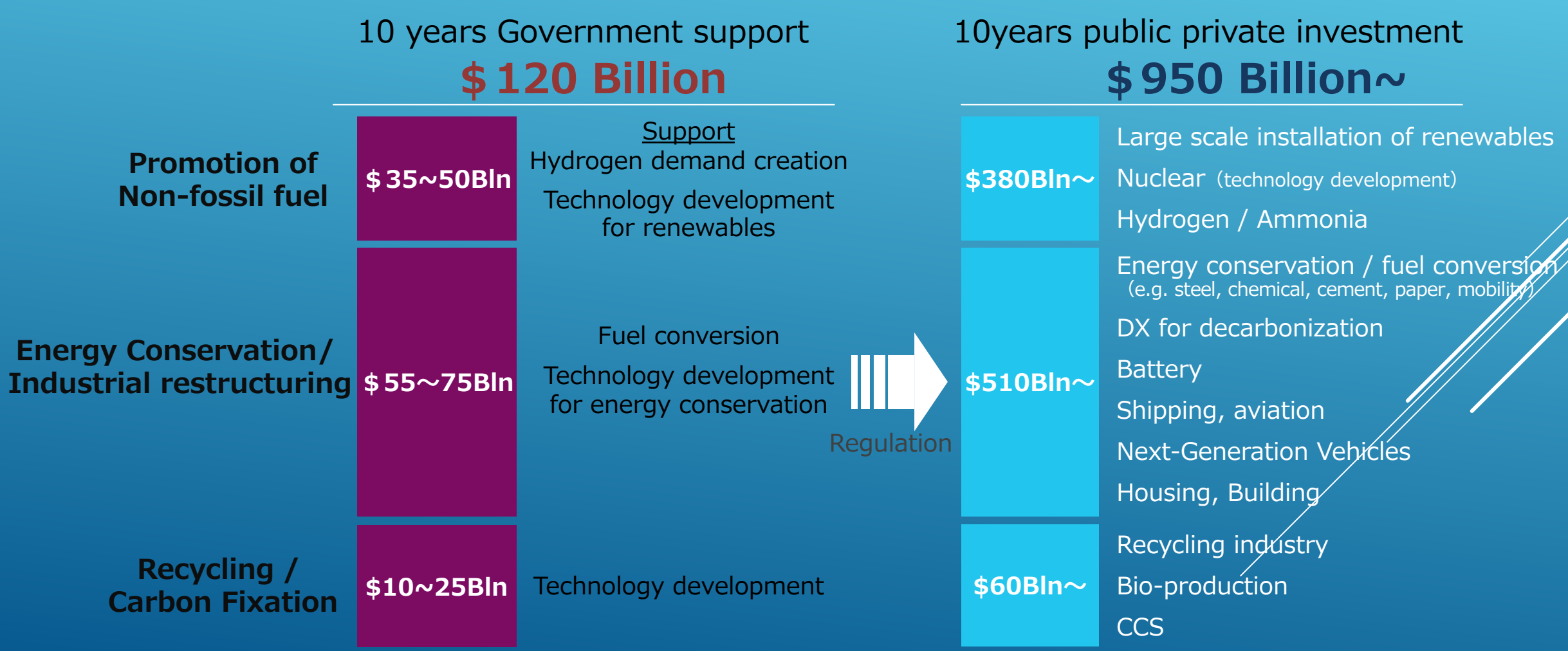
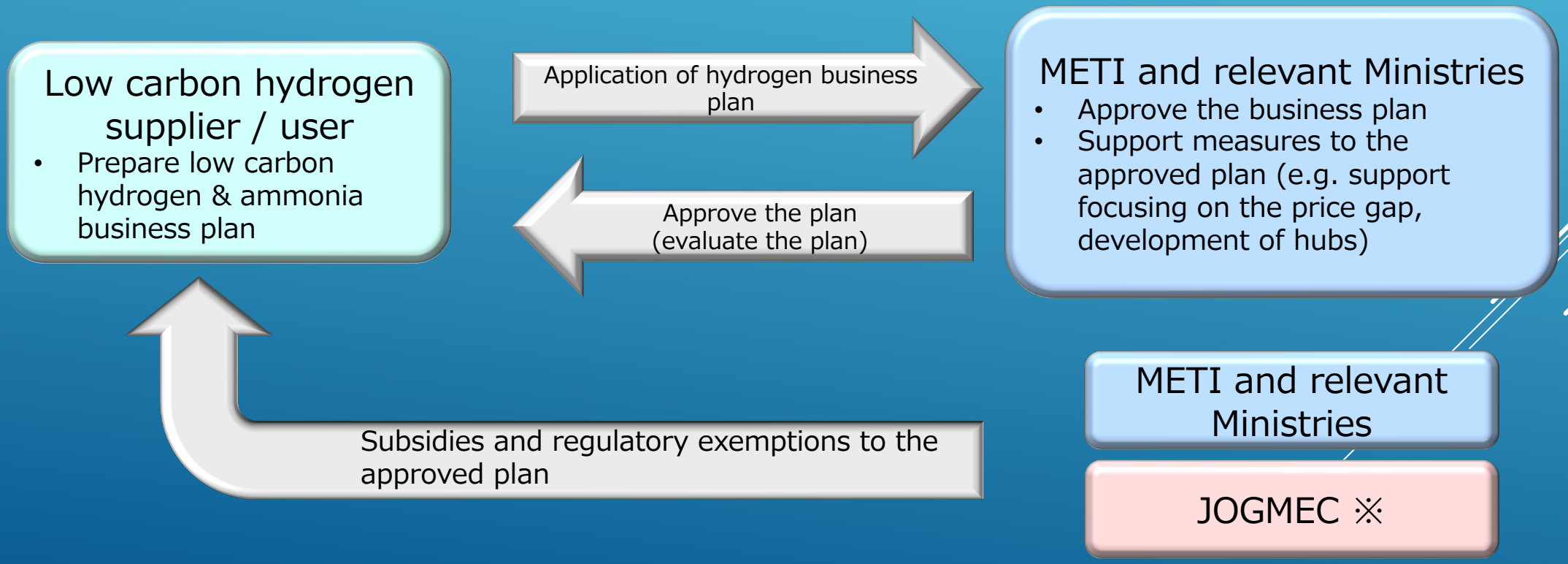


Hydrogen Society Promotion Act

- There are challenges to realize CN2050 in promotion of GX in hard to abate sector and realization of stable energy supply, decarbonization, economic growth.
- **Hydrogen and its derivatives are key enabler for promoting GX** in the industrial sectors, including iron and steel, chemicals, mobility and power generation sectors.
- **The Government will provide supporting measures to the approved hydrogen business plan** to promote the supply and utilization of low carbon hydrogen and its derivatives.



※ Japan Organization for Metals and Energy Security

Support focusing on the price gap

- Government plans to provide a 15-year support to **suppliers** who aim to develop a **commercial-scale supply chain** of low-carbon hydrogen and its derivatives which meets the Japan's primary energy policy. (i.e. S+3E: Safety + Energy Security, Economic Efficiency, Environment)

Key requirements:

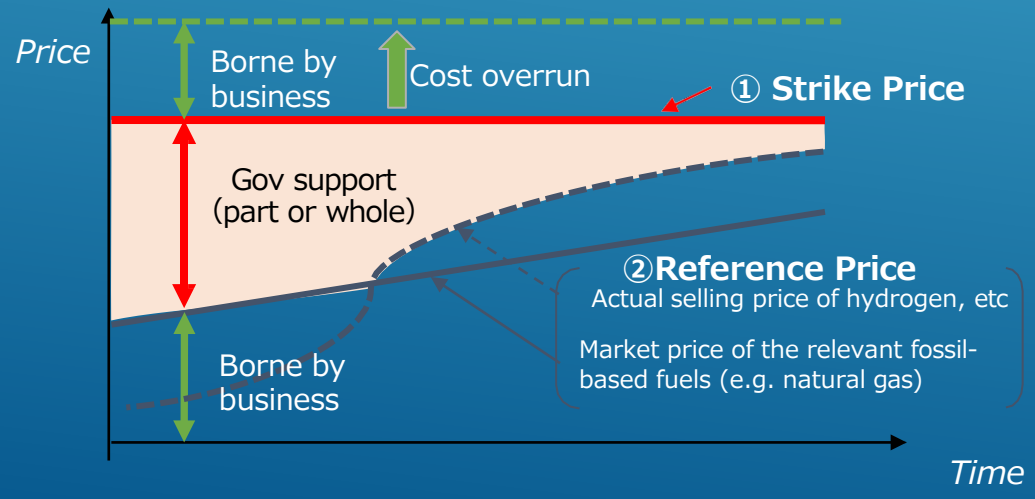
(1) supply to **hard-to-abate sectors and applications**, such as iron and chemicals;

(2) **contribution to domestic GHG emission reductions** in compliance with international CO2 accounting rules

(3) **start supply by FY2030** and **must continue for another 10 years following the support period**.

- Based on the requirement, projects to be evaluated in two main evaluation criteria: "**policy perspectives**" (e.g. Energy Policy and GX Promotion Policy); and "**project deliverability**" (e.g. certainty of off-takers, reliability of construction plans, robust financial plans etc.)

(Illustration) variable price gap



Key project evaluation criteria

(1)Policy perspectives
- **Energy policy (S+3E)**
- **Alignment with the GX Promotion Policy**

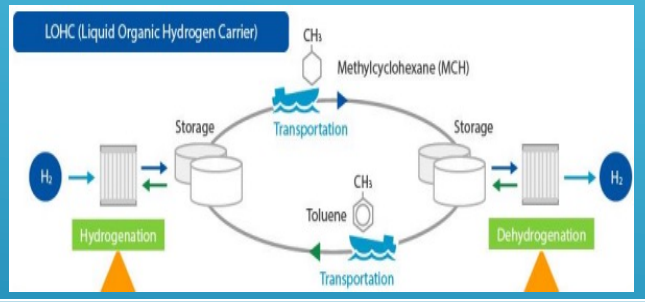
(2) Project deliverability
- **Certainty of the business plan**
- **Appropriate allocation of risks between Government and Private sectors**

Development of Hydrogen Supply Chain

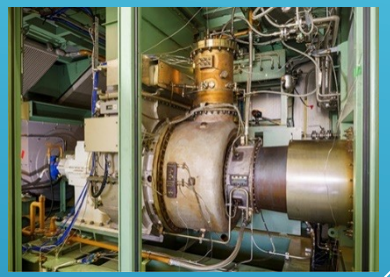
- Japanese industrial sector have technical strength such as **electrolizer and membrane** in “Production” area, **large-scale hydrogen vessel** in “Transportation” area, **mobility and power generation** in ”Utilization” area.
- Supporting **mass-production of electrolizer** through GX supply chain budget and **introducing cutting edge technologies to develop robust hydrogen supply chain** through support focusing on price gap.

Production

Transportation

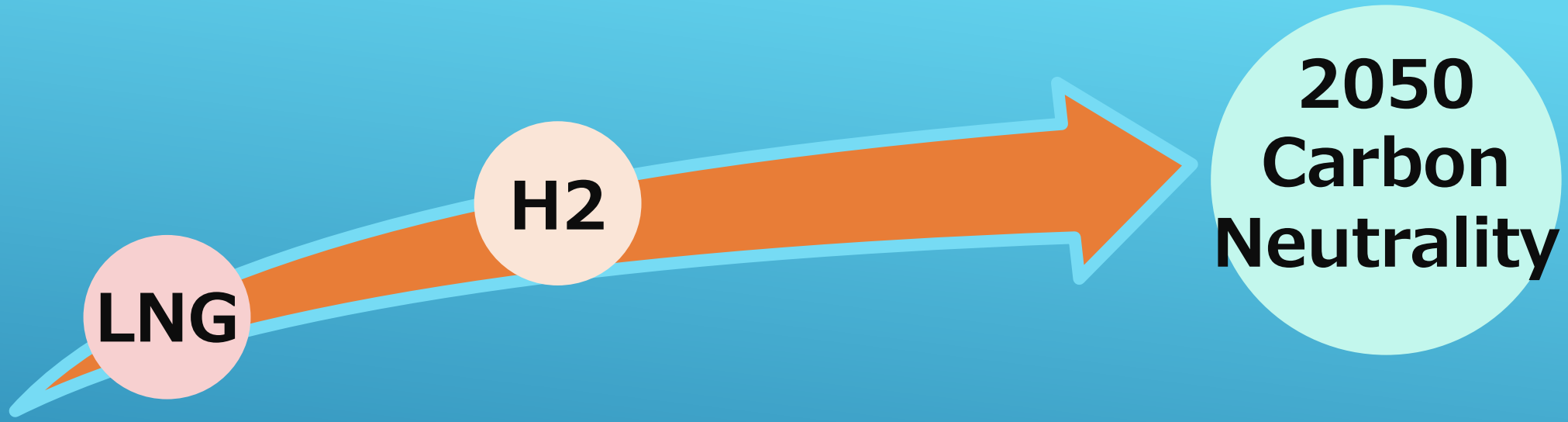


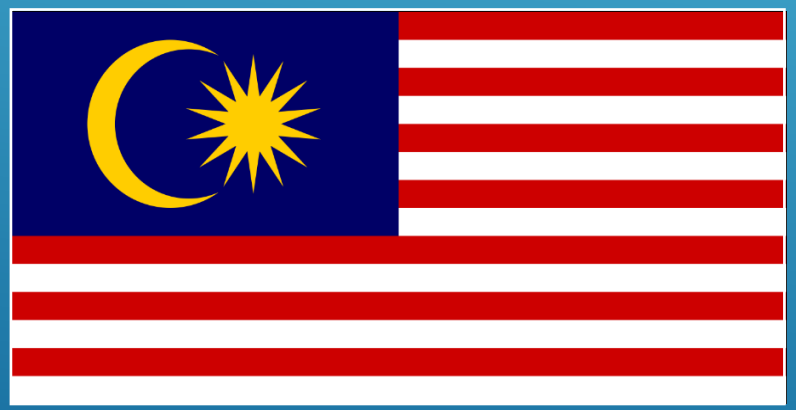
Utilization

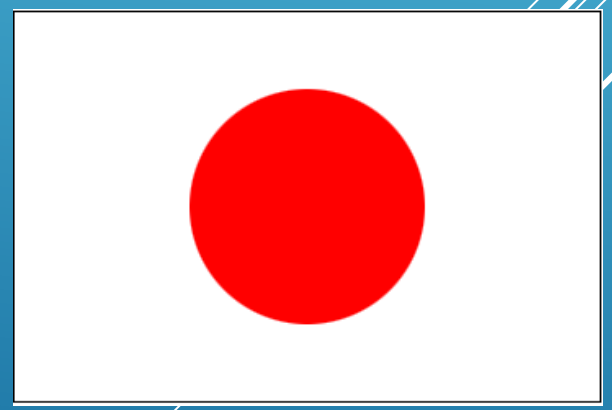


Core Technologies	・Electrolizer ・Membrane	・Transportation（LH2, MCH）	・Fuel cell system/vehicle/truck ・Power generation ・Industrial furnace / burner
Strength	Safety and Stable operation of electrolizer and innovative material development	Demonstration of world first transportation of hydrogen	Technological development of fuel cell Demonstration of power generation

To Achieve Carbon Neutrality







THANK YOU FOR YOUR KIND ATTENTION!!