環境省
Ministry of the Environment

MOE's Approach to CCUS and Hydrogen

March 25, 2025

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Director
Climate Change Projects Office
Global Environment Bureau

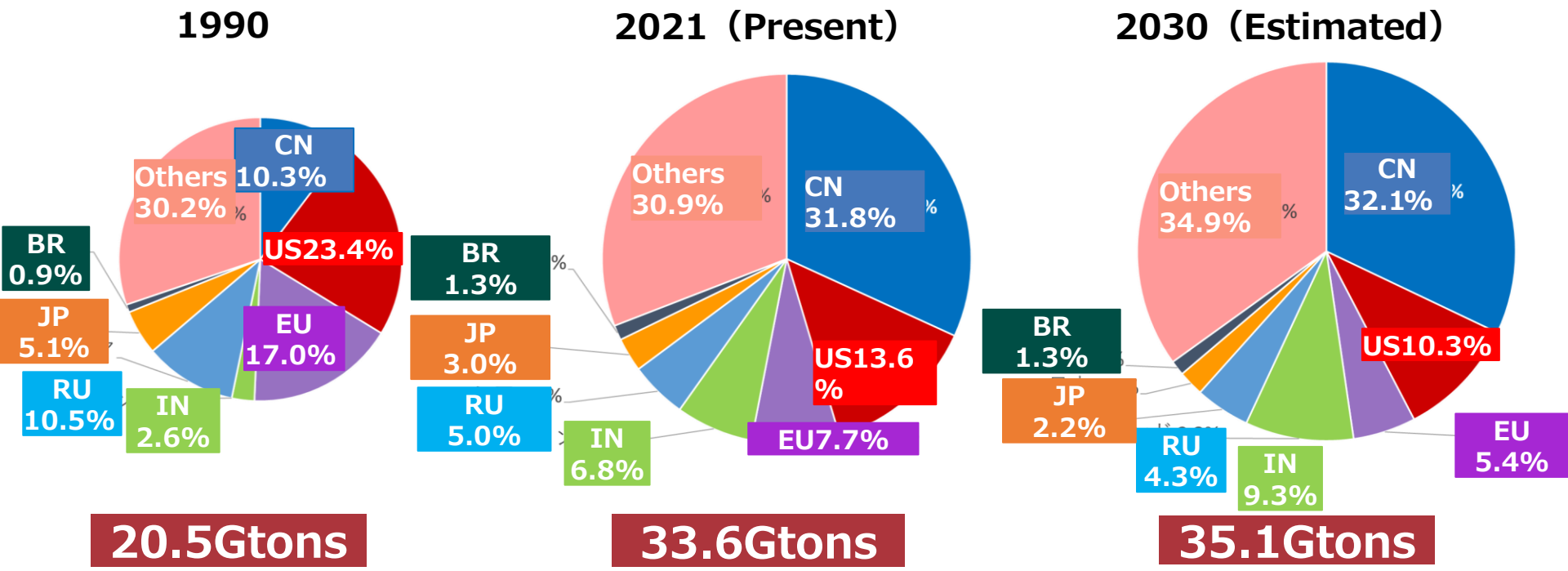
SUSTAINABLE DEVELOPMENT GOALS
Re-Style
デコ活 くらしの中のエコろがけ
つなげよう、支えよう 森里川海
Plastics Smart

1. Recent Global and Domestic Trends Toward Net Zero in 2050

Energy-related CO2 emissions in each country

- CO2 emissions have changed significantly from 1990 to the present day. The key to reducing global CO2 emissions lies in the efforts of major emitting countries (such as China, the United States, and India).
- **The Paris Agreement was signed at COP21 in 2015.** Unlike Kyoto Protocol, **all signatories to the Paris Agreement (195 countries and regions) have defined greenhouse gas reduction targets,** without distinction between developed and developing countries.

Comparison of energy-related CO2 emissions in each country



MOE's calculation based on IEA「Greenhouse Gas Emissions from Energy (2023)」「World Energy Outlook (2023),etc.

Cabinet decision of the global warming action plan and Submission of the Next Nationally Determined Contribution (NDC)

MOE

- Current targets for 2050 net zero : 46% reduction by FY2030, challenge to reach 50% from FY2013 level.
- Next reduction target: **Submission to the UN by February 2025** is required.
- **The Global Warming Action Plan**, a comprehensive action plan for meeting the reduction targets, **needs to be revised.**
- Discussion organized at **Joint meetings of the Central Environment Council and the Industrial Structure Council, gathering opinions from various fields and levels.**

  1st (Jun 2024) :Current and future challenges in climate change actions

  2nd – 5th (Jul – Oct) :Interviews with economic, youth and international organizations, local authorities, etc.

  6th (Nov) :Hearings with relevant ministries and agencies, discussions on the next reduction targets

  7th– 9th (Dec) :Draft global warming action plan, including next reduction targets, discussed several times.

- The government's proposal was finalised at the Global Warming Prevention Headquarters (Dec 27th), and public comments accepted from the same day. (the draft of the government action plan, a plan for reducing emissions from government offices and operations, was also decided on the same day.)

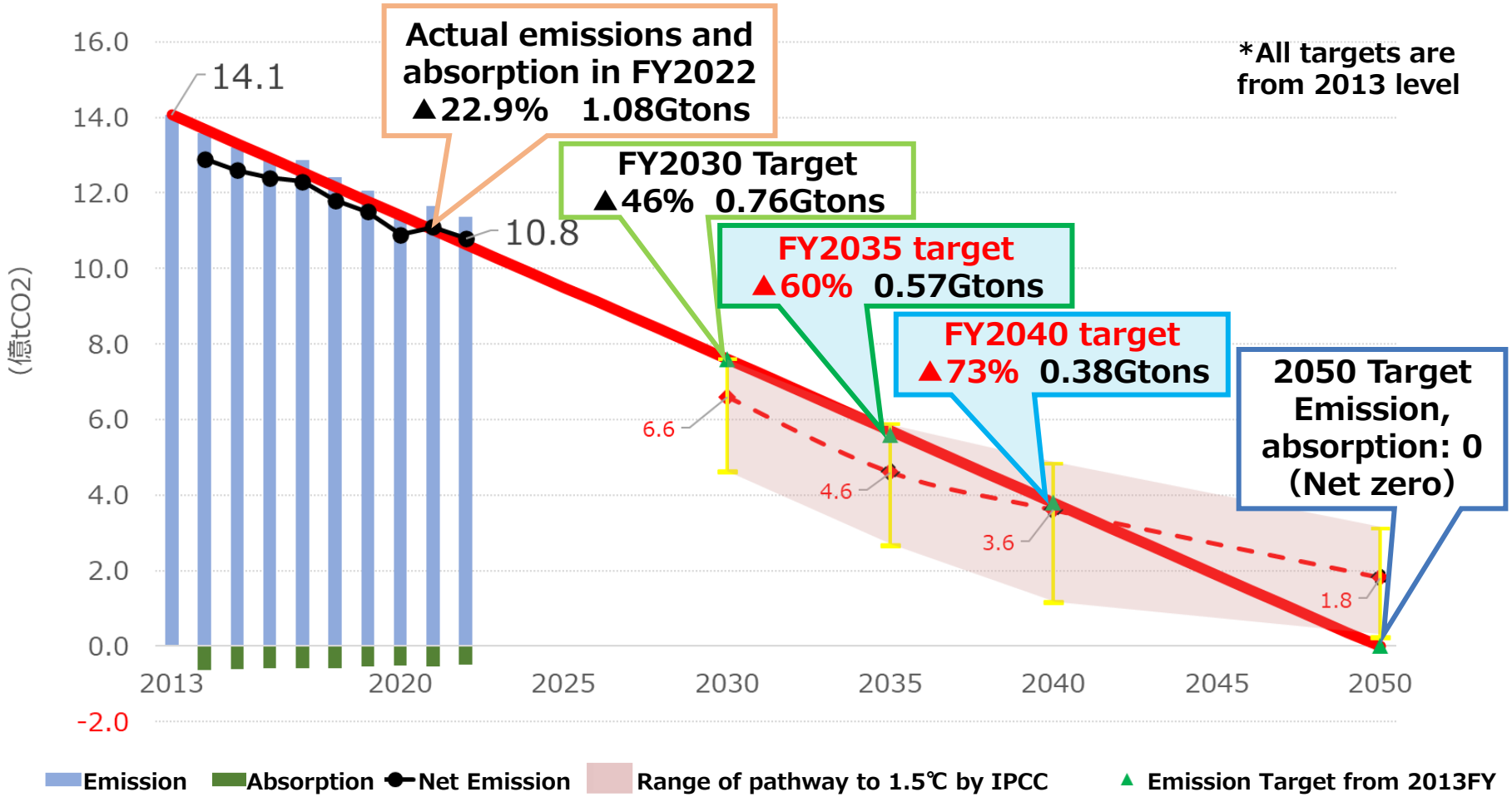
→Global warming action plan was approved by the Cabinet on February 18, 2025, and on the same day, the next NDC was submitted to the secretariat of UNFCCC.

Joint meetings of the Central Environment Council and the Industrial Structure Council (METI and MOE)	Review Team	Advisory Committee for Natural Resources and Energy (Agency for Natural Resources and Energy)
• Consideration of next reduction targets • Review of global warming action plan	Collaboration	• Review of the Energy Master Plan

GX2040 Vision

Next Nationally Determined Contribution (NDC)

- Japan will continue to **follow an unflagging and steady linear path between the 2030 target and the 2050 net zero.**
- For the next NDCs, **the ambitious and consistent with the 1.5°C target**, is to reduce greenhouse gas emissions **by 60% and 73%** in 2035 and 2040, respectively, from the 2013 level.
- This will increase medium- and long-term **predictability** and **accelerate GX investment** to **simultaneously realise decarbonisation and economic growth**.



Main Measures and Policies in the Global Warming Countermeasures Plan (Cabinet Decision on February 18, 2025)

MOE

- To achieve the next NDC, the following main measures and policies will be implemented in an integrated manner with the Energy Basic Plan and the GX2040 Vision.
- Regarding the measures and policies, we will continuously make them more concrete through follow-up implementation, while also flexibly revising them as needed.

《Energy Transition》

- Maximize the use of power sources with high decarbonization effects, such as renewable energy and nuclear power
- Utilize LNG thermal power as a transition means, while promoting the decarbonization of thermal power using hydrogen, ammonia, CCUS, etc., and accelerating the phase-out of inefficient coal-fired power
- Utilize hydrogen, CCUS, etc., in sectors where decarbonization is difficult

《Industry, Business, Transportation, etc.》

- Support for updating to advanced equipment in factories, etc., and energy-saving support for small- and medium-sized enterprises
- Amidst the expected increase in electricity demand, improve energy-saving performance of semiconductors, develop and utilize cutting-edge technologies such as optoelectronic fusion, and improve the efficiency of data centers
- CO_2 emission reduction throughout the lifecycle from manufacturing to disposal in the automotive sector, decarbonization in the logistics sector, and utilization of next-generation fuels in the aviation and maritime sectors

《Communities and Lifestyles》

- Acceleration of regional decarbonization that contributes to regional revitalization
  →Creating over 100 "decarbonization leading areas" by FY2030, etc.
- Transition to decarbonized lifestyles through energy-efficient housing and food loss reduction
- Creating demand through support for the introduction of thermal insulation windows, high-efficiency water heaters, electric commercial vehicles and perovskite solar cells, as well as proactive introduction in government and municipal buildings
- Promotion of decarbonization throughout the entire value chain through the development of calculation methods for Scope 3 emissions

《Cross-cutting Initiatives》

- Implementation and execution of "growth-oriented carbon pricing"
- Transition to a circular economy
  →Promotion of initiatives based on the Advancement Act for resource recycling businesses, early implementation of "waste treatment × CCU", promotion of solar panel recycling, etc.
- Initiatives related to securing forests, blue carbon and other carbon sinks
- Contribution to global emission reductions utilizing Japanese technologies
  →Expanding cooperation through the Joint Crediting Mechanism (JCM) and city-to-city collaboration based on frameworks such as the Asia Zero Emission Community (AZEC)

GX（Green Transformation）

MOE

What is GX

- Transformation of an industrial and social structure that relies on fossil fuels since the Industrial Revolution, to one that relies on green energy
- Simultaneous realisation of decarbonisation, industrial competitiveness and economic growth

Legal framework supporting the GX (Enacted in May 2023)

GX Promotion Act

- GX Economic Transition Bonds.
- Introduction of growth-oriented carbon pricing.

GX Decarbonisation Electricity Act

- Support for the maximum introduction and expansion of renewable energy in harmony with local communities.
- Use of nuclear power on the basic premise of ensuring safety. /Promote decommissioning of nuclear power.

GX promotion strategy (Cabinet decision on 28th Jul, 2023)

Integrated regulatory/supportive investment promotion policy

- Over ¥150 trillion of public and private investment in 10 years
- ¥20 trillion government support in 10 years ←GX economic transition bond (1st issued Feb 2024)
- MOE Supports on thermal window renovation, electrification of commercial vehicles, reginal decarbonisation, etc

Growth oriented carbon pricing

Added value increment of GX-related products and businesses by pricing carbon emissions⇒Provide incentives to businesses that take the initiative in implementing GX.

- 2026FY～ Full operation o「Emission Trading」
- 2028FY～ 「Carbon Tax」(Fossil Fuels)
- 2033FY～ Step-by-step Emission trading auction system

GX Implementation Council meetings

- Chairperson: Prim minister, Deputy chairperson:Chief Cabinet Secretary and Minister of State for GX Promotion (Minister of Economy, Trade and Industry)
- Minister of MOE will attend as a permanent member with Minister of MOD, METI, and 12 experts
- Discussion held in 14 meetings since Jul 2022 → GX2040 Visions was approved by the Cabinet on February 16, 2025.

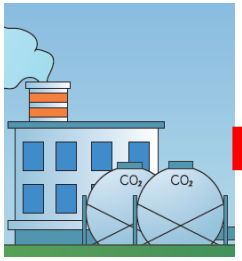
2. MOE's Approach on CCUS and Hydrogen

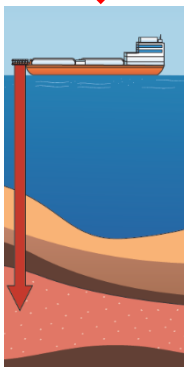
Interconnection between CCUS and Hydrogen

MOE

CCUS

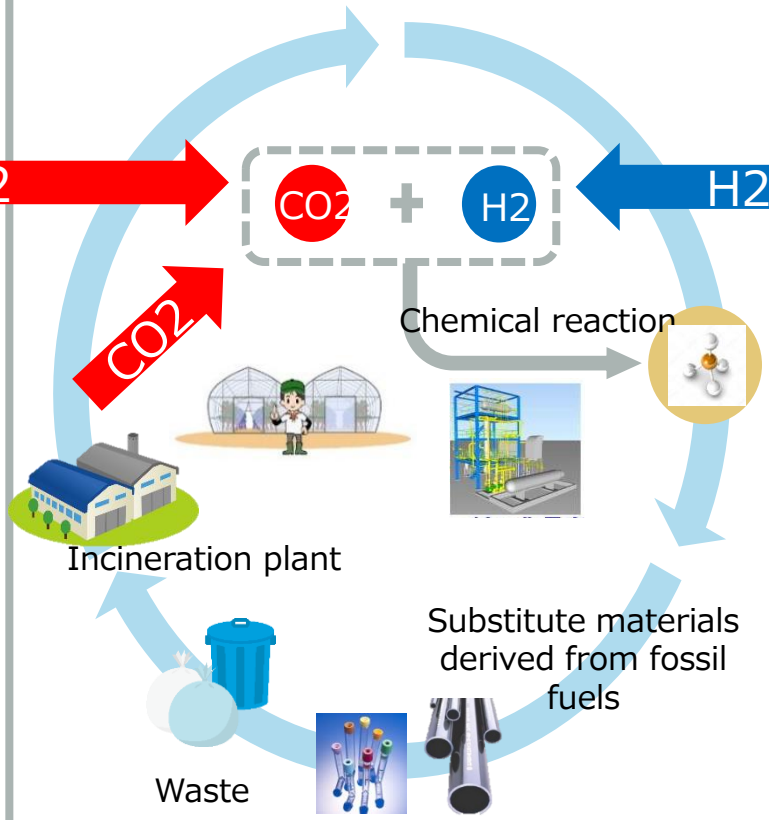
Capture





Storage

Utilization



Hydrogen

Renewable energy and other resources

Using Renewable Energy

Reformin g biogas

H2

Transportation

Pipelines

Hydrogen-absorbing alloy carried by delivery trucks

Applications

Fuel Cell

FC[1] Forklifts

FC[1] Buses

Fish breeding facilities

Hotels / Buildings

Significant Reduction of CO2 × **Carbon Circulation** × **Production and Utilization of Low-Carbon Hydrogen**

[1] **F**uel **C**ell

Project on Environmental Harmonization and Decarbonized/Circular Society Model Construction for Early Social Implementation of CCUS

MOE

Establishing CCUS (CO2 Capture, Utilization and Storage) technology and constructing demonstration sites and supply chains for practical deployment.

1. Project Objective

To ensure full-scale social implementation of CCUS and environmental harmonization by 2030, this project aims to establish CO2 separation, capture, and utilization technologies at commercial scale, while realizing demonstration sites and supply chains for practical deployment through the construction of decarbonized and circular society models.

2. Project Contents

(1) Carbon Dioxide Storage Site Survey Project (Joint project with the Ministry of Economy, Trade and Industry)

Conducting geological analysis and storage capacity assessment for sub-seabed CO2 storage.

(2) Environmentally Conscious CCUS Demonstration Site and Supply Chain Construction Project

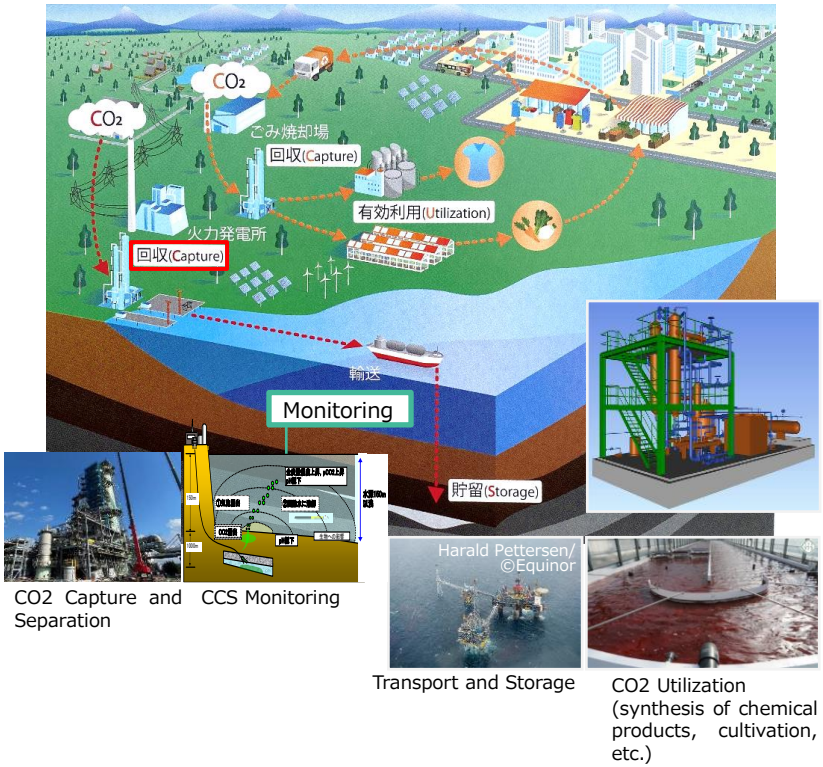
Based on the operation and evaluation results of CO2 separation, capture, and utilization facility demonstrations, this project will construct integrated demonstration sites and supply chains for practical deployment of CCUS. Additionally, it will develop decarbonized and circular society models through CO2 resource utilization and cultivate related technologies and know-how through feasibility studies of CO2 transport and storage based on international cooperation and project development.

（3）Comprehensive Study Project for Ensuring Appropriate Sub-seabed CCS Implementation for Marine Environmental Conservation

This project studies appropriate monitoring and regulatory frameworks utilizing the Best Available Techniques (B.A.T.) and knowledge related to sub-seabed CCS operations being demonstrated in the Tomakomai coastal area, particularly regarding post-CO2 injection, while giving full consideration to impacts on stakeholders.

4. Concept Image

CCUS Demonstration Concept



CO2 Capture and Separation

CCS Monitoring

Transport and Storage

CO2 Utilization (synthesis of chemical products, cultivation, etc.)

3. Project Scheme

- Project Form: Commissioned
- Commissioned to: Private businesses/organizations, universities, public research institutions, etc.
- Implementation Period: (1) FY2014-FY2023, (2) FY2014-FY2025, (3) FY2021-FY2025

①CO2 Separation and recovery

MOE

■ Conducting environmental impact assessment (EIA) according to operating pattern, and EIA of energy-saving CO2 separation and recovery technology using amine absorbent.

CO2 Capture Technology Demonstration with Liquid Absorbent Project（FY2021～FY2025）

- An existing site in Omuta-city is utilized to build supply chain model for mass transportation and effective use of recovered CO_2.
- Improvement measures such as enhancing recovery performance (recovery amount and recovery rate) and improving operability are considered through the experimental operation, and the applicability to further large-scale facilities is evaluated.
- The results of the experiment will proactively be disseminated both in Japan and abroad.

CO2 recovery experimental plant (Operation started in Oct 2020)

CO2 Capture Technology Demonstration with Solid Absorbent Project（FY2021～FY2024）

- US-Japan cooperation project being implemented in Wyoming, USA, which has a globally noteworthy experimental research institute and a thermal power plant capable of demonstrating technology.
- The EIA of separation and recovery using solid absorbent material, which saves more energy than the method using liquid absorbent material, is the world's first trial.
- The technology would be widely available through the world as an established technology and contribute to global CO_2 reduction, after confirming that its operation has no negative environmental impact.

Image of the plant to be built

Dry Fork Power Station
Fuel : Coal (pulverized coal)

②CO2 Transportation and storage (Offshore injection CCS)

MOE

- While most of Japan's CO2 storage potential exists in surrounding sea areas, the difficulty and cost of CO2 transportation via pipelines, especially in offshore areas, increase due to reasons such as: the installation length increasing in proportion to the distance from the shore when laying pipelines from land; limited shallow waters compared to Europe and the US, resulting in deeper water depths; and uneven seabed surfaces with reefs and other features.
- With the method of injecting CO2 into subsea formations from offshore facilities such as vessels, injection and storage can be implemented even in areas where pipeline installation is difficult, as described above, enabling effective utilization of geological formations suitable for CCS in offshore areas.
- In the case of offshore injection methods, even if the injection point needs to be changed due to reaching injection limits during operation, it can be flexibly accommodated without having to reinstall pipelines.
- Offshore injection has no global precedent yet. Since steep topography in sea areas can also be found in Asia and other regions, Japan's pioneering practical application of this technology is expected to lead to international deployment.

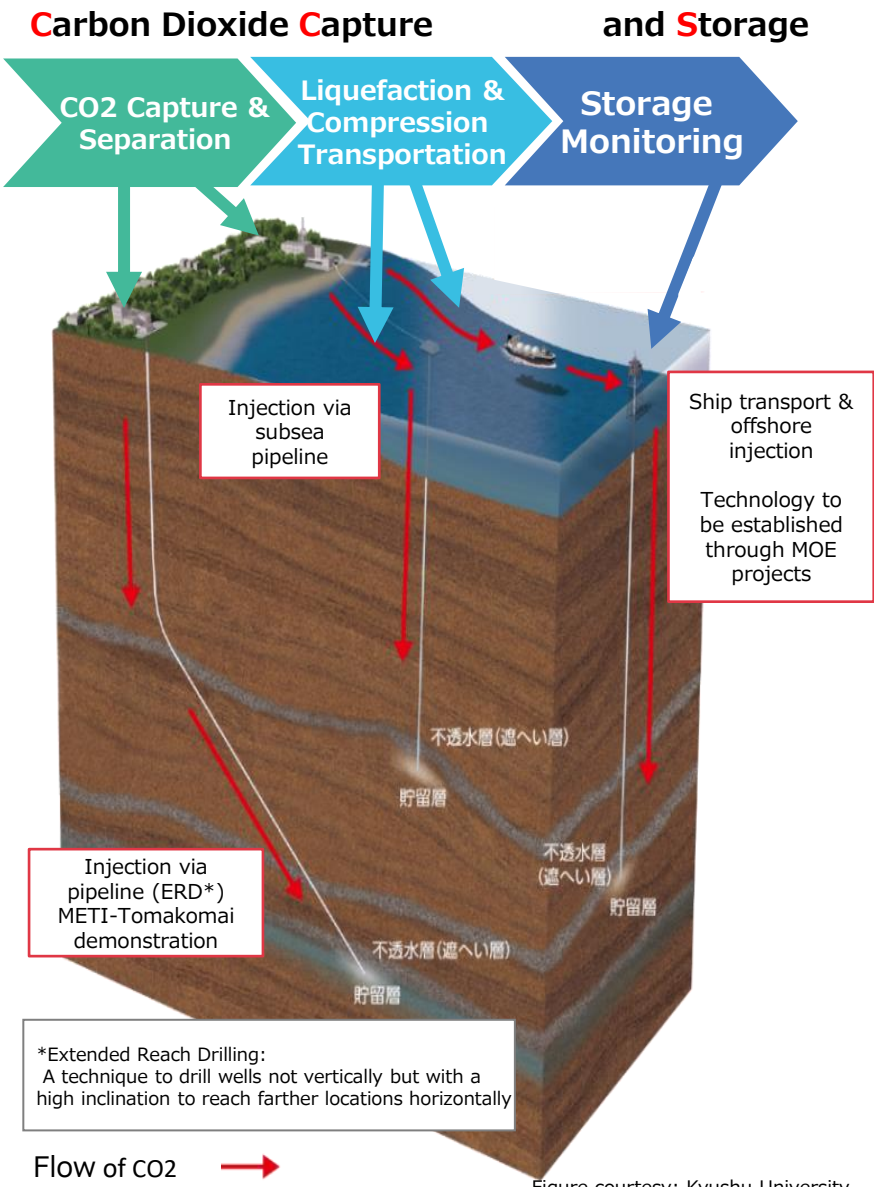


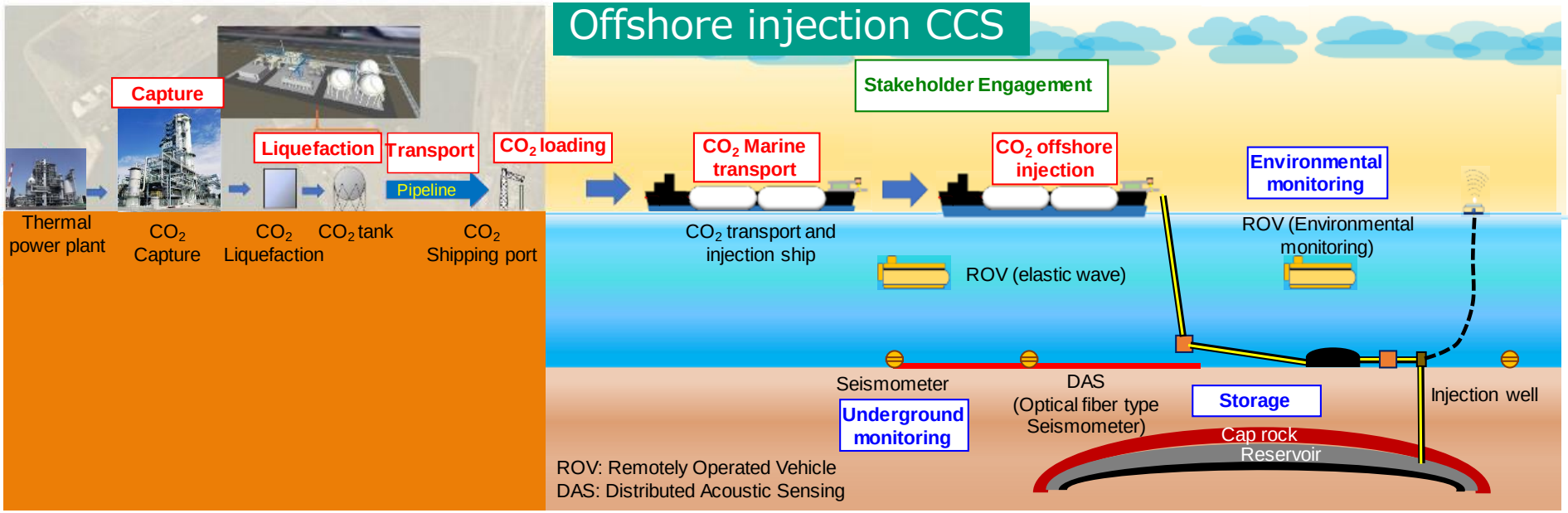
Figure courtesy: Kyushu University

②CO2 Transportation and storage

The purpose of this project is to conduct a technical study of offshore injection CCS in order to implement the entire process from CO2 separation and capture to transport, injection, and monitoring in an environmentally friendly manner. The project will also provide the knowledge necessary to smoothly promote the commercialization of CCS.

- Transport task: Technical study of shipping CO2 captured at a CO2 separation and recovery facility to a CO2 injection vessel for offshore injection.
- Storage and Monitoring task: Technical Study on CO2 Sequestration in Japan and establishment of appropriate CO2 monitoring technology for subsurface and oceanic.
- Stakeholder Engagement task: From the viewpoint of smooth implementation of CCUS, study on the economic and environmental benefits and risks of CCUS, and Stakeholder engagement.

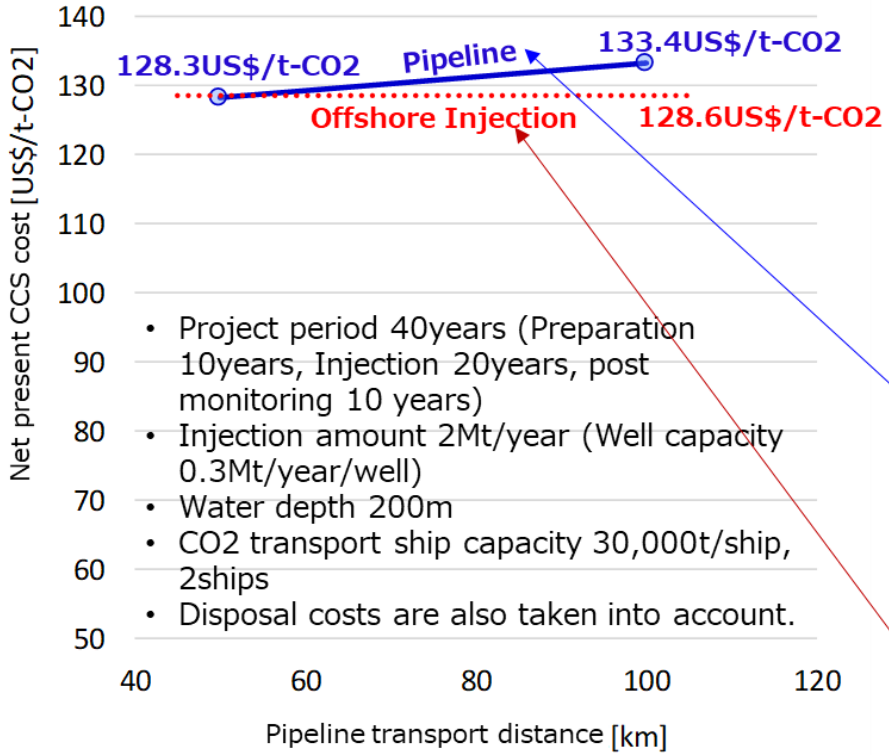
Project image



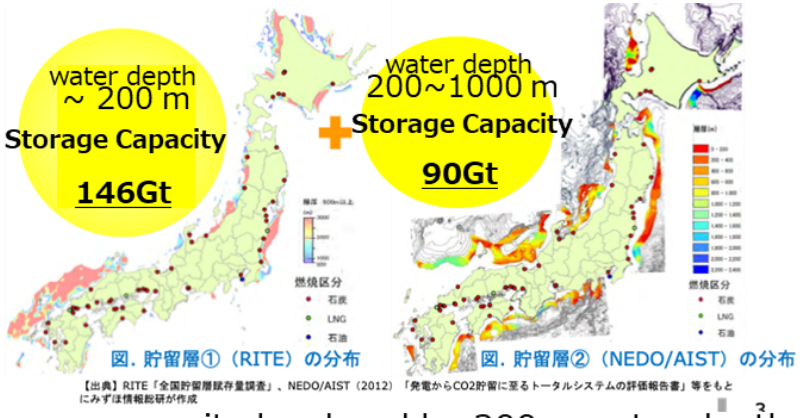
Project on environmentally conscious CCUS experimental site and supply chain construction
②CO2 Transportation and storage (Potential and cost estimation of offshore injection CCS)

MOE

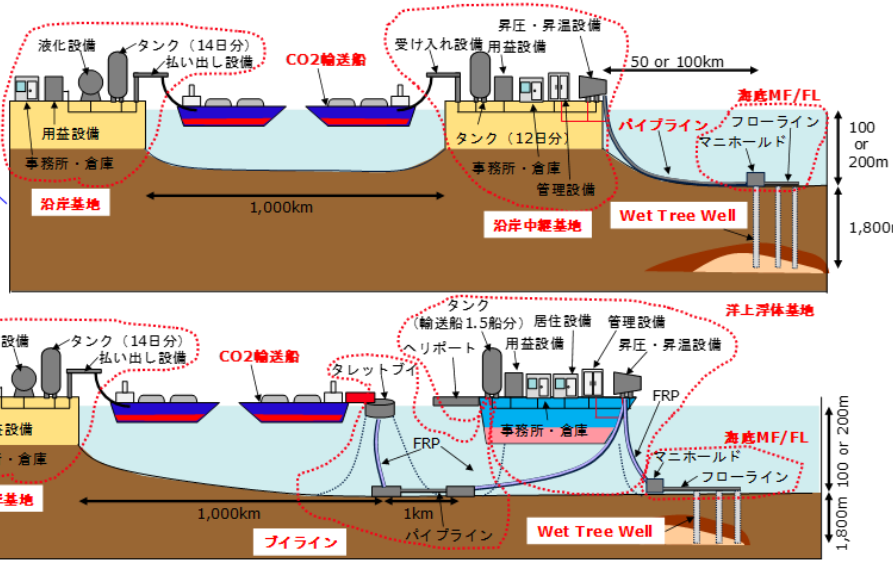
- Additional storage capacity can be obtained by offshore injection CCS.
- The offshore injection CCS is less expensive than the pipeline CCS from a transport distance of approximately 53 km.



Comparison of CCS costs versus pipeline transport distance



Storage capacity bordered by 200m water depth

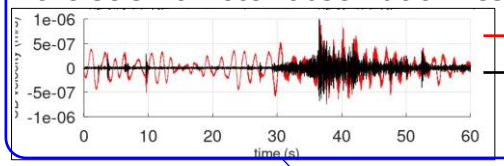


Project on environmentally conscious CCUS experimental site and supply chain construction
②CO2 Transportation and storage (CO2 monitoring)

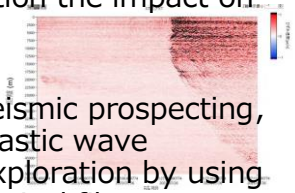
MOE

- Various technology and methods for subsurface and oceanic CO2 monitoring and reservoir stability monitoring are considered in this project.
  - Development of a continuous marine monitoring system: Development of new continuous monitoring technologies incorporating optical fiber sensing technology (DAS) and other methods to infer the spread of injected CO2 underground (for understanding CO2 behavior and confirming behavior stability).
  - Study of CO2 marine environment monitoring methods: Conducting detection verification tests at a water depth of 200m using Multi-Beam Echo Sonar (MBES) to detect CO2 leakage in the ocean, etc.

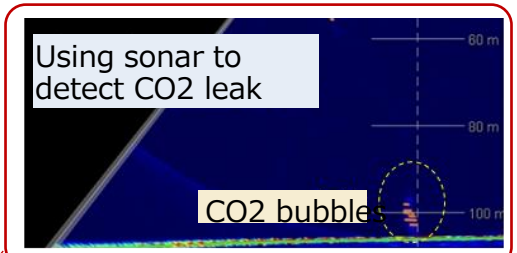
Microearthquakes are observed by removing the effects of ocean waves from the seismometer observation results.

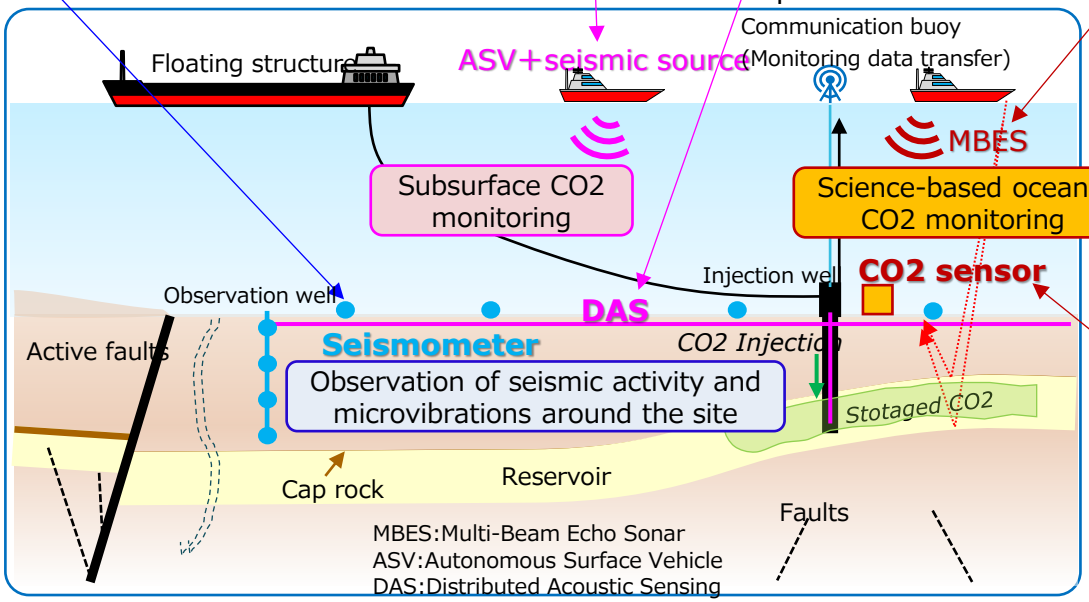


A small speaker-type seismic source that takes into consideration the impact on marine life

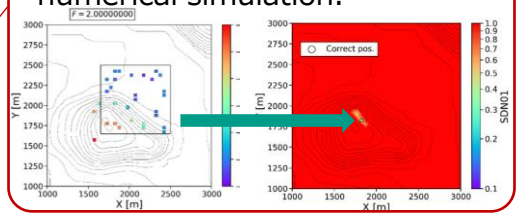


seismic prospecting, elastic wave exploration by using optical fiber

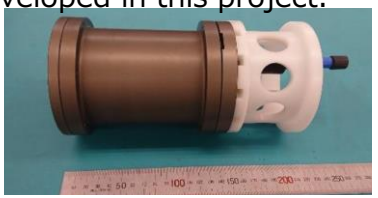




Leak point is identified from observational results by numerical simulation.



The pCO2 sensor PCS-19 was developed in this project.



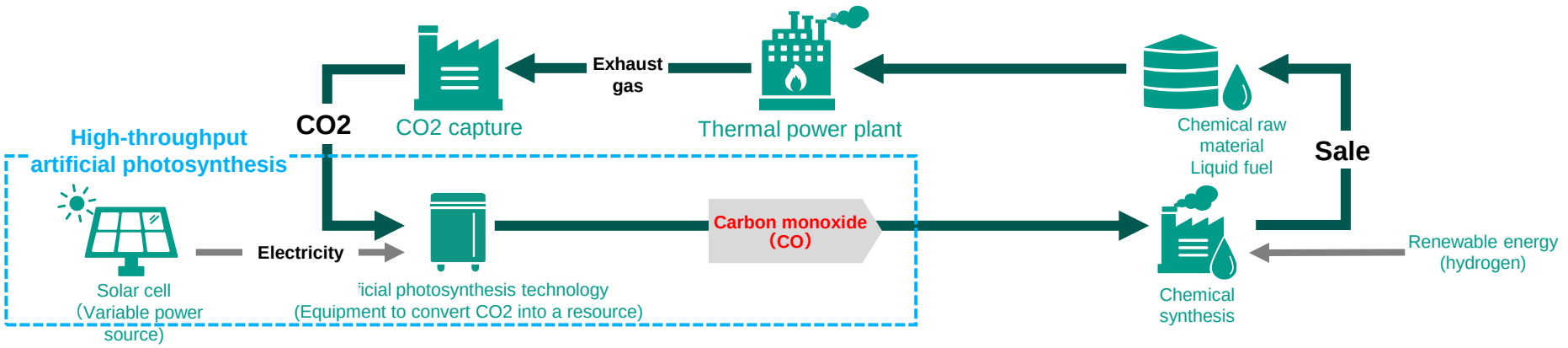
Overview of subsurface and oceanic CO2 monitoring in this project

Project on environmentally conscious CCUS experimental site and supply chain construction
③CO2 Utilization (Demonstration project on converting CO2 into a resource through artificial photosynthesis)

MOE

Representative: **Toshiba Corporation** | Period: FY2018 to FY2022

Capture CO2 from exhaust gas and generate a large amount of CO from the captured CO2 at the world's highest conversion speed.

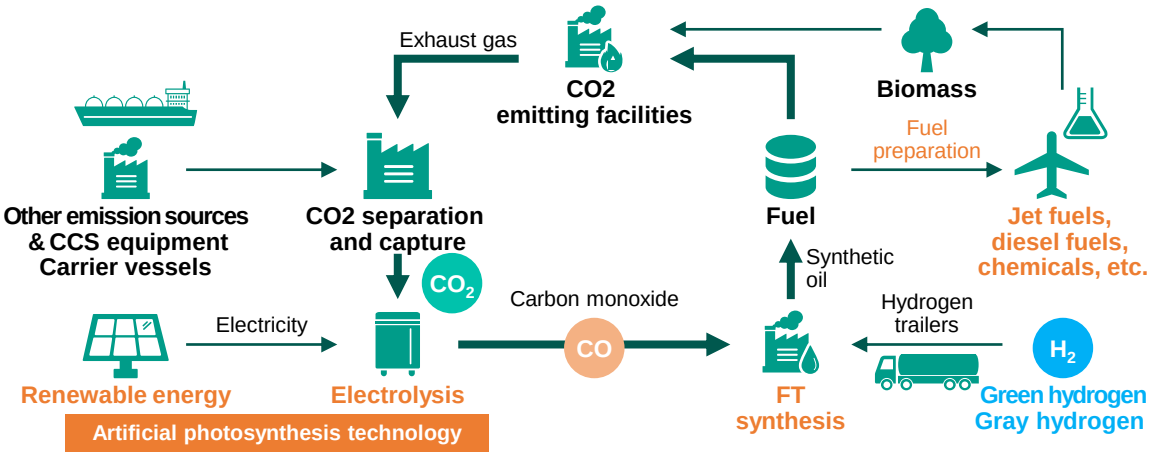


Representative: **Toshiba Energy Systems & Solutions Corporation** | Period: FY2021 to FY2024

Regional CO2 Resource Utilization Study Business through Electrolysis Utilizing Artificial Photosynthesis Technology

This initiative is designed for practical use in society of the technology to electrolyze CO2 to convert it into CO. Also, in the initiative, examinations are made for the establishment of a supply chain in which CO2 separated and captured from emission sources will be electrolyzed into CO by the use of artificial synthesis technology and then converted into sustainable aviation fuel (SAF) for jet planes and into liquid fuel that can be used locally.

Illustrative image of a process to convert CO2 into a resource



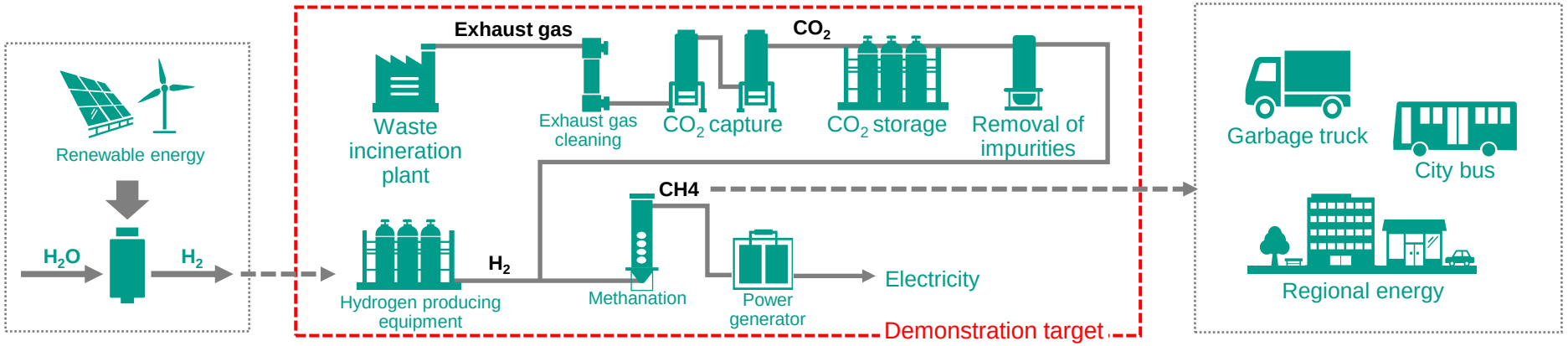
Project on environmentally conscious CCUS experimental site and supply chain construction
③CO2 Utilization (Demonstration project on converting CO2 into a resource through methanation)

MOE

Representative: **Kanadevia Corporation**

Period: FY2018 to FY2022

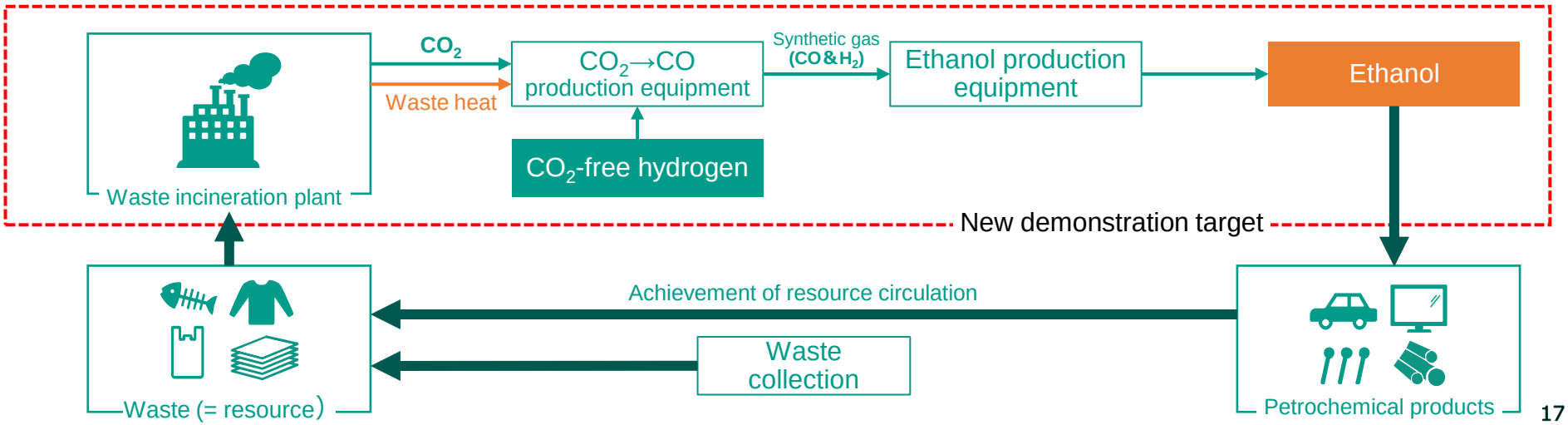
Separate and capture CO2 contained in exhaust gas from waste incineration facilities to use it as a material to manufacture methane through the reaction of CO2 with hydrogen.



Representative: **Sekisui Chemical Co., Ltd.**

Period: FY2018 to FY2022

Separate and capture CO2 contained in exhaust gas emitted from waste incineration facilities to use it as a material to manufacture ethanol through the reaction of CO2 with hydrogen, which is to be made by using waste heat and catalyst.



Project to Promote the Utilization of Hydrogen Derived from Renewable Energy in Local Communities

MOE

Promoting hydrogen utilization that leads to the construction of a hydrogen society.

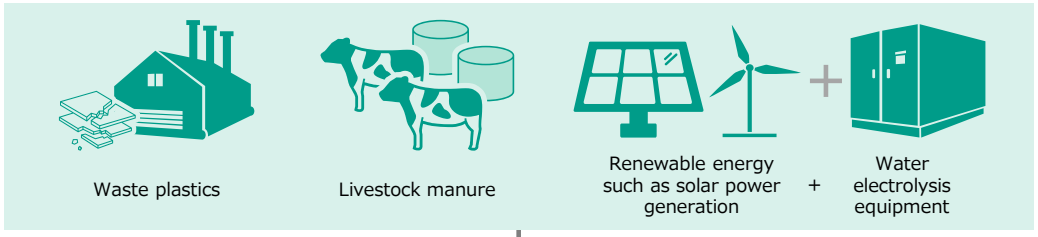
1. Project Objective

To promote the realization of a future hydrogen society by supporting projects that produce hydrogen—essential for decarbonization when aiming to achieve carbon neutrality by 2050—from local resources such as renewable energy, and projects that store, transport, and utilize hydrogen, as well as projects that leverage hydrogen characteristics for BCP applications.

2. Project Details

Construction of Local Hydrogen Supply Chains

Local Resources



Diverse hydrogen utilization

Toward the realization of a hydrogen society

Hydrogen Supply Chain Tailored to Regional Characteristics

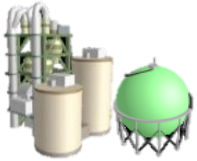
MOE

Produce

Water electrolysis

Utilization of renewable energy

By-products



By-products of caustic soda, etc.

Conversion

Gasification of used plastics

Biogas reforming

Hydrogen sources adapted to regional characteristics

Transport & Store

High-pressure hydrogen trailer

High-pressure hydrogen tube trailer

Hydrogen-absorbing alloys (utilizing existing distribution networks)

Simple hydrogen refueling vehicle

Pipeline

Diverse delivery methods

Use

Fuel cells

Swimming pools

After-school clubs

Sturgeon aquaculture

Hotels/Buildings

Fuel cell vehicles

Fuel cell buses

Fuel cell forklifts

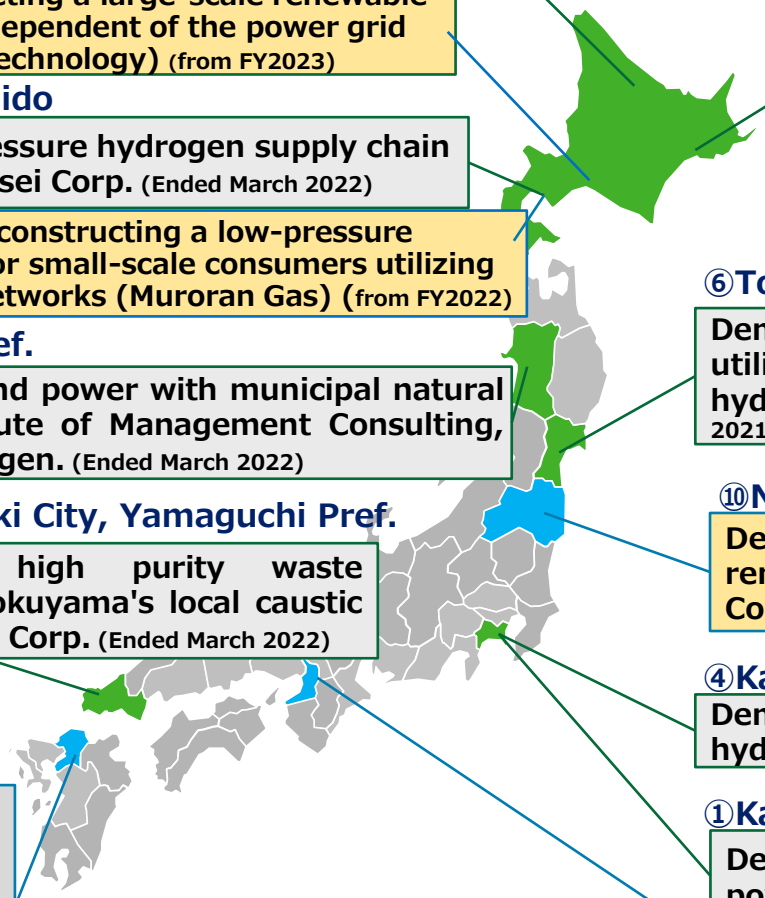
Various applications

環境省の水素実証事業

MOE

: Prefectures demonstrating a regional, low carbon hydrogen supply chain

: Prefectures creating and demonstrating low-cost hydrogen models using existing facilities and infrastructures（As of March 2022）



②Shikakoi Town, Hokkaido

Demonstration using clean hydrogen (biogas from livestock excreta). By Air Water INC. (Ended March 2022)

⑬Tomakomai City, Hokkaido

Demonstration of constructing a large-scale renewable hydrogen supply chain independent of the power grid (SPARX Green Energy & Technology) (from FY2023)

⑧⑫Muroran City, Hokkaido

Demonstration of low pressure hydrogen supply chain using wind power. By Taisei Corp. (Ended March 2022)

Demonstration project for constructing a low-pressure hydrogen delivery model for small-scale consumers utilizing existing gas distribution networks (Muroran Gas) (from FY2022)

⑦Noshiro City, Akita Pref.

Demonproduced from wind power with municipal natural gas. By NTT Data Institute of Management Consulting, Inc.stration mixing hydrogen. (Ended March 2022)

③Shunan & Shimonoseki City, Yamaguchi Pref.

Demonstration using high purity waste hydrogen supplied by Tokuyama's local caustic soda plant. By Tokuyama Corp. (Ended March 2022)

⑨Kitakyushu City, Fukuoka Pref.

Demonstration using green hydrogen from waste-to-energy and local renewable energy. By Kitakyushu Power Co., Ltd. (Ended March 2022)

⑤Shiranuka Town, Hokkaido

Demonstration using clean hydrogen (small hydraulic power). By Toshiba Corp. (Ended March 2021)

⑥Tomiya City, Miyagi Pref.

Demonstration of low carbon supply chain utilizing existing distribution network and pure hydrogen fuel cell. By Hitachi Ltd. (Ended March 2021)

⑩Namie Town, Fukushima Pref.

Demonstration constructing a low-cost renewable hydrogen supply chain. By Obayashi Corp. (From FY2020)

④Kawasaki City, Kanagawa Pref.

Demonstration using waste plastics for hydrogen. By Showa Denko K.K. (Ended March 2022)

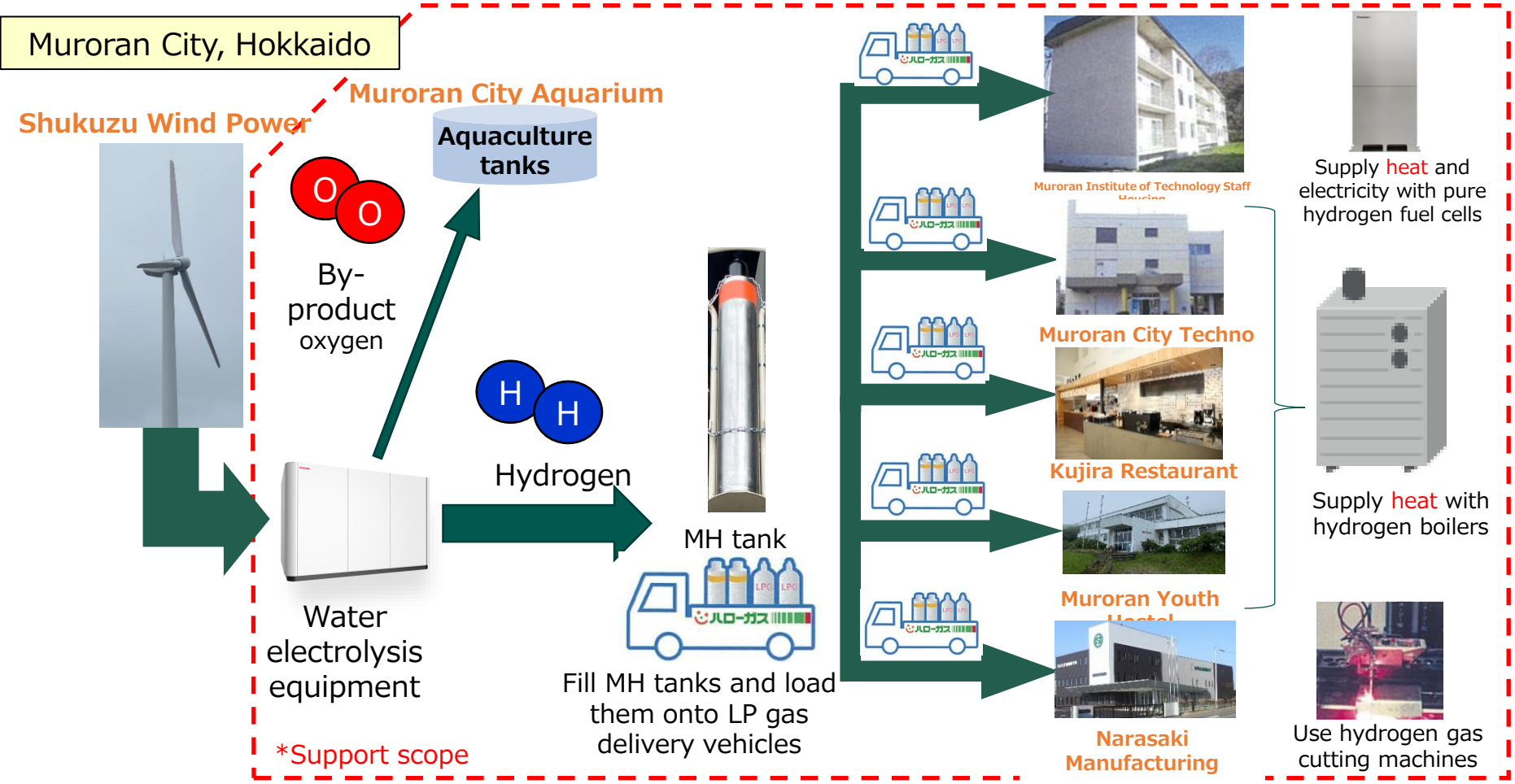
①Kawasaki & Yokohama City, Kanagawa Pref.

Demonstration using clean hydrogen (wind power). By Toyota Motor Corp. (Ended March 2022)

⑪Osaka City, Osaka Pref.

Demonstration of supply chain using methanation of clean hydrogen (renewable power) and biogas from compostable waste in cityside. By Osaka Gas. (From FY2022)

Hydrogen Demonstration Project Utilizing Existing LP Gas Distribution Network



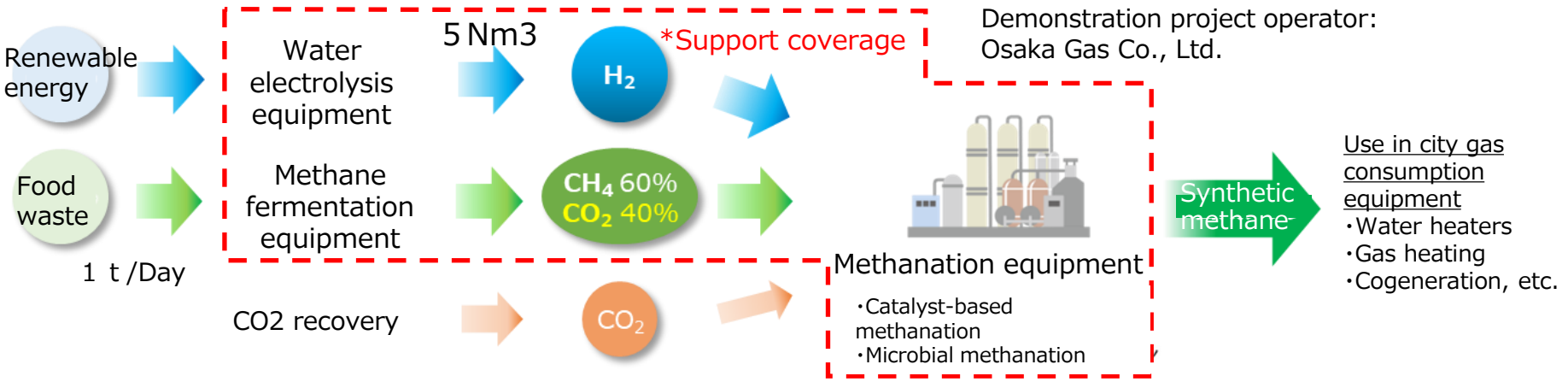
- A commissioned project utilizing power from the existing Shukuzu Wind Power Plant, planned for four years from FY2022
- Hydrogen is filled into cylindrical metal hydride (MH) tanks that can be mixed with existing gas distribution networks and do not violate the High Pressure Gas Safety Act, and delivered to consumers
- Cherry salmon farming is conducted at the Muroran City Aquarium adjacent to the water electrolysis equipment installation site, and effective utilization of by-product oxygen is also being considered

Hydrogen Supply Chain Construction and Demonstration Project through Methanation

MOE

Osaka City, Osaka Prefecture

- Scheduled from fiscal year 2022 to 2025, this project will utilize existing renewable energy electricity to produce hydrogen, and use biogas from food waste methane fermentation to perform methanation, transport through pipelines, and use in city gas consumption equipment.
- Demonstrations will be conducted at the 2025 Osaka-Kansai Expo venue.



Utilizing existing city gas infrastructure to expand demand for renewable hydrogen and reduce hydrogen costs

Until 2024, it will be implemented at the Osaka Wide Area Environmental Facilities Association Maishima Plant, after which it will be relocated to the Expo venue.

After the demonstration:

- Scale up methanation equipment.
- By 2030, establish a system to produce synthetic methane from renewable hydrogen and CO2 from food waste-derived biogas.
- Aim to implement at waste incineration plants and food processing factories primarily in the Kinki region.

Support for Introduction of Hydrogen Utilization Equipment and Devices

MOE

■ The Ministry of the Environment implements support programs that lead to hydrogen utilization in local communities

"Self-sufficient Distributed Energy System Construction Project"

Also effective for BCP response

Support for systems that produce and store hydrogen onsite from renewable energy and share energy

- Local production for local consumption using renewable hydrogen without wasting surplus power from solar generation
- Clean power generation from stored hydrogen during disasters. Contributing to strengthening regional disaster prevention capabilities.

«Subsidy Rates»
- Municipalities, Small and Medium Enterprises: 2/3
- Prefectures, Designated Cities, Private Companies: 1/2

"Project to Promote Introduction of Hydrogen Utilization Equipment and Support Social Implementation"

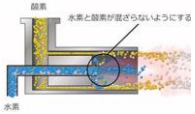
In anticipation of the transition to renewable hydrogen

Support for equipment that plays a role during the transition period from existing systems to hydrogen utilization

- Expanding demand through the introduction of equipment such as co-firing hydrogen with existing fuels
- Contributing to further CO2 reduction in anticipation of increasing the proportion of renewable hydrogen in the future

Industrial fuel cells

Hydrogen boilers



Hydrogen burners

Other hydrogen power generation, etc.

«Subsidy Rates»
- Municipalities, Small and Medium Enterprises: 2/3
- Prefectures, Designated Cities, Private Companies: 1/2

Support for introduction of renewable hydrogen equipment

Support for equipment introduction to build regional supply chains utilizing local renewable hydrogen

- Contributing to CO2 reduction by introducing equipment necessary for social implementation of renewable hydrogen supply chains

Water electrolysis equipment

Buffer tanks

Hydrogen filling units

Other hydrogen utilization equipment that contributes to supply chain construction, etc.

«Subsidy Rates»
- Municipalities, Small and Medium Enterprises: 2/3
- Prefectures, Designated Cities, Private Companies: 1/2

Examples of Support for Introduction of Hydrogen Utilization Equipment and Devices

[Subsidy Example 1] Brother Industries, Ltd. (Nagoya City, Aichi Prefecture)

・Producing hydrogen through solar power generation and filling it into cassette-type hydrogen absorbing alloys.
Delivering the filled hydrogen absorbing alloys to the museum and utilizing them as electricity within the facility.

＊1

Hydrogen absorbing alloys (cassette-type) installed outside the museum

[Subsidy Example 2] KAWASAKI KING SKYFRONT TOKYU REI HOTEL (Kawasaki City, Kanagawa Prefecture)

・Introduced a "50kW pure hydrogen stationary FC power generation system" using fuel cell (FC) modules manufactured by Toyota Motor Corporation and began hydrogen power generation from September 1, 2023.

＊2

"50kW pure hydrogen stationary FC power generation system" installed at the hotel

Sources for this slide *1: Brother website *2: KAWASAKI KING SKYFRONT TOKYU REI HOTEL website

Toward Further Promotion of Social Implementation of CCUS and Hydrogen (Summary)

MOE

- Toward achieving net-zero by 2050, it is important to adopt the mindset of not excluding any possibilities and maximizing the use of all available technologies.
- CCUS and hydrogen are important technologies for promoting decarbonization in areas that are difficult to decarbonize (hard-to-abate sectors), such as those where electrification is challenging.
- CCU is an important technology that utilizes CO2 as a resource, and the Ministry of the Environment is promoting the development of carbon circulation society models through demonstration projects.
- Regarding hydrogen, the Ministry of the Environment provides subsidies for demonstration projects to build local production for local consumption-type supply chains utilizing local resources, and for the introduction of equipment that manufactures and utilizes hydrogen from local renewable energy sources.
- CCS can be a practical and rapid solution for achieving carbon neutrality, in addition to other significant CO2 reduction measures.
- Offshore injection CCS is effective for efficiently utilizing CCS potential in offshore areas, and the Ministry of the Environment is conducting studies toward its practical application.
- Toward the implementation of environmentally harmonious CCS projects, the Ministry of the Environment is considering institutional issues and implementing initiatives for rational and appropriate monitoring of the marine environment (to be introduced in Lecture 16 on Day 2 of this symposium).
- The Ministry will continue to work in collaboration with relevant ministries and agencies, such as the Ministry of Economy, Trade and Industry, to promote the social implementation of CCUS and hydrogen.

Thank you