

**“Financing Programme to Demonstrate Decarbonization
Technology for Realizing Co-Innovation”**

and

**“Pilot Project for Comprehensive Support throughout
the Whole Hydrogen Supply Chain Abroad”**

December 17, 2021

**Global Environment Centre Foundation
(GEC)**



Japan (MOEJ) promotes the JCM Financing Schemes for the transition to a decarbonized society in developing countries.



< JCM Financing Schemes >

1. Financing Programme for JCM Model Projects
- ✓ 2. **Financing Programme to Demonstrate Decarbonization Technology for Realizing Co-Innovation**
- ✓ 3. **Pilot Project for Comprehensive Support throughout the Whole Hydrogen Supply Chain Abroad**

Budget for projects starting from FY 2021 is about JPY 8.8 billion (approx. USD 88 million) in total by FY2023 (USD1 = JPY100)

“Financing Programme to Demonstrate Decarbonization Technology for Realizing Co-Innovation”

Purposes and Characteristics

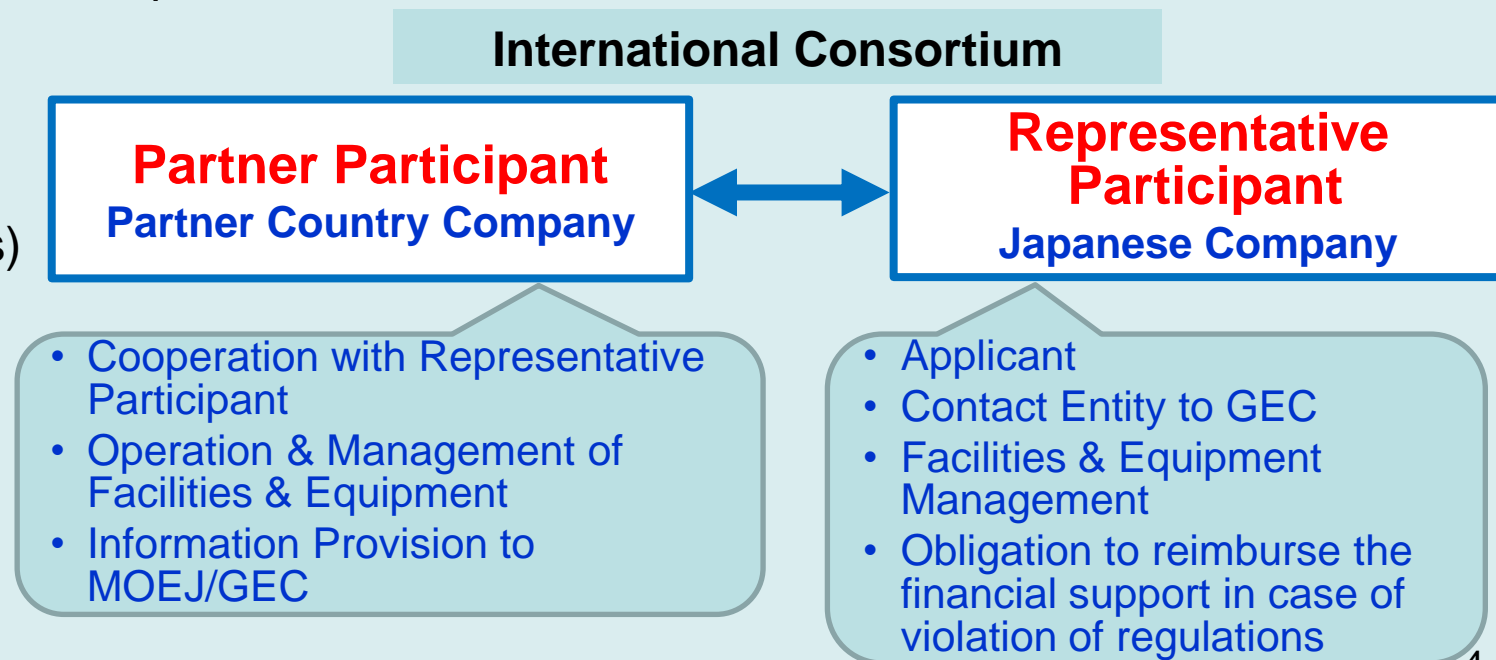
This financing programme aims to;

- Contribute to creating a decarbonized society through renovation and dissemination of high quality decarbonization technologies.
- Create innovation beneficial for both Japan and partner countries through collaboration (co-innovation).
- Contribute to fulfill the aim of a greenhouse gas reduction in Japan through the Joint Crediting Mechanism (JCM) .
- Bring benefits to the technology developers in Japan as a result.

Participant Eligibility

- Japanese entities (e.g. private companies)

Participants must establish the International Consortium that consists of foreign entities, etc.



Implementation Period of Financing Programme

- Project implementation period shall be within 3 years.

(Application documents for the Contract of Finance must be submitted in the first fiscal year.)

Ratio of Financial Support

- Small and medium-sized enterprises: 2/3
(Definition in the law of Japan)
- Participants who do not fall into the above classification
 - Project cost at time of the application exceeds ¥100,000,000 per fiscal year: 1/2
 - Project cost at time of the application does not exceed ¥100,000,000 per fiscal year: 1/3

- This financing programme is intended for renovation and demonstration of decarbonizing technologies that reduce energy-related CO2 emissions.
- Desirable projects are those that aim to systematize or package multiple technologies.

Eligible Technologies are contributing to;

- The reduction of energy-related CO2 emissions through waste management in partner countries.
- The reduction of CO2 emissions from the transport, household, or business sectors and others in partner countries.
- The promotion of renewable energy using solar power generation, wind power generation, geothermal power generation or hydroelectric power generation in partner countries.
- Transformation of social systems of partner countries into decarbonizing ones.
- The reduction of energy-related CO2 emissions the above cases.

- The financing programme covers the costs below.
- **Costs directly required to implement the project.**

Cost of ;

- Machinery and equipment
- Erection and installation
- Ancillary work
- Survey and test
- Facilities/instruments (including monitoring system)
- Administrative work

Example of demonstration project

Demonstrating a Combined Control of High-Performance Ventilation,
Air-Conditioning and Showcases in Food Supermarkets in Asia

Summery of Renovation & Demonstration

The aim of this project is to drastically reduce the energy of showcases and air-conditioner by the cooperative control of desiccant dehumidifier, indirect vaporization cooler, air-conditioner, and showcases in supermarkets (reduction ratio: showcase 20%, AC 70%). We also set a target for depreciation period of 4.9 years or less by reducing costs. Furthermore, by dehumidification, we aim for a hygienic and comfortable store environment without condensation or molds. We will show the future of air-conditioning at stores to build up de- facto standard and realize JCM.

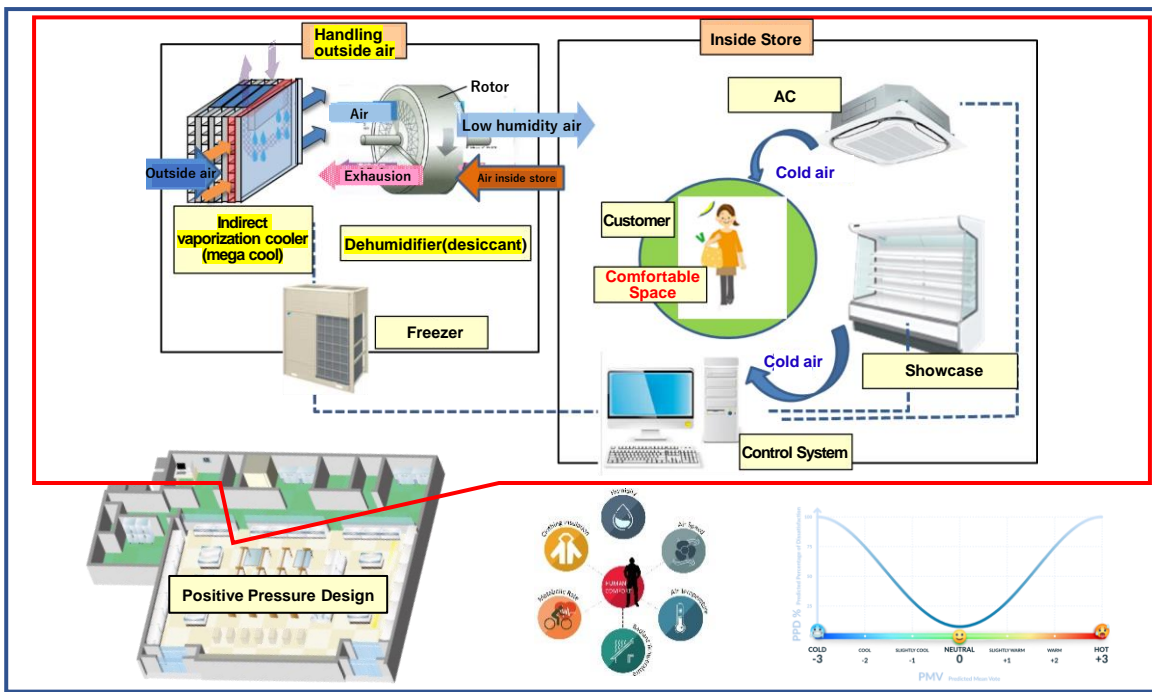
< Details of Renovation & Demonstration >

- ①Energy saving by the cooperative control of local freezer and Japanese showcase
 - Build a cooperative control system and demonstration of cooperative control using local equipment.
- ②Optimization of energy-saving air conditioner mainly using desiccant in the local store environment
 - Establish technology applicable to the local equipment to secure the amount of regenerated heat.
- Demonstration of its applicability to the local environment.
- ③Duct pit-less construction
 - Establish duct pit-less method applicable to the local construction. Demonstration of effectiveness
- ④Application of indirect vaporization cooler to the local water
 - Develop a cooling device applicable to the water which is harder than that of Japan. Demonstration of applicability
- ⑤Development of air-conditioning standard inside stores by PMV evaluation accepted by local customers
 - Develop air-conditioning operation standard based on local people's evaluation on the feeling of hot and cold through demonstration

Outline of Target Country / Region



In Southeast Asia, modernization of food supermarket is still in the stage of development, thus installation of showcases is expected to be increased in the future, and energy-saving / hygienic stores are highly demanded. In addition, ventilation is enhanced for Covid-19 prevention, and this technology can drastically reduce the heat-loss at ventilation. The demand for this technology is quite high.



Prospects for Commercialization and Diffusion in Target Country / Region

- Prospect for Commercialization
- STEP1 : Collaborate / expand mainly with Japanese supermarkets (2020-2022, actual demonstration)
- STEP2 : Collaborate / expand mainly with government-affiliated or conglomerate's supermarkets
- STEP3 : Collaborate / expand mainly with local supermarkets

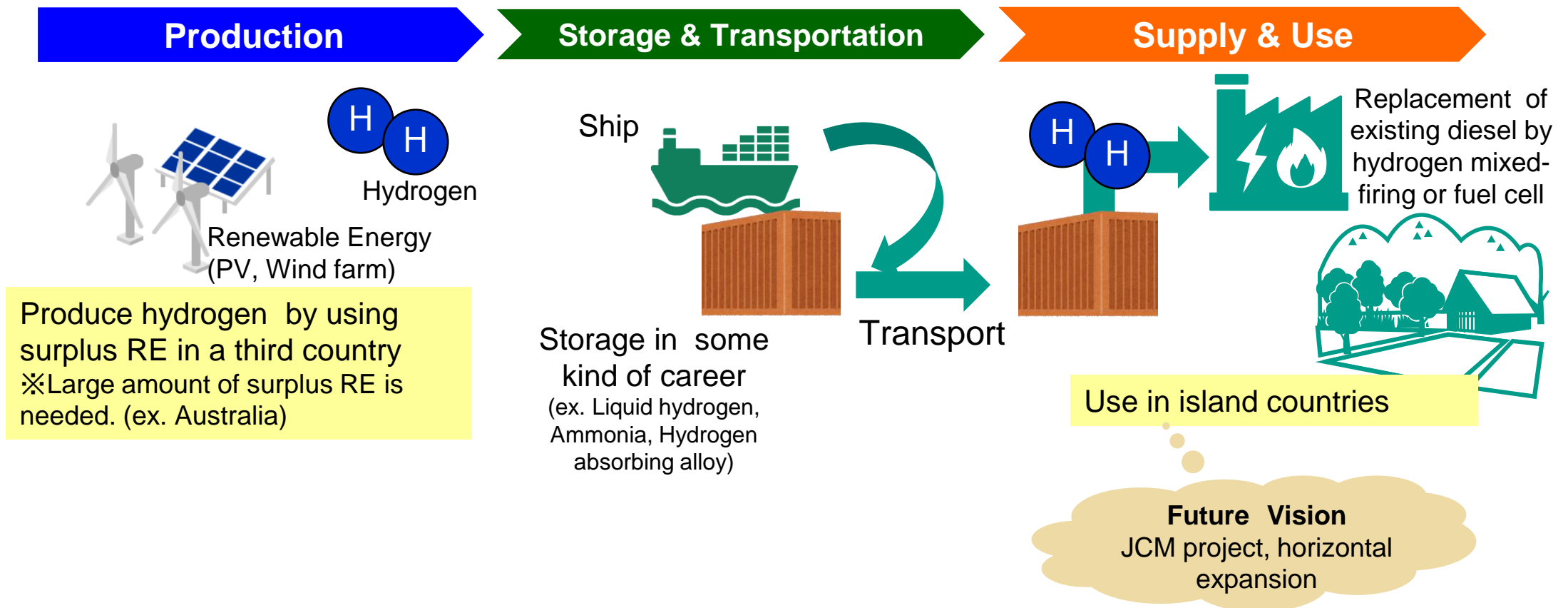
Prospect for Diffusion

Our partner intends to adopt this technology to all of its stores. As government-affiliated / conglomerate's supermarkets are willing to utilize technologies of developed countries, expansion of this technology will be accelerated if this project becomes known as a successful model. Even it can be expanded in other Southeast Asian countries with high possibility. On the other hand, this cost reducing technology is also applicable to Japan, and is expected to contribute to the return of technology and reduction of CO2 in Japan.



“Pilot Project for Comprehensive Support throughout the Whole Hydrogen Supply Chain Abroad”

- Produce and storage renewable hydrogen in a third country where renewable energy is abundant, and transport to supply and use in island countries.
- Cultivate demand market by supplying renewable hydrogen to island countries, which will lead to JCM projects and help developing countries transition to a decarbonized society.



International Consortium

Partner Participants:

- Cooperation with Representative Participant
- Operation & Management of Facilities & Equipment
- Information Provision to MOEJ/GEC

Representative Participant:

- Applicant
- Contact Entity to GEC
- Facilities & Equipment Management
- Obligation to reimburse the financial support in case of violation of regulations

Representative Participant
Japanese Company

Partner Participant
Third Country Company
(ex. Australia)

Partner Participant
Partner Country Company
(ex. Island Country)

Production

Storage & Transportation

Supply & Use

1. **Budget for projects starting from FY 2021 :**
JPY 500 million (Approx. USD 5 million)
2. **Ratio of Financial Support :**
50% of Costs Eligible for Financing
3. **Costs Eligible for Financing :**
Costs directly required to implement the project
 - a. Machinery and equipment
 - b. Erection and installation
 - c. Ancillary work
 - d. Survey and test
 - e. Facilities/instruments (including monitoring system)
 - f. Administrative work

1. Implementation Period of the Project :

Within 3 fiscal years

2. Period of Financing Support :

1 fiscal year

3. Evaluation of financing support has 2 steps as follows. Applicants must submit 2 different types of application documents.

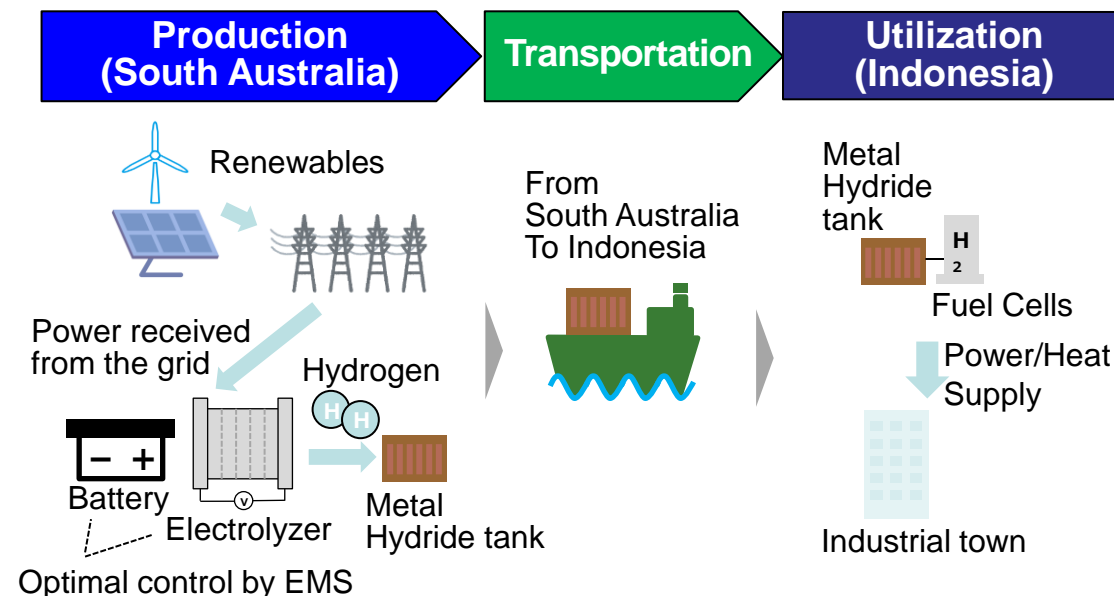
- **Evaluation of adoption:** When implementing a project that spans multiple fiscal years, the plan of the entire period should be described in the project implementation plan at the time of application.
- **Evaluation of contents:** Applicants selected for the financing support must submit application documents for the Contract of Finance each fiscal year.

Production of economical green hydrogen in South Australia, transportation of hydrogen by metal hydride to Indonesia and utilization of hydrogen through fuel cell in industrial town in Indonesia

Representative participant:
Marubeni Corporation

Outline of demonstration project

- In South Australia, materialize economical and stable green hydrogen production by 1) making effective use of grid surplus power come from renewable energy, 2) improving the utilization rate of electrolyzer by using the energy charged in the battery, 3) developing and operating the energy management system (EMS) for the optimal operation of electrolyzer and battery depending on weather and spot power price etc., and also try to contribute the grid stabilization at the same time.
- By using the metal hydride tank, transport the green hydrogen from South Australia to Java island in Indonesia, and do power/heat supply services in the industrial town in Indonesia by using fuel cells.



Outline of partner country / region

Site for utilization: Bekasi, West Java, Indonesia



Maps Data: Google, ©2021

- Indonesian government lists environmental measures as a priority and is working to materialize the low carbon society under their medium-term development plan to 2024.
- There are many islands, and they rely on mainly fossil fuel generations.

Site for production: Adelaide, South Australia

Prospects at commercialization (around 2030)

Estimated GHG reduction: 7,929 tCO₂/y (1st Step)

1st Step: Installment of total 2MW fuel cells as distributed power supply in industrial towns near Jakarta and do power/heat supplying services by utilizing the economical green hydrogen produced in South Australia.

2nd Step: Based on the 1st Step experience, minimize the operational risk and try to adopt the same business model in other islands in Indonesia and other Pacific Island countries by installing fuel cells as the replacement of existing diesel generators.

Cám ơn Thank you!

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