

Published in October 2020



Front cover photos (from top)

- Indonesia / JFE Engineering Corporation
 Waste Heat Recovery in Cement Industry
- Myanmar / Kirin Holdings Company, Limited Energy Saving Brewing System

Back cover photos (from top)

- Indonesia / Tokyo Century Corporation High Efficiency Injection Molding Machine
- Ebara Refrigeration Equipment & Systems Co., Ltd. High Efficiency Centrifugal Chiller



About the Joint Crediting Mechanism (JCM)

Many of the advanced low-carbon or decarbonizing technologies do not necessarily promise investment-return to developing countries. Japan will, while lowering burdens of those countries, promote diffusion of advanced low-carbon or decarbonizing technologies particularly through implementation of the Joint Crediting Mechanism (JCM).

As of September 2020, Japan has established partnership with 17 countries and continues to communicate with other developing countries.



Basic concept of the JCM

Facilitating diffusion of advanced low-carbon or decarbonizing technologies, products, system, services and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing country.

Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner and use them to achieve Japan's emission reduction target.

Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals.



The role of the JCM for Japan's NDC*

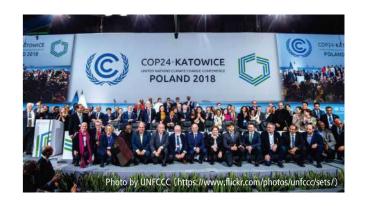
The JCM is not included as a basis of the bottom-up calculation of Japan's emission reductions target, but the amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction. Apart from contributions achieved through private sector-based projects, accumulated emission reductions or removals by FY2030 through governmental JCM programs to be undertaken within the government's annual budget are estimated to be ranging from 50 to 100 million t-CO2.

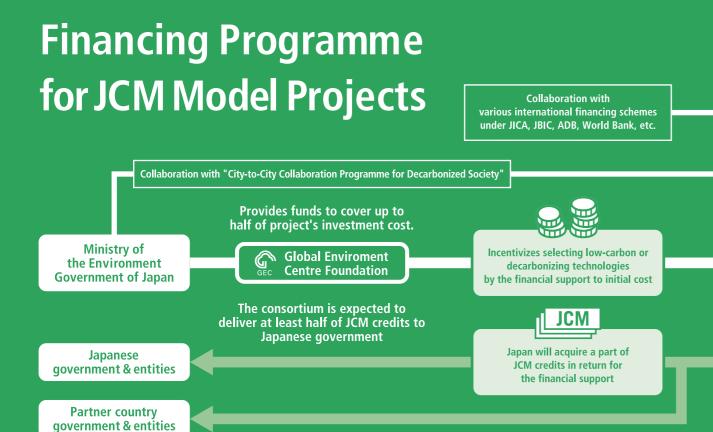
(*Nationally Determined Contribution)

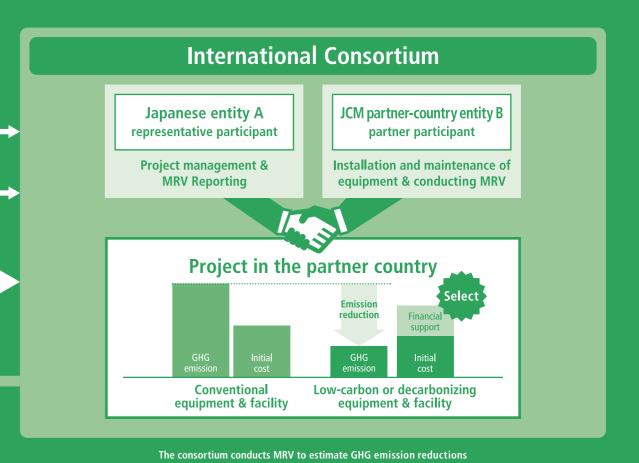
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JCM and the Paris Agreement

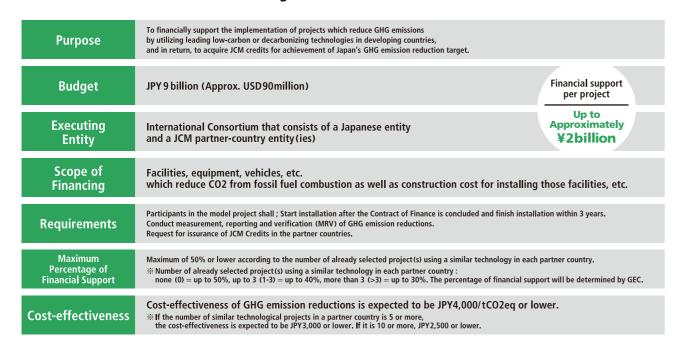
The role of carbon market mechanisms, including the JCM, is described under the Article 6 as a way to use emission reductions achieved overseas (internationally transferred mitigation outcomes: ITMO) towards national emission reduction targets. Furthermore, at the COP24 held in Katowice, Poland, the Paris Agreement Work Programme was adopted for the full implementation of the Paris Agreement for 2020 onwards.



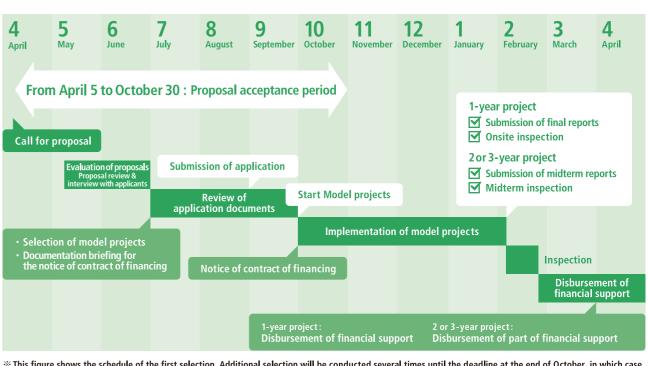




Overview of Financing Programme for JCM Model Project in FY2020



JCM Model Projects Schedule in FY2020



^{**}This figure shows the schedule of the first selection. Additional selection will be conducted several times until the deadline at the end of October, in which case the schedule after selection will be shifted behind accordingly.

JCM Model Projects Total 156 projects

FY 2013 - 2020 as of August 31, 2020

Energy Efficiency
 Renewable Energy
 Effective Use of Energy
 Waste Handling and Disposal
 Transportation

Bangladesh: 4 Projects

- Centrifugal Chiller
- 315kW PV-diesel Hybrid System

Saudi Arabia: 2Projects

 Electorolyzer in Chlorine Production Plant • 400MW Solar PV

Maldives: 1 Projects

186kW Solar Power on School Rooftop

Ethiopia: 1 Projects

120MW Solar PV

Kenya: 2 Projects

 1MW Solar PV at Salt Factory 38MW Solar PV

Myanmar: 7 Projects

- Refrigeration System in Logistics Center
 1.8MW Rice Husk Power Generation
 Brewing Systems and
- Brewing Systems to Brewery Factory
 8.8MW Waste Heat Recovery in Cement Plant
 Once-through Boiler in Instant Noodle Factory
 700kW Waste to Energy Plant

● 14MW Floating Solar PV

Laos: 4 Projects

Amorphous Transformers

11MW Solar PV

Cambodia: 6 Projects

- LED Street Lighting
 Inverters for Distribut
- 200kW Solar PV at International School Biomass & Solar PV
- 1.1MW Solar PV at International School
 Solar PV & Centrifugal Chiller

14MW Solar PV

Mongolia: 7 Projects Heat Only Boiler (HOB)

- Fuel Conversion by Introduction of LPG Boilers
- 2.1MW Solar PV in Farm 8.3MW Solar PV in Farm

● 10MW Solar PV 15MW Solar PV

21MW Solar PV

Viet Nam: 26 Projects

- Amorphous Transformers 1
- Amorphous Transformers 3
- Amorphous Transformers 4 High Efficiency Chiller 1 High Efficiency Chiller 2
- Electricity Kiln Energy saving Equipment

Energy Saving at Convenience Store

- Air Conditioning System & Chiller High Efficiency Water Pumps
- Energy Saving
 Equipmentin Wire Production Factory
 Energy Saving Equipment
 in Brewery Factory
 Container Farmation Facility Container Formation Facility Air-conditioning in Lens Factor
- High Efficiency Boiler

49MW Solar PV

57MW Solar PV

Biomass Boiler

3.4MW Solar PV

30MW Solar PV

Mexico: 6 Projects

Costa Rica: 2 Projects

Chile: 4 Projects

1MW Rooftop Solar PV3MW Solar PV

Chiller and Heat Recovery System

30MW Solar PV1

 Biomass Boiler to Chemical Factory Inverters for Raw Water Intake Pur Air-conditioning in Hotel 320kW Solar PV in Shopping Mall

Once-through Boiler and Fuel Switching 20MW Solar PV

Biomass Co-generation System Digital Tachographs Modal Shift with Reefer Container

Methane Gas Recovery System

5MW Solar PV

2MW Solar PV and

4MWh Storage Battery

Thailand: 32 Projects

- Upgrading Air-saving Loom
 Centrifugal Chiller & Compressor
- LED Lighting to Sales StoresBoiler System in Rubber Belt Plant Centrifugal Chiller in Tire Factory Ion Exchange Membrane Electrolyz
 Refrigeration System Air-conditioning Control System
- Refrigerator and Evaporator Air Conditioning System & Chiller Heat Recovery Heat Pump Chilled Water Supply System Heat Exchanger in Fiber Factory
- High Efficiency Chiller 1MW Solar PV on Factory Roofton
- 2MW Solar PV 3.4MW Solar PV
 - 8.1MW Solar PV 12MW Waste Heat Recovery 5MW Floating Solar PV Biomass Co-generation System in Cement Plant
- 0.8MW Solar PV and Centrifugal Chiller37MW Solar PV and Melting Furnace Co-generation System 25MW Solar PV in Industrial Park Co-generation in Fiber Factory 15MW Biomass Power Generatio

Philippines: 13 Projects

- 0.16MW Micro Hydro Power Plant
- 4MW Hydro Power Plant15MW Hydro Power Plant
- 19MW Hydro Power Plant1MW Rooftop Solar PV 1.2MW Rooftop Solar PV1.53MW Rooftop Solar PV
- 4MW Solar PV
- 18MW Solar PV 2.5MW Rice Husk Power Generation Biogas Power Generation and Fuel Conversion
- 33MW Wind Farm29MW Geothermal Power Plant

Palau: 5 Projects

- 370kW Solar PV for Commercial Facilities 155kW Solar PV for School 445kW Solar PV for Commercial Facilities II
 1MW Solar PV for Supermarke
- 0.4MW Solar PV for Supermarket
- Indonesia: 34 Projects
- Centrifugal Chiller at Textile Factory 1 Injection Molding Machine
- Centrifugal Chiller at Textile Factory 2
 Double Bundle-type Heat Pump
 Centrifugal Chiller at Textile Factory 3
 Regenerative Burners Old Corrugated Cartons Process
- Energy Saving at Convenience Store
 Refrigerants to Cold Chain Industry
- Absorption Chiller High Efficiency Autoclave

- Once-through Boiler System in Film Factory 2MW Hydro Power Plant Once-through Boiler in Golf Ball Factory 6MW Hydro Power Plant 1
- I FD Lighting to Sales Store

High Efficiency Boiler

- 10MW Hydro Power Plant 1 12 MW Biomass Power Plant
- 1.6MW Solar PV in Jakabaring Sport City 507kW Solar Power Hybrid Syste 30MW Waste Heat Recovery

3.4MW Rice Husk Power Generation

in Cement Industry

CNG-Diesel Hybrid Public Bus



Costa Rica / NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. Chiller and Heat Recovery System



Thailand / KYOWA HAKKO BIO CO., LTD. Refrigerator and Evaporator



Mexico / Suntory Spirits Ltd. Energy Efficient Distillation System



Vietnam / Yokohama Water Co., Ltd High Efficiency Water Pumps



Myanmar / Acecook Co., Ltd. Once-through Boiler in Instant Noodle Factory



Cambodia / MinebeaMitsumi Inc LED Street Lighting

Upgrading to Air-saving Loom

Centrifugal Chiller in Shopping Mall
Smart LED Street Lighting System



Effective Use of Energy

Thailand / NIPPON STEEL ENGINEERING CO., LTD. Co-generation in Motorcycle Factory



Indonesia / Toyota Tsusho Corporation Gas Co-generation system



Chile / Waseda Environmental Institute Co., Ltd.



Philippines / Chodai Co., Ltd. Hydro Power Plant



Thailand / TSB Co., Ltd. Floating Solar PV



Thailand / Fuji Foods Corporation Biomass Boiler



Philippines / Sharp Energy Solutions Corporation



Waste Handling and Disposal

Mexico /
NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.
Power Generation with Methane Gas Recovery System
Waste to Energy Plant Power Generation with Methane Gas Recovery System





Indonesia / Hokusan Co., Ltd. CNG-Diesel Hybrid Public Bus

Case Examples of JCM Model Project 1

Introduction of Biomass Boiler to Cooking Oil Factory in Thailand

Tepia Corporation Japan Co., Ltd.

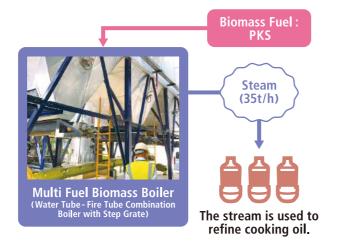
Thanakorn Vegetable Oil Products Co., Ltd.



Renewable Energy

A biomass boiler with the steam production capacity of 35 tons per hour is installed to a cooking oil factory in Samut Prakan Province. The steam is used in the oil production process.

Palm Kernel Shell (PKS) is used as its biomass fuel, and PKS is procured from multiple suppliers so as to secure the stability of steam production.



Case Examples of JCM Model Project 2

10MW Mini Hydro **Power Plant Project** in North Sumatra, Indonesia

Toyo Energy Farm Co., Ltd.

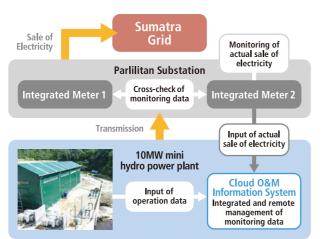
PT. Citra Multi Energi

Renewable Energy

A mini hydro power plant is constructed in **Humbang Hasunduran District of North Sumatra** with a capacity of 10MW (5MW×2). The electricity generated by the plant is to be supplied to a power company, resulting in GHG emission reductions by replacing grid electricity.

As North Sumatra has been experiencing energy shortages, this project is also expected to contribute to improving energy supply in the region.





Case Examples of JCM Model Project 3

Modal Shift from Truck to Cargo Ship with Freshness Preservation **Reefer Container in Vietnam**

Nihon Crant Co., Ltd.

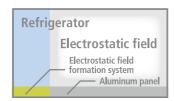
HOAN CHAU-ASIA CO., LTD.



Transportation

Introduction of freshness preservation reefer containers to distribution between Hai Phong and Ho Chi Minh enables transportation of foodstuff by sea route that needs long storage and leads to realize CO2 emission reduction by modal shift from trucks to cargo ships.

The freshness preservation reefer container forms static electric field with high voltage and low current in the chilled container and enables long storage of foodstuff.



How the container works



Inside the container



Case Examples of JCM Model Project 4

Introduction of Low-carbon **Facilities Utilizing Lease Scheme** in Indonesia

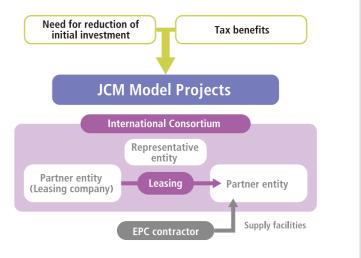
Tokyo Century Corporation

PT. Dynaplast, etc.

Energy Efficiency

By introducing highly efficient injection molding machines and refrigerators with utilizing a leasing scheme, power consumption and CO2 emissions will be reduced.

A leaseing scheme offers an alternative long-term financing and is expected to expand advanced low-carbon or decarbonizing technologies.



Case Examples of JCM Model Project 5

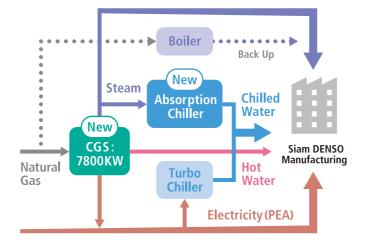
Introduction of **Co-generation System to Motor Parts Factory in Thailand**

DENSO Corporation

Siam DENSO Manufacturing Co., Ltd.



By introducing co-generation system (gas engine 7,800KW + absorption chiller 700RT) to the motor parts factory in Thailand, this project aims for promotion of energy saving and CO2 emission reduction, stable power supply by distributed power supply, acquisition of maintenance skill by local staff and spread of business model to Thailand. Energy saving and CO2 reduction are realized by suppression of power supply loss by an on-site generator, adoption of the high efficiency gas engine and utilization of all waste heat for air-conditioning of plant.



Case Examples of JCM Model Project 6

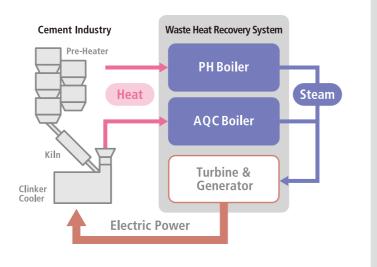
Waste Heat Recovery Power Generation at a Cement Plant in Indonesia

JFE Engineering Corporation

PT. Semen Indonesia



This project installs a waste heat recovery system at a PT Semen Indonesia plant. The system recovers heat during cement production process, turns it into steam to power a turbine generator, and generate electricity. This technology, expected to expand to other plants in the future, is one of the most effective choices for reducing CO2 emissions in Indonesia's cement industry.



Case Examples of JCM Model Project 7

Expanding Amorphous High Efficiency Transformers from Vietnam to Lao PDR

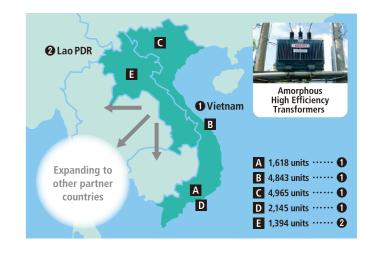
Yuko-Keiso Co., Ltd.

• EVN SPC, EVN HANOI, KHANH HOA, PCDON NAI PC



Energy Efficiency

This project introduced energy-saving amorphous high-efficiency transformers for the EVN Southern Power Corporation (EVNSPC). This reduces power loss during power transmission and contributes to stabilizing electrical power supply. Thanks to this achievement recognized in Vietnam, other power distribution companies are starting to introduce new procurement standards for this technology, promoting further use in other regions in Vietnam. Électricité du Laos has also commenced a project under JCM Financing Programme, from which we can expect further progress in the future.



Case Examples of JCM Model Project 8

Expansion of Large-scale Solar Power Projects in Mongolia, and Cooperation with JBIC and ADB

- Sharp Energy Solutions Corporation
- Everyday Farm LLC, Bridge LLC 2 Solar Power International LLC etc.



Renewable Energy

From 2015 to 2018, large-scale solar power projects using Japan's superior technology were implemented in several regions of Mongolia. These projects will contribute to the country's policy target of increasing renewable energy to 30% by 2030. By combining agriculture and power generation, Farmdo has realized a new hybrid model that solves the problems of CO2 emissions, energy and food. JBIC also provided loans for their projects. Sharp Energy Solutions has introduced solar power generation in four locations, one of which received a loan from ADB.







Basic structure of International Consortium

- Q. Who is eligible to apply for this programme?
- A. Entities which meet the following requirements are eligible.
- A representative participant of the model project shall be a Japanese entity, such as a private company, etc.
- A participant described above shall be the representative entity of an international consortium.
- A participant shall have developed structure for the implementation of the eligible project and have technical capacity to appropriately implement the eligible project.
- A participant shall have a financial basis to bear the costs necessary to appropriately implement the eligible project.
- A participant shall have adequate management structures and handling capacity for accounting and other administrative work related to the eligible project.
- A participant shall explain the contents, effect on GHG emission reductions, details of the cost, investment plan, etc. of the eligible project.

Requirements of Representative Participant of International Consortium

Q.What are the responsibilities of a Japanese entity as a Representative Participant of an international consortium?

A. Representative Participant is responsible for the followings:

- Applying for the Financing Programme for JCM Model Projects
- Managing the progress of the project, developing the project implementation plan, and acting as the contact entity for accounting and other administrative work related to the project
- Introducing the leading low-carbon or decarbonizing technologies
- Purchasing, installing and commissioning of the facilities/equipment during the construction period, and ensuring that the facilities/equipment are utilized according to the purpose of the model project for the legal durable years of the facilities/equipment as stipulated by the Japanese law
- Returning funds received if there are any violations of the Financing Regulations by any of the partner participants

Costs Eligible for Financing

- Q. What kind of costs are covered by this programme?
- A. This programme covers the following costs that directly contribute to energy-related CO2 emission reductions. The typical costs not covered by this programme are also listed below.

Covered	NOT covered
 Facilities/equipment (including monitoring equipment) Main construction work Ancillary work Machinery and appliances Surveying and testing Administrative work Other necessary costs approved by GEC 	 Removal of existing facilities/equipment (including miscellaneous expenses related to removal costs) Equipment and consumable supplies/materials for maintenance of the facilities/equipment installed by the model project, emergency facilities/equipment, safety equipment (such as fire extinguisher, sprinkler, PPE, etc.) and security equipment. Civil engineering work and building (excluding structures that directly contribute to energy-related CO2 emission reductions) Cost related to a simple restoration of function, such as restoring the function to the state at the time of installation by updating existing facilities/equipment Spare parts (excluding those used for testing and commissioning) On-site inspections and writing reports that are submitted to GEC as part of the model project Forward exchange contract and remittance charge Cost related to land acquisition

X Costs eligible for financing support in the JCM Eco Lease Scheme are limited to a leasing fee of the costs of facilities/equipment and relevant lease interests.

Legal Durable Years

Q. What is "the Legal Durable Years" used for estimation of total GHG emission reductions, etc.?

A. Please refer to the following Japanese law (Japanese only).

Ministerial Ordinance on the Durable Years, etc. of Depreciable Assets (Ordinance NO.15 of Ministry of Finance, March 31, 1965)	Appendix table 2	Producing "other final products" by using installed facilities
	Appendix table 1	Other cases than the above ex. the building owner introduces facilities as shared equipment

Please note that the legal durable years of the same facility may vary depending on the purpose of business usage.

(Examples)

Category of technology	Purpose of business usage	Legal durable years
Solar power generation facilities	Electric power sales	17 years
	Internal consumption at car manufacturing factories	9 years
	Internal consumption from rooftop equipment on warehouses	12 years
Boilers	Cooking oil production	10 years
	Rubber products production	9 years
	Hot water supply for hotels	17 years
Absorption chillers	Supply of chilled water in chemical factories	8 years
	Air conditioning in shopping malls	15 years

[%] For questions regarding how to determine the appropriate legal durable years for your project, please contact Japanese local tax office.

Cost-effectiveness of emission reductions of GHG

Q. What are the criteria of cost-effectiveness?

A. The cost of reducing 1 ton of GHG emissions must be JPY4,000/tCO2eq or lower.

Cost-effectiveness of emission reductions of GHG [JPY/tCO2eq]

- = Amount of financial support [JPY] ÷ Total emission reductions of GHG [tCO2eq]*
- ** Total emission reductions of GHG = Emission reductions of GHG per year [tCO2eq/y] × legal durable years [y]
 Amount of financial support [JPY] = Costs eligible [JPY] x Percentage of financial support [%]

In the following cases, the cost must be JPY3,000/tCO2eq or lower, or else JPY2,500/tCO2eq or lower.

If the number of similar technological projects in a partner country is 5 or more, the cost-effectiveness is expected be JPY3,000 or lower. If it is 10 or more, JPY2,500 or lower.

^{*}Regarding the number of similar technological projects in the partner countries, please refer to Annex 1

[&]quot;Categorization by applied technology type, Number of JCM model project by each country" of Guidelines for Submitting Proposals.

JCM ECO Lease Scheme

In the fiscal year 2020, "JCM Eco Lease Scheme" is newly introduced to JCM Model Project to cover leasing charges and interests. This scheme has an advantage in reducing the reporting burden of representative participants with shorter monitoring period and simple proposal document.

Representative Participant Japanese leasing company **Amount of Financial Support** Up to JPY500 million for 3 years in principal Percentage of Financial Support Uniformly 10% of total leasing charges including leasing interests Period of MRV Equal to leasing period **Leasing Period** At least 5 years

In principle, technologies with JCM methodology (ies) **Eligible Type of Technologies** that have been either approved or proposed

Costs Eligible for Financing

Only financial statements of Representative Participant need to be submitted.

Leasing charges of the costs of facilities/equipment and relevant lease interests

JCM Global Partnership

Ministry of the Environment, https://www.carbon-markets.go.jp/eng/jcmgp/ Japan (MOEJ) has launched the "JCM Global Partnership" with the aim of facilitating multilateral partnerships among the Joint Crediting Mechanism (JCM) partner countries and relevant stakeholders including national and local governments, private sector, financial institutions, non-governmental and international organizations that are involved in the JCM implementation or interested in market mechanisms under the Paris Agreement.





Three pillars of activities

JCM×Carbon Neutral Project Promoting utilization of financing schemes and business matchings to formulate JCM projects through collaboration among various stakeholders.

(Market mechanisms) Sharing how the JCM is being implemented as a program under the Article 6 of the Paris Agreement with actual cases.

JCM×Article 6

JCM×**SDGs** Sharing relevant information of JCM's contribution to SDGs

Application Support by GEC for JCM Model Project

GEC offers various application support at various phases of your project.

GEC Website

GEC introduces project examples selected so far in the JCM Model Project on the GEC website. You can search by sector such as renewable energy and from the map for project study. For additional information, please refer to "Guidelines for Submitting Proposals" for FY2020 and Q&A on the website.



Suitable for Learning about the programme and past projects at early phase.

JCM Business Matching Platform "JCM Global Match"

https://gec.force.com/JCMGlobalMatch/s/



This is an automated matching website which enables Japanese companies offering leading low-carbon or decarbonizing technologies (sellers) to meet with companies in JCM partner countries implementing such technologies (buyers), based on the users' interests. The users also can

make appointments with their matched business partners to meet in person at one of the JCM seminars. Registration of consulting firms and financial companies is also welcome. We invite you to register today! If you have any questions, please send an e-mail to jcm-gm@gec.jp.

Suitable for Finding a JCM project partner offering technologies or services of your interest.

Consultation by GEC

GEC provides application consultation in order to assist project formation for entities interested in JCM Model Project. Please feel free to contact us. Please send an e-mail to jcm-info@gec.jp. Subject of e-mail should be "Consultation on application for JCM Model Project (Your company name)".

Suitable for

Getting advice on your proposal at various phases.

Global Environment Centre Foundation (GEC)



Global Environment Centre Foundation (GEC) was established in 1992 as a United Nations Environment Programme (UNEP) support entity committed to conservation of the global environment, supporting IETC's activities for urban environmental management and promoting partnership between Japan and developing countries. GEC has served as an implementation agency of the Financing Programme for JCM Model Projects since 2014.

[Tokyo Office]

4th Floor Hongo Ozeki Bldg., 3-19-4 Hongo Bunkyo-ku, Tokyo 113-0033, Japan Phone: +81-3-6801-8860

(Osaka Headquarters)

2-110, Ryokuchi-koen, Tsurumi-ku, Osaka 538-0036, Japan Phone: +81-6-6915-4122 (Climate Change Division)





