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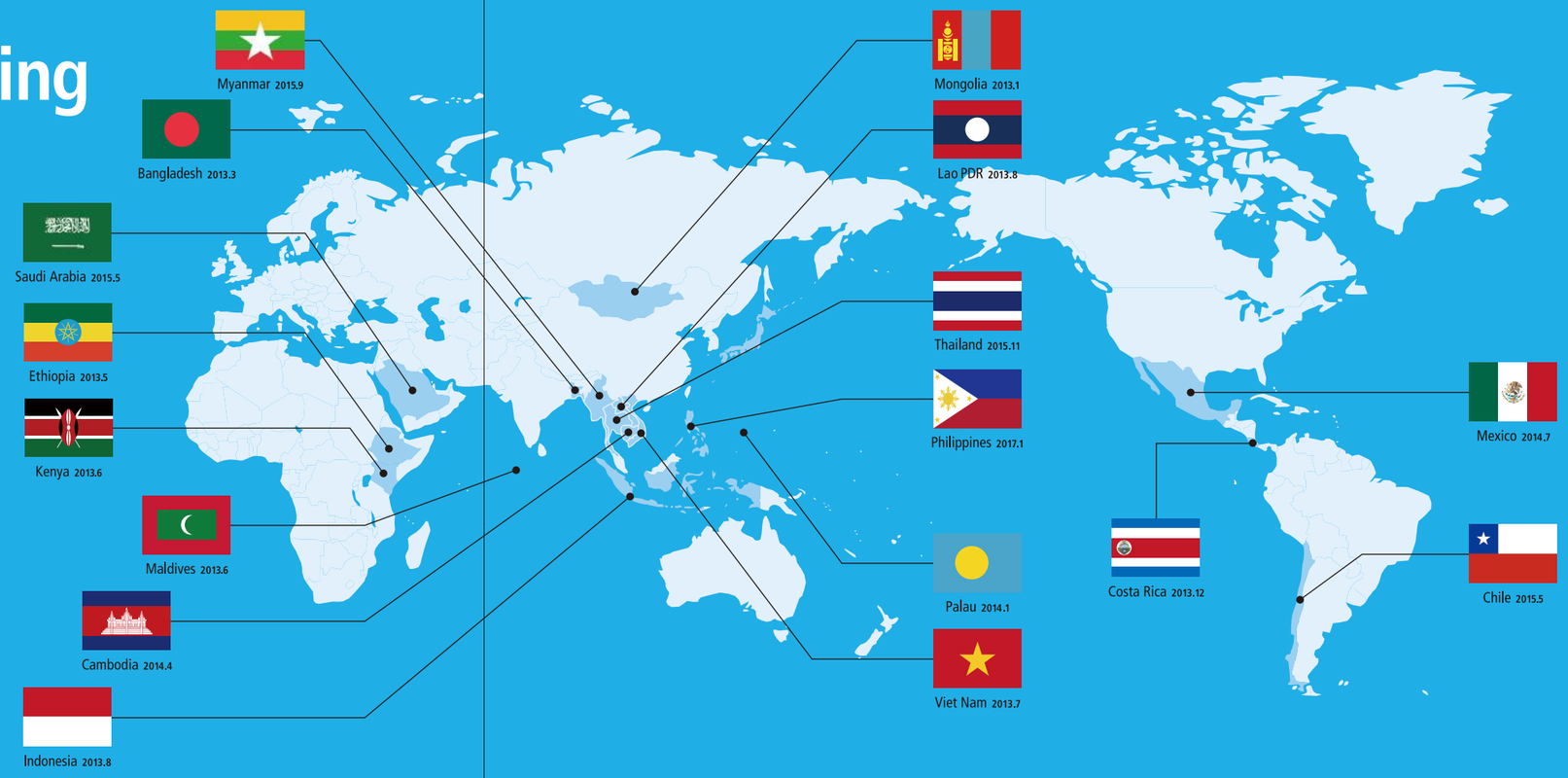
JCM THE JOINT CREDITING MECHANISM

Introduction of Joint Crediting Mechanism (JCM) & Financing Programme for JCM Model Projects

GEC Global Environment Centre Foundation

About the Joint Crediting Mechanism (JCM)

Many of the advanced low-carbon technologies do not necessarily promise investment-return to developing countries. Japan will, while lowering burdens of those countries, promote diffusion of advanced low-carbon technologies particularly through implementation of the Joint Crediting Mechanism (JCM).
In order to support the implementation of candidate JCM projects, Ministry of the Environment, Japan (MOEJ) has established a financing programme which covers up to half of the initial cost of projects that reduce GHG emissions by utilizing advanced low-carbon technologies in developing countries.

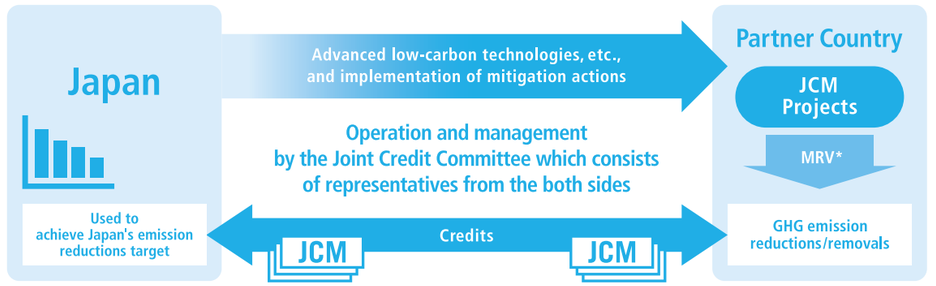


Basic concept of the JCM

Facilitating diffusion of advanced low-carbon 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 reduction or removals.



*measurement, reporting and verification

The role of the JCM for Japan's INDC*

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 though private-sectors based projects, accumulated emission reductions or removals by FY2030 through governmental JCM programs to be undertaken which the government's annual budget are estimated to be ranging from 50 to 100 million t-CO2.

(*Intended Nationally Determined Contributions)

The JCM related Article in the Paris Agreement

Use of market mechanisms, including the JCM, is articulated under Article 6 which prescribes for the use of emission reductions realized oversees (internationally transferred mitigation outcomes: ITMO) towards national emission reductions targets.

Photo by UNFCCC (https://www.flickr.com/photos/unfccc/sets/)

Financing Programme for JCM Model Projects by MOEJ

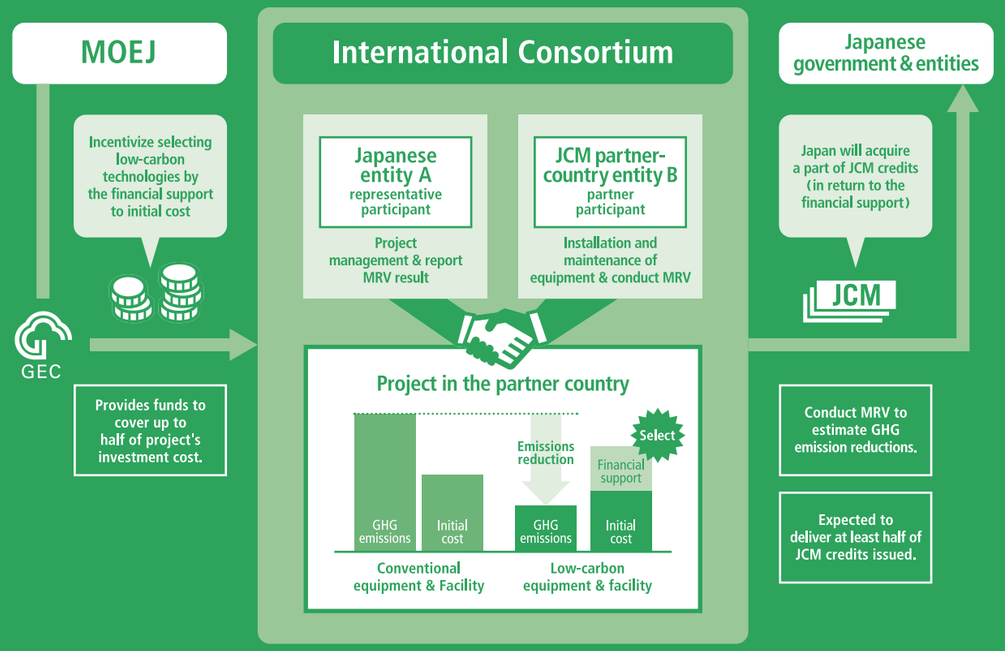
Ministry of the Environment, Japan (MOEJ) has been implementing the "Financing Programme for JCM Model Projects" in order to promote diffusion of low-carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions in developing countries. Participants in the model project implement a project to reduce GHG emissions utilizing advanced low-carbon technologies, etc. and also conduct measurement, reporting and verification (MRV) of GHG emission reductions. The model project will finance part of an investment cost (up to half), on the premise of seeking to deliver at least half of the issued JCM credits to the Government of Japan. The finance will be provided to a Japanese representative participant in an international consortium.

1 Bangladesh / Ebara Refrigeration Equipment & Systems Co., Ltd.
2 Thailand / KANEMATSU CORPORATON

Overview of Financing Programme for JCM Model Project in FY2018

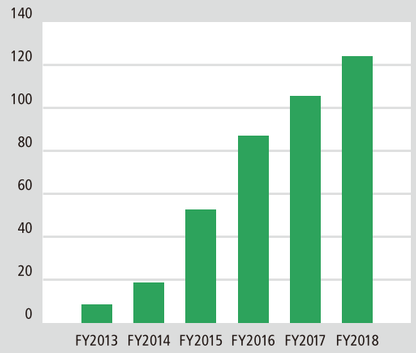
Budget	JPY6.9 billion (Approx. USD69million)
Executing Entity	International Consortium that consists of a Japanese entity and a JCM partner-country entity(ies)
Implementation Period	From FY2018 to FY2020 (max.3years)
Scope of Financing	Facilities, equipment, vehicles, etc. which reduce CO2 from fossil fuel combustion as well as construction cost for installing those facilities, etc.
Eligible Projects	Start installation after the Contract of Finance is concluded and finish installation within 3 years.
Maximum percentage of Financial Support	Maximum of 50% and reduce the percentage according to the number of already selected project(s) using a similar technology in each partner country.
Cost-effectiveness	Cost-effectiveness of GHG emission reductions is expected to be JPY4,000/tCO2 or better. ※If the number of PV projects in a partner country are 5 or more, cost-effectiveness is expected to be JPY3,000/tCO2 or better.

Financial support per project
From ¥50million to ¥2billion (approx.)



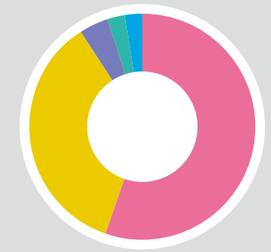
JCM Model Projects Portfolio

Cumulative Number of JCM Model Projects



*up to preliminary selection in FY2018 (terminated projects are not included)

Number of JCM Model Projects by Sector



Energy Efficiency Improvement
Renewable Energy
Waste Management / Biomass Utilization
Waste Heat Recovery
Transport

1 Mongolia / Sharp Energy Solutions Corporation
Solar Power System in Darkhan City
2 Vietnam / Yuko Keiso Co., Ltd.
Amorphous High Efficiency Transformers in power grid
1 Mexico / Suntory Spirits Limited
Once-through Boiler and Fuel Switching
2 Kenya / Pacific Consultants Co., Ltd.
Solar PV System at Salt Factory



1 Indonesia / Hokusan Co., Ltd.
CNG-Diesel Equipment to Public Bus
2 Vietnam / Nippon Express Co., Ltd.
Eco-driving by Utilizing Digital Tachograph System
(Pic : Driving performance feedback)
1 Myanmar / JFE Engineering Corporation
Waste to Energy Plant in Yangon City
2 Mexico / NTT DATA INSTITUTE OF
MANAGEMENT CONSULTING, Inc.
Power Generation with Methane Gas Recovery System




INDUSTRY MANUFACTURING

POWER GENERATION AND SUPPLY

Large-scale power generation and distribution

TRAFFIC

Eco driving / LED street light/Low-carbon port

INDUSTRY MANUFACTURING

Energy saving device / Biomass / PV etc.

OFFICE & COMMERCIAL FACILITY

Shopping mall・PV for office use / Energy-efficient air conditioner etc.

URBAN INFRASTRUCTURE

Waste to Energy / Energy-saving water and sewage etc.

Accelerating International Promotion of Infrastructure through JCM

Financing Programme for JCM Model Projects fosters international promotion of infrastructure through diffusion of advanced low-carbon technologies renewable energy source for disaster resilience based on the Overseas Development Strategy (Environment) complied by MOEJ in June 2018.

URBAN INFRASTRUCTURE





Photo by Kenshiro Imamura (JICA)

OFFICE & COMMERCIAL FACILITY


3 Myanmar / Kirin Holdings Company, Limited.
Energy Saving Brewing Systems
4 Indonesia / Environmental Managemen
and Technology Center
Energy Saving in Industrial Wastewater Treatment System
1 Indonesia / NTT FACILITIES, INC.
High Efficiency for Air-Conditioning at Shopping Mall
2 Cambodia / AEON MALL Co., Ltd.
Solar Power System and High Efficiency Centrifugal Chiller

3 Vietnam / Yokohama Water Co., Ltd.
High Efficiency Water Pumps
4 Cambodia / METAWATER Co., Ltd.
Energy Saving by Inverters for Distribution Pumps
3 Thailand / FamilyMart Co., Ltd.
High Efficiency Air-Conditioning
and Refrigerated Showcase
4 Palau / Pacific Consultants Co., Ltd.
Solar Power Plants for Commercial Facilities

Case Examples of JCM Model Project

1

Power Generation by Waste-heat Recovery in Cement Industry

Representative Participant

JFE Engineering Corporation

Partner Participant

PT. Semen Indonesia

This project installs a waste heat recovery power generation system in PT. Semen Indonesia's cement production process. Steam is generated from the recovered waste-heat to generate power by a steam turbine generator. The electricity generated from the system replaces a part of the power consumed at the process and contributes to reduce the power purchased from grid and therefore the CO2 emitted by grid power generation.

Representative participant's voice

We, PT. Semen Indonesia (Persero) Tbk., have a strong interest in environmental investment in a way that can contribute to local communities and environmental conservation. We have previously conducted a joint feasibility study on the use of waste heat for power generation with JFE Engineering based on JCM scheme. We believe that this technology is one of the most effective choices for Indonesia's cement industry to attain stable energy supply and environmental conservation at the same time.

Case Examples of JCM Model Project

2

Introduction of Amorphous High Efficiency Transformers in Power Distribution Systems

Representative Participant

Yuko-Keiso Co., Ltd.

Partner Participant

EVN Southern Power Corporation ,etc.

This project introduced energy-saving amorphous high-efficiency transformers for the EVN Southern Power Corporation (EVNSPC). This reduces power loss when the power is distributed and contributes to stable electrical power supply. Thanks to this achievement recognized in Vietnam, other power distribution companies introduce procurement standards for this technology, which promoted the dissemination of the technology and spread widely to other regions in Vietnam. Électricité du Laos (EDL) has also commenced operations under the Financing Programme for JCM model projects, from which we can expect further progress in the future.

Representative participant's voice

From the local partner, we received feedback saying that this project has dramatically improved the transformer failure rate and reduced power outages, which enormously supports local economic activities and lives. We are planning to diversify our businesses by using the strong connection we developed with the power distribution company through this project.

Case Examples of JCM Model Project

3

Installation of Gas Co-generation System for Automobile Manufacturing Plant

Representative Participant

Toyota Tsusho Corporation

Partner Participant

TMMIN PT. Toyota Motor Manufacturing Indonesia

This project installs a gas engine co-generation system in an automobile manufacturing plant that cover part of the power and heat demands. With utilizing waste heat, this project contributes to the reduction of CO2 emissions in Indonesia, where coal, petroleum, and other fossil fuel of high-CO2 source make up a high proportion of energy sources. The introduction of efficient power generation systems is also still not available. Additionally, cost benefit can be expected from switching to natural gas, which can be acquired at relatively low cost in the country.

Representative participant's voice

While studying the use of Japanese government's support schemes in the consideration of installing private power generator at a plant to alleviate the surging electricity costs, we decided that the Financing Program for JCM model projects was optimal and applied the project. TMMIN is continuously working on the development and introduction of low CO2 technologies and CO2 emissions reduction activities in our daily production.

Case Examples of JCM Model Project

4

10MW Solar Power Project in Darkhan City

Representative Participant

Sharp Energy Solutions Corporation

Partner Participant

SPI Solar Power International LLC

This project is for constructing a 10MW solar power plant in the area adjacent to the 220/110kV substation near Darkhan city, located about 230km north of the capital city of Ulaanbaatar. The local grid currently relies heavily on coal as primary energy source, so the clean power generated by this project, being fed into that grid, contributes to reduction of greenhouse gas emissions in Mongolia.

Representative participant's voice

In addition to supplying photovoltaic modules and peripheral devices, such as mounting structures and inverters, we provided a design that adapts to the natural environment of Mongolia, where winters can be severely cold with snowy weather. This project received commendations, from the Mongolian government and Darkhan City, for its contribution to development in the energy sector. We shall continue to maintain its stable and long-term operation.

Case Examples of JCM Model Project

5

Introduction of High Efficiency Water Pumps in Da Nang City

Representative Participant

Yokohama Water Co., Ltd.

Partner Participant

DAWACO Da Nang Water Supply Joint Stock Company ,etc.

Introduction of high-efficiency pumps in Da Nang City

This project upgraded the nine pumps in the water treatment facilities owned by DAWACO to high-efficiency pumps. The reduced power consumption of power saving pumps realized reduction of CO2 emissions.

Introduction of Lowering high-efficiency inverters in Ho Chi Minh City

This project will introduce high-efficiency inverters to the existing intake pumps to reduce energy consumption. This project also contributes to efficient maintenance, management, and operation of waterworks in Ho Chi Minh City.

Representative participant's voice

Yokohama Water was established to utilize business using the technological capabilities and know-how accumulated by the Yokohama Water Works Bureau over its long history in business field. The project in Da Nang City was formed in FY2016 through City-to-City Collaboration with Yokohama and realized under JCM's support. Based on the achievements of this project, we are currently working on a new project in Ho Chi Minh City. Through these projects, we will contribute to supplying environment-friendly tap water and solving problems waterworks business entities are facing in both cities, where population is growing at a high pace.

Case Examples of JCM Model Project

6

4MW Mini Hydro Power Plant Project in Taguibo River in Mindanao

Representative Participant

CHODAI Co., Ltd.

Partner Participant

Equi-Parco Construction Company, Wawa Green Energy Corporation

This project constructs a 4MW run-of-river- mini hydro power plant utilizing the water sources in the Butuan City area located in the northeastern part of Mindanao, Philippines. In this project, CO2 emissions are reduced by replacing fossil fuel-derive electricity with renewable energy. Additionally, this project contributes to the realization of a sustainable society by fulfilling power demand, which is expanding along with the economic growth.

Representative participant's voice

The project site -Butuan City and its periphery- is a region where economic development has been particularly delayed on the island of Mindanao, where a shortage of employment and ongoing local conflict are deeply rooted. Amid such circumstances, this project will contribute to improving electricity supply in the region despite the size is as small a scale as 4MW. The stable power supply will not only promote private investment and encourage the expansion of economic activities in the area, but also will contribute to the region in terms of job creation for construction and O&M.

Case Examples of JCM Model Project

7

Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang

Representative Participant

Hokusan Co., Ltd.

Partner Participant

BLU UPTD Trans Semarang

This project contributes to reducing CO2 emissions by remodeling city buses in Semarang, Indonesia, to hybrid buses that run on diesel and natural gas. The vehicles will be equipped with a tank for compressed natural gas, and their engines will be replaced by hybrid engines. Diesel is used when starting the engine, and once the vehicle starts running, it automatically switches to a multi-fuel combustion mode using natural gas and diesel. Using natural gas along with diesel as fuel is expected to reduce CO2 emissions as well as improve fuel efficiency.

Representative participant's voice

This project is based on City-to-City Collaboration between Toyama City and Semarang City. Our engineers will conduct the remodeling in collaboration with local firms. Leveraging the know-how that we accumulated through the maintenance of LP gas vehicles in Toyama Prefecture, we will work to realize a low-carbon society. We also hope to expand our operations to other developing countries, using this project as a step in the process.

Case Examples of JCM Model Project

8

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

Representative Participant

Nihon Crant Co., Ltd.

Partner Participant

O's & Tec Co., Ltd., Vietnam National Shipping Lines (Vinalines)

This project enables the maritime transportation of foods that require long-term preservation by introducing reefer containers with a freshness retention function, as well as realizing a reduction in CO2 emissions by a modal shift from land transportation to maritime transportation. This project also contributes to the development of the agricultural sector in Vietnam through providing a solution to the problems of quality degradation of perishable goods currently transported by land and their high wastage rate.

Representative participant's voice

Vinalines has contacted us with their problems: perishable goods could only be trucked, and because of the unavailability of refrigeration technology, the wastage rate was incredibly high due to rotting. The reefer containers with freshness retention function that we proposed in this project are more expensive than the present, but we plan to introduce more of these containers by showcasing them via this JCM project.

Eligible Projects

What kind of projects are supported by this financing programme?

- Reduce energy-related CO2 emissions with leading low-carbon technologies in partner countries.
- Contribute to the sustainable development in partner countries.
- Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.
- Facilities installed by the projects do not receive any other subsidy by the Government of Japan.

Cost-effectiveness of emission reductions of GHG

What is the criteria of cost-effectiveness?

JPY4,000/tCO2equivalent

$$= \frac{\text{Amount of financial support [JPY]}}{\text{Emission reductions of GHG [tCO2equivalent/y]} \times \text{legal durable years[y]*}}$$

JPY3,000/tCO2equivalent

In case the number of PV JCM Model Projects by each country is 5 or more. (Mongolia and Thailand)

*Legal durable years of the facilities is stipulated by the Japanese law, and are dependent on the industry classification.

Guideline

for Submitting
JCM model project proposal in FY2018

Basic structure of International Consortium

Who is eligible to apply for this programme?

a A representative participant of the model project shall be a Japanese entity, such as a private company, etc.

b A participant described in **a** shall be the representative entity of an international consortium.

c A participant shall have developed structure for the implementation of the eligible project and have technical capacity to appropriately implement the eligible project.

d A participant shall have a financial basis to bear the costs necessary to appropriately implement the eligible project.

e A participant shall have adequate management structures and handling capacity for accounting and other administrative work related to the eligible project.

f A participant shall explain the contents, effect on GHG emission reductions, details of the cost, investment plan, etc. of the eligible project.

Costs Eligible for Financing

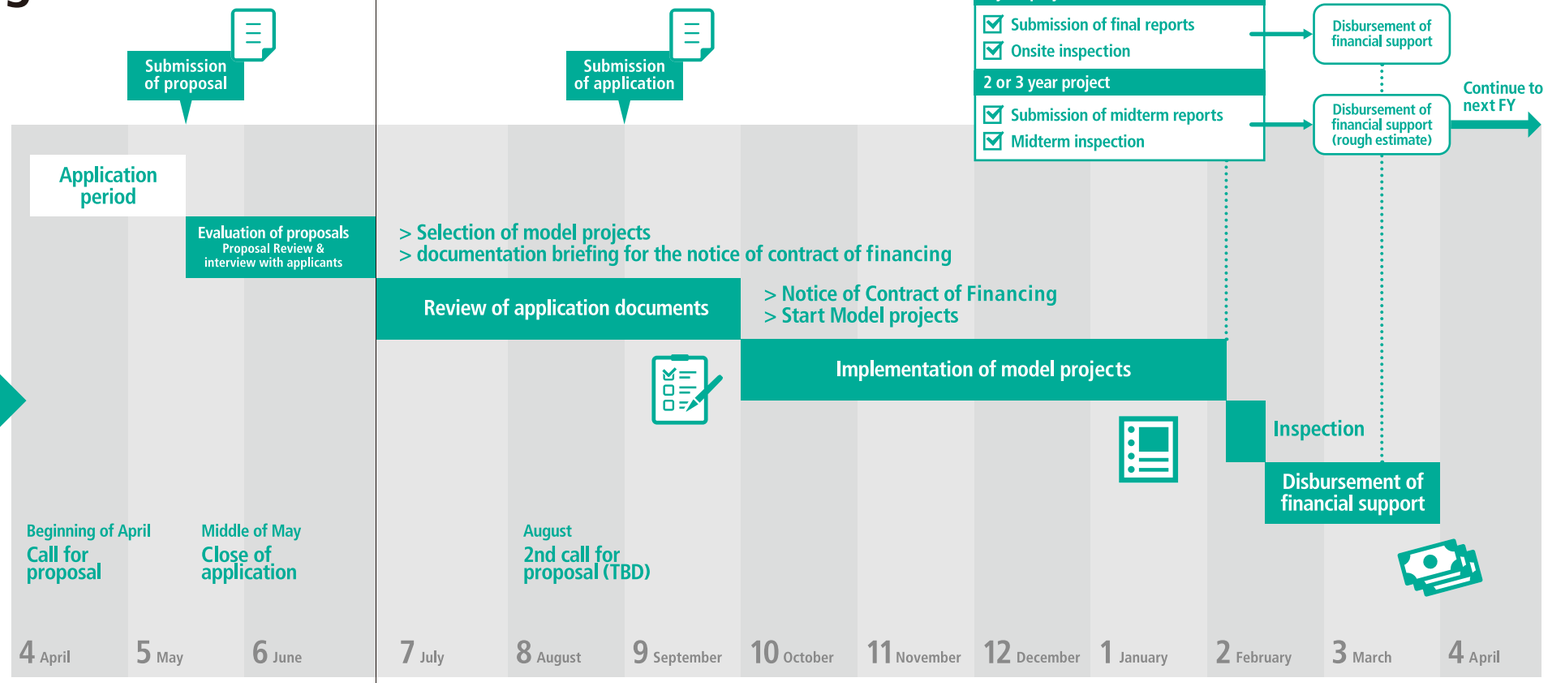
What kind of cost is covered by this programme?

- ☑ Cost of main construction work
- ☑ Cost of ancillary work
- ☑ Cost of machinery and appliances
- ☑ Cost of surveying and testing
- ☑ Cost of facilities (including monitoring equipment)
- ☑ Cost of administrative work; and
- ☑ Other necessary costs approved by GEC

How to apply for the Financing Programme for JCM Model Projects?

Advance Consultation with GEC

GEC assists formulation of your project and supports those interested in applying for JCM Model Project.



About Global Environment Centre Foundation

Global Environment Centre Foundation (GEC) is 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. Served as implementation agency of the Financing Programme for JCM model projects since 2014.

Please check our website

http://gec.jp/jcm/
http://twitter.com/GEC_JCM_Info

Project search
You can find implementing/completed projects according to name, country, sector etc.

Call for proposal
You can find "Guidelines for Submitting Proposals" and follow solicitations result and more information.

Contact us
Questions can be submitted via request form.

About Us

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