



JCM Webinar in Costa Rica

Financing Programme for JCM Model Projects and JCM Global Match

10th March 2021

Global Environment Centre Foundation (GEC)



1. Financing Programme for JCM Model Projects

- **Overview and Recent trend of JCM Model Projects**
- JCM Model Projects in Costa Rica

2. Promotion / “JCM Global Match”

Outline of JCM Model Projects



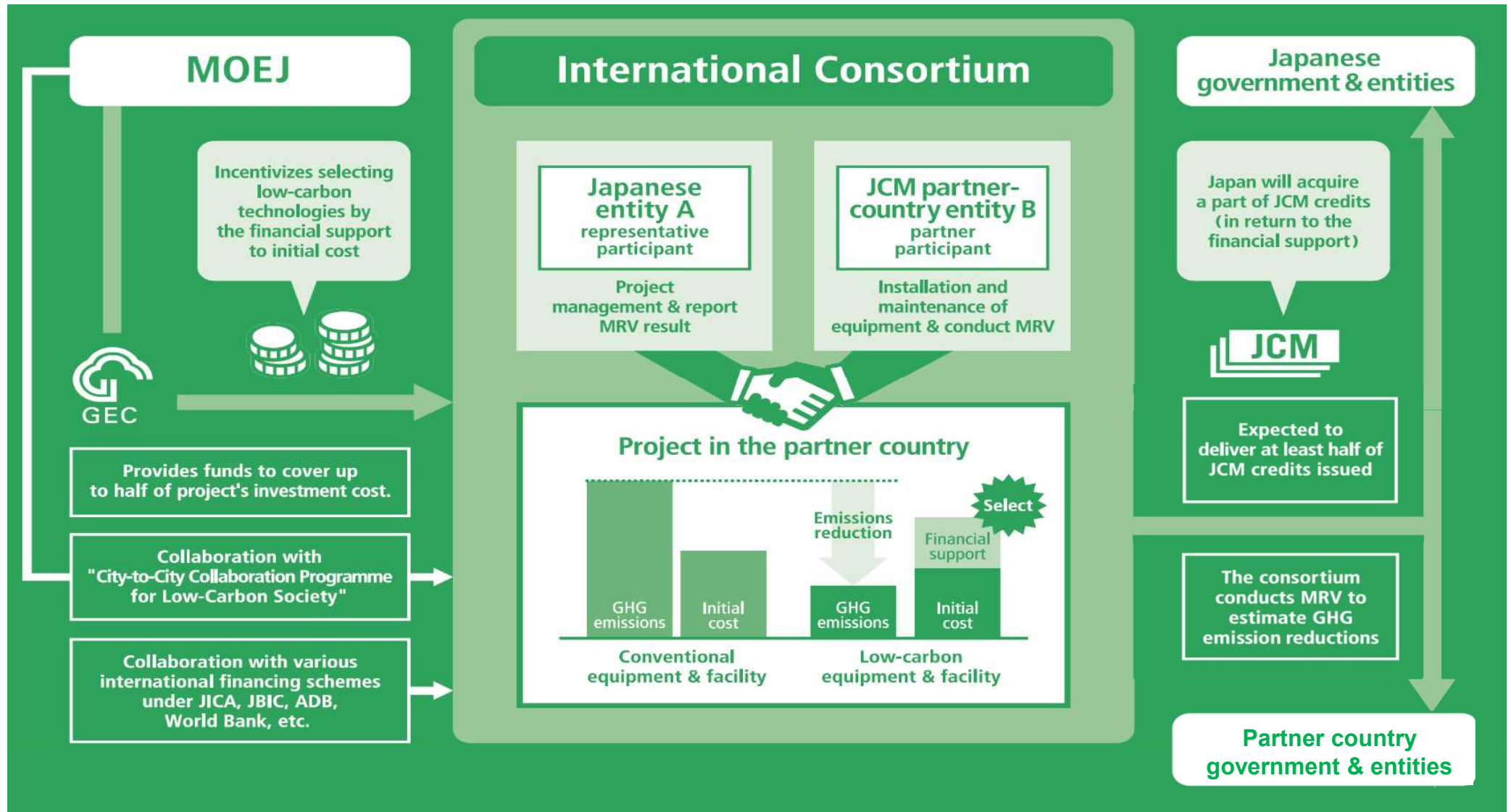
Global Environment Centre Foundation

Budget	Approx. USD90million
Executing Entity	International Consortium that consists of a Japanese entity and a JCM partner-country entity(ies)
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. ※ Number of already selected project(s) using a similar technology in each partner country : none (0) = up to 50%, up to 3 (1-3) = up to 40%, more than 3 (>3) = up to 30%. The percentage of financial support will be determined by GEC.
Cost-effectiveness	Cost-effectiveness of GHG emission reductions is expected to be JPY4,000/tCO2eq or better. ※ If the number of PV projects in a partner country is 5 or more, cost-effectiveness is expected to be JPY3,000/tCO2eq or better.

Guideline

for Submitting
JCM model project proposal

Basic Concept of JCM Model Projects



What kind of projects are supported by this financing programme?



- Reduce energy-related CO2 emissions with leading low carbon or decarbonizing 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.

International consortium

Jointly implement a JCM model project

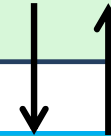
**Representative participant
(Shall be a Japanese entity)**

Main role : Overall project management



**Partner participant(s)
(At least one local entity
shall be a partner)**

Main role : Installation & management of
facilities



EPC contractor

- Consortium must include both an owner and user of facility installed by the model project.

Guideline

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What is the criteria of cost-effectiveness?

JPY4,000/tCO₂equivalent

$$= \frac{\text{Amount of financial support[JPY]}}{\text{Emission reductions of GHG [tCO}_2\text{equivalent/y]} \times \text{legal durable years[y]}}$$

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

JPY3,000/tCO₂equivalent

In case the number of similar technological Projects in each country is 5 to 9.

JPY2,500/tCO₂equivalent

In case the number of similar technological Projects in each country is 10 or more.

Categorization by applied technology type

Sector	Technology	Mongolia MN	Bangladesh BD	Ethiopia ET	Kenya KE	Maldives MV	Vietnam VN	Lao PDR LA	Indonesia ID	Costa Rica CR	Palau PW	Cambodia KH	Mexico MX	Saudi Arabia SA	Chile CL	Myanmar MM	Thailand TH	Philippines PH	Total
1. Energy Efficiency	Air Conditioning System						3		1								1		5
	Chiller		2				4		4	1		1					3		15
	Refrigerator								1							2	4		7
	Absorption Chiller Using Waste Heat								2								2		4
	Swirling Induction Type Air-conditioning System																1		1
	Double Bundle-type Heat Pump						1		1								1		3
	Fridge and Freezer Showcase								1								1		2
	Boiler	2					1		3				1			2	1		10
	Water Heater Using Waste Heat									1									1
	Waste Heat Recovery System															2	1		3
	Heat Exchanger																1		1
	Transformer						4	1											5
	LED Lighting								2								2		4
	LED Street Lighting with Dimming System								1			1							2
	Pump						1												1
	Air Compressor						1										1		2
	Aeration System								1										1
	Regenerative Burners								1										1
	Gas Fired Furnace						1												1
	Gas Fired Melting Furnace																1		1
	Air Conditioning Control System						1										1		2
	Frequency Inverter for Pump						1					1							2
	Loom		1						2								1		4
	Old Corrugated Cartons Process								1										1
	Battery Case Forming Device						1												1
	Electrolyzer in Chlorine Production													1			1		2
	Wire Stranding Machines						1												1
	Gantry crane																1		1
	Electric Forklift																1		1
	Autoclave								1										1
	Multi-effect Distillation System												1						1
	Injection Molding Machine								1										1
2. Renewable Energy	Solar Power Plant	6	1	1	2	2	2	2	2	1	5	4	3		2		10	5	48
	Solar Power Plant with Battery								1						1				2
	Small Hydropower Plant								5									4	9
	Wind Power Plant																	1	1
	Biomass Power Plant								1			1			1	1	1	1	6
	Biogas Power Plant																		1
	Biogas boiler						1										1		2
	Biogas boiler														1			1	2
	Biomass Co-generation																1		1
	Power Generation by Waste Heat Recovery								1						1	1			3
3. Effective Use of Energy	Gas Co-generation								2								3		5
	Waste-to-Energy Plant														1				1
4. Waste Handling and Disposal	Power Generation by Methane Recovery												1						1
	Digital Tachograph System						1												1
5. Transportation	CNG-Diesel Hybrid Bus								1										1
	Reefer Container						1												1
Total	Number of technology : 48	8	4	1	2	2	25	3	36	3	5	8	6	1	4	10	42	13	173

White 0 project = Up to 50% Yellow 1-3 project(s) = Up to 40% Orange more than 4 projects = Up to 30%

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
Costs Eligible for Financing	Leasing charges of the costs of facilities/equipment and relevant lease interests
Eligible Type of Technologies	In principle, technologies with JCM methodology (ies) that have been either approved or proposed
Financial Statement for Application	Only financial statements of Representative Participant need to be submitted.

Guideline

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JCM model project proposal

Infrastructure through JCM

- 1 Thailand / P&T RETAIL INC. CO., LTD.
High Efficiency LED Lighting
- 2 Cambodia / AEON MALL Co., Ltd.
Solar Power System and High Efficiency Centrifugal Oil Filter
- 3 Bangladesh / Nippon Refrigeration Equipment & Systems Co., Ltd.
High Efficiency Centrifugal Chiller
- 4 Mexico / Sanyo Sales Limited
On-to-through Roller and Fuel Switching



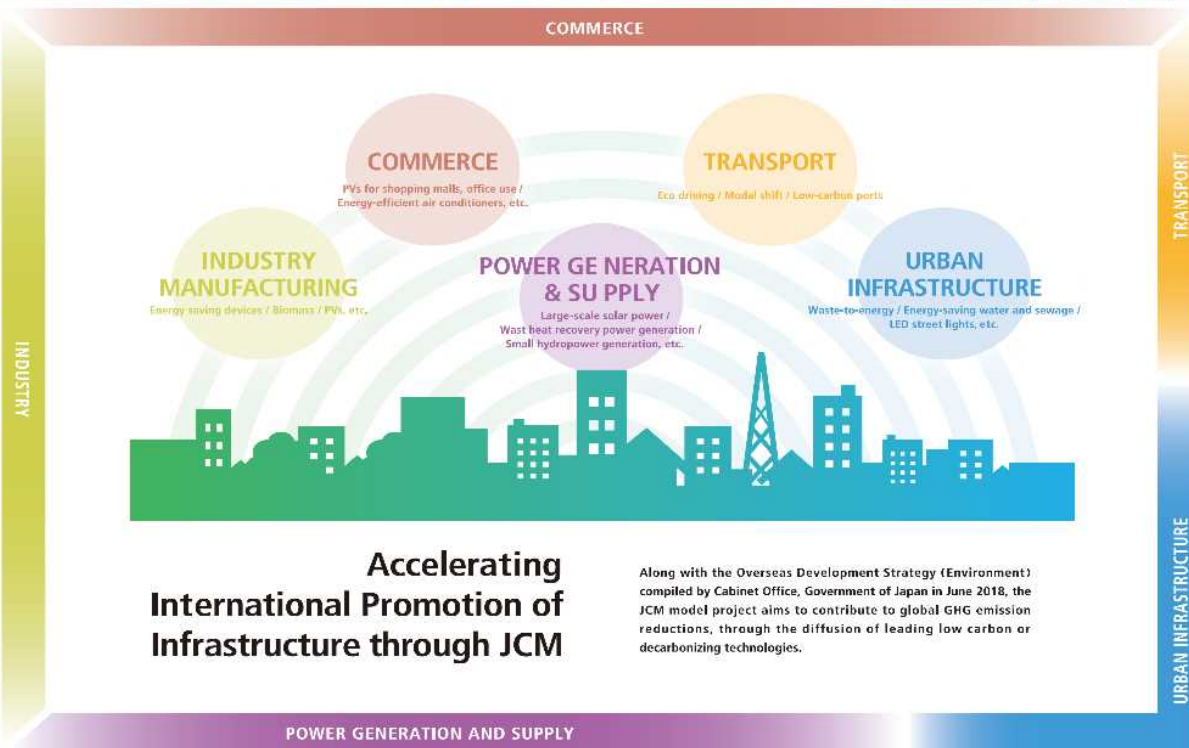
- 5 India / Pacific Consultants Co., Ltd.
Solar Power Plant for Commercial Facilities
- 6 Indonesia / Toyota Tsusho Corporation
Double-Bundle type Heat Pump
- 7 Indonesia / Hokuetsu Co., Ltd.
On-to-through Equipment for Public Bus
- 8 Thailand / Yokohama Port Corporation
Energy Efficient equipment to Bangkok Port



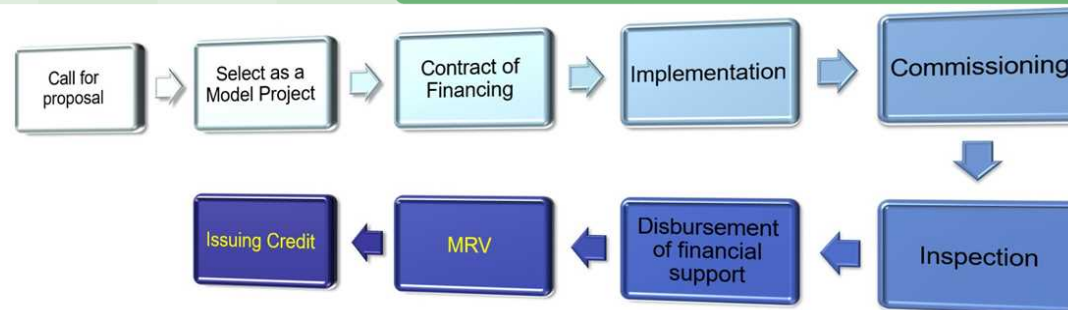
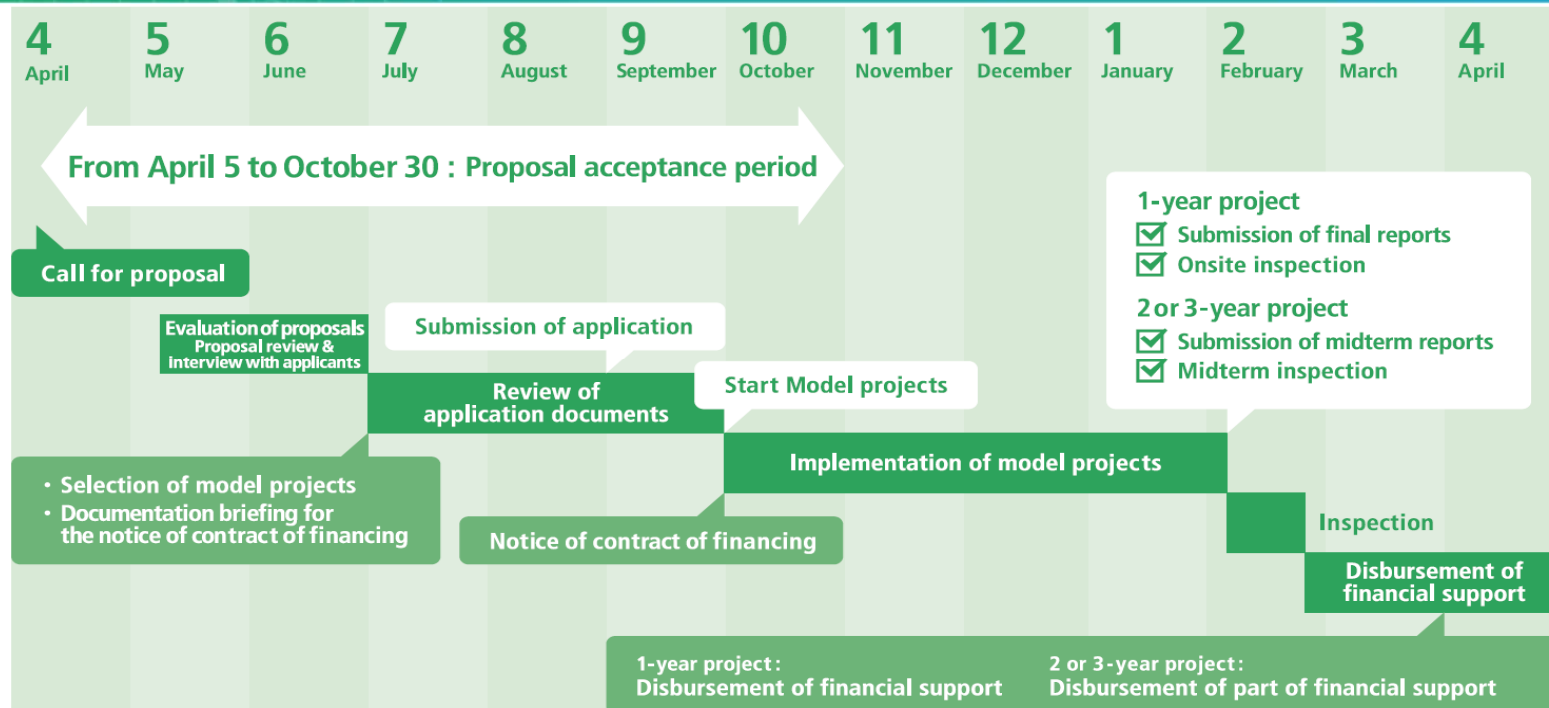
- 1 Indonesia / Environmental Management and Technology Center
Energy Saving in Industrial Wastewater Treatment System
- 2 Myanmar / Kain Holdings Company, Limited
Energy Saving Heating System
- 3 Thailand / TSD Co., Ltd.
Floating Solar Power System
- 4 Korea / KILU S&P Co., Ltd. / HANJANGHWA / COMBITEK, Inc.
Power Generation with Methane Gas Recovery System



- 1 Viet Nam / Yaku Kasei Co., Ltd.
Amorphous High Efficiency Transformers in power grid
- 2 Viet Nam / Yokohama Water Co., Ltd.
High Efficiency Water Pumps
- 3 Myanmar / JTC Engineering Corporation
Waste to Energy Plant in Yangon City
- 4 Myanmar / Kyuta Corporation
Rice Husk Power Generation



JCM Model Projects Schedule in FY2020



Guideline for Submitting JCM model project proposal in FY2020

Selection of Projects in FY2020

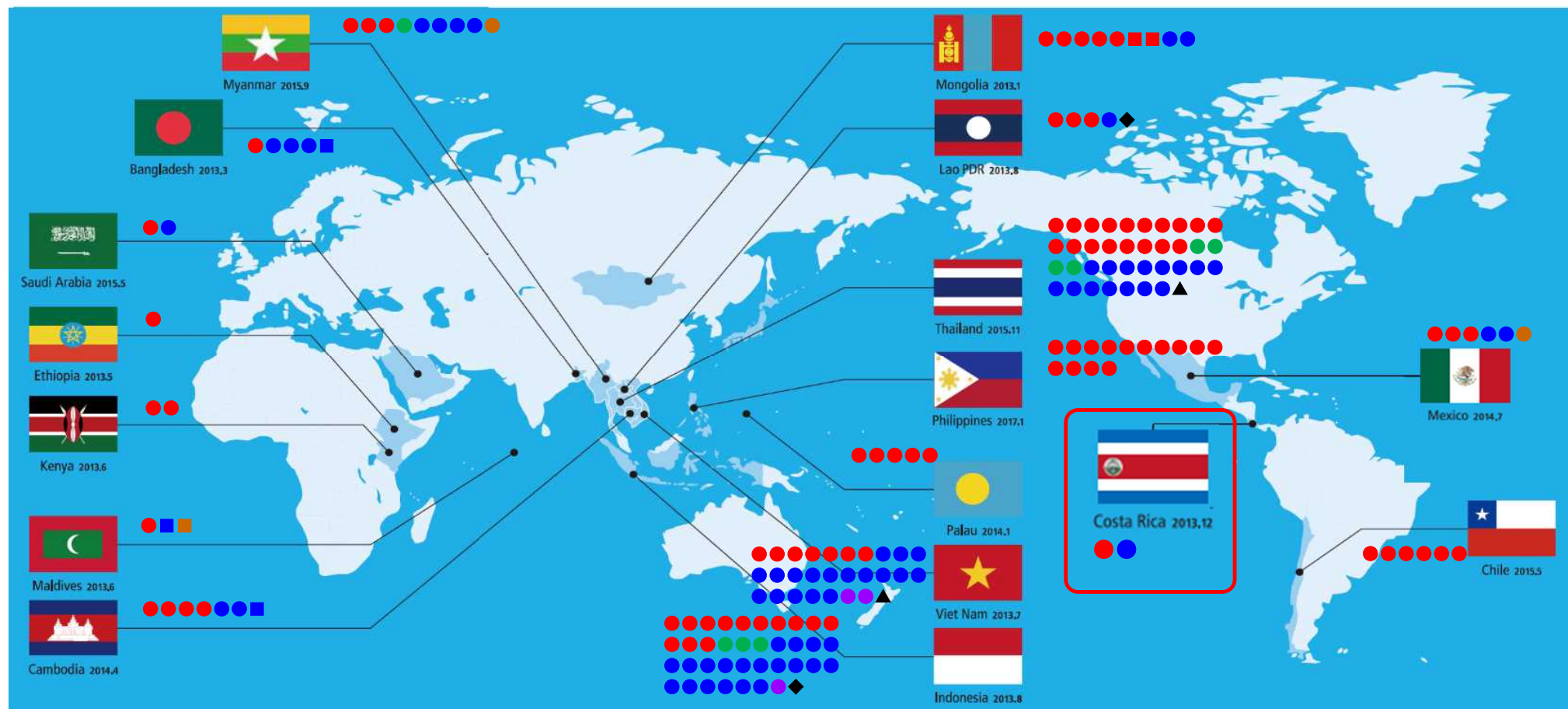
Partner Country	Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO2/y)
Vietnam	Kanematsu KGK Corp.	57MW Solar Power Project in An Giang Province	Renewable Energy	28,208
Vietnam	DAIICHI JITSUGYO CO., LTD.	Introduction of Biomass Co-generation system to Food Factory	Renewable Energy	24,115
Vietnam	Marubeni Corporation	Introduction of Biomass Boiler to Soluble Coffee Manufacturing Plant	Renewable Energy	19,498
Vietnam	Acecook Co., Ltd.	Introduction of High Efficiency Boiler System to Food Factory	Energy Efficiency Improvement	7,631
Vietnam	Hitachi-Johnson Controls Air Conditioning, Inc	Introduction of High Efficiency Air-conditioning System to Hotel in Ho Chi Minh City	Energy Efficiency Improvement	184
Lao PDR	Kayama Kogyo Co., Ltd.	14MW Solar Power Project in Vientiane Province and Borikhamxay Province	Renewable Energy	8,104
Indonesia	NIX Co., Ltd.	6MW Mini Hydro Power Plant Project in West Pasaman, West Sumatra	Renewable Energy	18,319
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of 8.1MW Rooftop Solar Power System in Motorcycle Factory and Fiber Factory	Renewable Energy	3,797
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of Energy Saving Centrifugal Chillers to Machinery Factory	Energy Efficiency Improvement	225
Philippines	Mitsubishi Heavy Industries, Ltd.	29MW Binary Power Generation Project at Palayan Geothermal Power Plant	Renewable Energy	72,200
Saudi Arabia	Marubeni Corporation	400MW Solar Power Project in Rabigh Region	Renewable Energy	477,129
Chile	FARMLAND Co., Ltd.	3MW Solar Power Project Utilizing Farmland in Valparaiso Region	Renewable Energy	2,397
Myanmar	Tokyo Century Corporation	7.3MW Solar Power Project in Mandalay International Airport and Yangon City	Renewable Energy	3,276
Thailand	Sumitomo Mitsui Finance and Leasing Company, Limited	Introduction of 5MW Rooftop Solar Power System to Aluminum Building Materials Factory	Renewable Energy	2,200
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of 2.6MW Rooftop Solar Power System to Semiconductor Factory	Renewable Energy	1,188
Thailand	Inabata Co., Ltd.	2.5MW Solar Power Project with Blockchain Technology in Chiang Mai University Town Community	Renewable Energy	1,041
Philippines	Tokyo Century Corporation	Introduction of 2MW Solar Power System to Shopping Mall (JCM Eco Lease Scheme)	Renewable Energy	1,476
Indonesia	Voith Fuji Hydro K.K.	5MW Hydro Power Project in Bengkulu Province	Renewable Energy	15,299
Myanmar	Yuko Keiso Co., Ltd.	Introduction of Energy Saving Equipment to Complex Buildings of Smart Urban Development Project in Yangon	Energy Efficiency Improvement	1,544
Vietnam	Idemitsu Kosan Co., Ltd.	Introduction of 2MW Solar Power System for Pellet Factory	Renewable Energy	1,024
Indonesia	Alamport Inc.	4.2MW Rooftop Solar Power Project to Pharmaceutical Factories, Vehicles Dealers, and Timber Factories	Renewable Energy	3,961
Thailand	SHIZUOKA GAS CO., LTD.	Introduction of 2MW Rooftop Solar Power System to University	Renewable Energy	868
Indonesia	AURA-Green Energy Co., Ltd.	8MW Mini Hydro Power Plant Project in Maluku Province	Renewable Energy	18,034
Chile	Sharp Energy Solutions Corporation	34MW Solar Power Project in Nuble Region	Renewable Energy	25,576
Thailand	Shizen Energy Inc.	30MW Floating Solar Power Project in Industrial Park	Renewable Energy	13,739

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- **JCM Model Projects in Costa Rica**

2. Promotion / “JCM Global Match”

Project Map of JCM Financing Programme, as of Feb.2021 Global Environment Centre Foundation



Total 180 projects / 17 countries

(● Model Project:170, ■ ADB:6, ◆ REDD+:2, ▲ F-gas:2)

- Renewable Energy
- Effective Use of Energy
- Energy Efficiency Improvement
- Transport
- Waste Handling and Disposal

5MW Solar Power Project in Belen

PP (Japan) : NTT Data Institute of Management Consulting, Inc. ,

PP (Costa Rica) : Generacion Solar Fotovoltaica Belen Sociedad Anonima
Coope guanacaste R.L.,

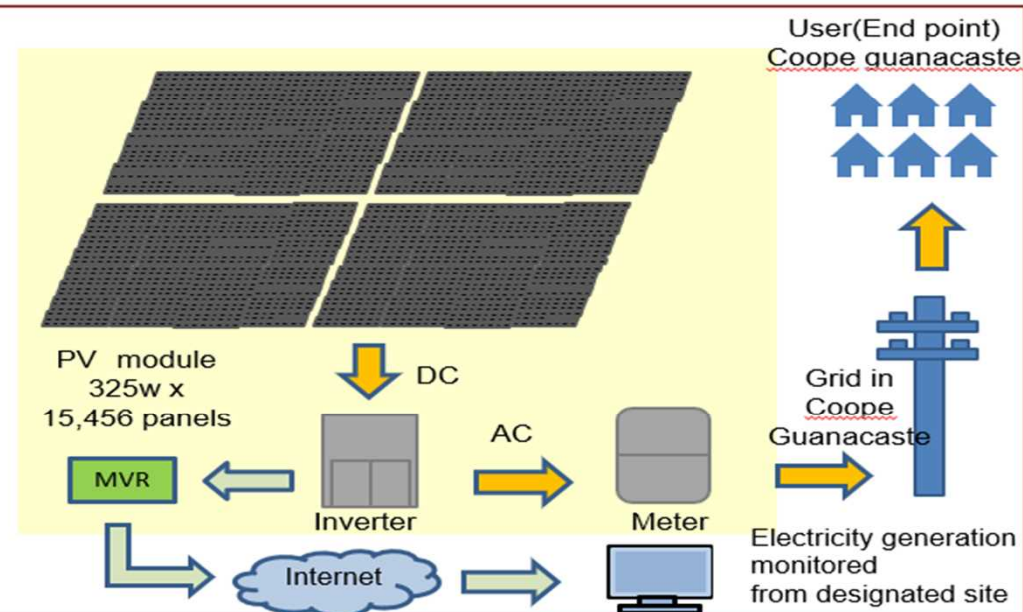
Outline of GHG Mitigation Activity

This project is to introduce a large-scale solar power plant in Belen, Guanacaste province, Costa Rica.

The solar power plant enables to supply electricity to the customers of Coope Guanacaste, a power company in Guanacaste.

Solar panels to be installed are manufactured by Panasonic Corporation, providing top-level performance in the industry: 19.7% nominal conversion efficiency with a output of 325 watts per panel. This 5MW-scale power plant uses 15,000 PV panels installed in the precinct of Coope Guanacaste.

It enables Coope Guanacaste to diversify the sources of the energy supply by introducing renewable energy, complement the water-power generation in dry season, and contribute to GHG emission reductions.



Expected GHG Emission Reductions

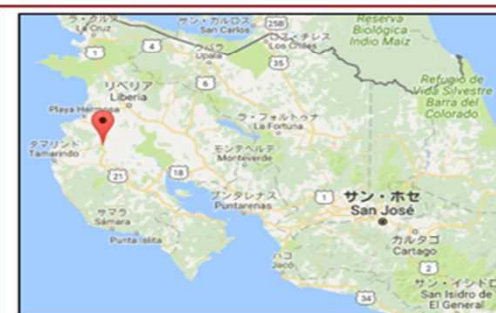
CO₂ Emission reductions = **2,245 tCO₂/year**

Emission reductions (ER_p) = RE_p - PE_p ※PE_p = 0
= RE_p

RE_p = Reference CO₂ emissions
= Estimated amount of annual power generation
× Grid CO₂ emission factor

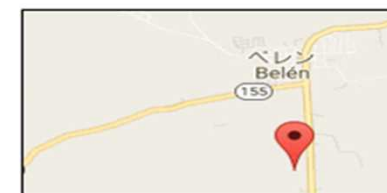
PE_p = Project CO₂ emissions

Sites of JCM Model Project



Map Data ©2016Google

Project site is about 30km from the nearest airport, located 1km from the Belen city center.



Map Data ©2016Google

Introduction of the High Efficiency Chiller and the Exhaust Heat Recovery System

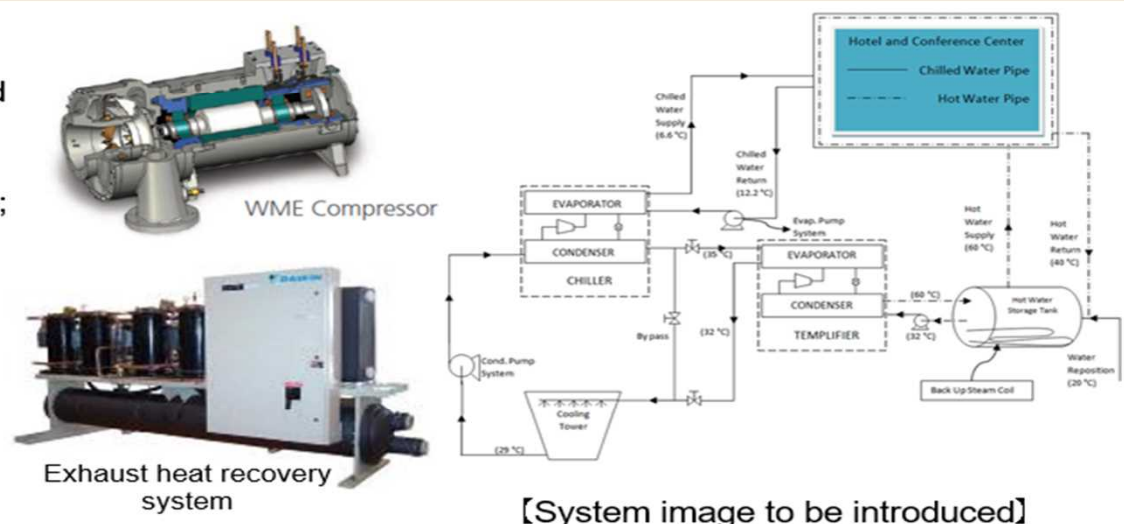
PP (Japan): NTT Data Institute of Management Consulting, Inc. / PP (Costa Rica): MGM Sustainable Energy Limitada

Outline of GHG Mitigation Activity

This project aims to improve the energy efficiency of a luxury hotel's air-conditioning system by replacing the existing centrifugal chiller with a high efficiency chiller and existing heavy oil boilers with a water heater utilizing the waste heat from the chiller.

The high efficiency chiller (Daikin WMC400DC) delivers; low operating noise (76dBA), optimized control through digital, easy to maintenance. It enables to improve the energy efficiency of up to 40% compared to a standard centrifugal chiller and restart in as little as 43 seconds after a power restoration.

The high efficiency exhaust heat recovery water heater (Daikin Templifier TGZ060B) can supply hot water and heating, and also be utilized for cooling the cooling tower by combining with the chiller.



Expected GHG Emission Reductions

585tCO₂/year

CO₂ Emission reductions

= Reference CO₂ emissions (RE) – Project CO₂ emissions (PE)

High efficiency chiller: 160 tCO₂/year

➢ RE: 650.6 tCO₂/year

➢ PE: 490.2 tCO₂/year

Exhaust heat recovery water heater: 425tCO₂/year

➢ RE: 491.0 tCO₂/year

➢ PE: 65.2 tCO₂/year

Sites of JCM Model Project



Map data©2016Google

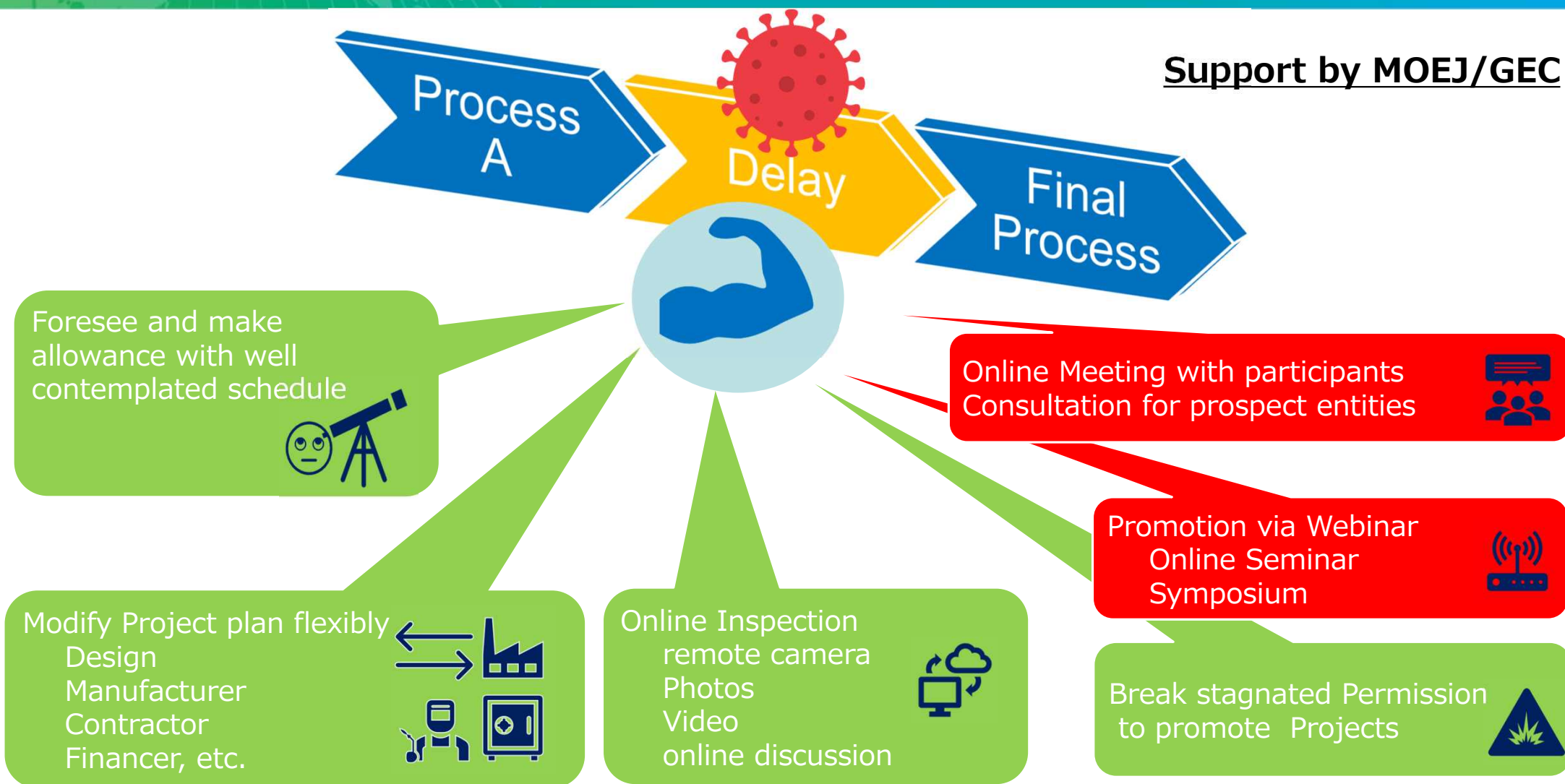
Impact on Operation for JCM Model Projects

- Influence on Tourism industry:
 - Very few tourists visit Costa Rica
 - Hotels cannot operate



- Validation for Project Registration is on hold

Support by MOEJ/GEC



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Muchas Gracias !
ありがとうございました。

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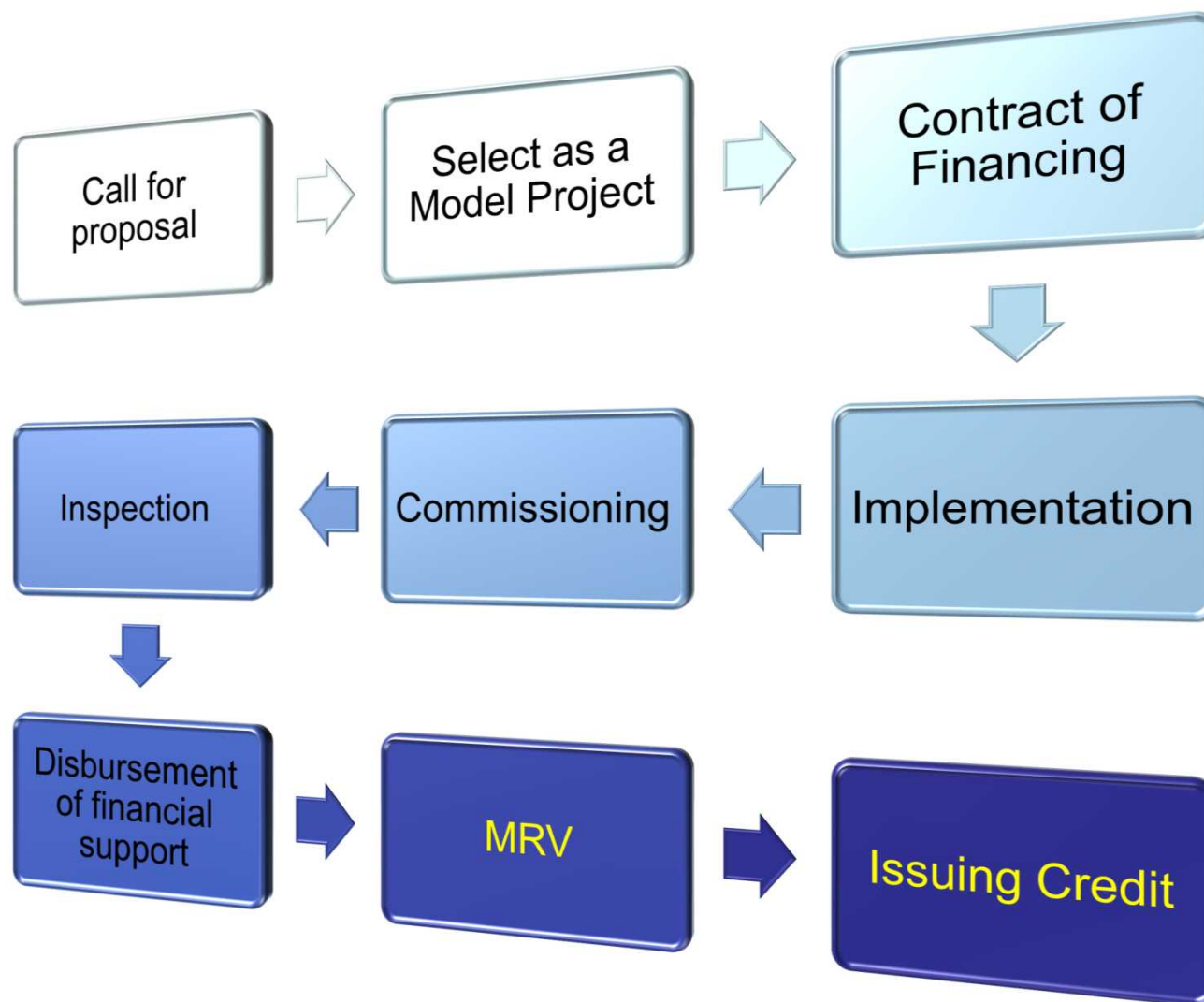
Appendix

Impact on Projects

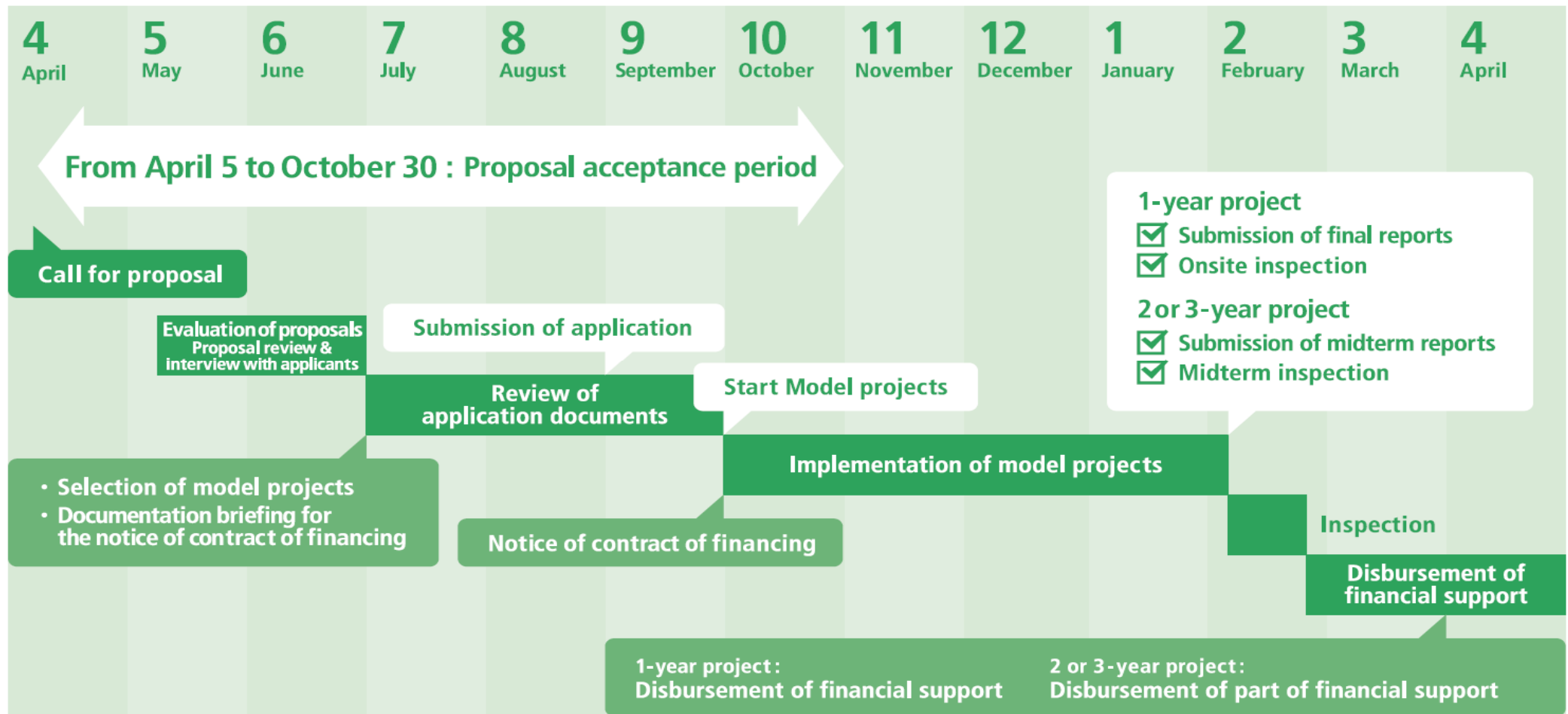
- Government services stall, licenses and permits delay
- Design work delay / supply delay due to suspension of factory operation
- Installation work delay due to difficulty in securing labor for construction / engineers unable to enter the project site.
- Deterioration of cash flow of the project partner / reduction of investment budget, difficulty in raising funds
- Suspension of banking operations (delay on loan contracts, remittances)
- Reassessment of the project feasibility / change or reduction of project plan (especially in tourism and transportation)

Impact on Operation for JCM Model Projects

- Restricted face to face meeting:
 - Evaluation interviews
 - Meeting with participants
 - Consultation for prospect entities



JCM Model Projects Schedule in FY2020



Guideline

for Submitting
JCM model project proposal in FY2020