

Financing Programme for JCM Model Projects

September 2021

Global Environment Centre Foundation (GEC)



Budget	Approx. USD83million in total with Demonstrate Decarbonization Technology for Realizing Co-Innovation Program
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 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.

Basic policy for JCM Model Projects in FY2021

“Strategy for Overseas Expansion in the Environmental Field”
(decided by MOEJ, June, 2018)

“2025 Strategy for Overseas Expansion of Infrastructure Systems”
(decided by the Economic Cooperation Infrastructure Strategy
Council, in December, 2020)

<Project examples>



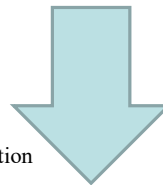
Solar power generation



Carbon capture and storage
(CCS)



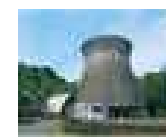
Wind power generation



Hydrogen



Waste power generation



Geothermal power generation

JCM Model Projects :

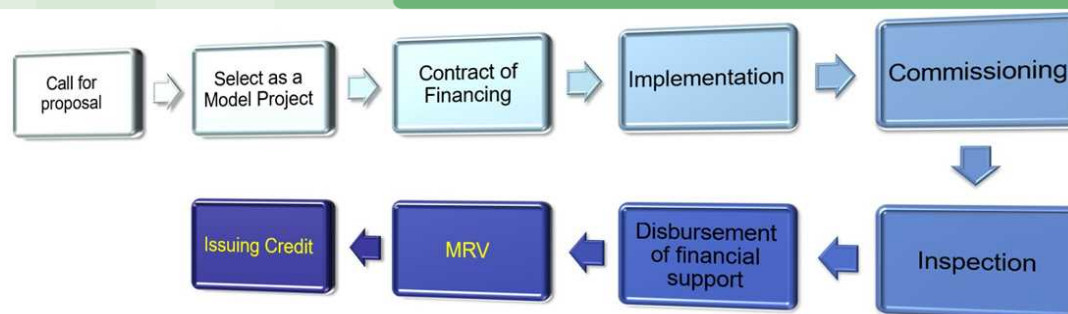
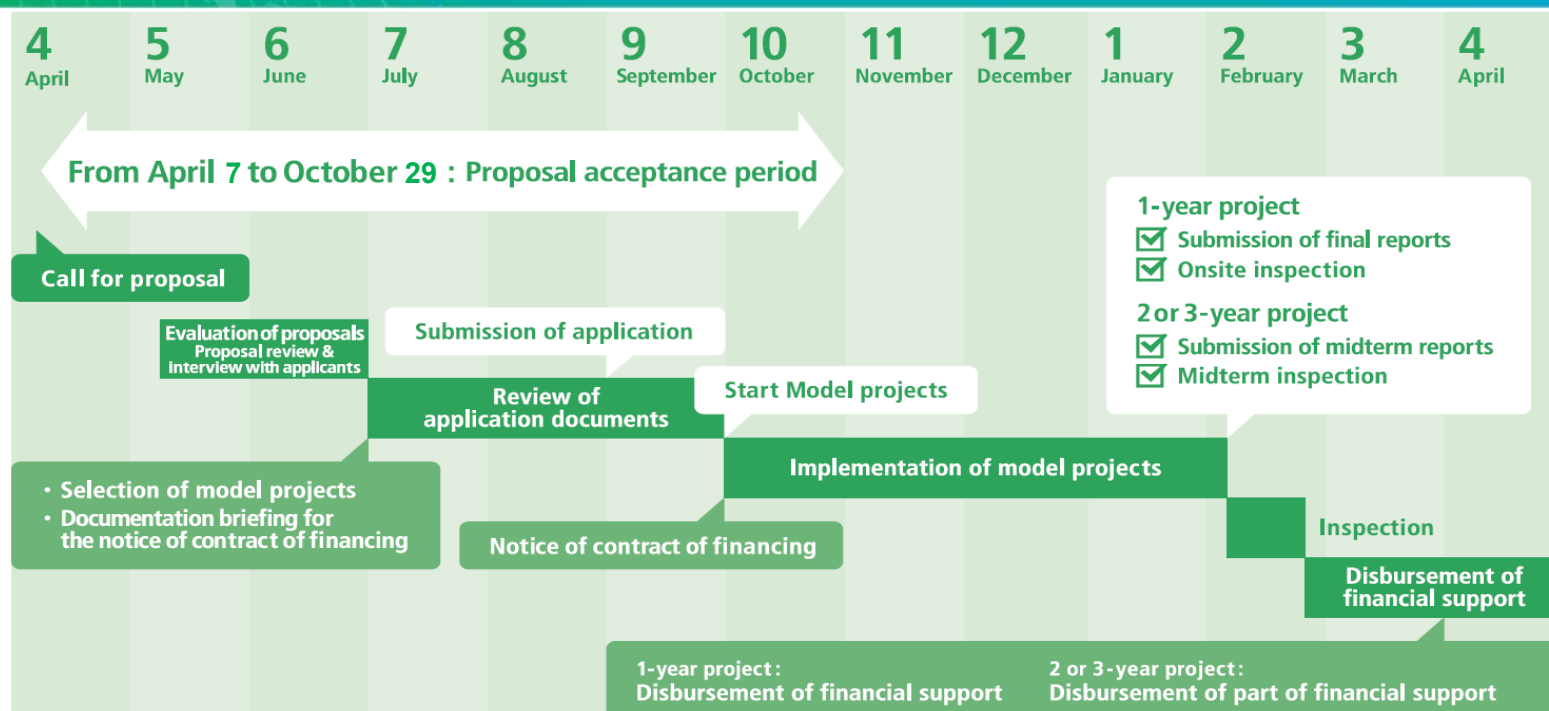
Supporting to facilitate diffusion of advanced decarbonizing technologies ,etc and infrastructure as well as implementation of mitigation actions.

Eligible Projects

- (a) Projects that reduce energy-related CO2 emissions with leading decarbonizing technologies in developing countries, with which Japan has signed or has been consulting to sign a bilateral document on JCM, and that are expected to contribute to achieving Japan's GHG emission reduction target through the JCM;
- (b) Projects contribute to the sustainable development in partner countries. The installation and operation of the facilities/equipment shall comply with the relevant laws and regulations of the partner country and international practices and guidelines regarding the environmental protection
- (c) Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified; and
- (d) Facilities/equipment installed by the projects do not receive any other financial support by the Government of Japan.
- (e) If the technology to be adopted is a technology mentioned in Annex 3 “Conditions for Adoption by Technology” in this guideline, the technology shall meet its conditions.

※Call for Proposals for JCM Model Projects in FY2021Guidelines for Submitting Proposals (Page3)

JCM Model Projects Schedule in FY2021



Guideline for Submitting JCM model project proposal in FY2021

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.

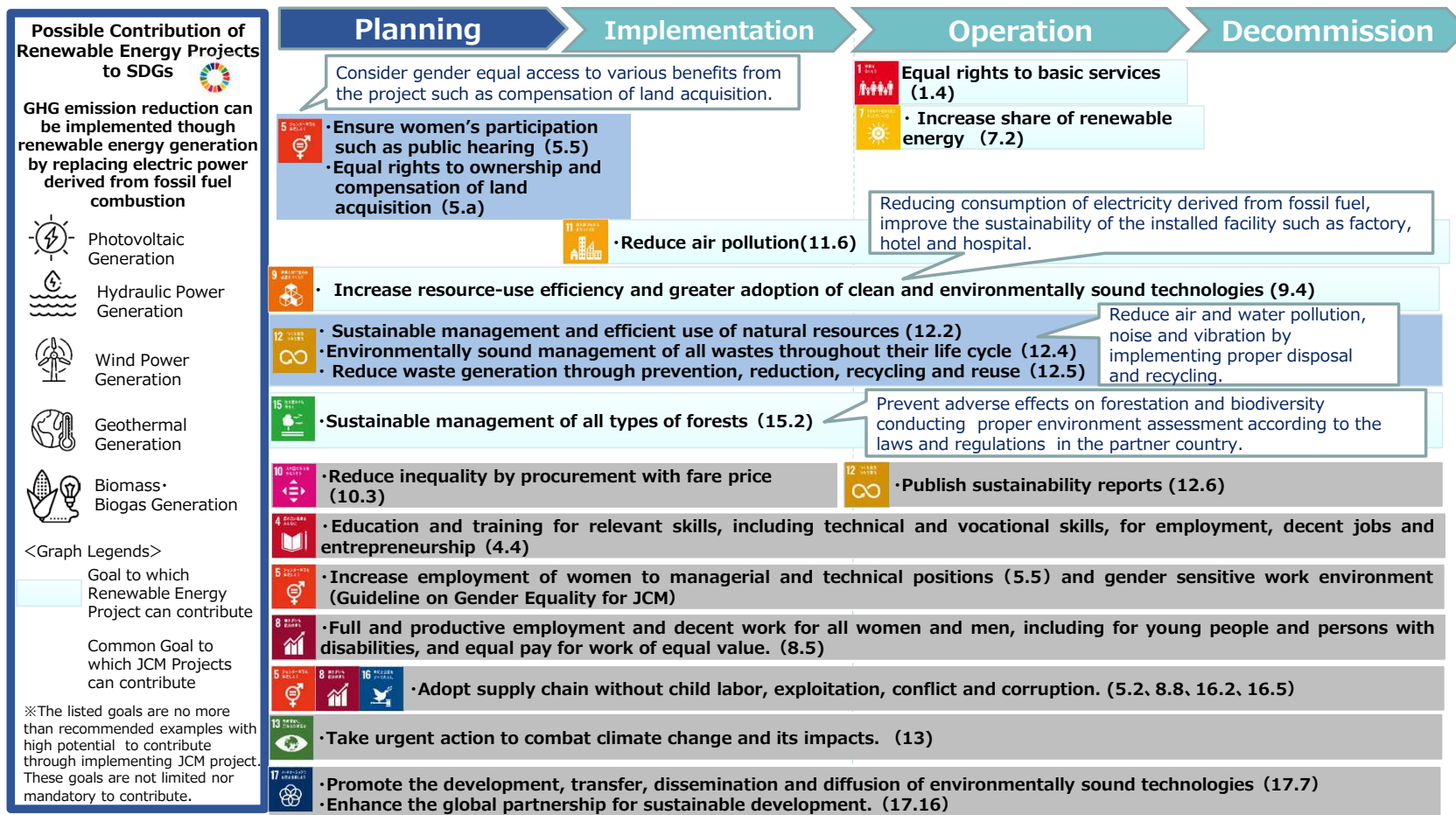
Solar power projects in Thailand

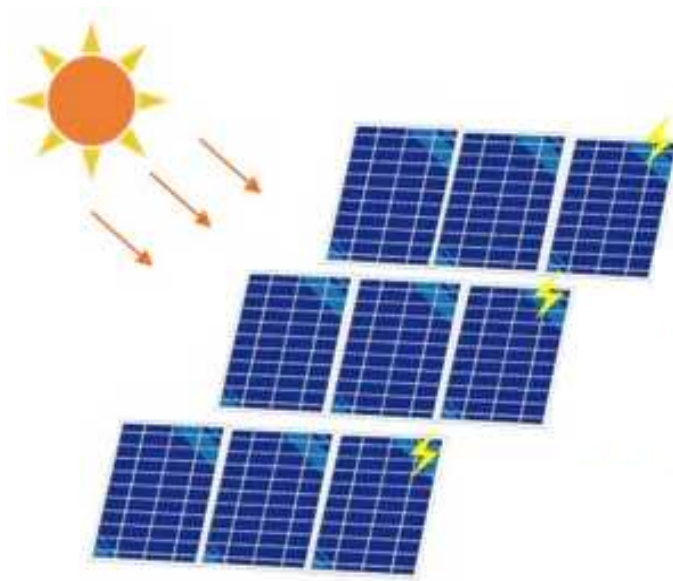
Solar power projects in Mongolia, Palau and Philippine and hydropower projects in Indonesia

Categorization by applied technology type

Sector	Technology	Mongolia MN	Bangladesh BD	Ethiopia ET	Kenya KE	Maldives MV	Viet Nam 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	
1. Energy Efficiency	Air Conditioning System						4		1								1		6
	Chiller		2				4		4	1		1				1	4		17
	Refrigerator								1							2	4		7
	Absorption Chiller Using Waste Heat								2								2		4
	Swirling Induction Type Air-conditioning System																1		1
	Air Conditioning System with Total Heat Exchanger															1			1
	Fridge and Freezer Showcase								1								1		2
	Boiler	2					2		3				1			2	1		11
	Double Bundle-type Heat Pump						1		1								1		3
	Water Heater Using Waste Heat									1						1			2
	Waste Heat Recovery System															2	1		3
	Heat Exchanger																1		1
	Transformer						4	1											5
	LED Lighting								2								1		3
	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
	Ventilation Control System															1			1
	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
	Autoclave								1										1
	Multi-effect Distillation System												1						1
	Injection Molding Machine								1										1
2. Renewable Energy	Solar Power Plant	4	1	1	2	1	4	3	3	1	5	4	3	1	4	1	15	6	59
	Solar Power Plant with Battery								1										1
	Small Hydropower Plant								8									3	11
	Wind Power Plant																	1	1
	Geothermal Power Plant																	1	1
	Biomass Power Plant								1			1			1	1	1		6
	Biogas Power Plant																	1	1
	Biogas boiler						2										1		3
	Biogas boiler															1		1	2
	Biomass Co-generation						1										1		2
3. Effective Use of Energy	Power Generation by Waste Heat Recovery								1							1	1		3
	Gas Co-generation								2								3		5
4. Waste Handling and Disposal	Waste-to-Energy Plant															1			1
	Power Generation by Methane Recovery												1						1
5. Transportation	Digital Tachograph System						1												1
	CNG-Diesel Hybrid Bus								1										1
	Reefer Container						1												1
Total	Number of technology : 51	6	4	1	2	1	31	4	40	3	5	8	6	2	5	15	45	14	192

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





Photovoltaic module:
Conversion rate of 20% or
higher, from optical to electric
energy

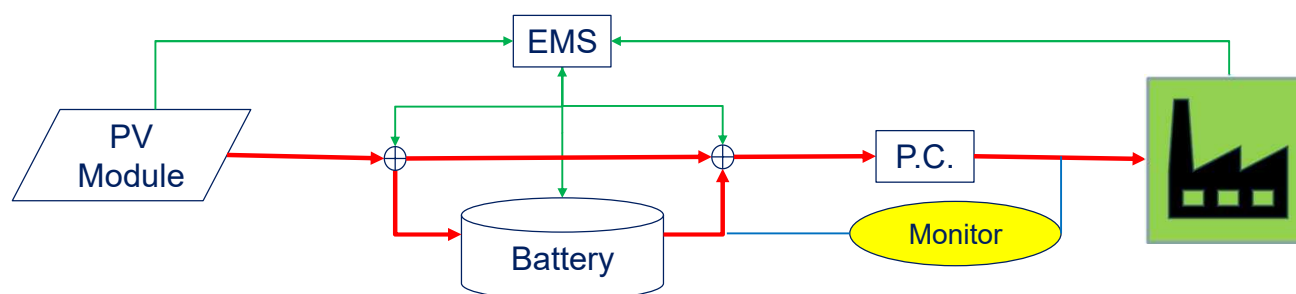
Technology	Mongolia	Bangladesh	Ethiopia	Kenya	Maldives	Viet Nam	Lao PDR	Indonesia	Costa Rica	Palau	Cambodia	Mexico	Saudi Arabia	Chile	Myanmar	Thailand	Philippines	Total
	MN	BD	ET	KE	MV	VN	LA	ID	CR	PW	KH	MX	SA	CL	MM	TH	PH	
Solar Power Plant	4	1	1	2	1	4	3	3	1	5	4	3	1	4	1	15	6	59

Photovoltaic(PV) module:

Conversion rate of 20% or higher, from optical to electric energy

Battery

- (1) Charges only the power generated by PV modules introduced, and the power supplied from the battery is measured.
- (2) Necessity
 - 1) Introduction to off-the-grid areas
 - 2) Installation of batteries is required to connect grid by laws or regulations
 - 3) For self-consumption in factories or local power supply business
 - (a) The battery should be charged and discharged every day
 - (b) The battery capacity is 20% or larger than wattage of PV module installed, and within maximum daily base chargeable amount



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

for Submitting
JCM model project proposal

1st Selection of Projects in FY2021

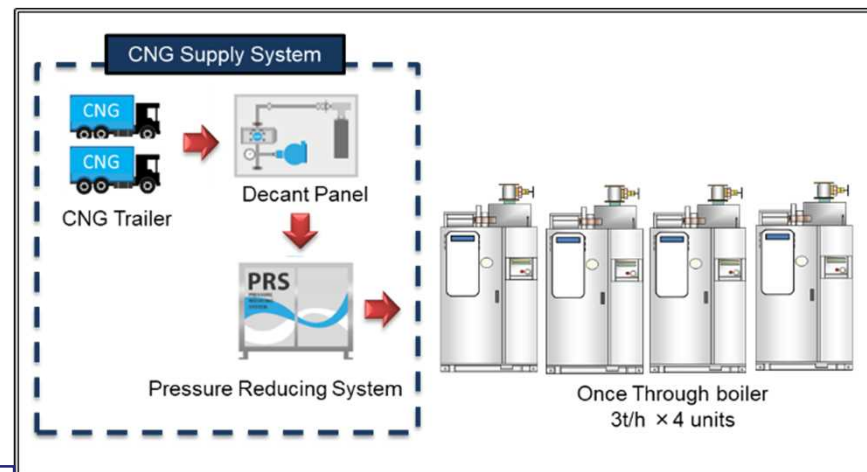
Partner Country	Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO ₂ /y)
Vietnam	JFE Engineering Corporation	Waste to Energy project in Bac Ninh Province	Waste handling and disposal	41,805
Vietnam	Sharp Energy Solution Corporation	Introduction of 9MW Rooftop Solar Power System to Factories	Renewable Energy	3,618
Vietnam	ENDO Lighting Corporation	Introduction of High Efficiency LED Lighting with Dimming and Tunable Function to Office Building in Ho Chi Minh City	Energy Efficiency Improvement	196
Indonesia	Sumitomo Forestry Co., Ltd.	Introduction of 3.3MW Rooftop Solar Power System in Woodworking Factories	Renewable Energy	2,396
Indonesia	FUMAKILLA LIMITED	Introduction of High-Efficiency Thermal Oil Heater System in Chemical Factory	Energy Efficiency Improvement	1,942
Mexico	Sharp Energy Solution Corporation	20MW Solar Power Project in Guanajuato	Renewable Energy	20,023
Thailand	Osaka Gas Co., Ltd.	Introduction of High Efficiency Once Through Boiler to Garment Factory	Energy Efficiency Improvement	2,665
Philippines	MITSUI & CO., LTD.	60MW Solar Power Project in Cordon, Isabela	Renewable Energy	44,860
Philippines	Mizuho-Toshiba Leasing Company Ltd.	Tanawon 20MW Flash Geothermal Power Plant Project	Renewable Energy	38,312

Introduction of High Efficiency Once Through Boiler to Garment Factory

PP (Japan): OSAKA GAS CO., LTD., PP (Thailand): OSAKA GAS (THAILAND) CO., LTD. , Parfun Textile Co., Ltd.

Outline of GHG Mitigation Activity

This project saves energy consumption by replacing existing water tube boilers with high-efficiency once-through boilers (boiler efficiency 98%) at a garment factory. It also reduces greenhouse gas (GHG) emissions by switching fuel from coal to natural gas.



Expected GHG Emission Reductions

2,665 tCO₂/year

- = Reference CO₂ emissions (7,837 tCO₂/year)
- Project CO₂ emissions (5,172tCO₂/year)

• Reference CO₂ emissions

- = Fuel consumption of Reference boiler
- × CO₂ Emission Factor of Reference fuel type
- + Electricity consumption of Reference boiler
- × Electricity grid Emission Factor

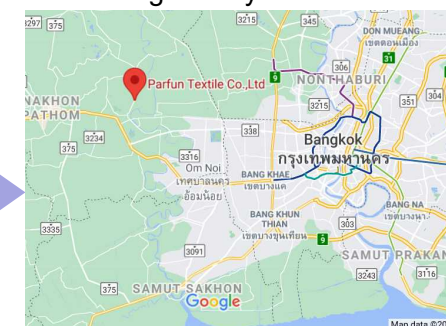
• Project CO₂ emissions

- = Fuel consumption of Project boiler
- × CO₂ Emission Factor of Project fuel type
- + Electricity consumption of Project boiler
- × Electricity grid Emission Factor

Site of Project



Approx. 40km west of Bangkok city



Map Data ©2021 Google

Introduction of High-Efficiency Thermal Oil Heater System in Chemical Factory

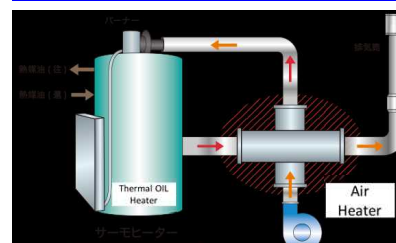
PP (Japan): FUMAKILLA LIMITED, PP (Indonesia): PT FUMAKILLA NOMOS

Outline of GHG Mitigation Activity

For the purpose of the contribution to the global environment, the operation of the existing coal-fired thermal oil heater is stopped, and the amount of greenhouse gas (GHG) emissions can be reduced by installing the new high-efficiency natural gas-fired thermal oil heater.

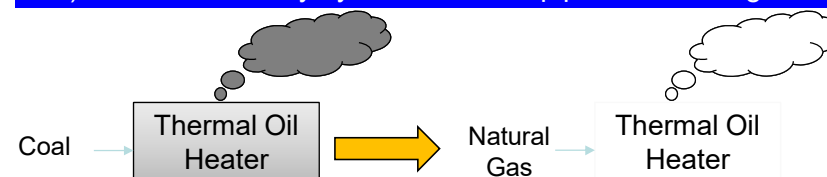
By replacing the coal-fired system with the natural gas-fired system, concerns about the corrosion of pre air heater will be diminished, and the equipment is also expected to be used with high efficiency in the long run.

1) Efficiency improvement by installing pre air heater



Heater efficiency is expected to be improved by 12% by installing pre air heater and to reduce more GHG emissions.

2) More eco-friendly by conversion to pipeline natural gas



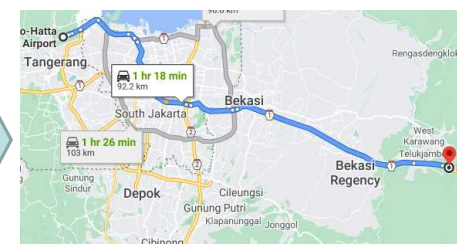
Expected GHG Emission Reductions

1,942 tCO₂ /year

$$= [(Reference\ fuel\ consumption) - (Project\ fuel\ consumption)] \times Emission\ factor\ (EF)$$

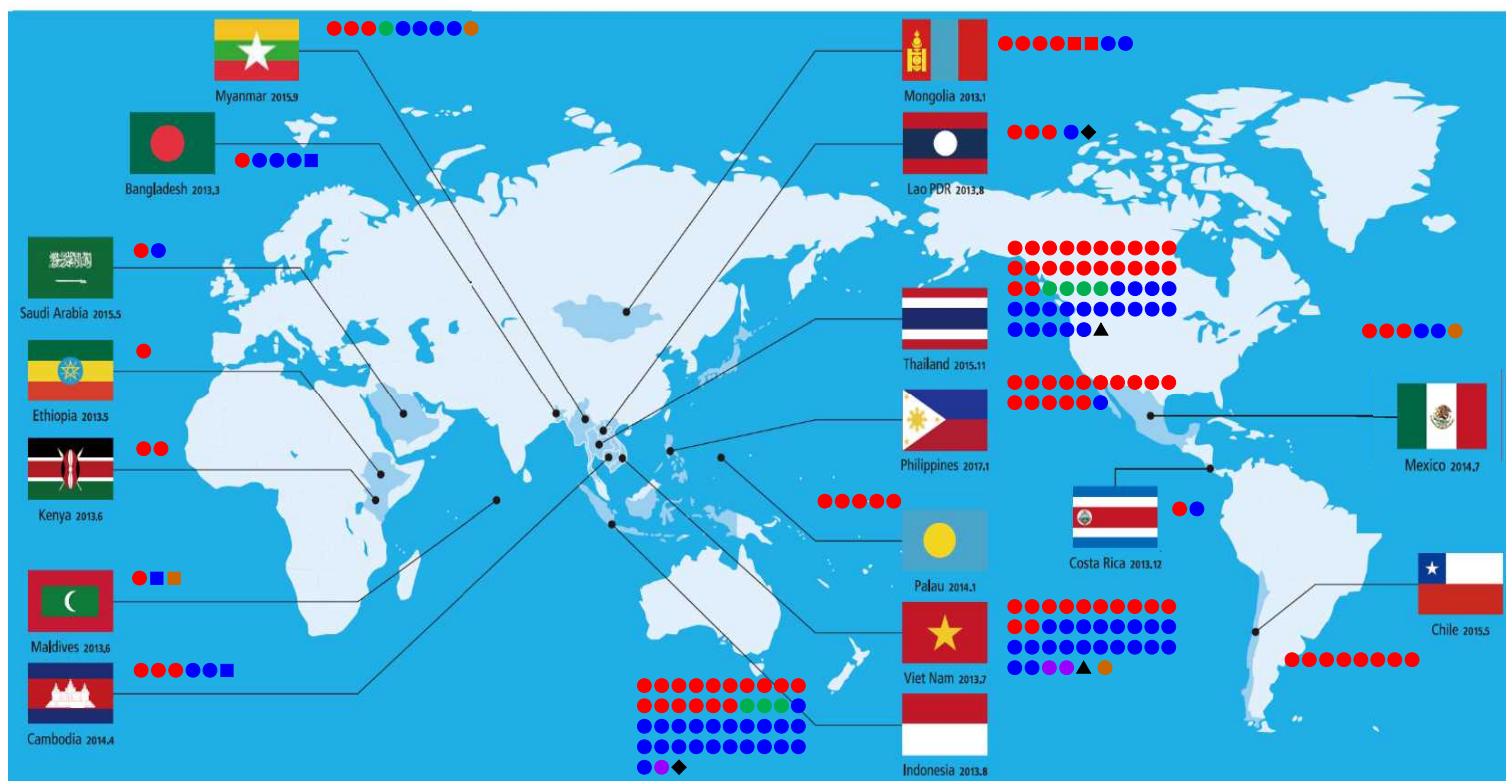
Sites of Project

Approximately 100km southeast of Soekarno-Hatta International Airport



Map data©2021Google

Project Map of JCM Financing Programme : as of September 27, 2021

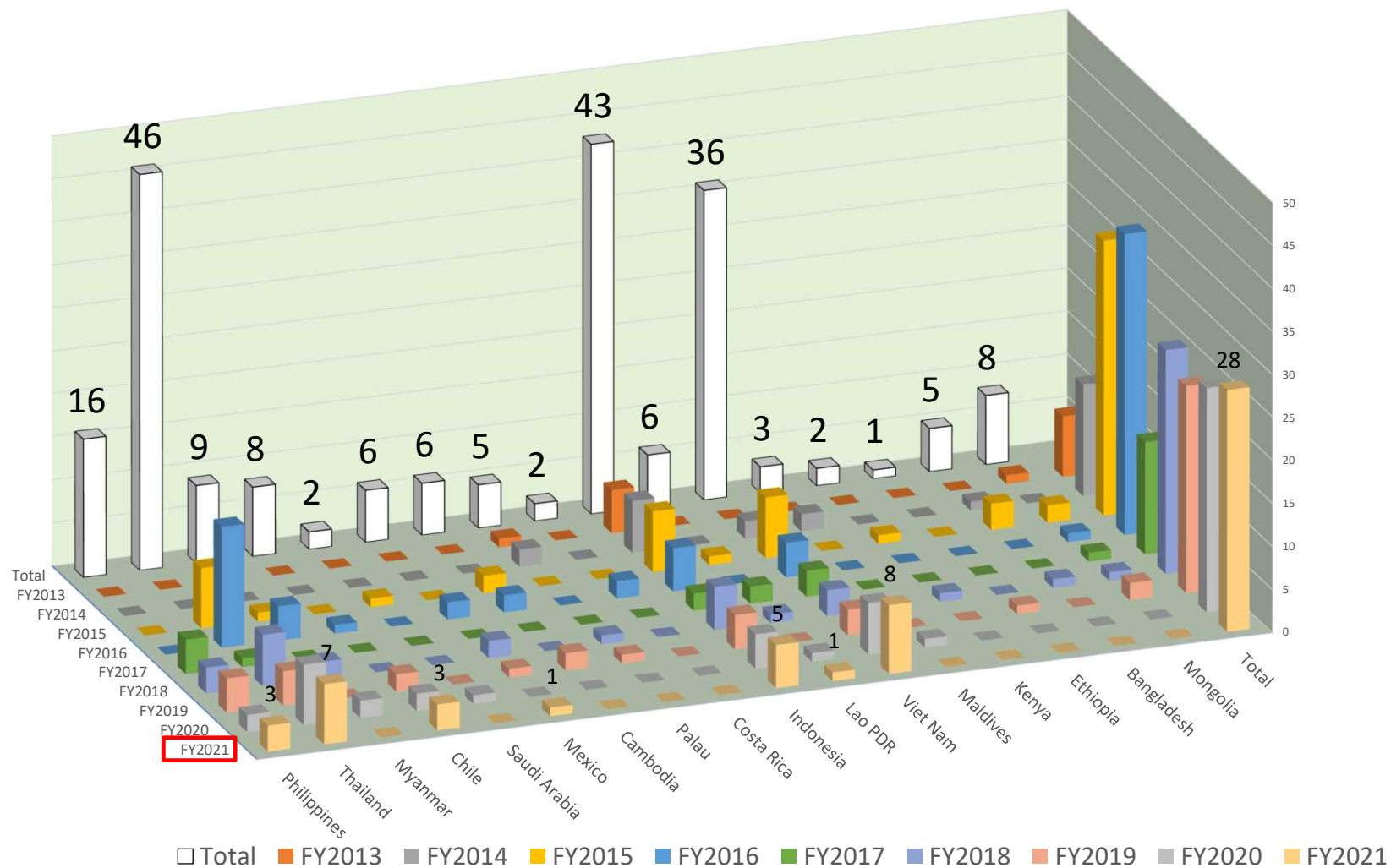


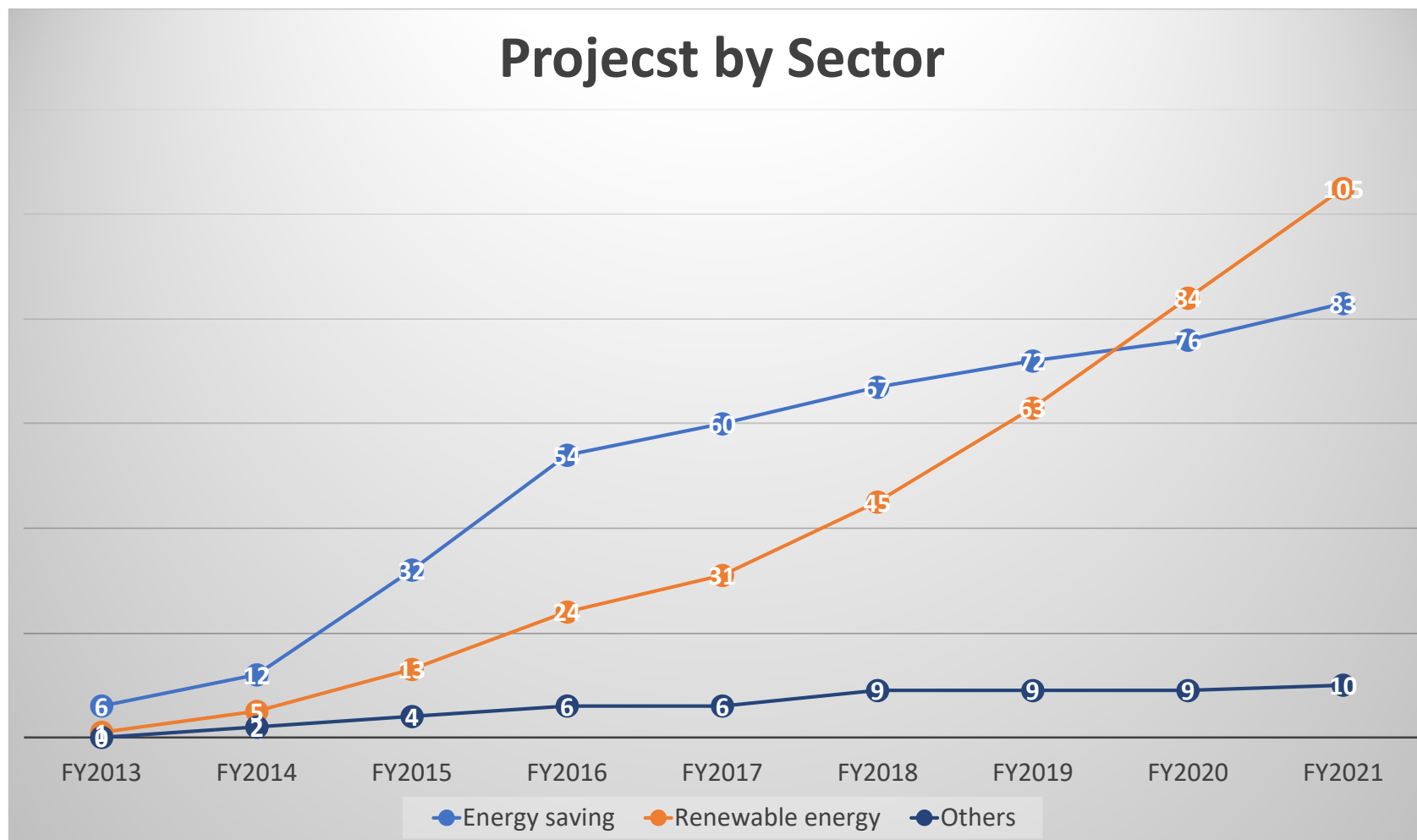
Total 203 projects / 17 countries

(● Model Project:194, ■ ADB:5, ◆ REDD+:2, ▲ F-gas:2)

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

Project by Year and Country

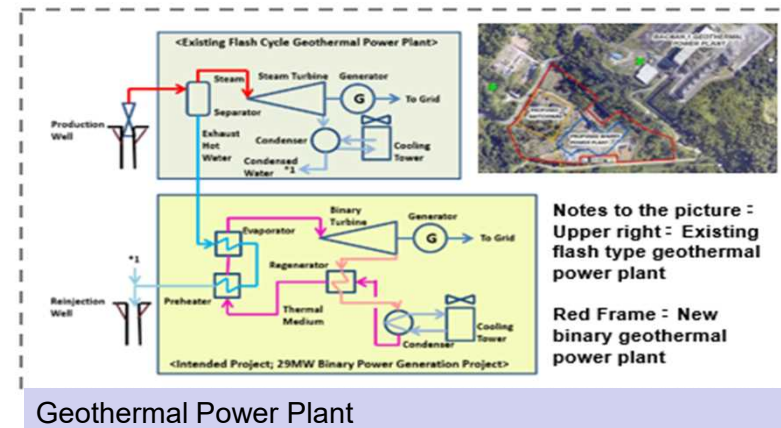




Wind Power Generation

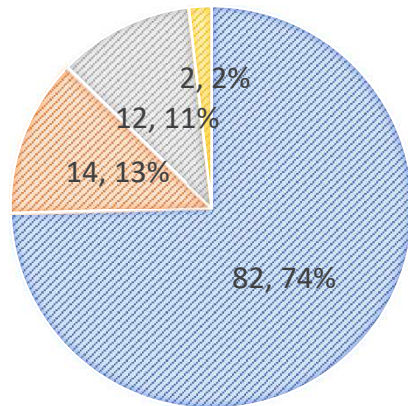
Wind turbines

Concept image

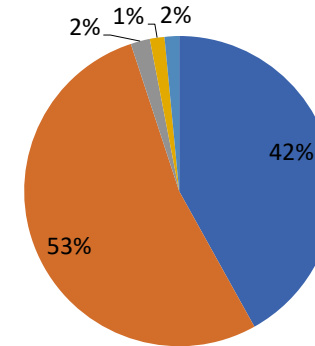


RENEWABLE ENERGY SECTOR

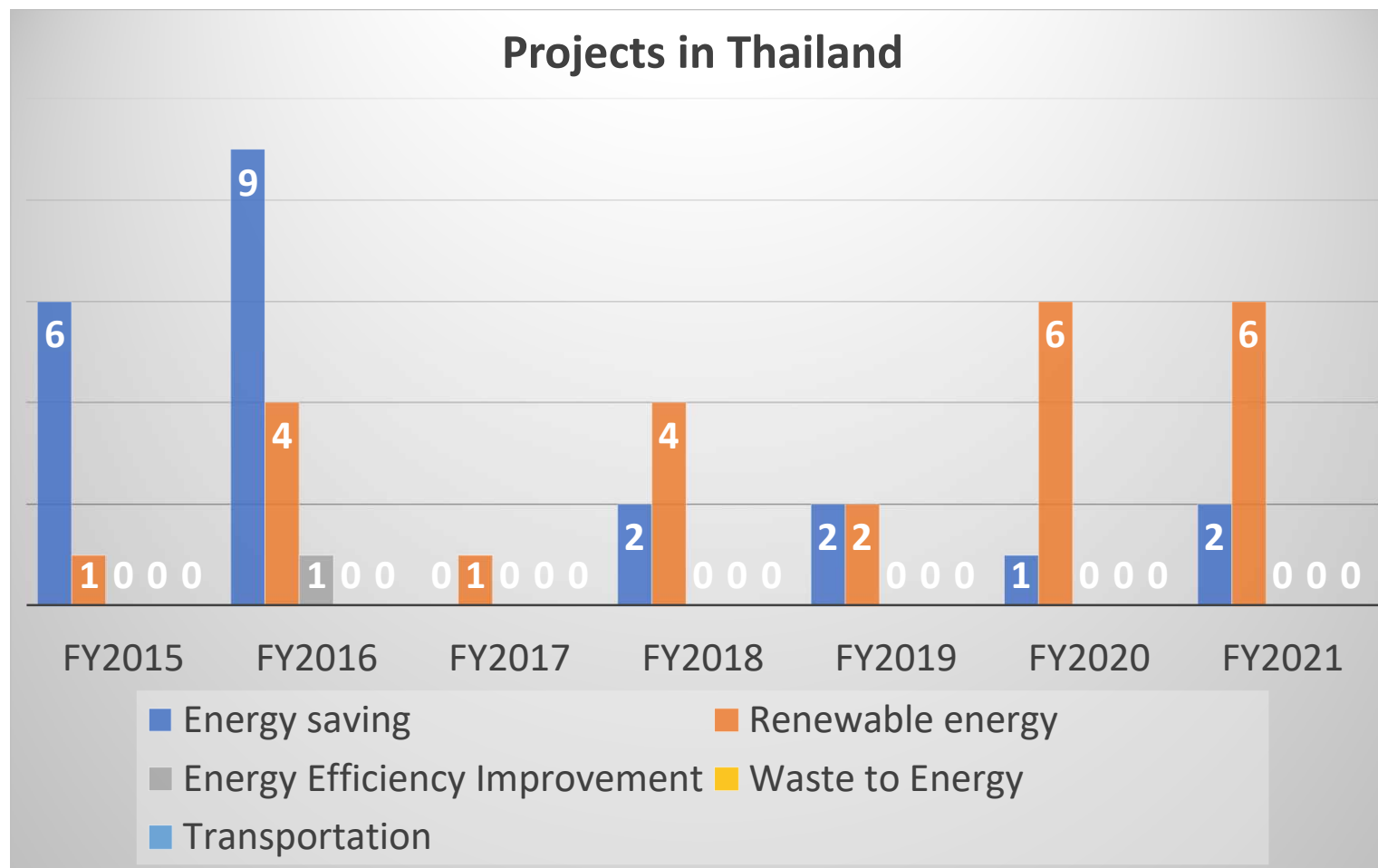
PV Hydro Bio Others



17 Partner Countries



Energy saving
 Energy Efficiency Improvement
 Transportation
 Others
 Renewable energy
 Waste to Energy
 Total



Infrastructure through JCM

- 1 Thailand / EAST RETAILING CO., LTD.
High Efficiency LED Lighting
- 2 Cambodia / Aeon Mall Co., Ltd.
Solar Power System and High Efficiency Centrifugal Chiller
- 3 Hongkong / Hase Integration Equipment & Systems Co., Ltd.
High Efficiency Centrifugal Chiller
- 4 Mexico / Suntory Spirits Limited
Once-through Reeler and Fuel Switching



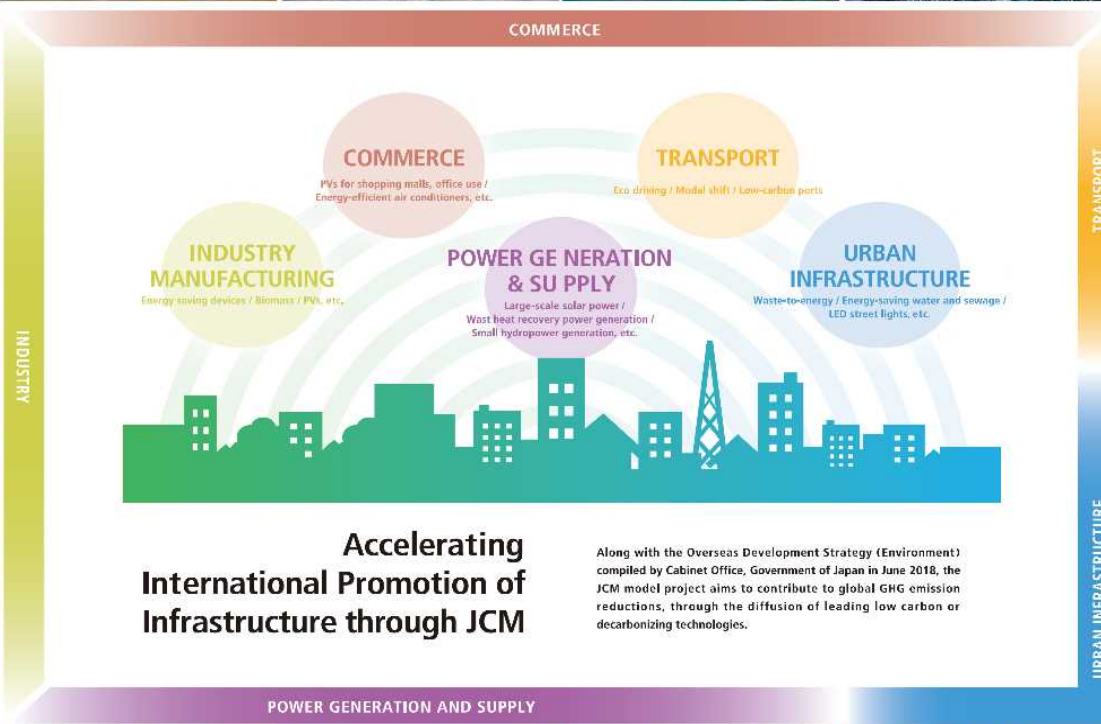
- 1 Palau / Pacific Consultants Co., Ltd.
Solar Power Plants for Commercial Facilities
- 2 Indonesia / Toyota Tsusho Corporation
Double-Bundle type Heat Pump
- 3 Indonesia / Hokuetsu Co., Ltd.
Choke-Stream Equipment to Public Bus
- 4 Thailand / Yokohama Port Corporation
Energy Efficient equipment to Bangkok Port



- 1 Indonesia / Environmental Management and Technology Center
Energy saving in Industrial Wastewater Treatment System
- 2 Myanmar / Kiri Holdings Company, Limited
Energy Saving Drilling Systems
- 3 Thailand / TSC Co., Ltd.
Floating Solar Power System
- 4 Andon / TIT DATA RES. LTD. / TIT-THAI-THAI CONSULTING, INC.
Power generation with Methane Gas Recovery System



- 1 Viet Nam / Yuke 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 / Kujito Corporation
Rice Husk Power Generation

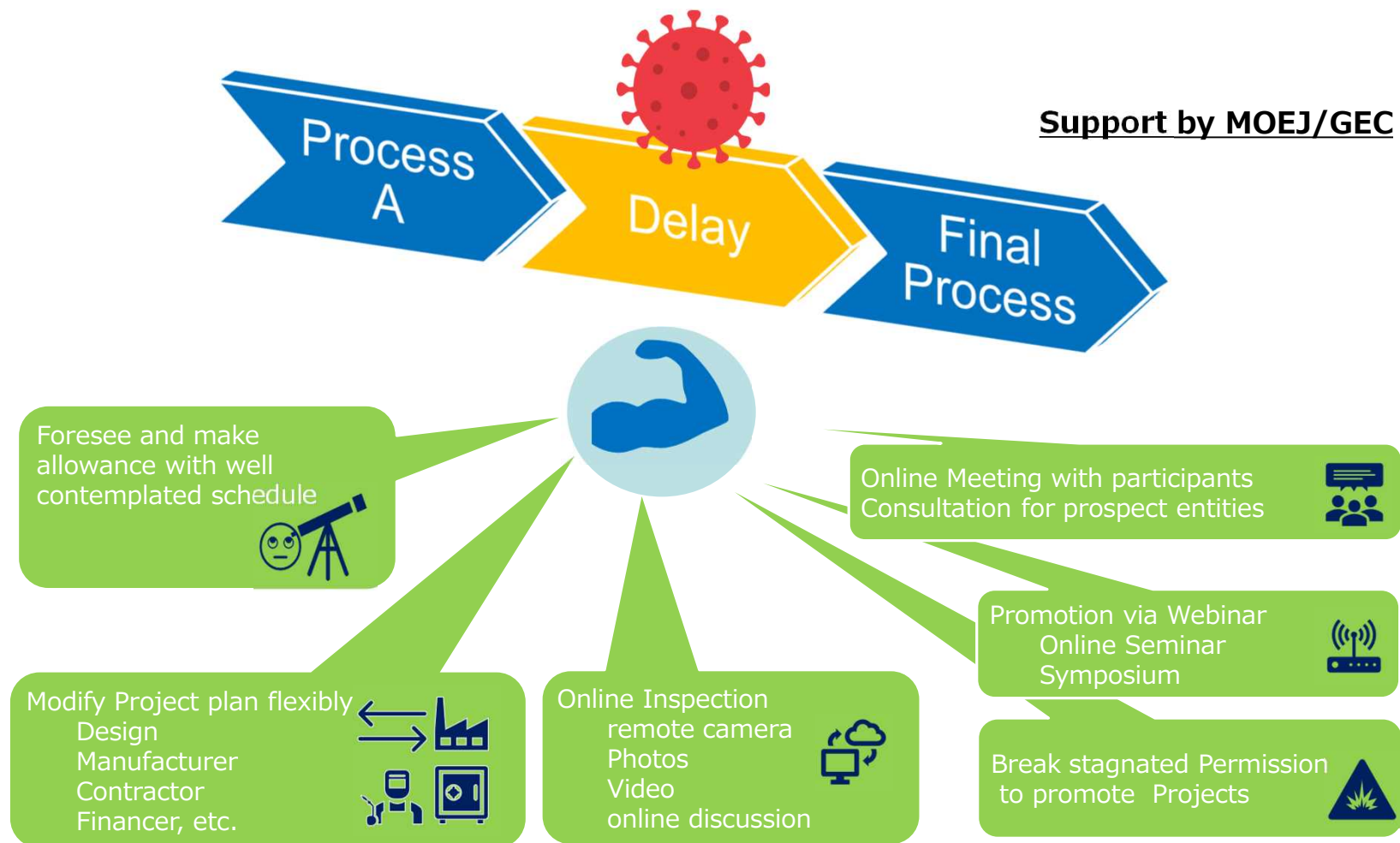


Impact on Projects

- 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



ขอบคุณ !
ありがとうございました。

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