Financing Programme for JCM Model Projects

September 2021

Global Environment Centre Foundation (GEC)

Outline of JCM Model Projects

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.

Guideline for Submitting JCM model project proposal

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

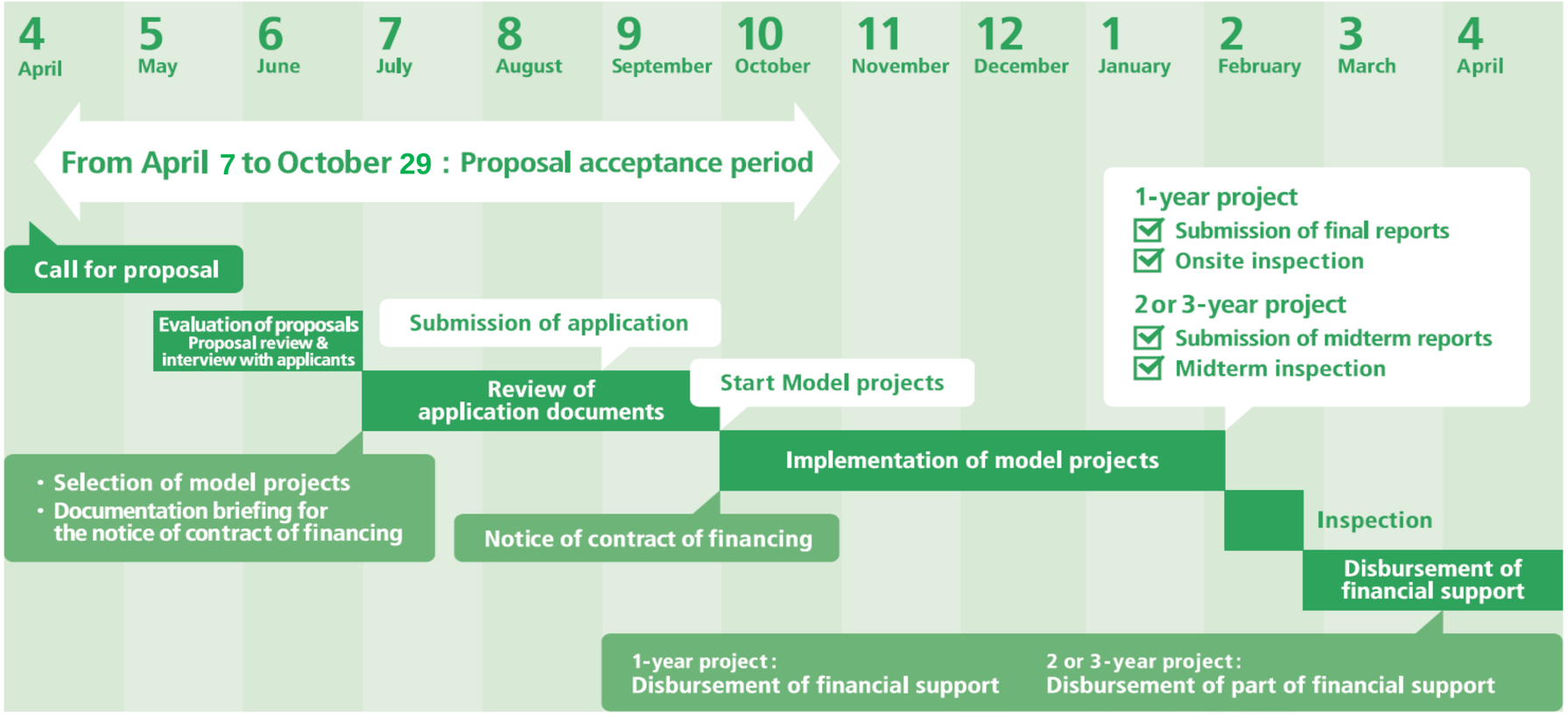
JCM Model Projects：
Supporting to facilitate diffusion of advanced decarbonizing technologies ,etc and infrastructure as well as implementation of mitigation actions.

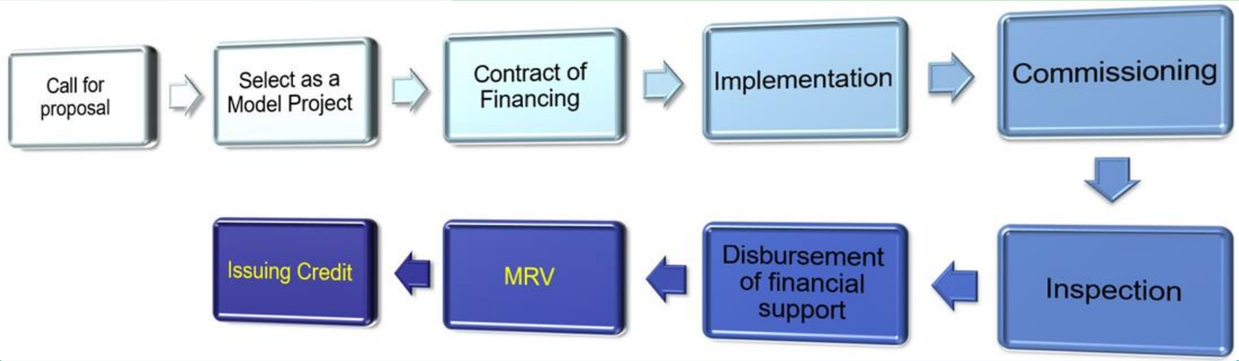
Eligible Projects

(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

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

※ 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

Global Environment Centre Foundation

Sector	Technology	Mongolia	Bangladesh	Ethiopia	Kenya	Maldives	Viet Nam	Lao PDR	Indonesia	Costa Rica	Palau	Cambodia	Mexico	Saudi Arabia	Chile	Myanmar	Thailand	Philippine	
		MN	BD	ET	KE	MV	VN	LA	ID	CR	PW	KH	MX	SA	CL	MM	TH	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 Excahnger															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
	Freaquency Inverter for Pump						1					1							2
	Ventilation Contorl 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 Modling 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	1	6
	Biogas Power Plant																	1	1
	Biomas 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%

JCM for SDGs

Possible Contribution of Renewable Energy Projects to SDGs

GHG emission reduction can be implemented though renewable energy generation by replacing electric power derived from fossil fuel combustion

- Photovoltaic Generation
- Hydraulic Power Generation
- Wind Power Generation
- Geothermal Generation
- Biomass・Biogas Generation

<Graph Legends>

- Goal to which Renewable Energy Project can contribute
- Common Goal to which JCM Projects can contribute

※The listed goals are no more than recommended examples with high potential to contribute through implementing JCM project. These goals are not limited nor mandatory to contribute.

Planning | **Implementation** | **Operation** | **Decommission**

Consider gender equal access to various benefits from the project such as compensation of land acquisition.

- **Ensure women's participation such as public hearing（5.5）**
- **Equal rights to ownership and compensation of land acquisition（5.a）**

- **Equal rights to basic services（1.4）**
- **Increase share of renewable energy （7.2）**

- **Reduce air pollution(11.6)**

Reducing consumption of electricity derived from fossil fuel, improve the sustainability of the installed facility such as factory, hotel and hospital.

- **Increase resource-use efficiency and greater adoption of clean and environmentally sound technologies (9.4)**

- **Sustainable management and efficient use of natural resources (12.2)**
- **Environmentally sound management of all wastes throughout their life cycle（12.4）**
- **Reduce waste generation through prevention, reduction, recycling and reuse（12.5）**

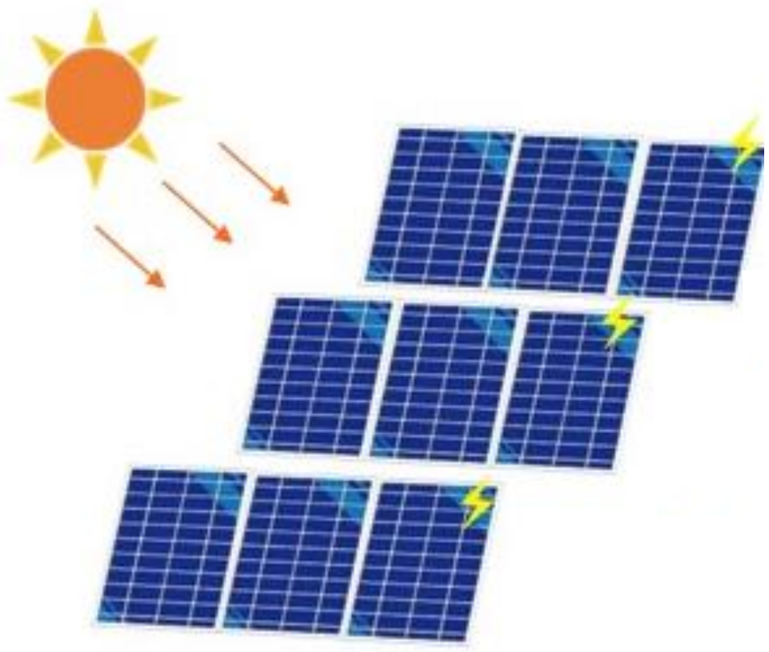
Reduce air and water pollution, noise and vibration by implementing proper disposal and recycling.

- **Sustainable management of all types of forests（15.2）**

Prevent adverse effects on forestation and biodiversity conducting proper environment assessment according to the laws and regulations in the partner country.

- **Reduce inequality by procurement with fare price（10.3）**
- **Publish sustainability reports (12.6)**
- **Education and training for relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship（4.4）**
- **Increase employment of women to managerial and technical positions（5.5）and gender sensitive work environment (Guideline on Gender Equality for JCM)**
- **Full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.（8.5）**
- **Adopt supply chain without child labor, exploitation, conflict and corruption.（5.2、8.8、16.2、16.5）**
- **Take urgent action to combat climate change and its impacts.（13）**
- **Promote the development, transfer, dissemination and diffusion of environmentally sound technologies（17.7）**
- **Enhance the global partnership for sustainable development.（17.16）**

Solar Power Module



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	Philippine	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

Solar Power Plant with Battery

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

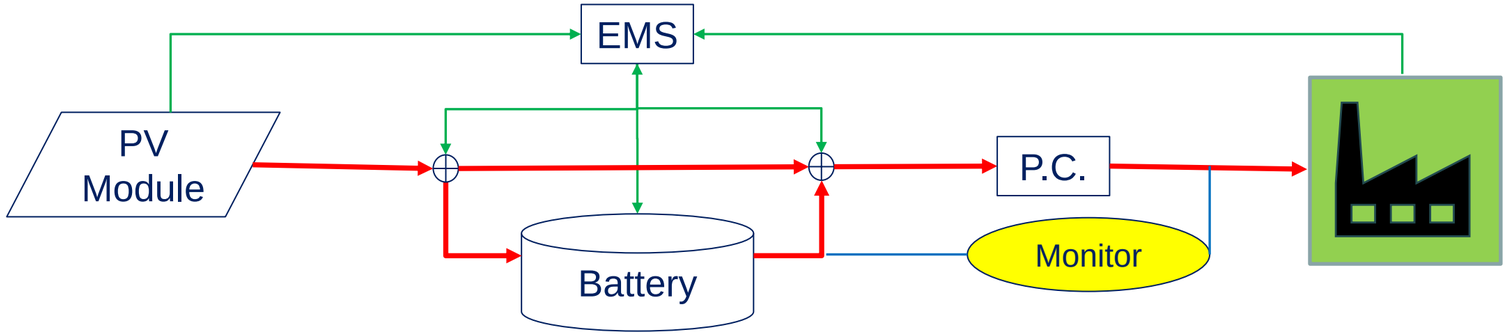
1) Introduction to off-the-grid areas

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（tCO2/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

2nd Selection of Projects in FY2021

Partner Country	Entity	Project Title	Sector	GHG Emission Reductions（tCO2/y）
Vietnam	Marubeni Corporation	Introduction of 12MW Rooftop Solar Power System to Commercial and Industrial Customers	Renewable Energy	5,815
Vietnam	Osaka Gas Co., Ltd.	Introduction of 9.8MW Rooftop Solar Power System in Industrial Park	Renewable Energy	4,254
Vietnam	Asian Gateway Corporation	Introduction of 5.8MW Rooftop Solar Power System to Beverage Factory	Renewable Energy	2,531
Vietnam	The Kansai Electric Power Company, Incorporated	Introduction of 2.5MW Rooftop Solar Power System to Food Factory and Garment Factory	Renewable Energy	982
Vietnam	Tokyu Corporation	Introduction of High Efficiency Chiller and High Efficiency LED Lighting with Dimming Function to Shopping Center	Energy Efficiency Improvement	726
Lao PDR	Liberal Solution Co., Ltd.	19MW Solar Power Project in Xiangkhouang Province	Renewable Energy	7,861
Indonesia	WWS-JAPAN Co.	6MW Mini Hydro Power Plant Project in Besay River, Lampung Province	Renewable Energy	20,307
Indonesia	WWS-JAPAN Co.	2.3 MW Mini Hydro Power Plant Project in Melesom River, Lampung Province	Renewable Energy	6,787
Indonesia	Otsuka Pharmaceutical Factory, Inc.	Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory 2	Energy Efficiency Improvement	8,796
Chile	Eurus Energy Holdings Corporation	9MW Solar Power Project in Casablanca, Valparaiso Region	Renewable Energy	8,527
Chile	Eurus Energy Holdings Corporation	9MW Solar Power Project in Yungay, Biobio Region	Renewable Energy	8,476
Chile	FARMLAND Co., Ltd.	3MW Solar Power Project Utilizing Farmland in Maule Region	Renewable Energy	2,489
Thailand	Kanematsu KGK Corp.	35MW Solar Power and Storage Battery Project in Suphanburi Province	Renewable Energy	13,197
Thailand	Sharp Energy Solution Corporation	Introduction of 23MW Rooftop Solar Power System to Tire Factories	Renewable Energy	8,928
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of High Efficiency Boiler, High Efficiency Chiller, and Solar PV System to Textile Factory and Food Factory	Energy Efficiency Improvement/ Renewable Energy	1,885
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of 2MW Rooftop Solar Power System to Non-ferrous Metal Factory	Renewable Energy	945
Thailand	Tokyo Century Corporation	Introduction of 1.85MW Solar Power System to Food Factories (JCM Eco Lease Scheme)	Renewable Energy	858
Thailand	Tokyo Century Corporation	Introduction of 0.13MW Solar Power System to Auto Parts Factory (JCM Eco Lease Scheme)	Renewable Energy	52
Philippines	Oriental Consultants Co., Ltd.	Introduction of Energy Saving Air Conditioning System to Quezon City Hall Compound	Energy Efficiency Improvement	780

JCM Model Project（FY2021）in Thailand

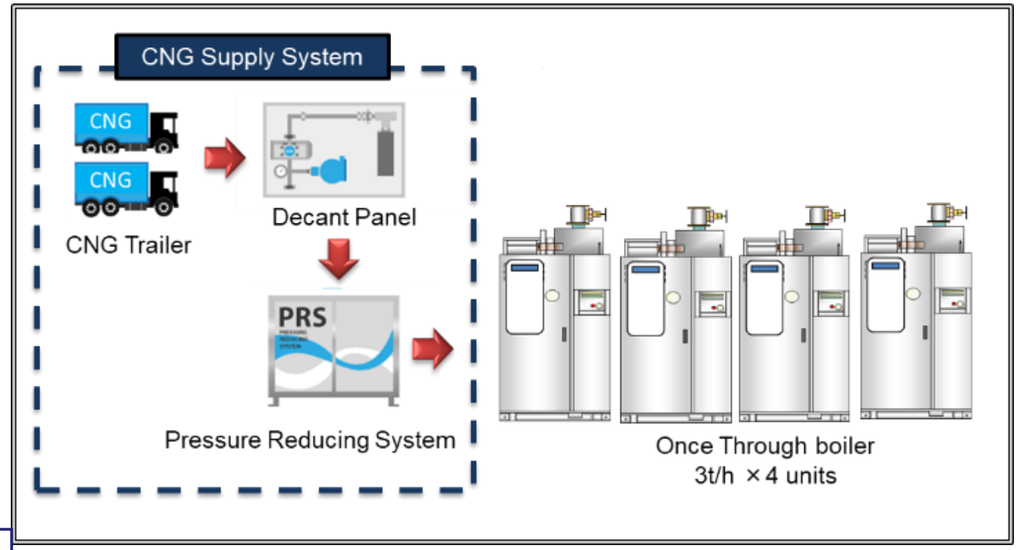
Global Environment Centre Foundation

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 tCO_2/year

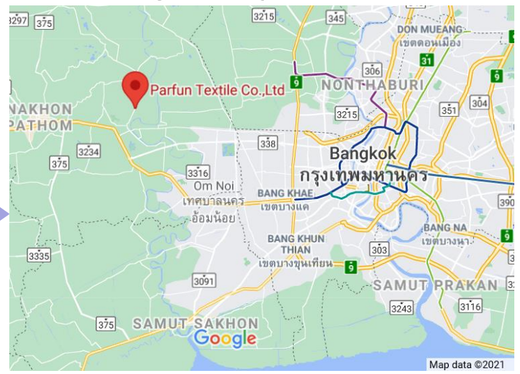
= Reference CO_2 emissions (7,837 tCO_2/year)
- Project CO_2 emissions (5,172tCO_2/year)

・Reference CO_2 emissions
= Fuel consumption of Reference boiler
× CO_2 Emission Factor of Reference fuel type
+ Electricity consumption of Reference boiler
× Electricity grid Emission Factor

・Project CO_2 emissions
= Fuel consumption of Project boiler
× CO_2 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

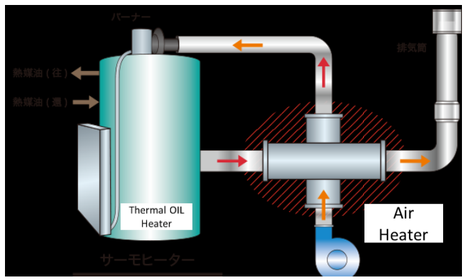
Introduction of High-Efficiency Thermal Oil Heater System in Chemical Factory

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

Outline of GHG Mitigation Activity

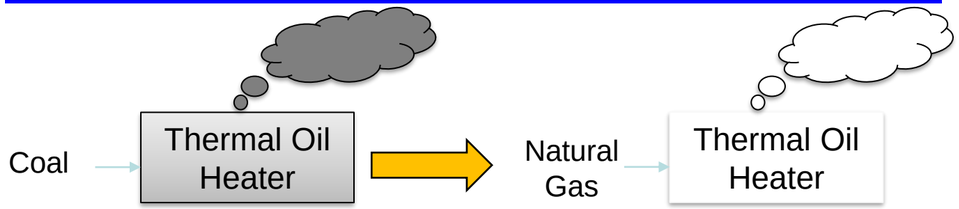
For the purpose of the contribution to the global environment, the operation of the existing coal-fired thermal oil heater is stopped, and the amount of greenhouse gas (GHG) emissions can be reduced by installing the new high-efficiency natural gas-fired thermal oil heater.
By replacing the coal-fired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



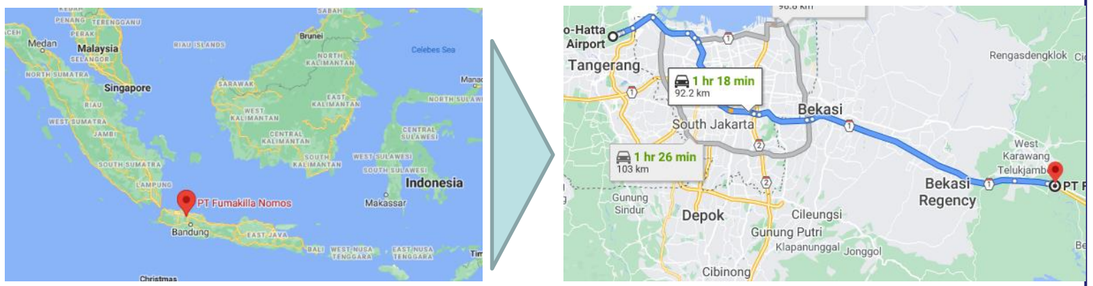
Expected GHG Emission Reductions

1,942 tCO_2 /year

= [(Reference fuel consumption)
– (Project fuel consumption)]
x Emission factor (EF)

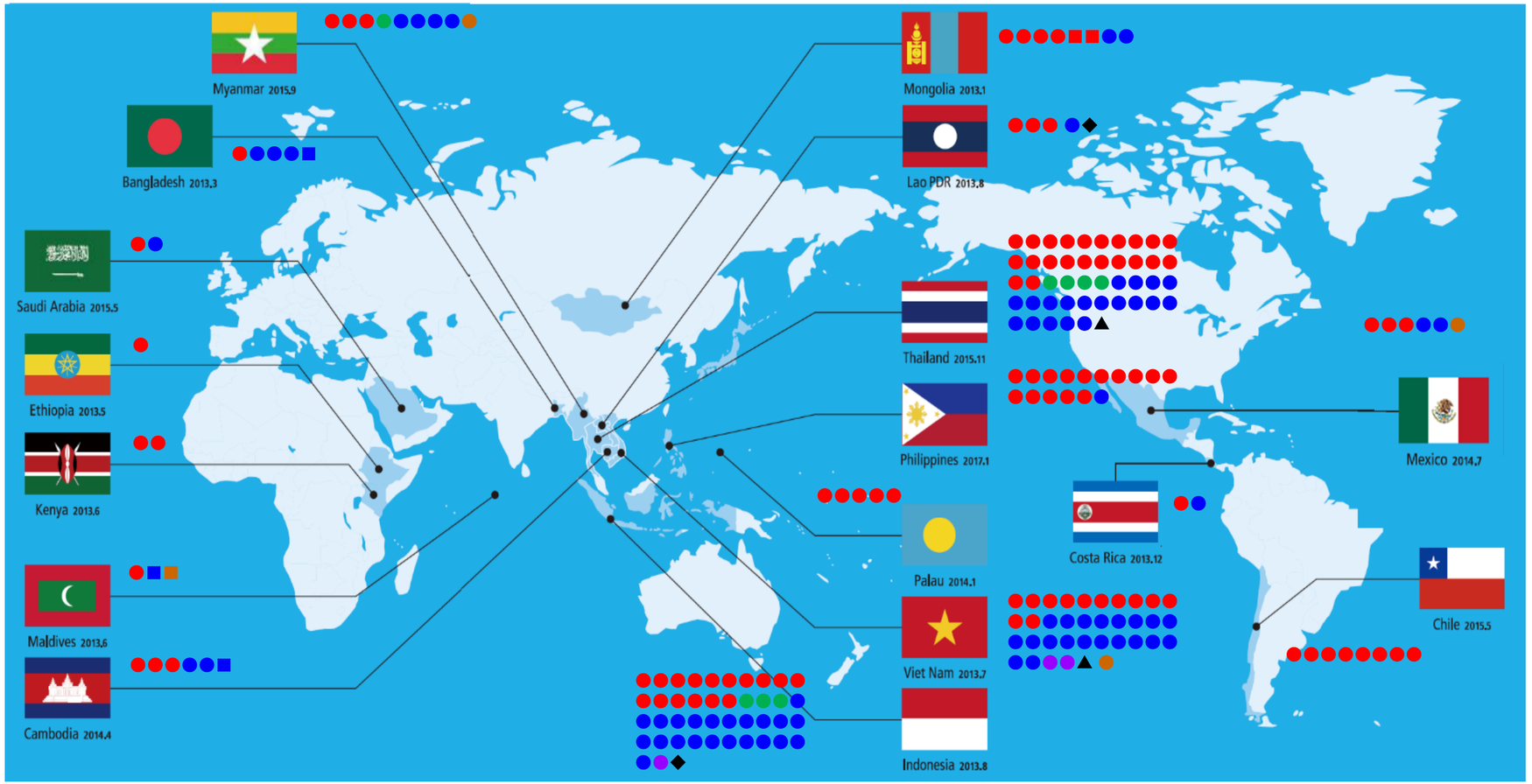
Sites of Project

Approximately 100km southeast of Soekarno-Hatta International Airport



Map data©2021Google

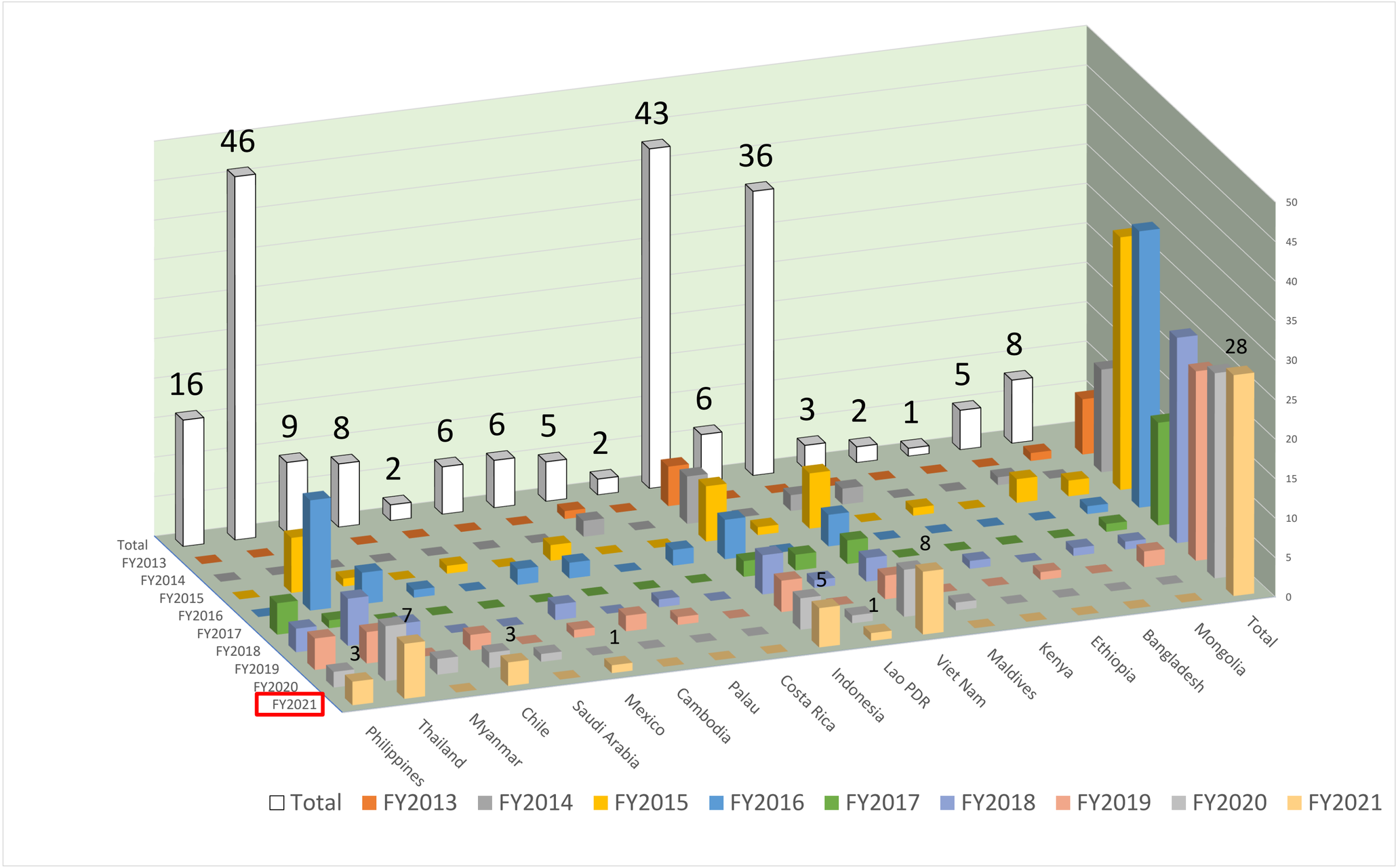
Project Map of JCM Financing Programme : as of September 27, 2021



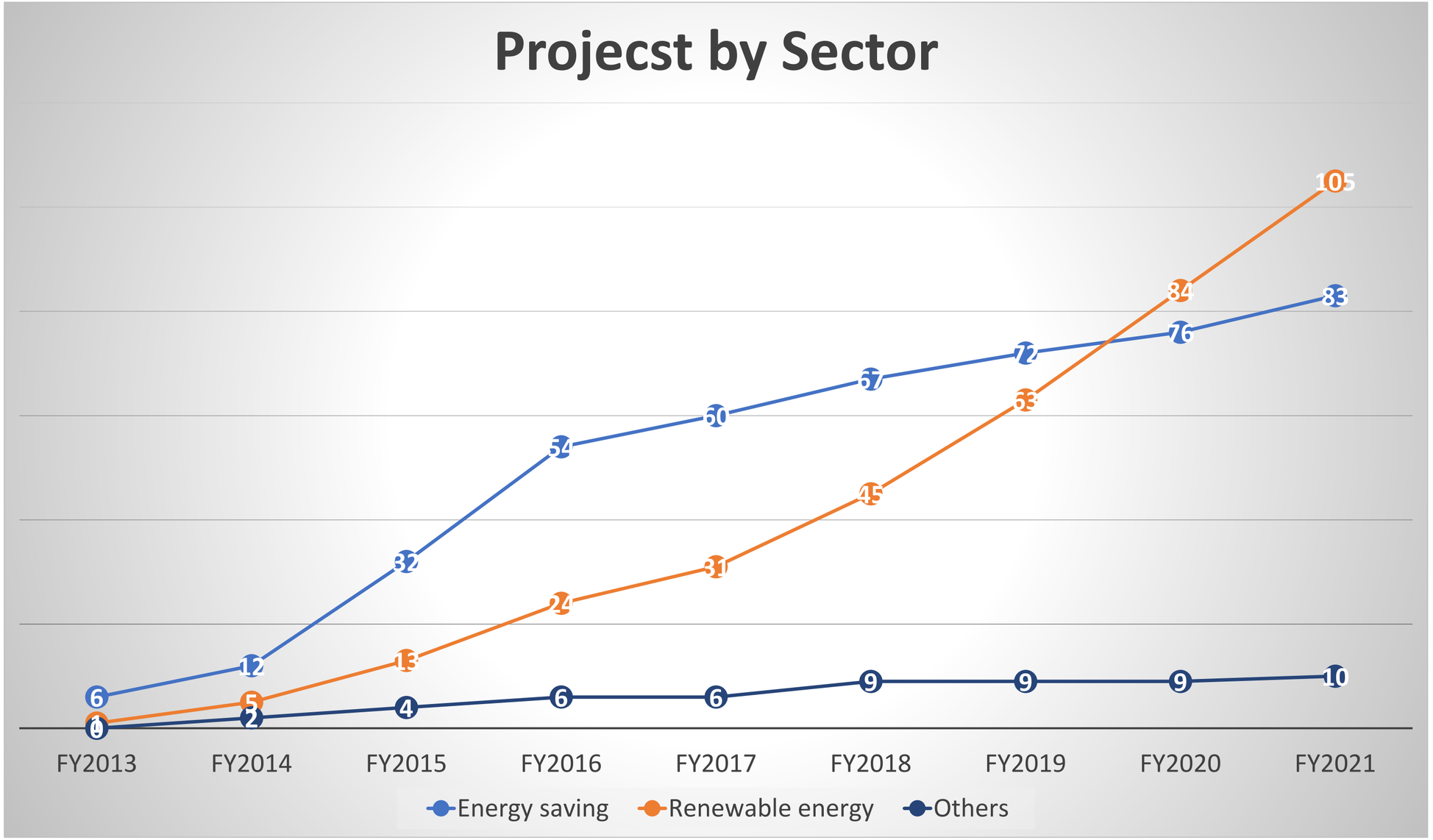
Total 203 projects / 17 countries
(● Model Project:194, ■ ADB:5, ◆ REDD+:2, ▲ F-gas:2)

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

Project by Year and Country

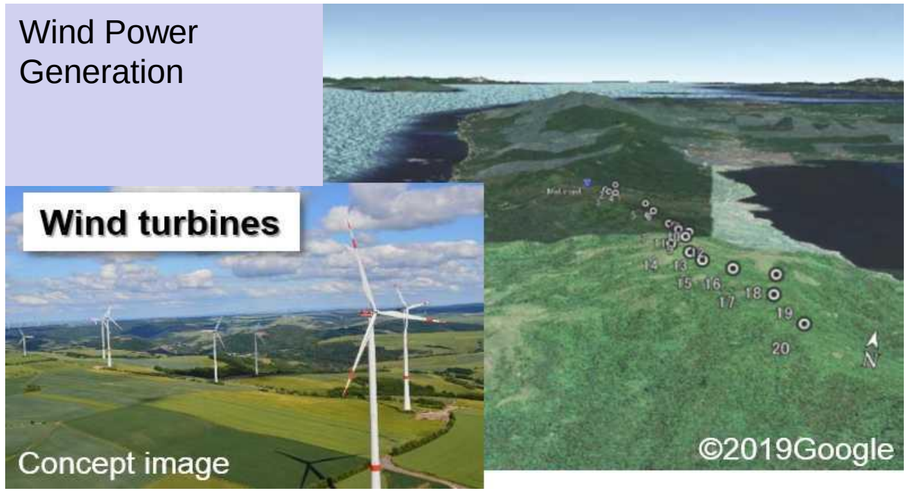


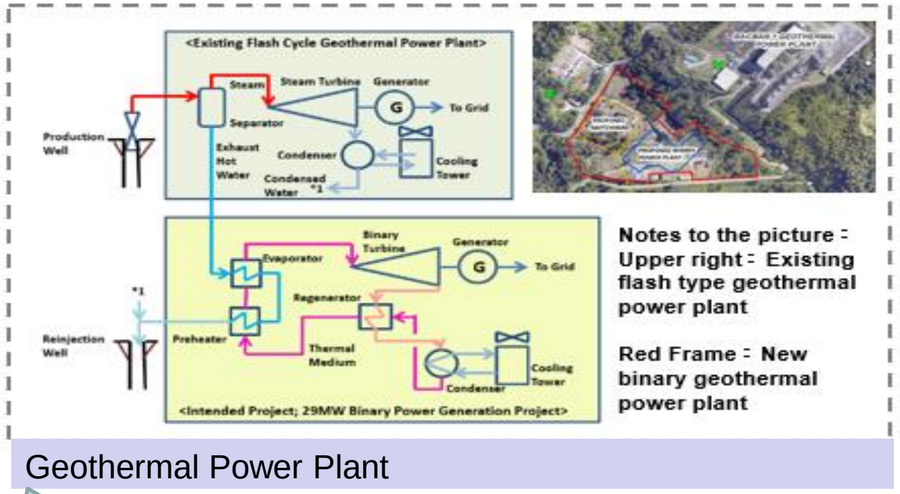
Project by Sector



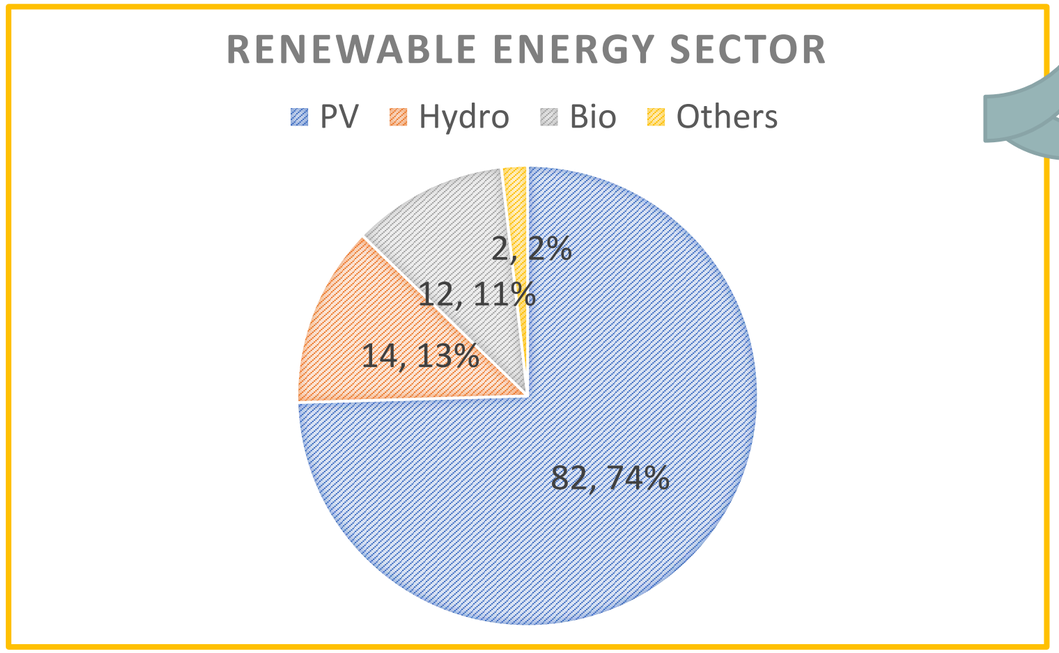
Renewable Energy

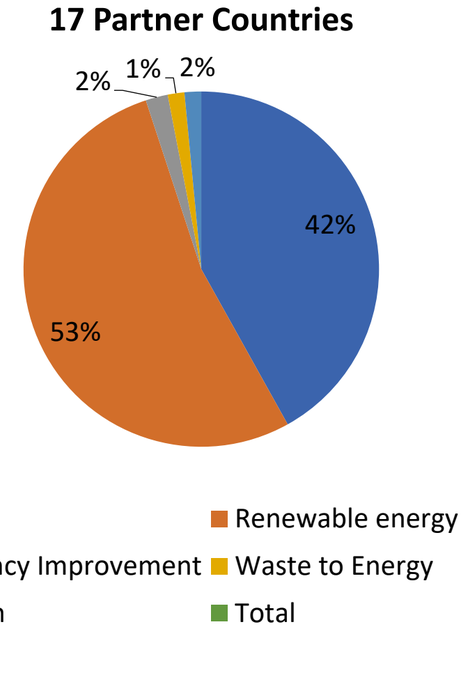
Wind Power Generation



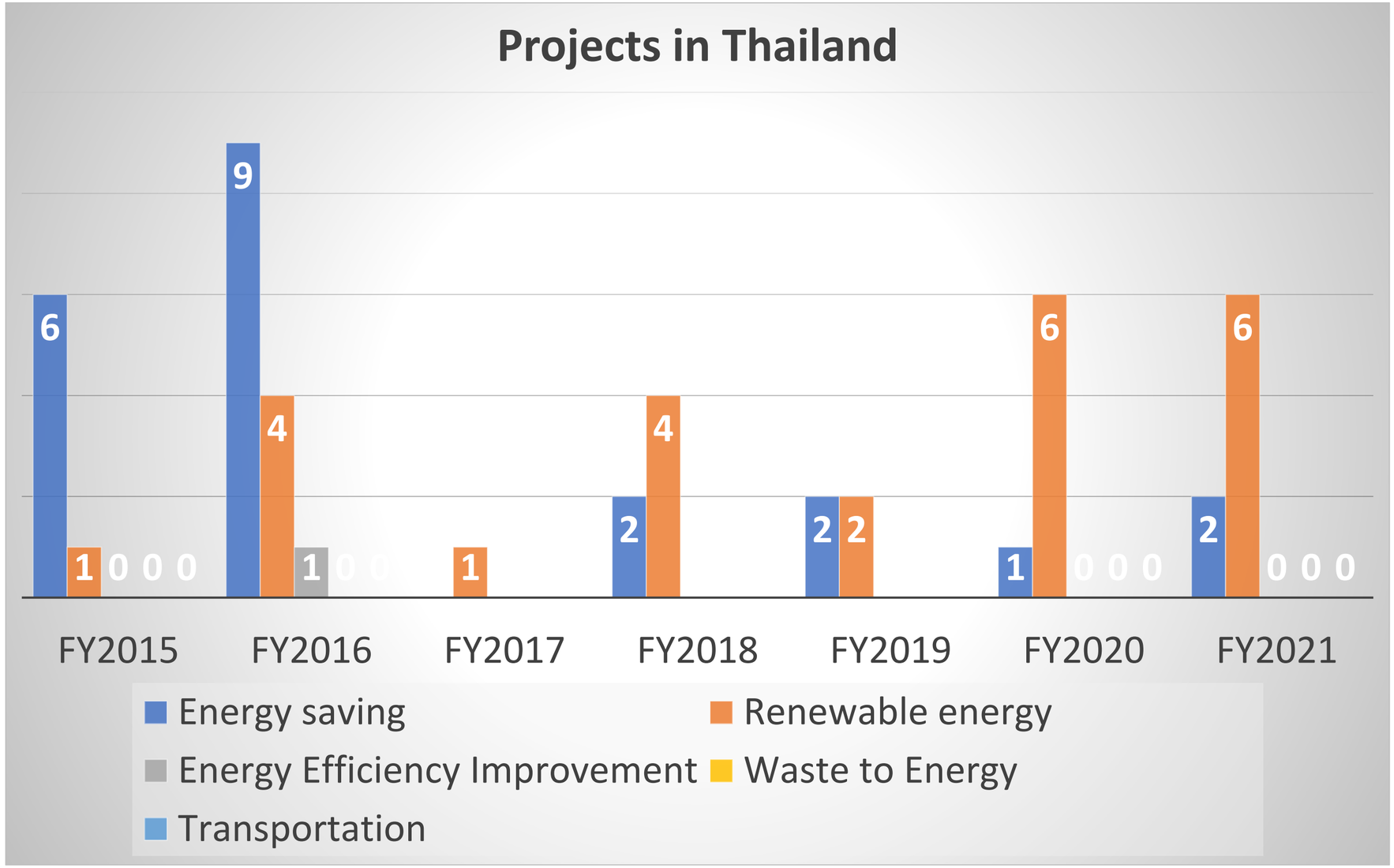


Geothermal Power Plant





Projects in Indonesia



Guideline for Submitting JCM model project proposal

Infrastructure through JCM

1 Thailand / FAST RETAILING CO., LTD.
High Efficiency LED Lighting
2 Cambodia / AEON MALL Co., Ltd.
Solar Power System and High Efficiency Centrifugal Chiller
1 Bangladesh / Hitachi Refrigeration Equipment & Systems Co., Ltd.
High Efficiency Centrifugal Chiller
2 Mexico / Suntory Spirits Limited
Once-through Boiler and Fuel Switching




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




COMMERCE

INDUSTRY

TRANSPORT

URBAN INFRASTRUCTURE

POWER GENERATION AND SUPPLY

COMMERCE
PVs for shopping malls, office use / Energy-efficient air conditioners, etc.

TRANSPORT
Eco driving / Modal shift / Low-carbon ports

INDUSTRY MANUFACTURING
Energy saving devices / Biomass / PVs, etc.

POWER GE NERATION & SU PPLY
Large-scale solar power / Wast heat recovery power generation / Small hydropower generation, etc.

URBAN INFRASTRUCTURE
Waste-to-energy / Energy-saving water and sewage / LED street lights, etc.

Accelerating International Promotion of Infrastructure through JCM

Along with the Overseas Development Strategy (Environment) compiled by Cabinet Office, Government of Japan in June 2018, the JCM model project aims to contribute to global GHG emission reductions, through the diffusion of leading low carbon or decarbonizing technologies.




3 Indonesia / Environmental Management and Technology Center
Energy Saving in Industrial Wastewater Treatment System
4 Myanmar / Kirin Holdings Company, Limited,
Energy Saving Brewing Systems
1 Thailand / TSB Co., Ltd.
Floating Solar Power System
2 Mexico / NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.
Power Generation with Methane Gas Recovery System




1 Viet Nam / Yuko Keiso Co., Ltd.
Amorphous High Efficiency Transformers in power grid
2 Viet Nam / Yokohama Water Co., Ltd.
High Efficiency Water Pumps
3 Myanmar / JFE Engineering Corporation
Waste to Energy Plant in Yangon City
3 Myanmar / Fujita Corporation
Rice Husk Power Generation

Covid-19 Impact on JCM Model Projects

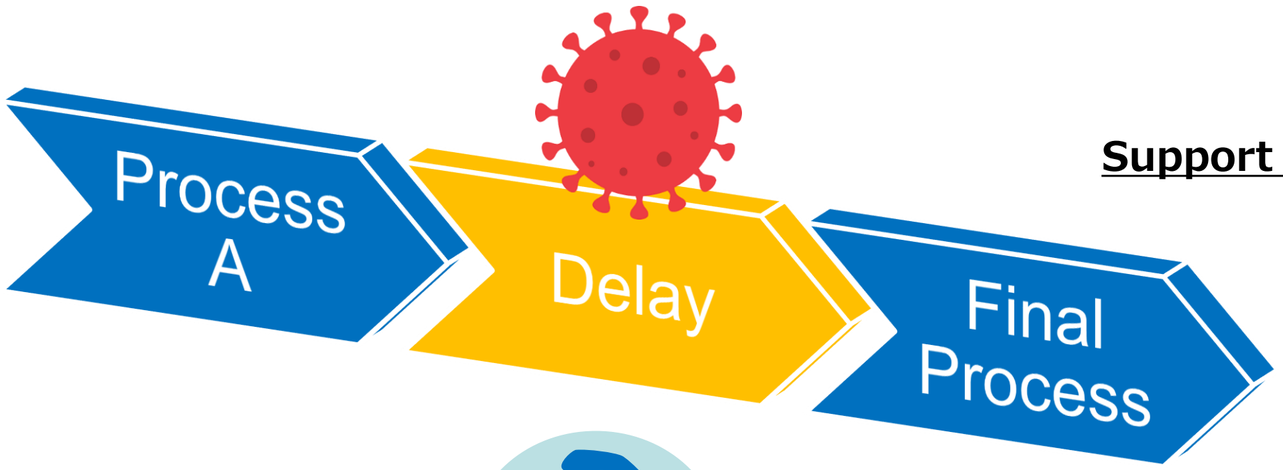
Impact on Projects

- 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

Countermeasures against Covid-19 Impact



Support by MOEJ/GEC

Foresee and make allowance with well contemplated schedule

Modify Project plan flexibly
- Design
- Manufacturer
- Contractor
- Financer, etc.

Online Inspection
- remote camera
- Photos
- Video
- online discussion

Online Meeting with participants
Consultation for prospect entities

Promotion via Webinar
- Online Seminar
- Symposium

Break stagnated Permission to promote Projects

ขอบคุณ！

ありがとうございました。

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