

Financing Programme for JCM Model Projects

July 26th 2022

Global Environment Centre Foundation (GEC)



1

- JCM Model Projects Overview

2

- Selection in 2021 and 2022

3

- Project Trend

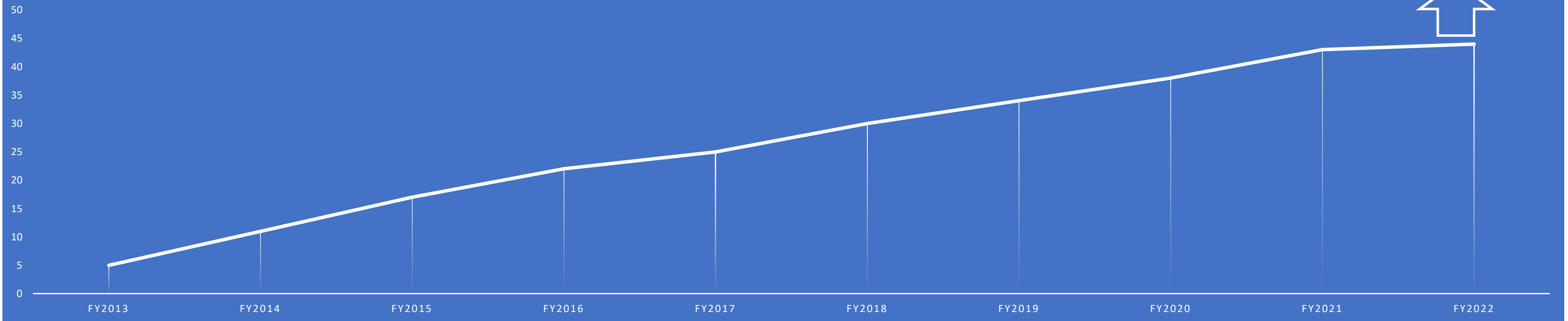
4

- Trend in Indonesia

5

- Conclusion

NUMBER OF SELECTED PROJECTS IN INDONESIA



2013

2014

2015

2016

2017

2018

2019

2020

2021

2022



2013.8.26



Coordinating Ministry
for Economic Affairs
Republic of Indonesia

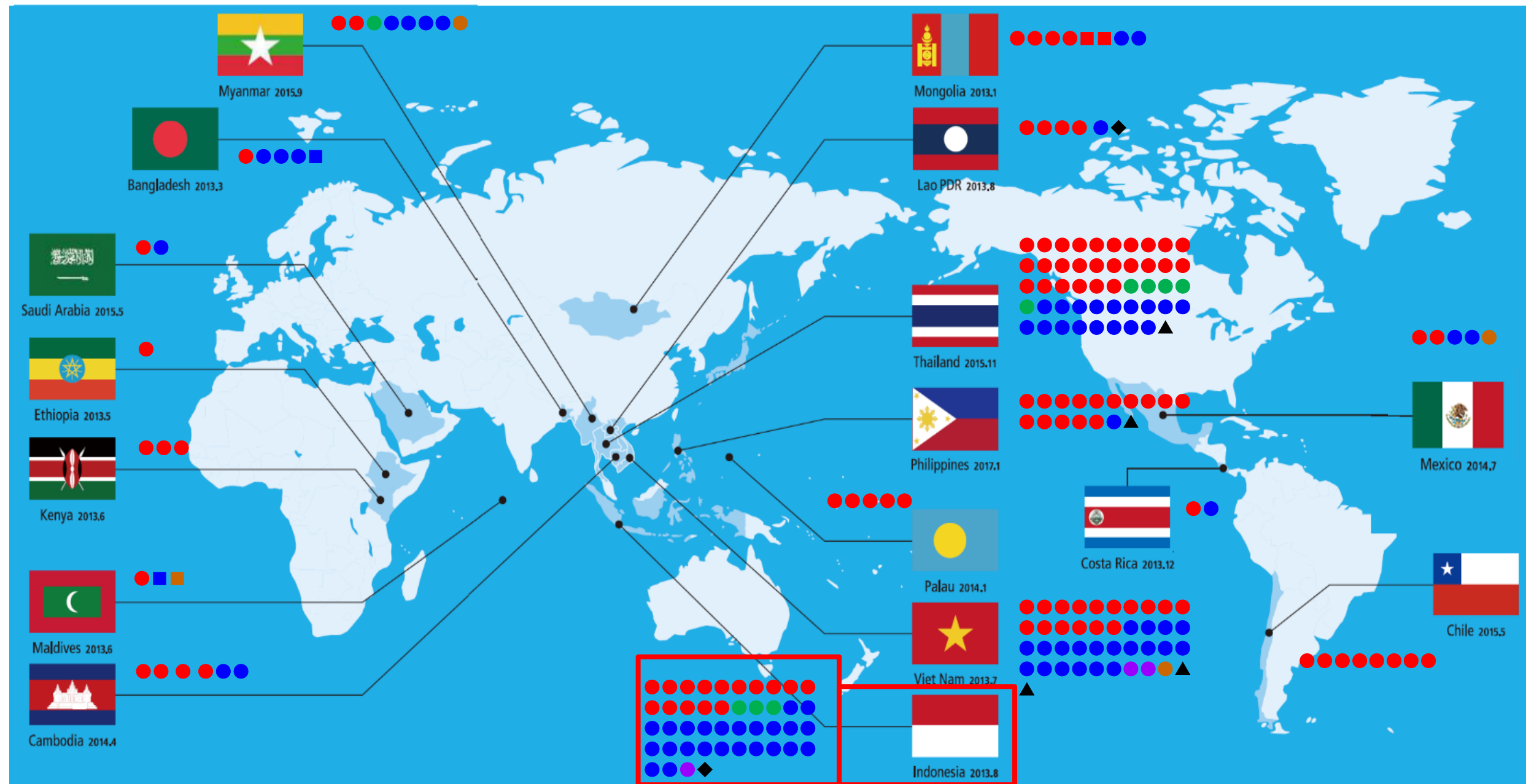


Ministry of the Environment
Government of Japan

Joint Crediting Mechanism (JCM)
Model Project
INDONESIA and JAPAN



JCM THE JOINT CREDITING
MECHANISM

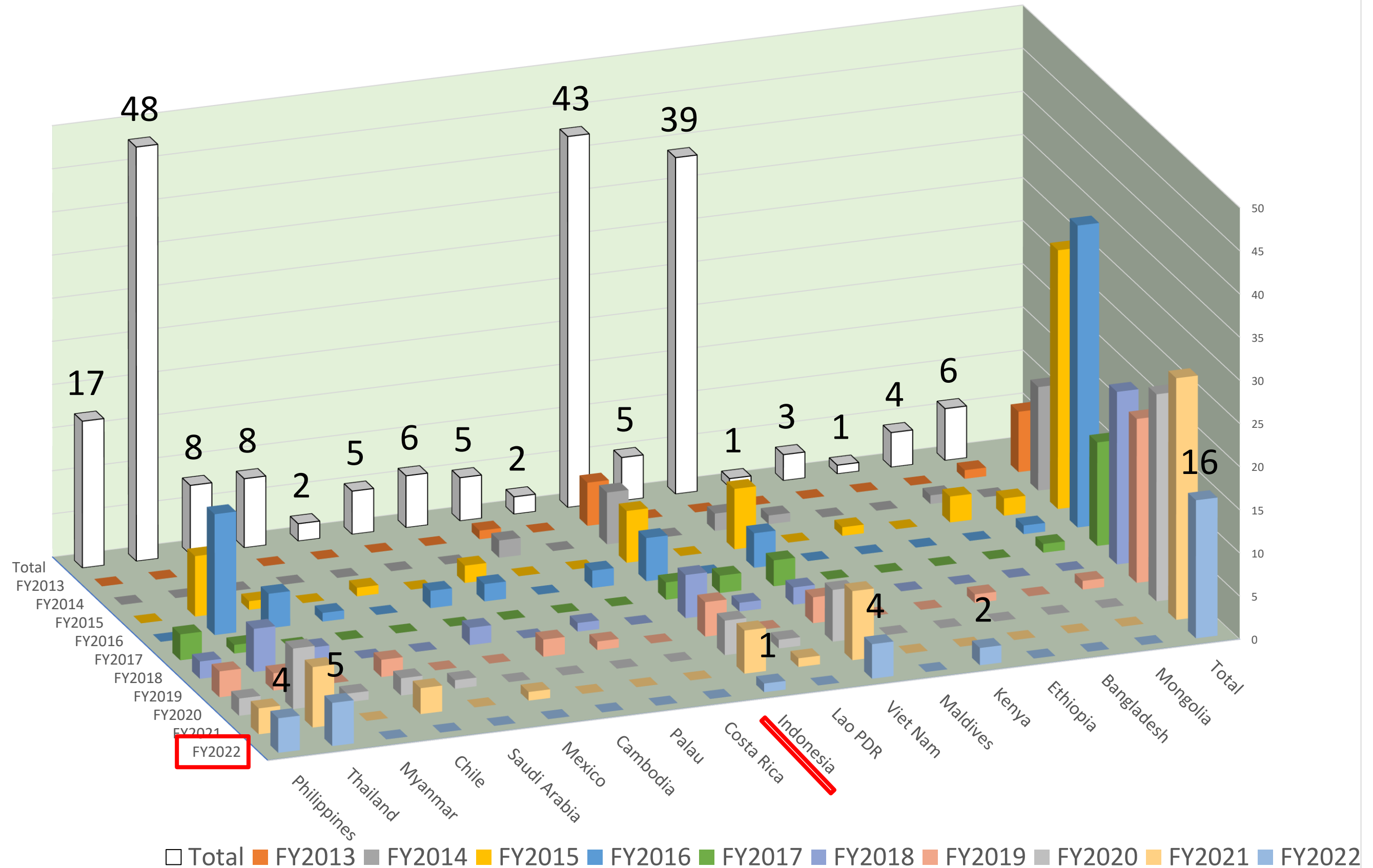


Total 214 projects / 17 countries

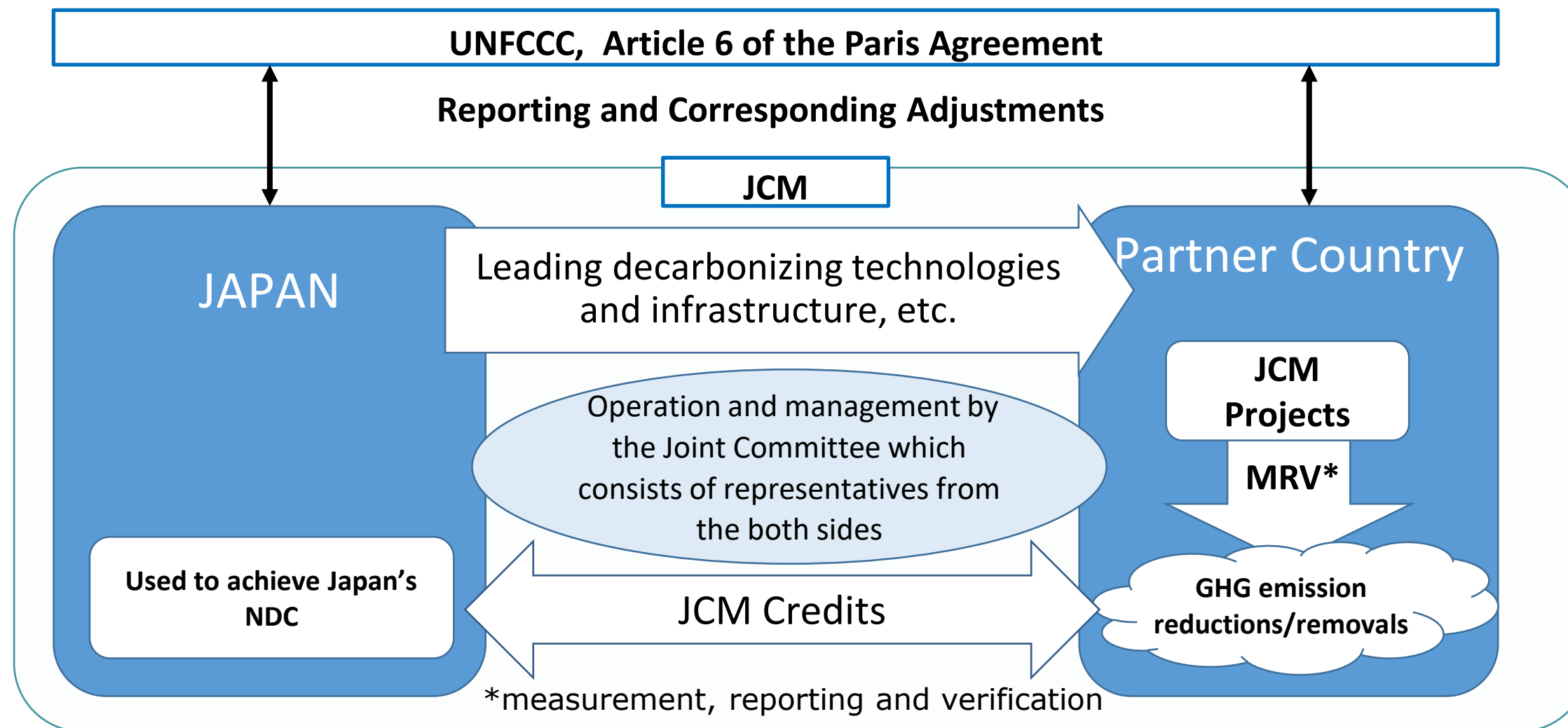
(● Model Project:203, ■ ADB:5, ◆ REDD+:2, ▲ F-gas:4)

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

Model Project by Year and Country



- Facilitate diffusion of leading decarbonizing technologies and infrastructure, etc., thereby contributing to GHG emission reductions or removals and sustainable development in partner countries.
- Contribute to the achievement of both countries' NDCs while ensuring the avoidance of double counting through corresponding adjustments.
- Implement the JCM consistent with the guidance on cooperative approaches, referred to in Article 6, paragraph 2 of the Paris Agreement.



Source: The Ministry of Environment, Japan, June 2022

- Japan has held consultations for the JCM with developing countries since 2011 and has established the JCM with Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand and the Philippines.



Mongolia
Jan. 8, 2013
(Ulaanbaatar)



Bangladesh
Mar. 19, 2013
(Dhaka)



Ethiopia
May 27, 2013
(Addis Ababa)



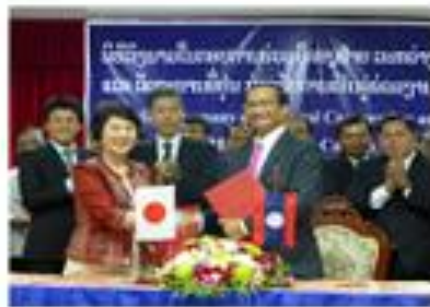
Kenya
Jun. 12, 2013
(Nairobi)



Maldives
Jun. 29, 2013
(Okinawa)



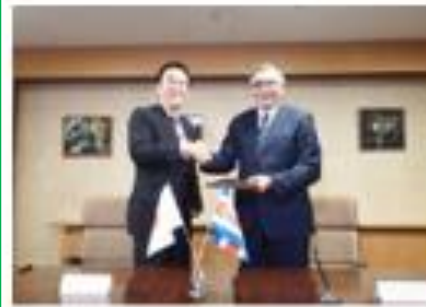
Viet Nam
Jul. 2, 2013
(Hanoi)



Lao PDR
Aug. 7, 2013
(Vientiane)



Indonesia
Aug. 26, 2013
(Jakarta)



Costa Rica
Dec. 9, 2013
(Tokyo)



Palau
Jan. 13, 2014
(Ngerulmud)



Cambodia
Apr. 11, 2014
(Phnom Penh)



Mexico
Jul. 25, 2014
(Mexico City)



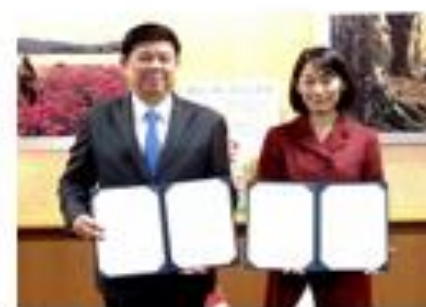
Saudi Arabia
May 13, 2015



Chile
May 26, 2015
(Santiago)



Myanmar
Sep. 16, 2015
(Nay Pyi Taw)



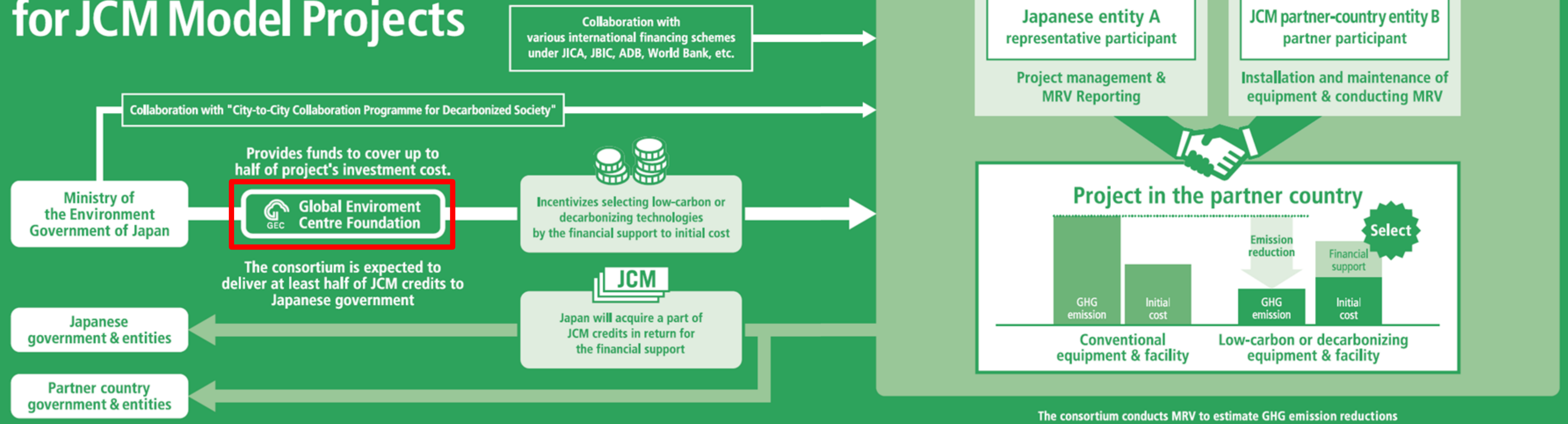
Thailand
Nov. 19, 2015
(Tokyo)



Philippines
Jan. 12, 2017
(Manila)

Source: The Ministry of Environment, Japan,
February 2022

Financing Programme for JCM Model Projects



Development Step

Matching with a Japanese Partner



Development of proposal and submission to GEC



Announcement of preliminary selection result for financing programme for JCM Model Projects



Development of application documents for contract of finance and submission to GEC

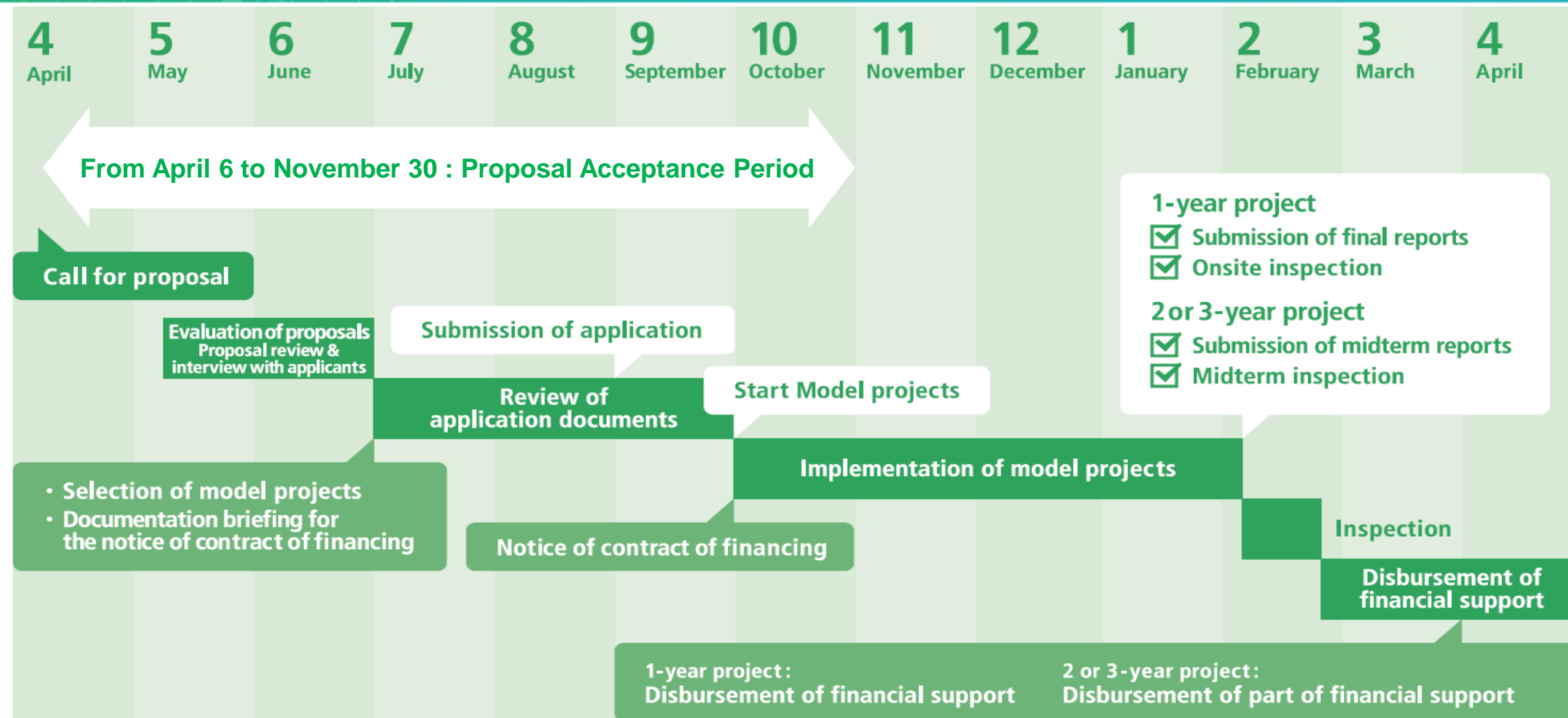


Conclusion of the contract of finance



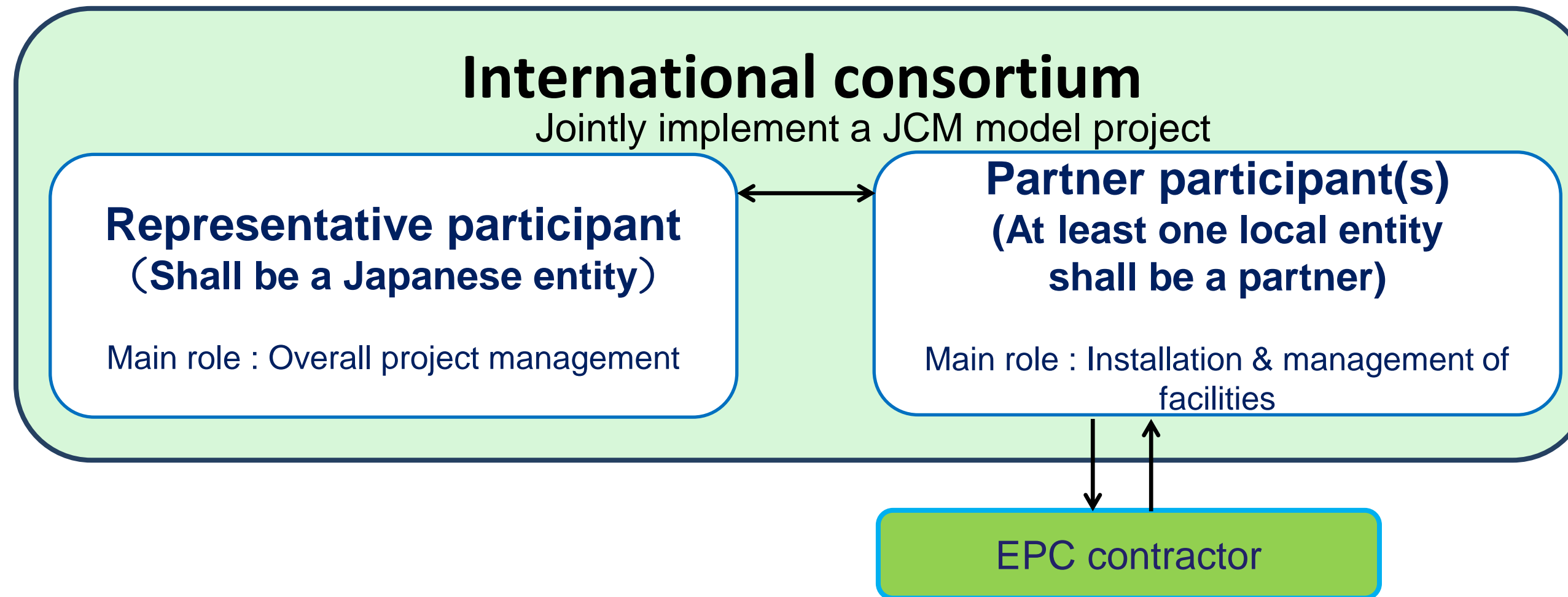
Starting the JCM Model Project

JCM Model Projects Schedule in FY2022



- Prioritize 17 partner countries that have already established the JCM (as of 6 April 2022).
 - Project proposals in the Indo-Pacific region (specifically Asia and Island regions) and African region are also received.
- ◆ Adoption is considered in parallel with bilateral negotiations for new partner countries.

Budget	<p>Approx. USD132million for FY2022 *Applied Exchange Rate JPY130/USD</p> <p>Suggested size of one model project is within USD1.5 million</p>
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	<p>Maximum of 50% and reduce the percentage according to the number of already selected project(s) using a similar technology in each partner country.</p> <p>※ 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.</p>
Cost-effectiveness	<p>Cost-effectiveness of GHG emission reductions is expected to be JPY 4,000/tCO2eq or lower.</p> <p>Details are referred in later slide</p>



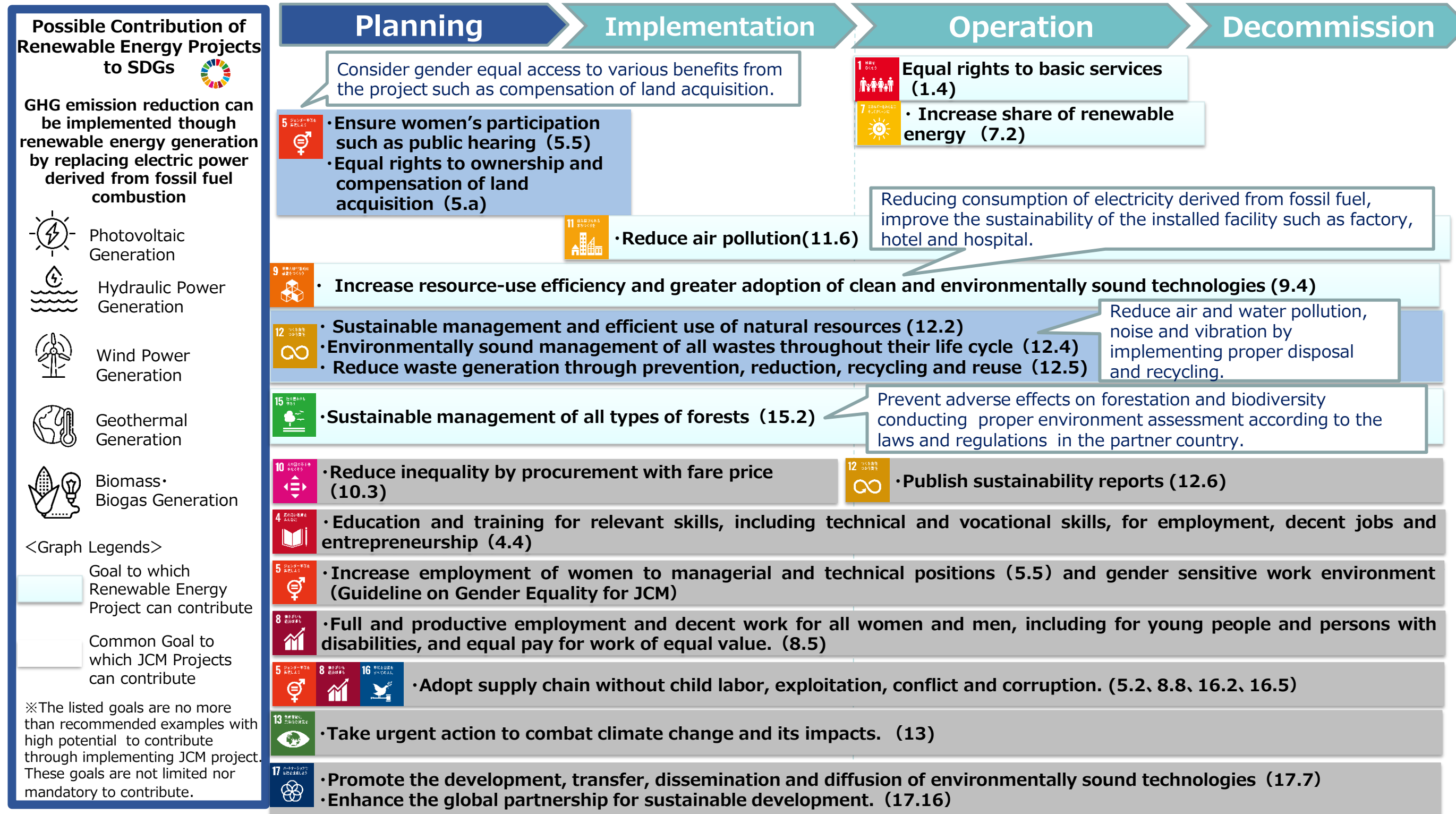
- Consortium must include both an owner and user of facility installed by the model project.

What kind of projects are supported by Financing Programme?

⇒ Excerpt from Guidelines for Submitting Proposals
[\(tentative\)2022_Guidelines_for_Submitting_Proposals.pdf \(gec.jp\)](#)

- (a) Projects that reduce energy-related CO2 emissions with leading decarbonizing technologies in developing countries.
- (b) Projects contribute to realization of SDGs (Sustainable Development Goals) and shall comply with the relevant laws and regulations of the partner country and international practices regarding the environmental and human rights protection.
- (c) Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.





- Implement a project to reduce GHG emissions utilizing leading decarbonizing technologies
- Conduct **Measurement, Reporting and Verification** (MRV) of GHG emission reductions.
- Procedures for the issuance of JCM credits;

(a) Registration as JCM Project

Application for registration should be conducted within 1 year from the start of the operation of the facilities/equipment introduced by the project.

(b) Monitoring

Participants shall conduct monitoring to quantitate the effects of the facilities/equipment on GHG emission reductions based on a MRV methodology approved or expected to be approved by the Joint Committee.

(C) Issuance of JCM Credits

Participants shall request for issuance of JCM credits by using the monitoring results. The issuance includes development of a monitoring report, verification by a TPE, and submission of “JCM Credits Issuance Request” to a JCM Joint Committee.

The Participants shall deliver the issued JCM Credits with the percentage decided by the Ministry of the Environment, Japan to the account of Japanese government.

Categorization by applied technology type and Support

Sector	Technology	Mongo lia MN	Bangla desh BD	Ethiopi a ET	Kenya KE	Maldiv es MV	Viet Nam VN	Lao PDR LA	Indon esia ID	Costa Rica CR	Palau PW	Camb odia KH	Mexico MX	Saudi Arabia SA	Chile CL	Myan mar MM	Thaila nd TH	Philipp ine PH	
1. Energy Efficiency	Air Conditioning System						4		1								1	1	7
	Chiller		2				5		4	1		1					5		18
	Refrigerator								1							2	4		7
	Absorption Chiller Using Waste Heat								2								2		4
	Swirling Induction Type Air-conditioning System																1		1
	Fridge and Freezer Showcase								1								1		2
	Boiler	2					2		3				1			2	3		13
	Heat Medium Boiler								1										1
	Double Bundle-type Heat Pump						1		1								1		3
	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								1		3
	LED Lighting with Dimming System						2		1			1							4
	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
	Autoclave								2										2
	Multi-effect Distillation System												1						1
	Injection Modling Machine								1										1
2. Renewable Energy	Solar Power Plant	4	1	1	1	1	9	4	4	1	5	4	2	1	7	1	20	7	73
	Solar Power Plant with Battery								1								1		2
	Small Hydropower Plant								10									2	12
	Wind Power Plant																	1	1
	Geothermal Power (Binary)																	1	1
	Geothermal Power (Flush)																	1	1
	Biomass Power Plant								1			1			1	1			4
	Biogas Power Plant																	1	1
	Biomass 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			2
	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 : 49	6	4	1	1	1	40	5	45	3	5	8	5	2	8	11	53	15	213

Maximum Percentage of Financial Support

Number of selected project(s) using a similar technology in each country	Percentage of financial support
0	Up to 50%
1 to 3	Up to 40%
More than 3	Up to 30%

- 10% flat for JCM Eco Lease Scheme

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.

Solar power projects in Viet Nam, Chile, Palau, and Philippine and chiller projects in Viet Nam and Thailand

JPY2,500/tCO₂equivalent

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

Hydropower projects in Indonesia

JPY2,000/tCO₂equivalent

In case the number of similar technological Projects in each country is 20 or more.

Solar power projects in Thailand

NOTE: Cost effectiveness guide for a solar power project (except Thailand) : 2,500JPY/tCo2eq
Hydropower project : 500JPY/tCo2eq

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.

★JCM Eco Lease scheme: Monitoring period is equal to the leasing period (Minimum five years)

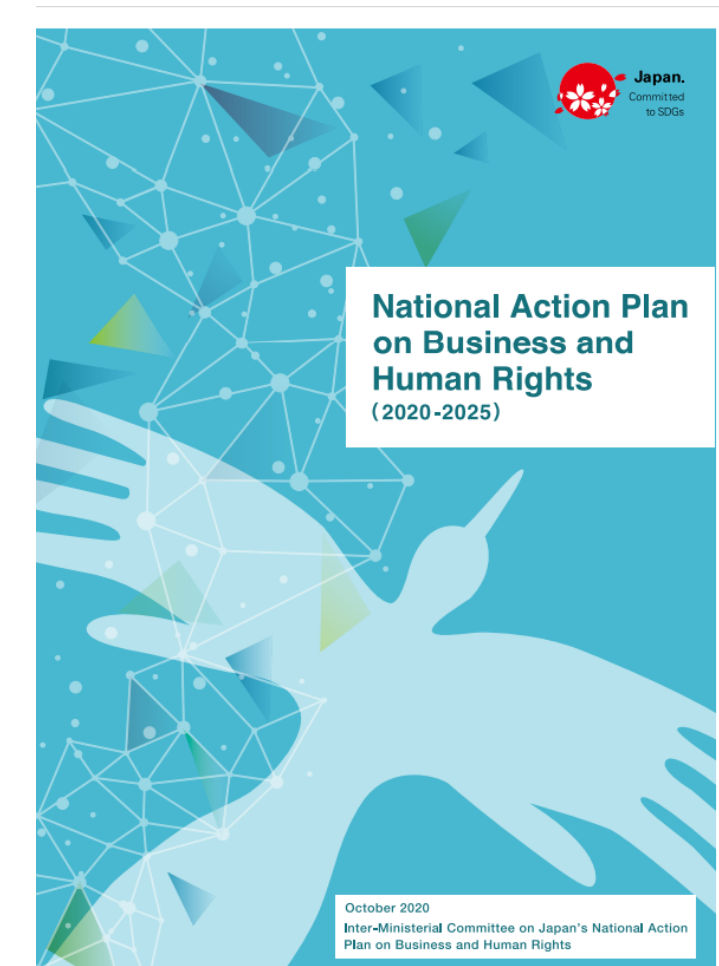
Guideline

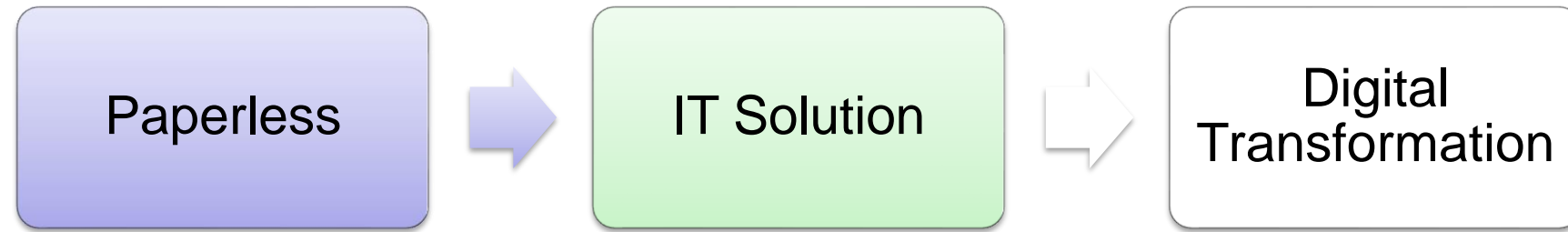
for Submitting
JCM model project proposal

Eligibility Criteria # 13

- Is the company taking the best possible measures to respect human rights (introduction of human rights due diligence process, dialogue with stakeholders, etc.) under its own responsibility in accordance with the Action Plan on Business and Human Rights (2020-2025) (the Inter-Ministerial Committee for Japan's National Action Plan on Business and Human Rights in October 2020)?

<https://www.mofa.go.jp/files/100173319.pdf>





事業種別 *

申請カテゴリ *

申込年度 *

採択回

受理日

代表事業者 *

取得 クリア

案件No. ?

識別番号

64文字以下

パートナー国 *

分野 ?

技術分類

技術

事業名(日本語名称) ?

事業名(英語名称)

GEC主担当

GEC副担当

事業者情報

事業概要

導入技術

事業費

資金計画

財務情報

GHG

ヒアリング

添付資料

事業者情報

国際コンソーシアム名 ?

共同事業者

共同事業者

現職法人

国際コンソーシアム

代表事業者との関係性

取得 クリア

担当者

代表事業者責任者

No.	氏名(責任者)	部署名	役職	電話番号	E-mail	所在地
<input type="checkbox"/>	取得 クリア					

代表事業者窓口

No.	氏名(窓口)	部署名	役職	電話番号	E-mail	所在地
<input type="checkbox"/>	取得 クリア					

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Partner Country	Representative Participant	Project Name	Sector	Estimated GHG Reduction tCO2/year)
Kenya	AAIC Japan Co., Ltd.	Introduction of 3.1MW Rooftop Solar Power System to Food Processing Facilities	Renewable Energy	2,454
Kenya	AAIC Japan Co., Ltd.	Introduction of 2.3MW Rooftop Solar Power System to Hatchery, Meat Processing and Battery Facilities	Renewable Energy	1,735
Vietnam	eREX Co.,Ltd.	20MW Biomass Power Plant Project in Hau Giang Province	Renewable Energy	36,814
Vietnam	Kanematsu KGK Corp.	16MW Mini Hydro Power Plant Project in Binh Thuan Province	Renewable Energy	16,910
Vietnam	The Kansai Electric Power Company, Incorporated	Energy Supply Project by 7.9MW Rooftop Solar Power System to Automotive and Garment Factories	Renewable Energy	2,634
Vietnam	Sumitomo Mitsui Trust Panasonic Finance Co., Ltd.	Introduction of 0.4MW Rooftop Solar Power System to Aluminum Wheel Manufacturing Factory (JCM Eco Lease Scheme)	Renewable Energy	156
Indonesia	DIC Corporation	Introduction of High-efficiency Once-through Boiler System to Chemical Factory	Energy Efficiency Improvement	1,652
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of Gas Co-generation System and 22MW Rooftop Solar Power System to Tire Factory	Energy Efficiency Improvement/ Renewable Energy	31,652
Thailand	AGC Inc.	Introduction of ORC Waste Heat Recovery Power Generation System to Flat Glass Factory	Effective Use of Energy	7,845
Thailand	The Kansai Electric Power Company, Incorporated	Energy Supply Project by 4.3MW Rooftop Solar Power System to Parts and Tools Factories	Renewable Energy	1,926
Thailand	Osaka Gas Co., Ltd.	Energy Supply Project by 2.9MW Rooftop Solar Power System to Metal Factories and Refrigerating Warehouse	Renewable Energy	1,150
Thailand	Marubeni Corporation	Energy Supply Project by 1MW Rooftop Solar Power Project for Metal Recycling and Automotive Parts Factories	Renewable Energy	403
Philippines	JGC CORPORATION	28MW Binary Power Generation Project at Mahanagdong Geothermal Power Plant	Renewable Energy	76,220
Philippines	Toyota Tsusho Corporation	14.5MW Mini Hydro Power Plant Project in Siguil River in Mindanao	Renewable Energy	47,349
Philippines	Marubeni Corporation	Energy Supply Project by 9MW Solar Power System to Ceramic Factory and Cement Plant	Renewable Energy	5,957
Philippines	Tokyo Century Corporation	Introduction of 0.8MW Solar Power System to Aluminum Products, Packaging Materials and Automotive Parts Factories (JCM Eco Lease Scheme)	Renewable Energy	544

Newly selected Representative Participant

Introduction of High-efficiency Once-through Boiler System to Chemical Factory PP (Japan): DIC Corporation, PP (Indonesia): PT. DIC GRAPHICS

Outline of GHG Mitigation Activity

This project reduces energy consumption and greenhouse gas (GHG) emissions by installing natural gas-fired high-efficiency once-through boiler system in the factory where coal-fired boiler mainly has been used.

Coal-fired boiler

Natural Gas-fired high-efficiency once-through Boiler

Expected GHG Emission Reductions

1,652 tCO₂/year

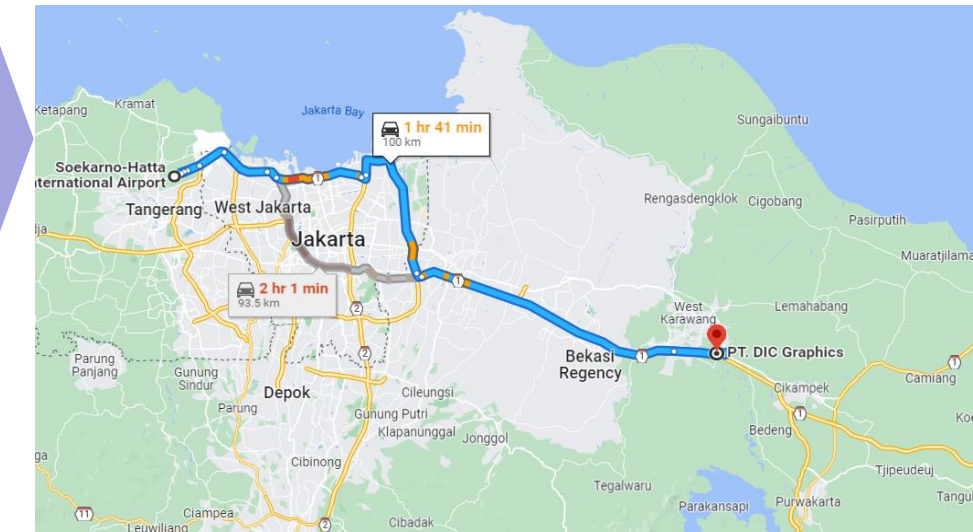
$$= [(Reference\ fuel\ consumptions) - (Project\ fuel\ consumptions)] \times Emission\ factor\ (EF)$$

Sites of Project



Map Data ©2022 Google

It is located approximately 90 km southeast of Jakarta Soekarno-Hatta Airport.



Map Data ©2022 Google

Partner Country	Representative Participant	Project Name	Sector	Estimated GHG Reduction (tCO2/year)
Vietnam	JFE Engineering Corporation	Waste to Energy Project in Bac Ninh Province	Waste handling and disposal	41,804
Vietnam	Sharp Energy Solutions 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	197
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	1,809
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	47,596
Philippines	Mizuho-Toshiba Leasing Company Ltd.	Tanawon 20MW Flash Geothermal Power Plant Project	Renewable Energy	38,312
Vietnam	Marubeni Corporation	Introduction of 12MW Rooftop Solar Power System to Commercial and Industrial Customers	Renewable Energy	4,975
Vietnam	Osaka Gas Co., Ltd.	Introduction of 9.8MW Rooftop Solar Power System in Industrial Park	Renewable Energy	4,312
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	984
Vietnam	Tokyu Corporation	Introduction of High Efficiency Chiller and High Efficiency LED Lighting with Dimming Function to Shopping Center	Energy Efficiency Improvement	726

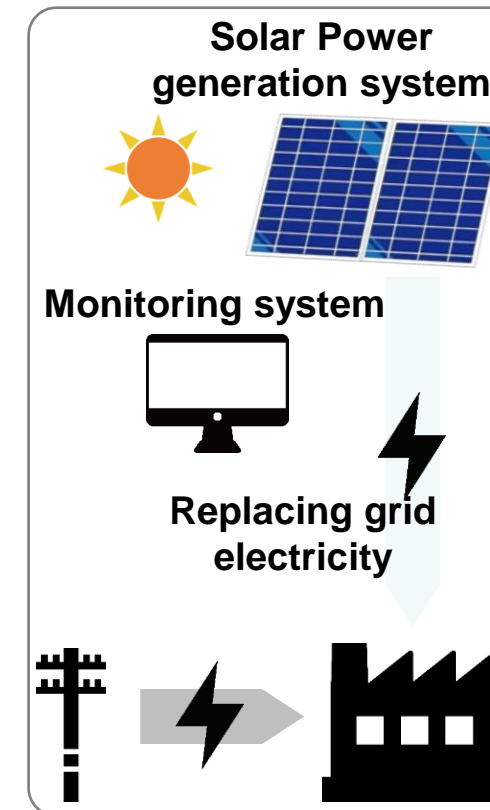
Partner Country	Representative Participant	Project Name	Sector	Estimated GHG Reduction (tCO2/year)
Lao PDR	Liberal Solution Co., Ltd.	19MW Solar Power Project in Xiangkhouang Province	Renewable Energy	7,861
Indonesia	WWS-JAPAN Co.	6MW Mini Hydro Power Plant Project in Besay River, Lampung Province	Renewable Energy	20,307
Indonesia	Otsuka Pharmaceutical Factory, Inc.	Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory 2	Energy Efficiency Improvement	8,796
Indonesia	WWS-JAPAN Co.	2.3 MW Mini Hydro Power Plant Project in Melesom River, Lampung Province	Renewable Energy	6,787
Chile	Eurus Energy Holdings Corporation	9MW Solar Power Project in Casablanca, Valparaiso Region	Renewable Energy	8,232
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	14,194
Thailand	Sharp Energy Solutions 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	947
Thailand	Tokyo Century Corporation	Introduction of 1.3MW Solar Power System to Food Factories (JCM Eco Lease Scheme)	Renewable Energy	603
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

Introduction of 3.3MW Rooftop Solar Power System in Woodworking Factories PP (Japan): Sumitomo Forestry Co., Ltd., PP (Indonesia): PT. AST INDONESIA

Outline of GHG Mitigation Activity

A total of 3.3MW of roof-mounted captive solar power generation system is installed at two woodworking factories located in an industrial park in the suburbs of Semarang city. The generated electricity replaces a portion of grid electricity to reduce greenhouse gas (GHG) emissions.

The project is being implemented as part of the Sumitomo Forestry Group's efforts to reduce GHG emissions based on SBT (Science Based Targets) and to introduce renewable energy in line with the RE100 target. It also contributes to the achievement of country's renewable energy introduction target of 23% by 2025.



Expected GHG Emission Reductions

2,396 tCO₂/year

= (Reference CO₂ emissions)
- (Project CO₂ emissions)

• Reference CO₂ emissions
= (Quantity of the electricity generated by the project) [MWh/year]

× Emission factor [tCO₂/MWh]

• Project CO₂ emissions
= 0 [tCO₂/year]

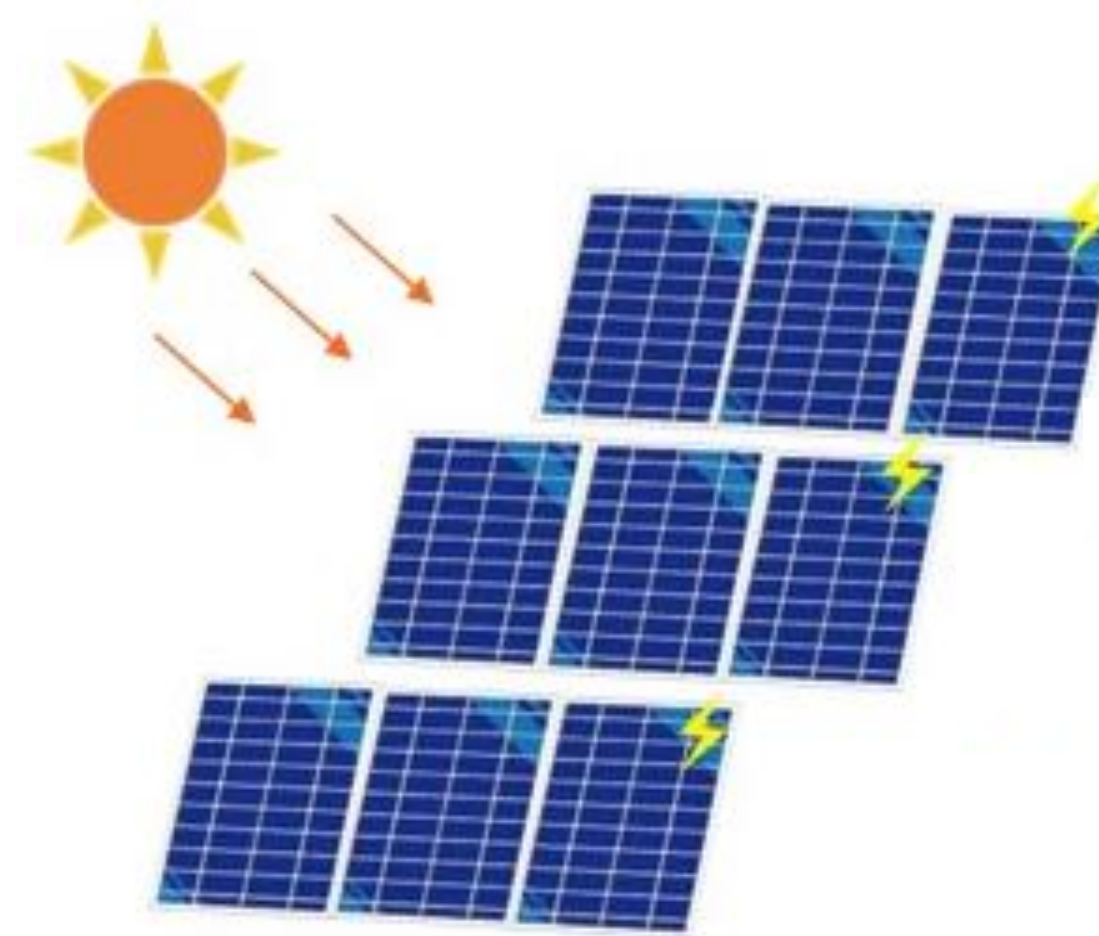
Sites of Project



Define selection base for
Solar Power technology

Solar Power Module

Solar Power Plant with
Battery



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

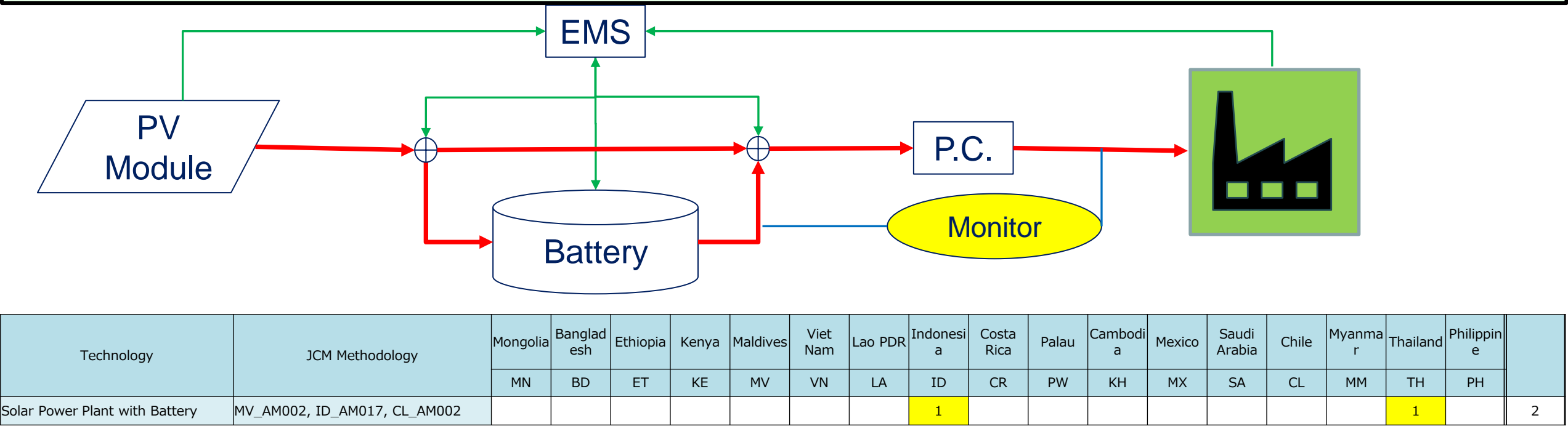
Technology	JCM Methodology	Mongolia	Banglad esh	Ethiopia	Kenya	Maldives	Viet Nam	Lao PDR	Indonesi a	Costa Rica	Palau	Cambodi a	Mexico	Saudi Arabia	Chile	Myanma r	Thailand	Philippin e	
		MN	BD	ET	KE	MV	VN	LA	ID	CR	PW	KH	MX	SA	CL	MM	TH	PH	
Solar Power Plant	MN_AM003, BD_AM002, KE_AM002, MV_AM001, VN_AM007, LA_AM002, ID_AM013, CR_AM001, PW_AM001, KH_AM002, MX_AM001, CL_AM001, TH_AM001, PH_AM002	4	1	1	1	1	9	4	4	1	5	4	2	1	7	1	20	7	73

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



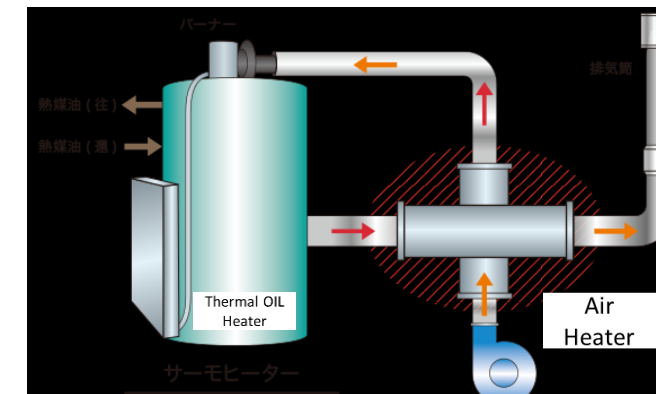
Introduction of High-Efficiency Thermal Oil Heater System in Chemical Factory PP (Japan): FUMAKILLA LIMITED, PP (Indonesia): PT FUMAKILLA NOMOS

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.

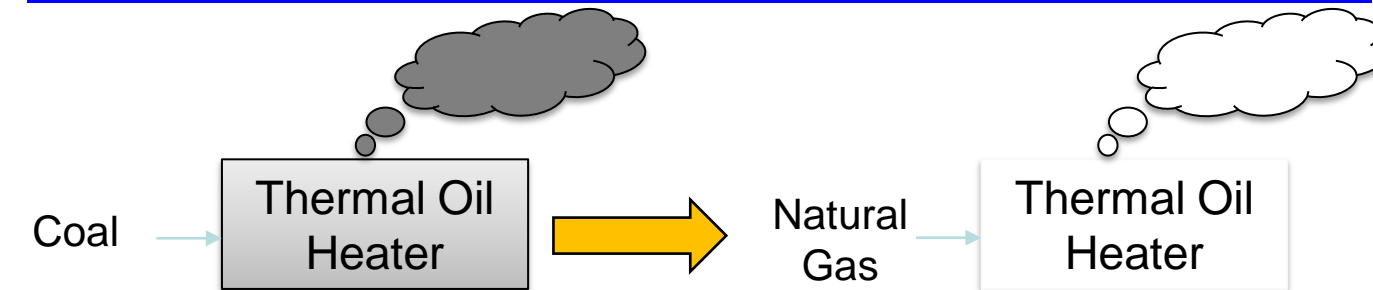
By replacing the coal-fired system with the natural gas-fired system, concerns about the corrosion of pre air heater will be diminished, and the equipment is also expected to be used with high efficiency in the long run.

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



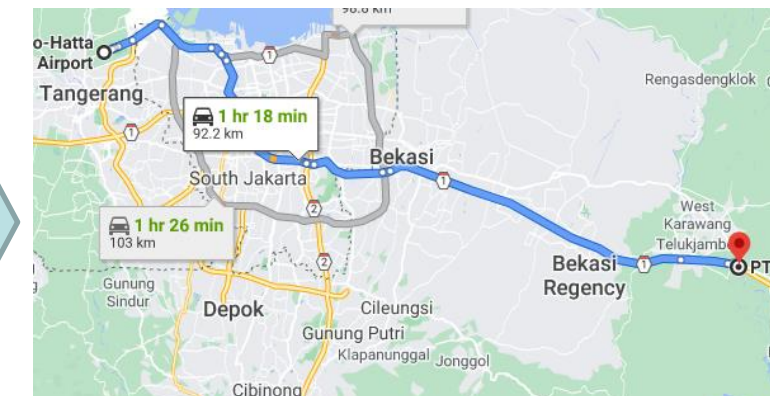
Expected GHG Emission Reductions

1,942 tCO₂ /year

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

Sites of Project

Approximately 100km southeast of Soekarno-Hatta International Airport



Map data©2021Google

6MW Mini Hydro Power Plant Project in Besay River, Lampung Province

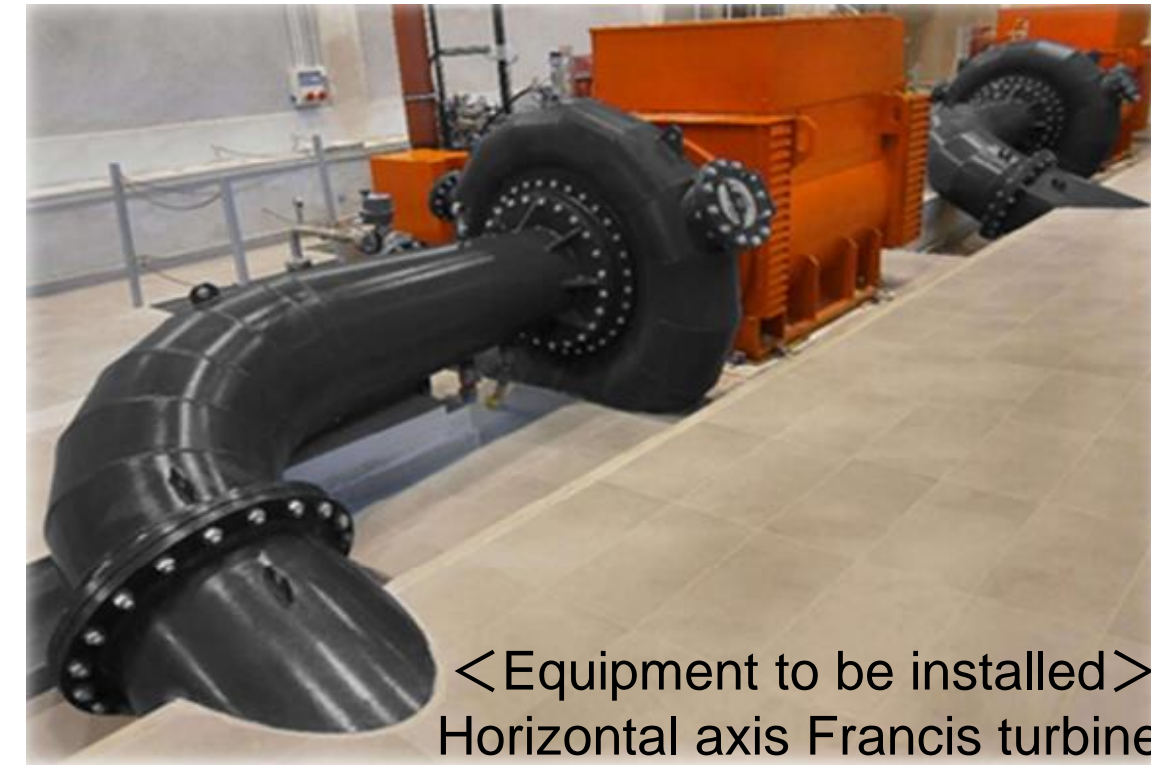
PP (Japan): WWS-JAPAN Co., PP (Indonesia): PT Adimitra Energi Hidro、PT. Adimitra Kharisma

Outline of GHG Mitigation Activity

The project aims to increase the electrification rate of the province by renewable energy and contribute to the reduction of greenhouse gas (GHG) emissions by installing a 6MW (3MW x 2 units)run-of-river type small hydro system in the Besay River, Lampung Province, Sumatra.

The project contributes to the achievement of Indonesia's national energy policy target of increasing the share of renewable energy to at least 23% by 2025.

The project also creates jobs in the Lampung and enables Indonesia to continue to operate the project independently over the long term.



<Equipment to be installed>
Horizontal axis Francis turbine

Expected GHG Emission Reductions

20,307 tCO₂ /year

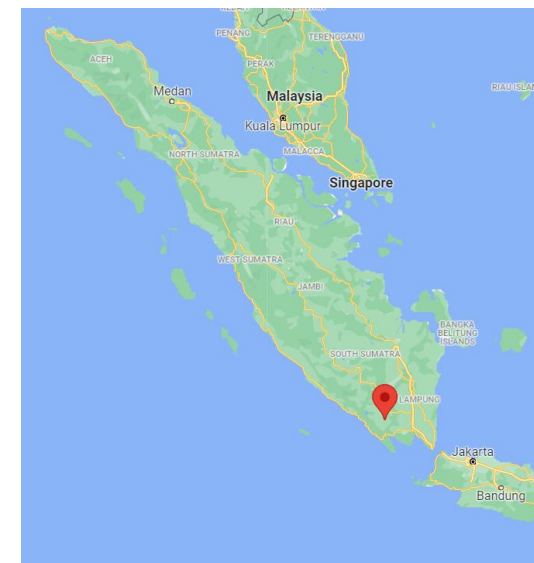
= (Reference CO₂ emissions)
- (Project CO₂ emissions)

- Reference CO₂ emissions
= (Quantity of the electricity generated by the project)
42,573 [MWh/year]

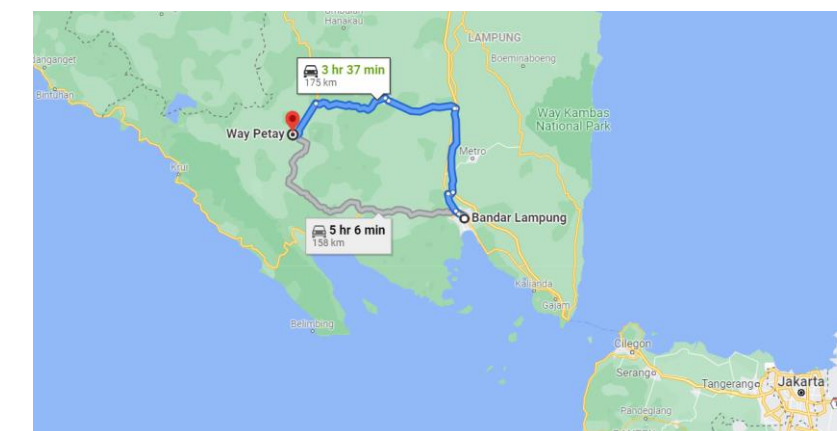
× Emission factor 0.477 [tCO₂/MWh]

- Project CO₂ emissions
= 0 [tCO₂/year]

Sites of Project



Approx. 175km northwest of Bandar Lampung, the capital of Lampung Province



Map Data ©2021 Google

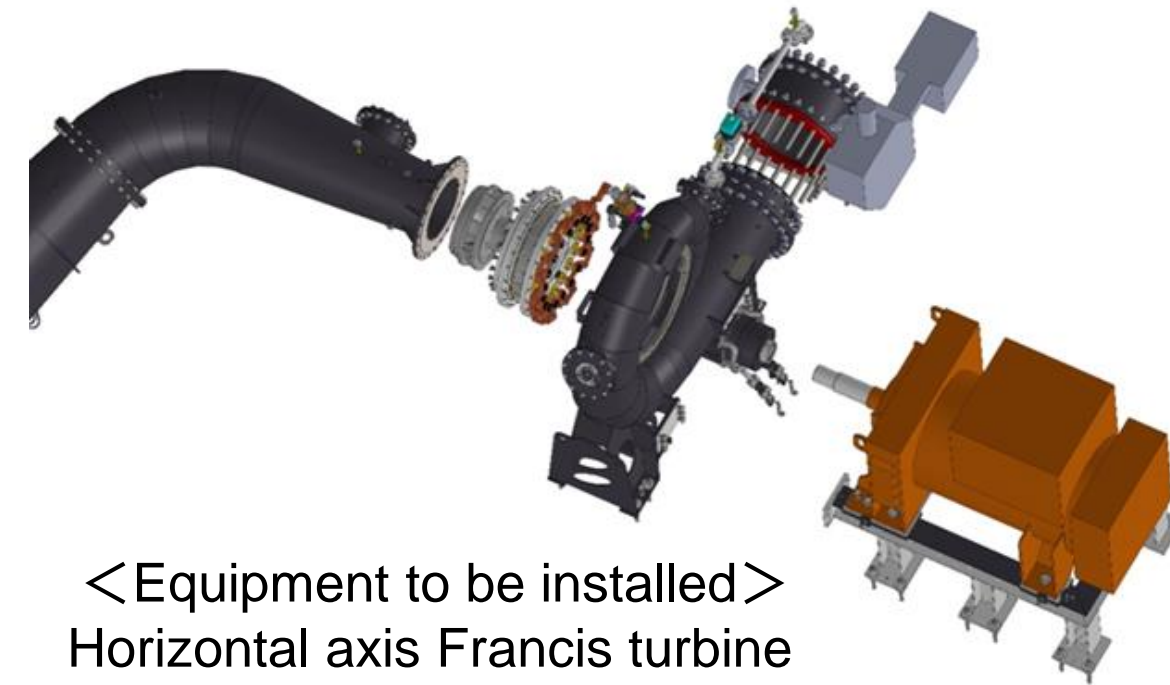
2.3MW Mini Hydro Power Plant Project in Melesom River, Lampung Province

PP (Japan): WWS-JAPAN Co., PP (Indonesia): PT Graha Hidro Nusantara, PT. Adimitra Kharisma

Outline of GHG Mitigation Activity

The project aims to increase the electrification rate of the province by renewable energy and contribute to the reduction of greenhouse gas (GHG) emissions by installing a 2.3MW (1.15MW x 2 units) run-of-river type small hydro system in the Melesom River, Lampung Province, Sumatra.

The project contributes to the achievement of Indonesia's national energy policy target of increasing the share of renewable energy to at least 23% by 2025. The project also creates jobs in the Lampung and enables Indonesia to continue to operate the project independently over the long term.



Expected GHG Emission Reductions

6,787 tCO₂ /year

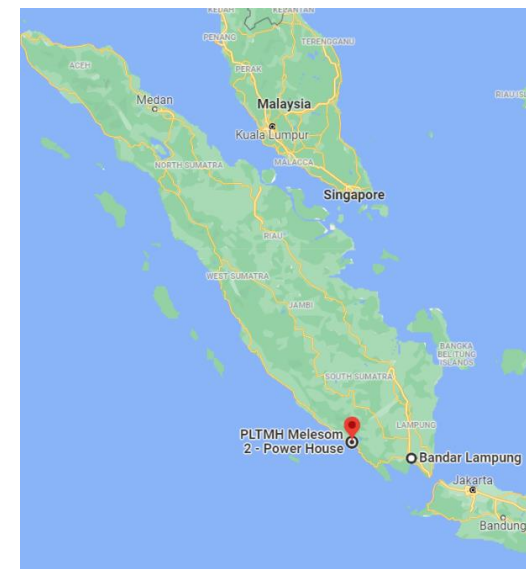
= (Reference CO₂ emissions)
- (Project CO₂ emissions)

▪ Reference CO₂ emissions
= (Quantity of the electricity generated by the project)
14,229 [MWh/year]

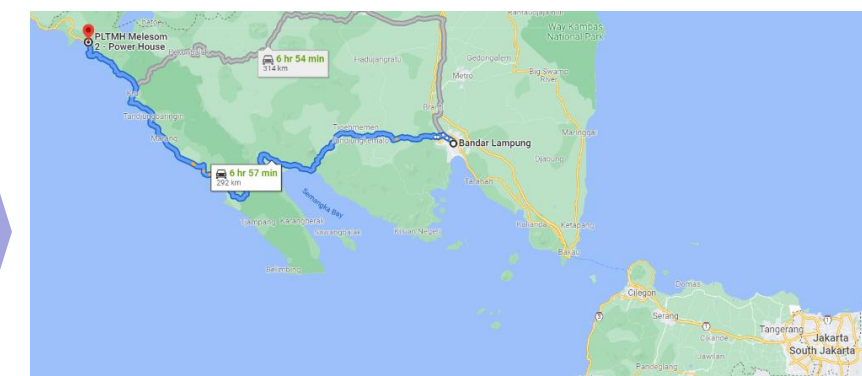
× Emission factor 0.477 [tCO₂/MWh]

▪ Project CO₂ emissions
= 0 [tCO₂/year]

Sites of Project



292km northwest of Bandar Lampung,
the capital of Lampung Province



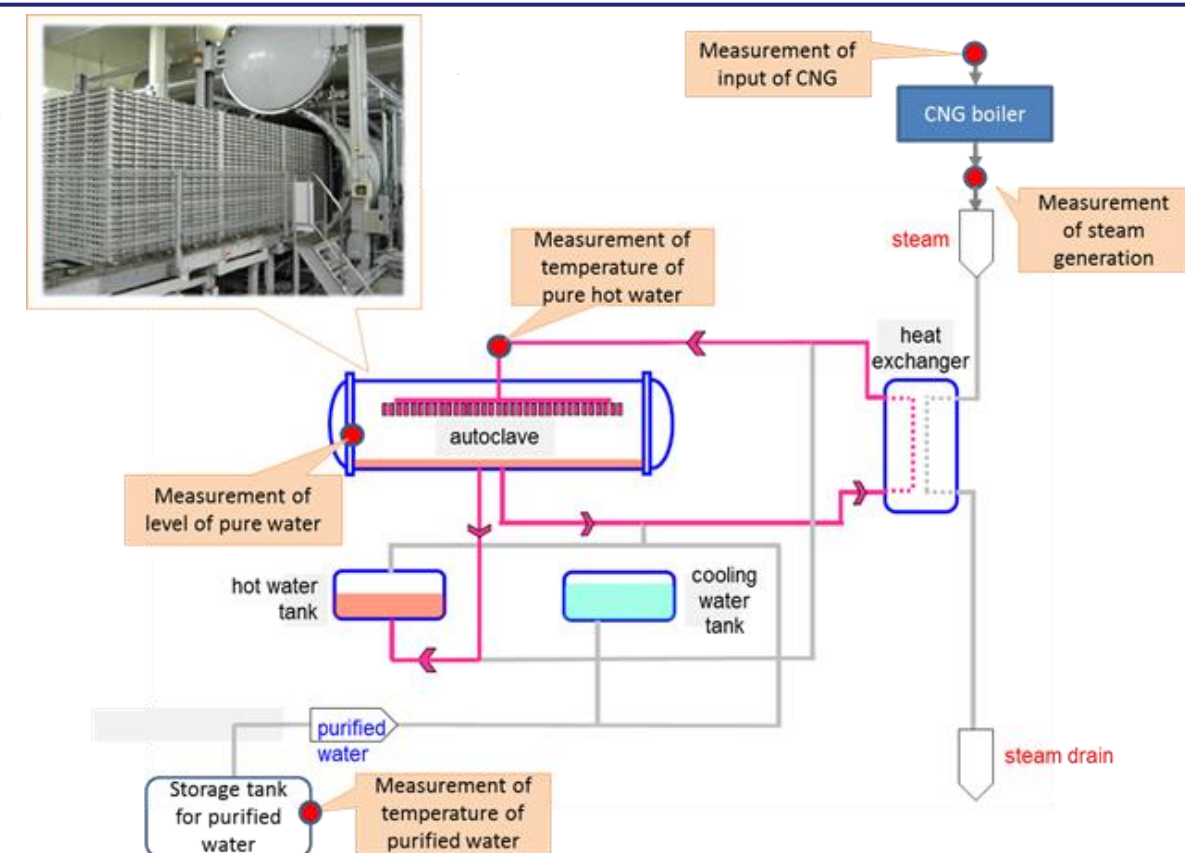
Map Data ©2021 Google

Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory 2 PP (Japan):Otsuka Pharmaceutical Factory, Inc. PP (Indonesia):PT. Otsuka Indonesia

Outline of GHG Mitigation Activity

At a new infusion manufacturing factory in the existing infusion manufacturing base of PT. Otsuka Indonesia under the Otsuka Group, a new type of high efficiency autoclave, which fulfills the Good Manufacturing Practice (GMP) and realizes energy and resource saving, is introduced to contribute to the solution of global environmental issues as well as to assure the safety of pharmaceutical products.

Since the hot water to be injected into the autoclave is maintained at a high temperature, both the amount of steam charged in a batch unit and consumption of natural gas (CNG) required for steam generation are reduced. In addition, pure water used in the sterilization process is reused, so that the amount of pure water is also greatly saved.



Expected GHG Emission Reductions

8,796 tCO₂/year

= (Reference CNG consumption volume
– project CNG consumption volume) X Emission factor of CNG.

Sites of Project



Approx. 70km south of JUANDA International airport



Map data©2021 Google

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- JCM Model Projects Overview

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- Selection in 2021 and 2022

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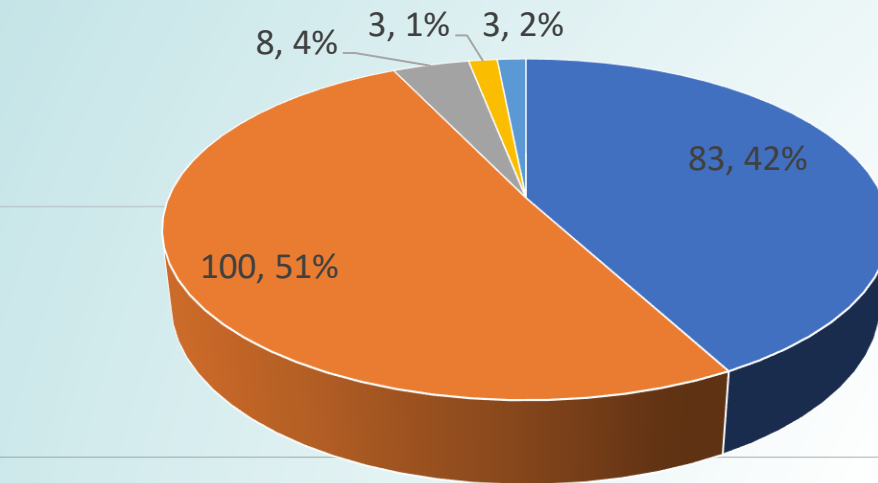
- Project Trend

4

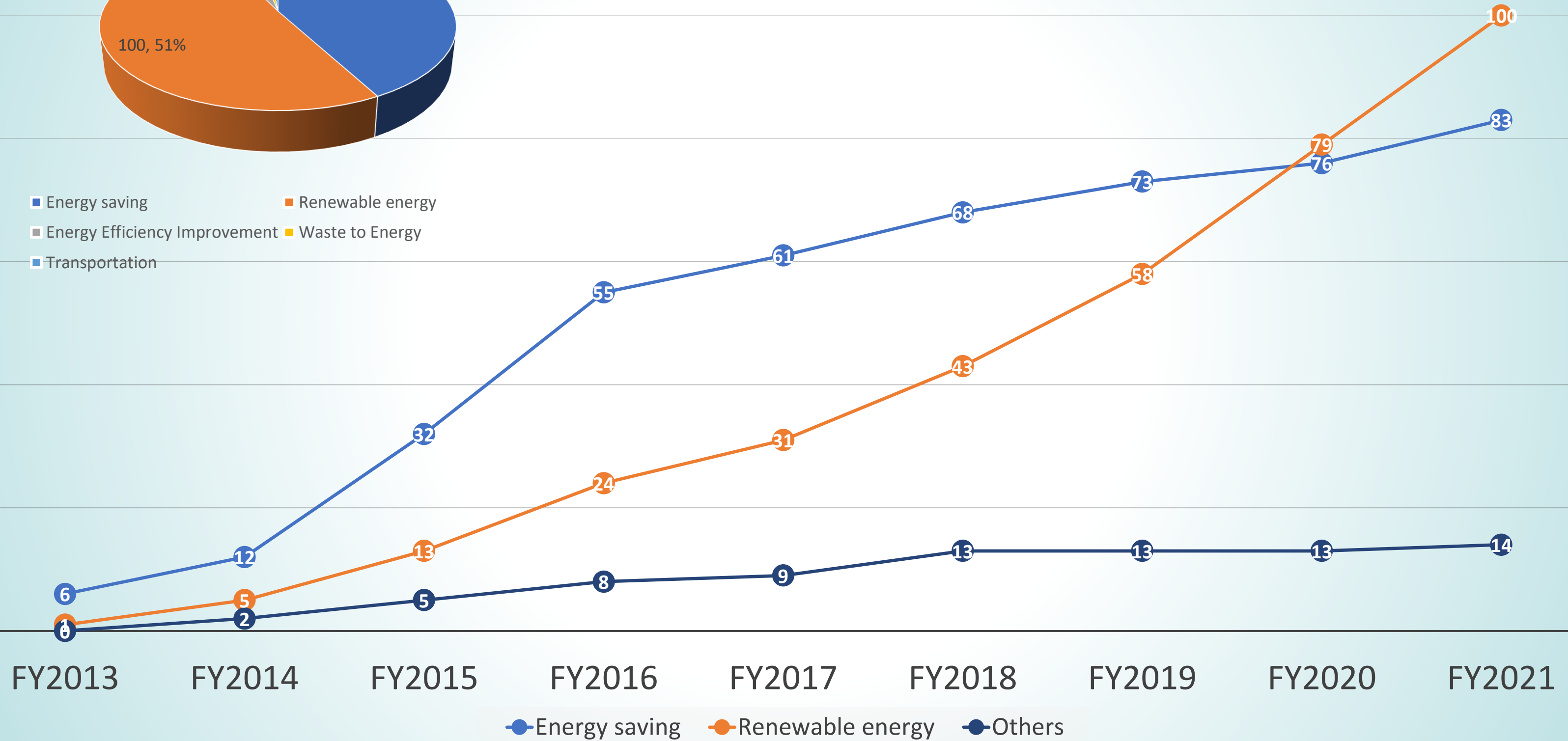
- Trend in Indonesia

5

- Conclusion

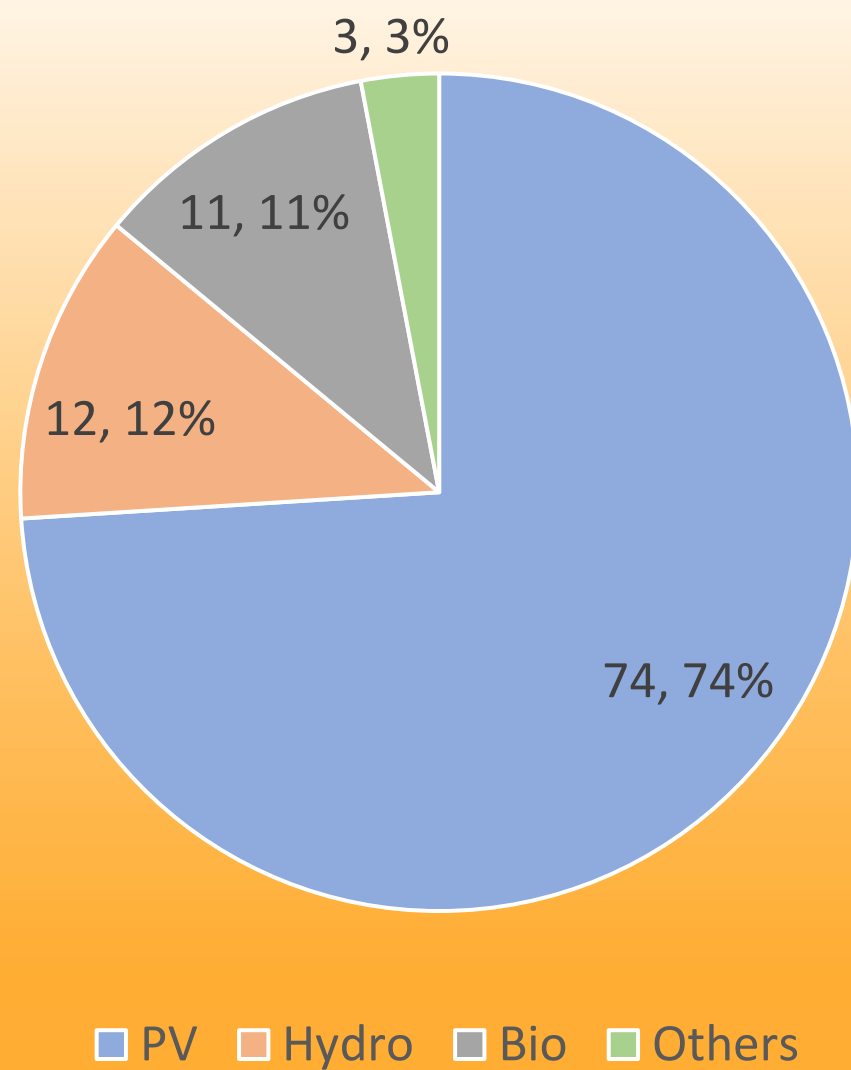


■ Energy saving
 ■ Renewable energy
 ■ Energy Efficiency Improvement
 ■ Waste to Energy
 ■ Transportation

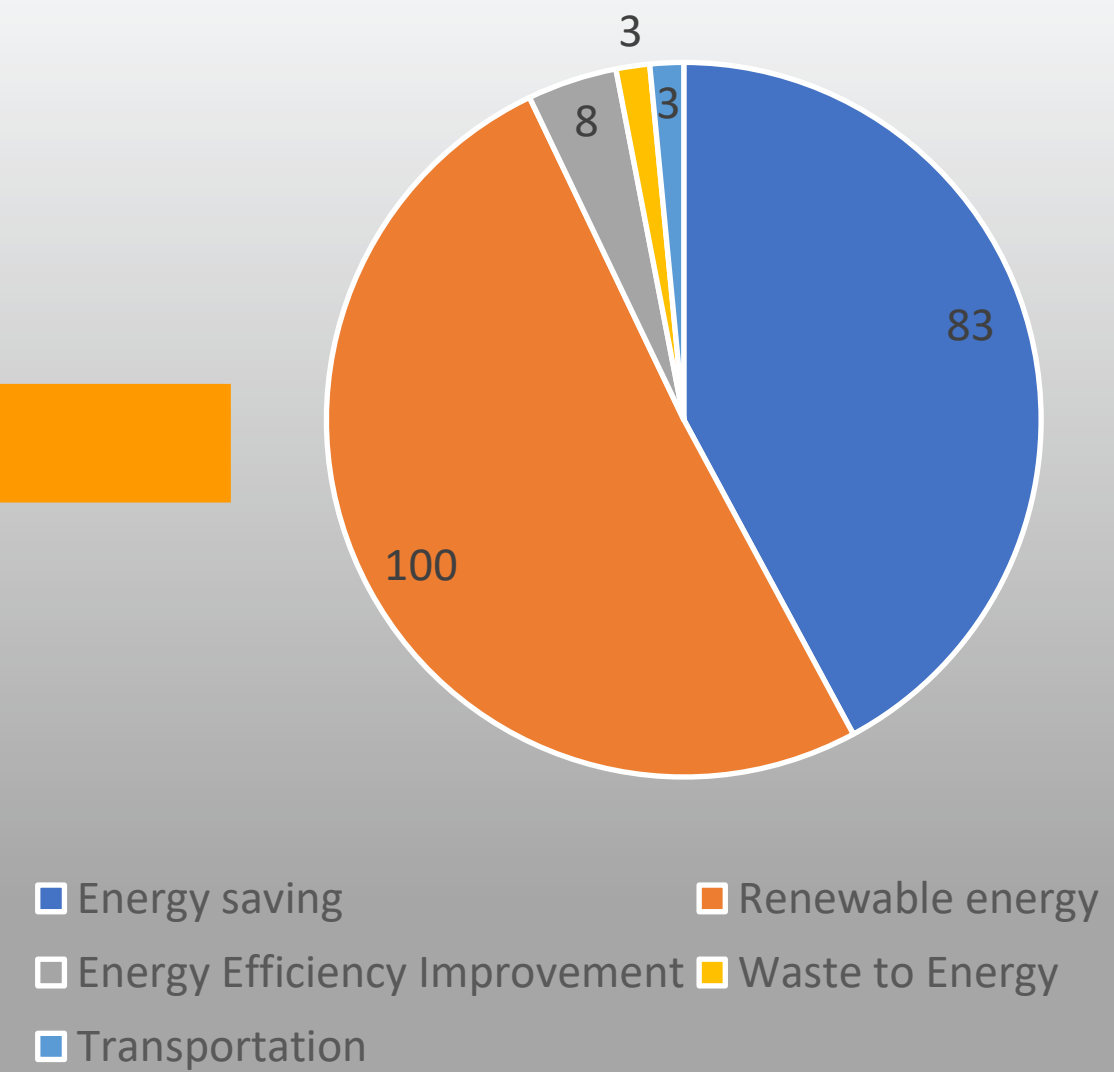


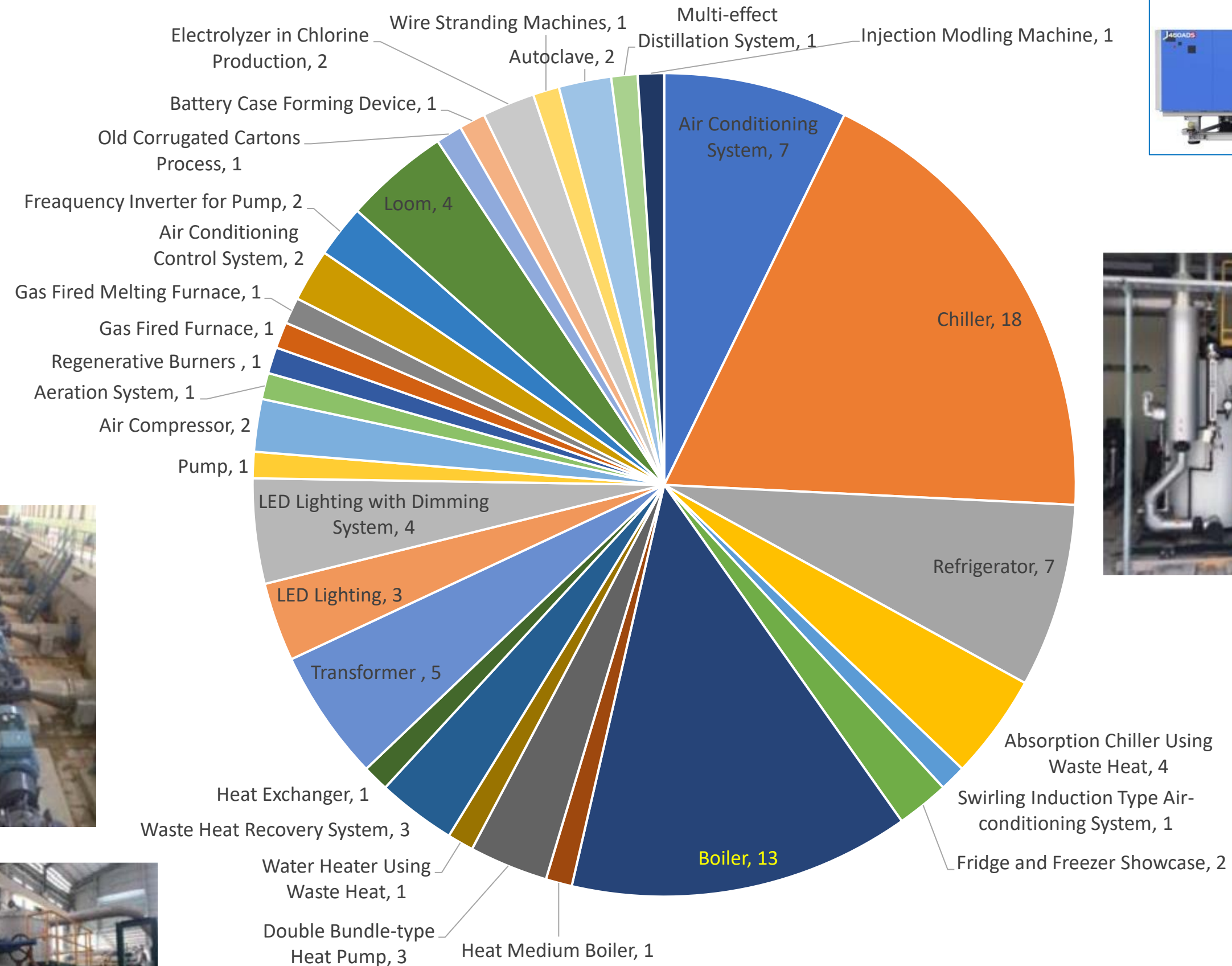
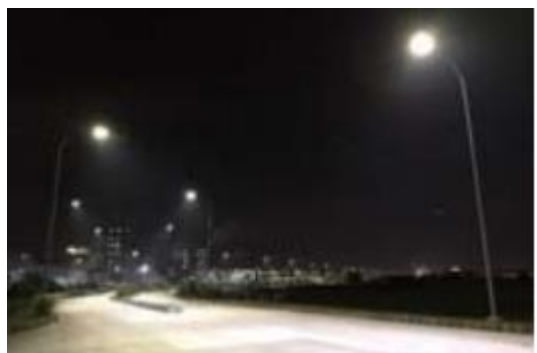
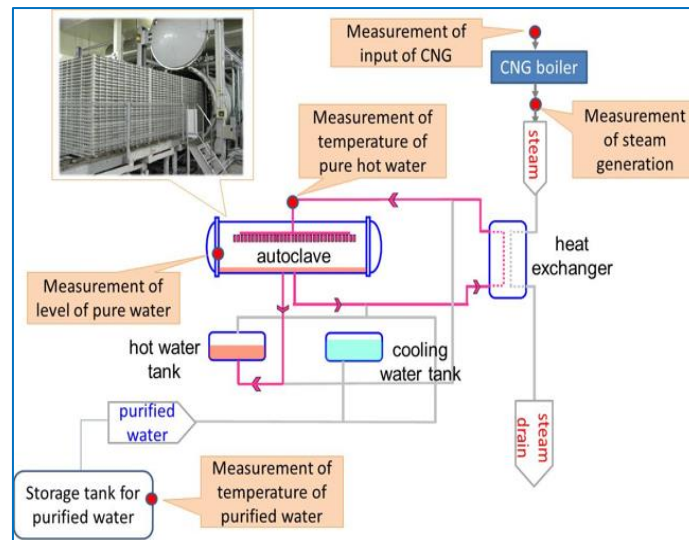


Renewable Energy Sector



Projectst by Sector





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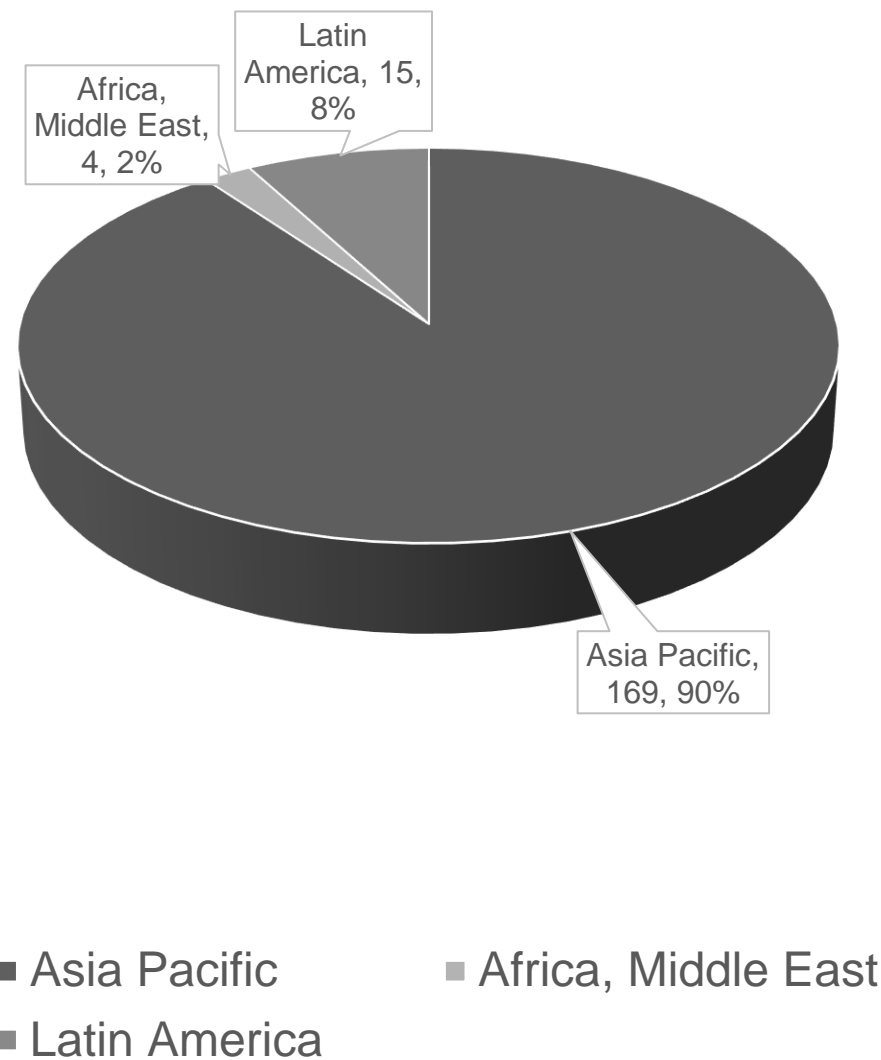
4

- Trend in Indonesia

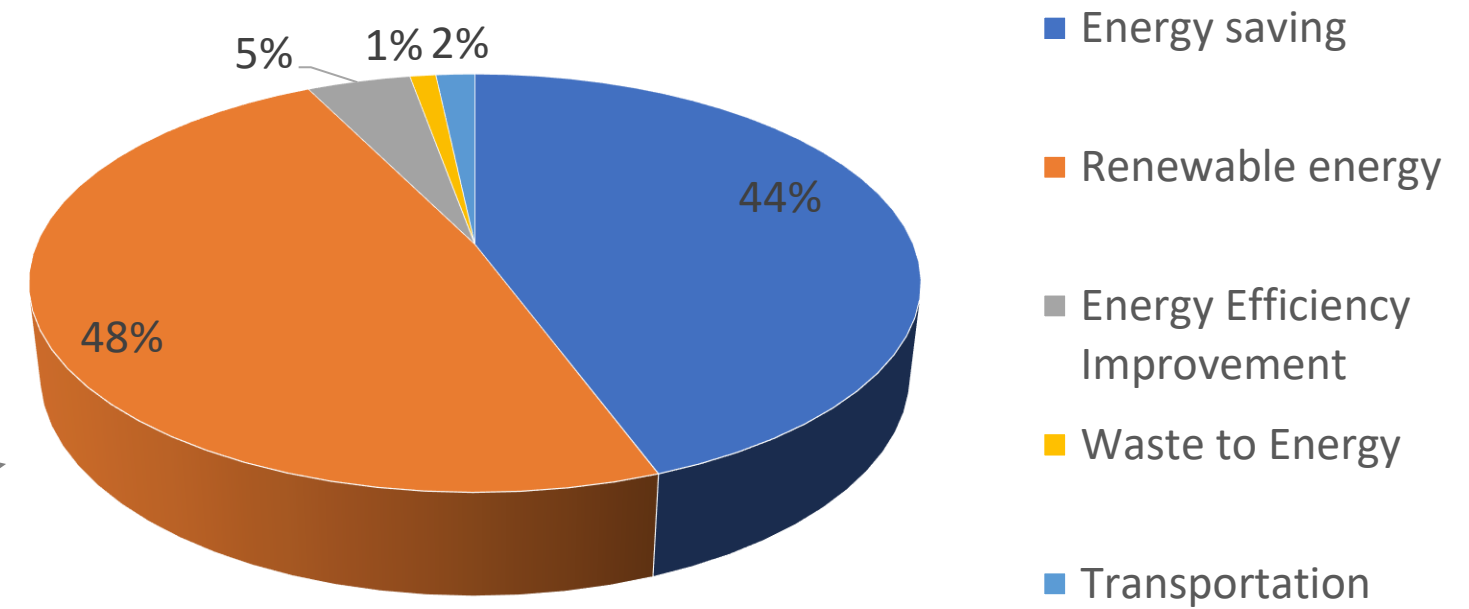
5

- Conclusion

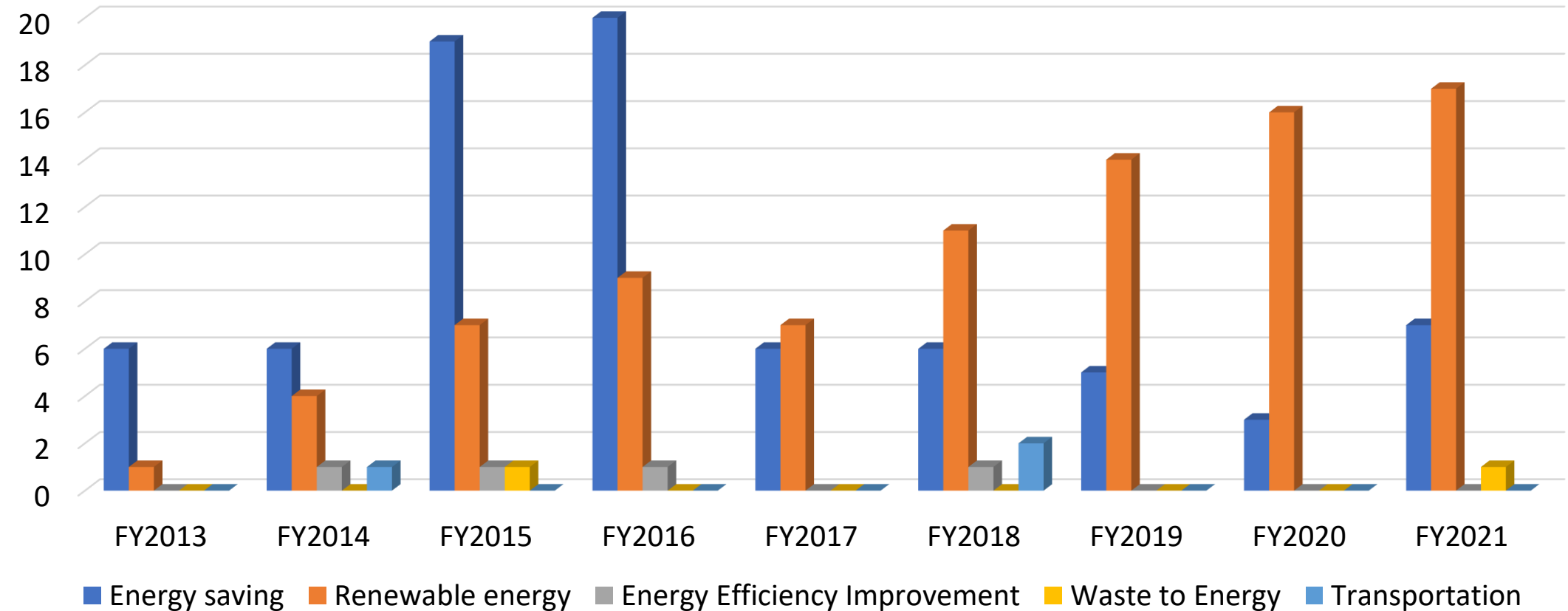
Project by Region

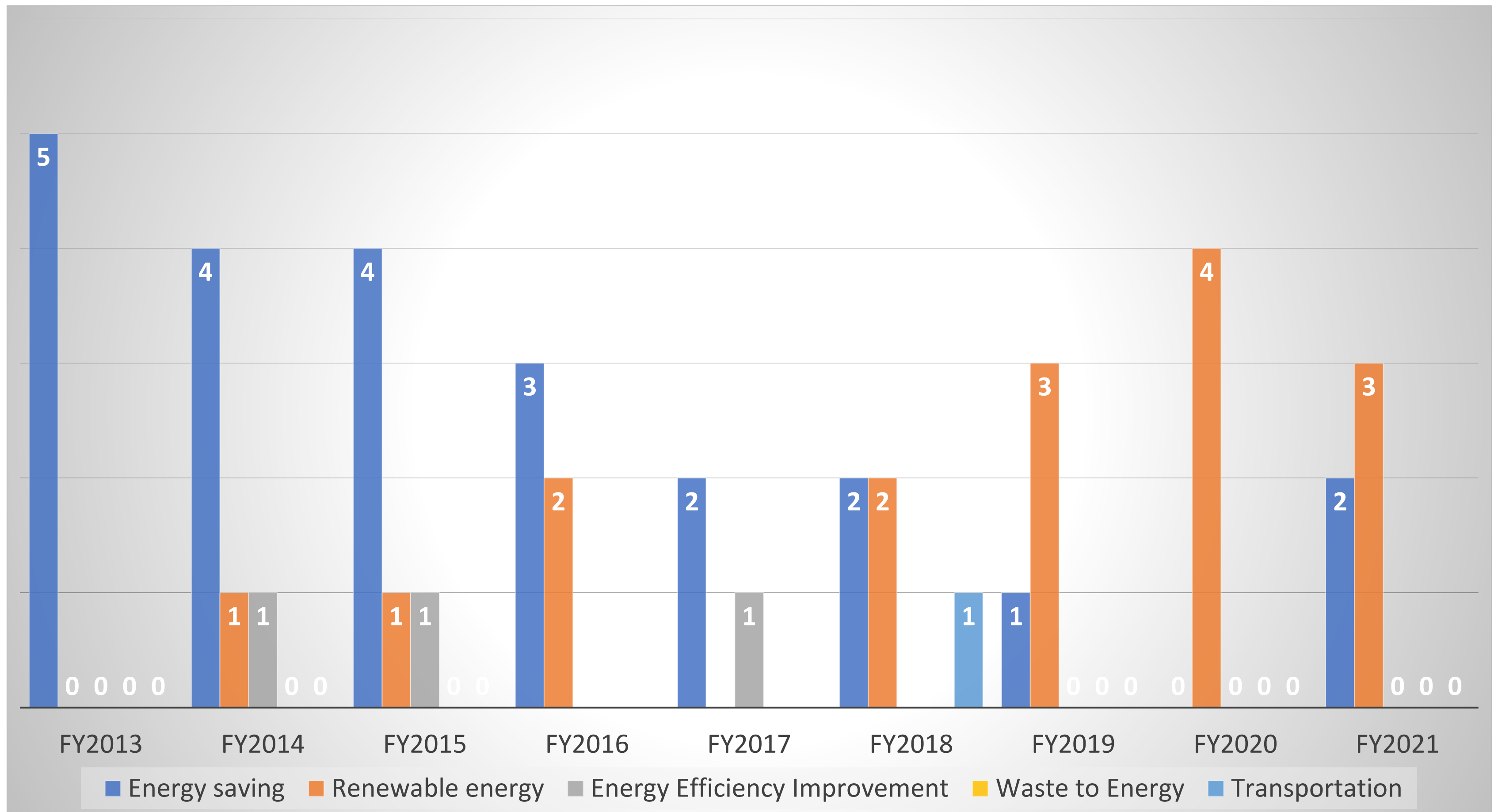


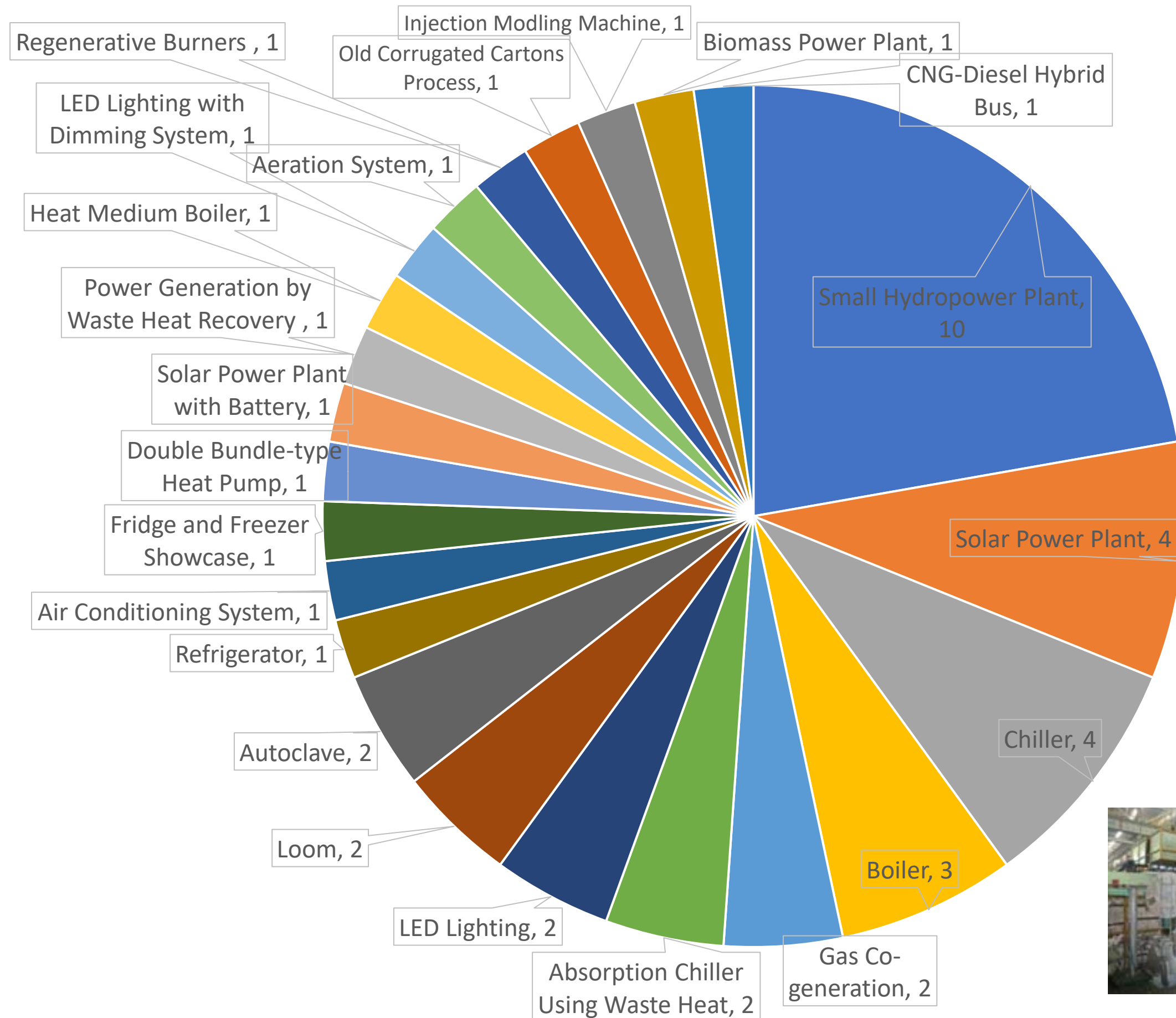
Project by Sector in Asia Pacific



Project by Sector in Asia Pacific







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- Conclusion

- 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 Bangladesh / Kibao Refrigeration Equipment & Systems Co., Ltd.
High Efficiency Centrifugal Chiller
- 4 Mexico / Sunteco Solares Limited
Once-through Boiler and Fuel Switching



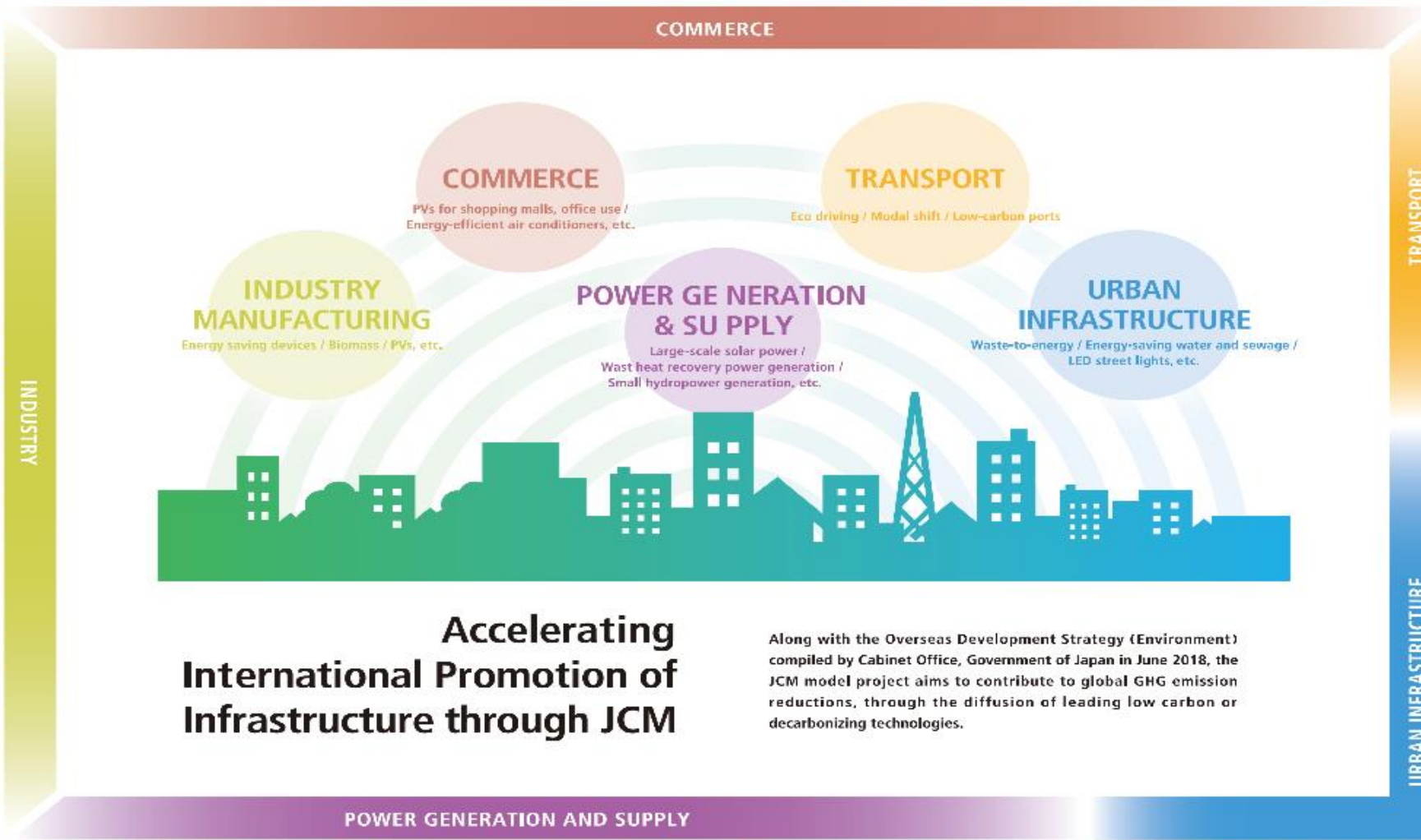
- 5 Palau / Pacific Consultants Co., Ltd.
Solar Power Plants for Commercial Facilities
- 6 Indonesia / Toyota Tsusho Corporation
Double-Bundle type Heat Pump
- 7 Indonesia / Hokutan Co., Ltd.
CHG-Diesel Equipment to Public Bus
- 8 Thailand / Yokohama Port Corporation
Energy Efficient Equipment to Bangkok Port



- 9 Indonesia / Environmental Management and Technology Center
Energy Saving in Industrial Wastewater Treatment System
- 10 Myanmar / Kiri Holdings Company, Limited
Energy Saving Heating Systems
- 11 Thailand / TSD Co., Ltd.
Floating Solar Power System
- 12 Mexico / FILL DATA RESOURCES MANAGEMENT CONSULTING, INC.
Power Generation with Methane Gas Recovery System



- 13 Viet Nam / Yuka Kasei Co., Ltd.
Amorphous High Efficiency Transformers in power grid
- 14 Viet Nam / Yokohama Water Co., Ltd.
High Efficiency Water Pumps
- 15 Myanmar / JTE Engineering Corporation
Waste-to-Energy Plant in Yangon City
- 16 Myanmar / Fujita Corporation
Rice Husk Power Generation

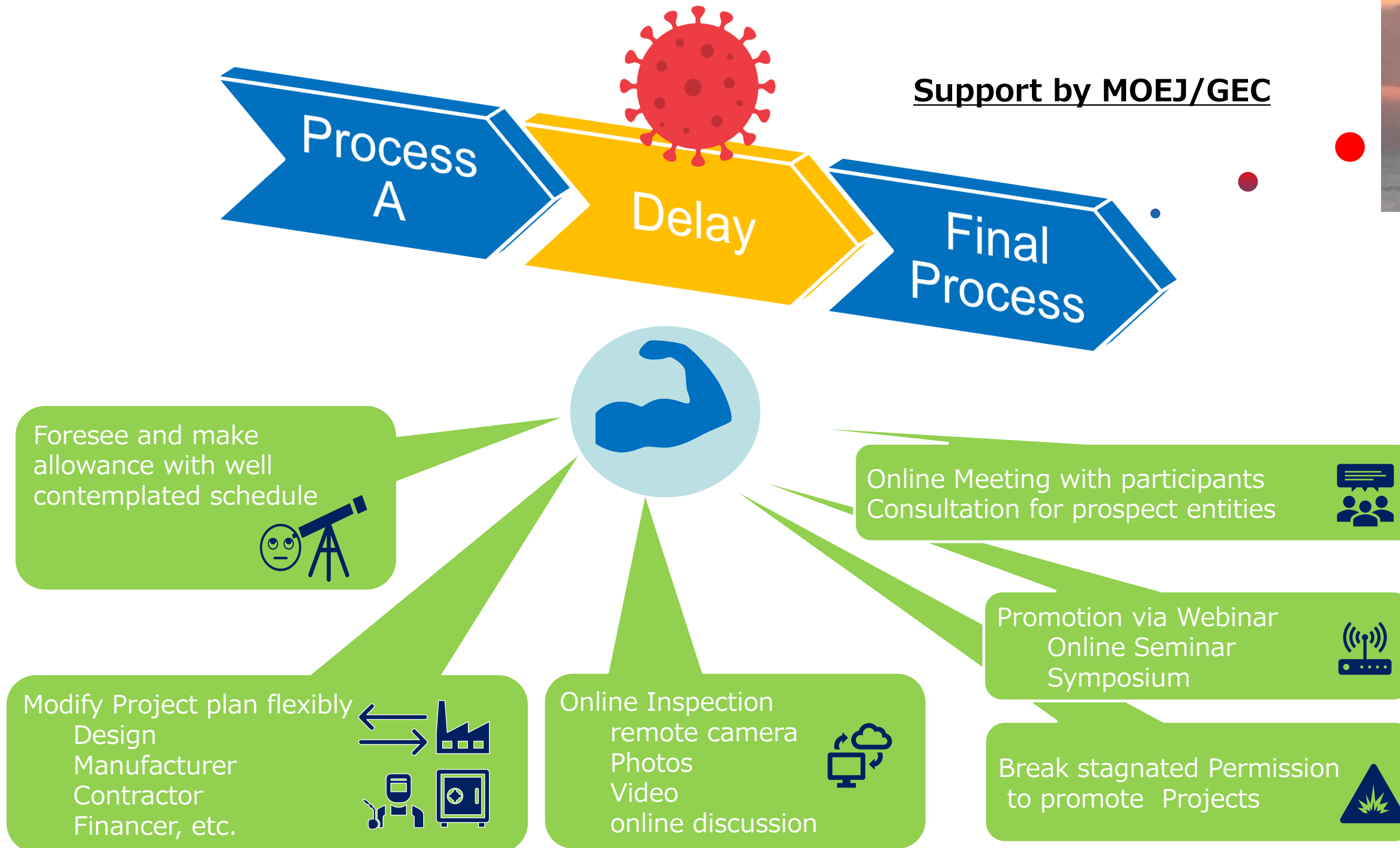


Representative Participants by type of Industry



Wholesale Distributors, Trading Companies	ITOCHU Corporation / Inabata Co., Ltd. / Kanematsu Corporation / Toyota Tsusho Corporation / Toyotsu Machinery Corporation / Japan Pulp and Paper Company Limited / Farmdo Co., Ltd. (FARMLAND Co., Ltd.) / Marubeni Corporation / MITSUI & CO., LTD. / YUASA TRADING CO., LTD
Retail	AEON MALL Co., Ltd. / AEON RETAIL Co., Ltd. / FAST RETAILING CO., LTD. / FamilyMart Co., Ltd. / Lawson, Inc.
Foods	Acecook Co., Ltd. / Kirin Holdings Company, Ltd. / Sapporo International Inc. / Suntory Spirits Ltd. / CPF JAPAN CO., LTD. / Fuji Foods Corporation
Chemicals, Rubber	Otsuka Pharmaceutical Factory, Inc. / KYOWA HAKKO BIO CO. LTD. / Showa Denko Materials Co., Ltd. / Sumitomo Rubber Industries, Ltd. / DIC Corporation / Bando Chemical Industries, Ltd. / FUMAKILLA LIMITED / Mitsubishi Chemical Corporation
Textiles, Glass, Ceramics	AGC Inc. / TOTO Ltd. / Toray Industries, Inc. / Nisshinbo Textile Inc.,
Nonferrous Metals	YKK Corporation
Electric Machinery, Precision Instruments	ENDO Lighting Corporation / Sharp Energy Solutions Corporation / Sony Semiconductor Manufacturing Corporation / DAIICHI JITSUGYO CO., LTD. / WWB Corporation / TSB Co., Ltd. / Hitachi-Johnson Controls Air Conditioning, Inc. / Voith Fuji Hydro K.K. / HOYA CORPORATION / MinebeaMitsumi Inc. / YAZAKI PARTS CO., LTD. / RICOH COMPANY, LTD.
Industrial Machinery	Ebara Refrigeration Equipment & Systems Co., Ltd. / Kanematsu KGK Corp. / Mayekawa Manufacturing Co., Ltd. / Mitsubishi Heavy Industries, Ltd.
Automobiles & Auto parts	DENSO CORPORATION / Toyota Motor Corporation
Transportation, Warehousing	Tokyu Corporation / Nippon Express Co., LTD. / RYOBI HOLDINGS Co., Ltd.
Engineering & Construction	JFE Engineering Corporation / Sumitomo Forestry Co., Ltd. / Toyo Energy Farm Co., Ltd. / JGC CORPORATION / NIPPON STEEL & SUMIKIN ENGINEERING CO., LTD. / Nihon Crant Co. Ltd. / Next Energy & Resources Co., Ltd. / Fujita Corporation / Yuko Keiso Co., Ltd.
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Services and Others	Asian Gateway Corporation / Alampart Inc. / AAIC Japan Co., Ltd. / NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. / NTT FACILITIES, INC. / Oriental Consultants Co., Ltd. / Kayama Kogyo Co., Ltd. / EMATEC:Environmental Management and Technology Center / Global Engineering Co., Ltd. / NiX Co., Ltd. / SUURI-KEIKAKU Co., Ltd. / Chodai Co., Ltd. / TEPIA Corporation Japan Co.,Ltd. / Pacific Consultants Co., Ltd. / Finetech Co., Ltd. / Waseda Environmental Institute Co., Ltd.

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Terima kasih!

ありがとうございました。

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