

Financing Programme for JCM Model Projects in FY2018 in Indonesia

2018/07/24

Global Environment Centre Foundation (GEC)
as the implementing organization of the JCM Financing Programme



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1. Status of JCM Model Projects in FY2018 in Indonesia



Financing Programme for JCM Model Projects by MOEJ

The budget for projects starting from FY 2018 is **6.9 billion JPY (approx. USD 69million)** in total by FY 2020.

(1 USD = 100 JPY)

Finance part of an investment cost (**less than half**)

Government of Japan



*Includes collaboration with projects supported by JICA and other governmental-affiliated financial institute

Conduct MRV and expected to deliver at least half of JCM credits issued

International consortiums (which include Japanese entities)



- Scope of the financing: facilities, equipment, vehicles, etc. which reduce CO₂ from fossil fuel combustion as well as construction cost for installing those facilities, etc.
- Eligible Projects : starting installation after the adoption of the financing and finishing installation within three years.

Call for Proposals for JCM Model Projects in FY2018 (1)

➤ Schedule

➤ First call

Call for Proposal :	April 6 th 2018
Deadline for submitting Proposals	May 14 th 2018
Announcement of selected model projects	June 25 th 2018

Adopted 17 projects (4 projects in Indonesia)

➤ Second call

Call for Proposal :	August 27 th 2018
Deadline for submitting Proposals	November 30 th 2018

Budget: approx. 2.0 billion JPY (approx. USD 20million)

Announcement of selected model projects is sequentially

➤ Maximum Percentage of Financial Support (plan)

Number of already selected project(s) using a similar technology in each partner country	Percentage of financial support
None (0)	Up to 50%
Up to 3 (1 – 3)	Up to 40%
More than 3 (>3)	Up to 30%

Call for Proposals for JCM Model Projects in FY2018 (2)

➤ **Countries of Priority**

The model project shall prioritize the following countries that have already established or decided to establish the JCM (as of 13 January 2017):

Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Vietnam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand and Philippines (*If other countries establishes JCM subsequently, they shall be included.)

➤ **Cost-effectiveness of emission reductions of GHG is expected to satisfy the standard below;**

- 4,000JPY/tCO₂equivalent

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

- 3,000JPY/tCO₂equivalent :

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

➤ **Payback period is preferred to be 3 years or longer with the financial support.**

Project Cycle of JCM Model Project



FY2018

FY2019

Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr

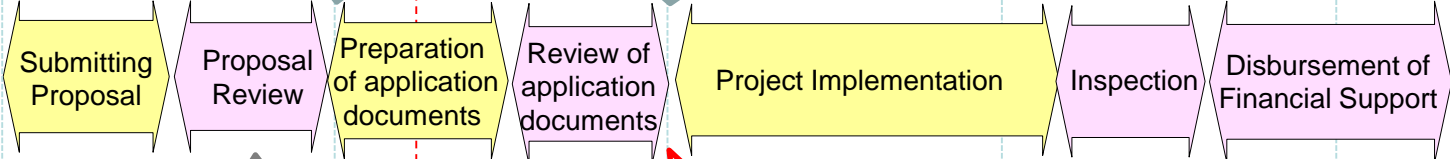
← Max. 90 days →

First Call From Apr6

Preliminary Selection of model projects

Notice of Contract of Finance issued to participants

First Call Phase



Interview with applicants

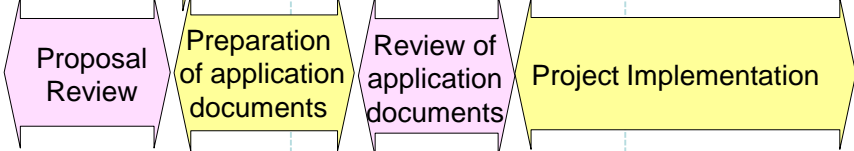
Project Start

Project Completion (in case of 1-year project)

Second Call Phase

Second Call from Aug27

Submitting Proposal



Project Start

Consulting for Capacity Building of JCM model Projects

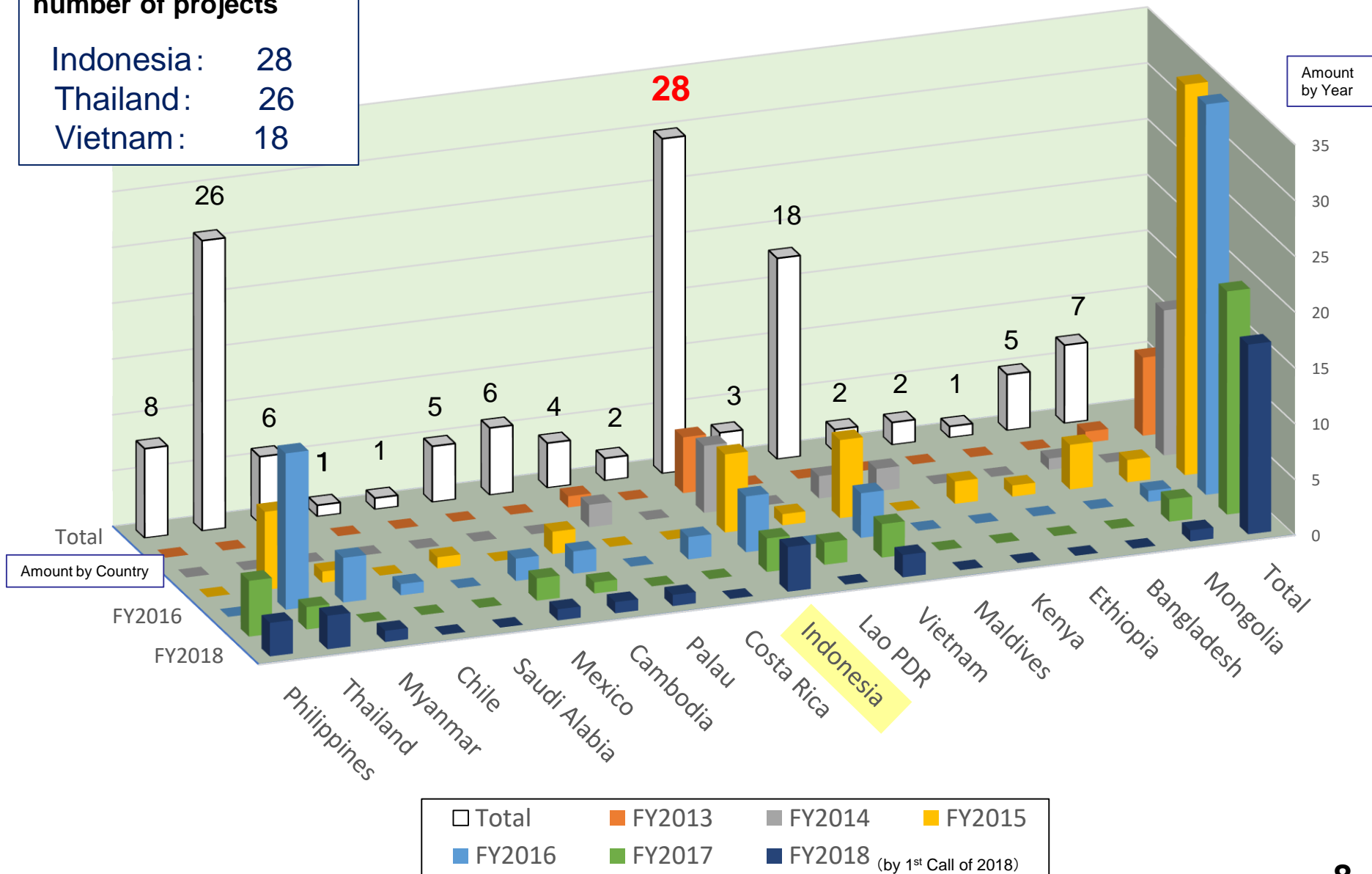
Activity of participants Activity of GEC

Number of JCM Model Projects by Country/Year



Top 3 Countries by the number of projects

Indonesia: 28
 Thailand: 26
 Vietnam: 18



List of JCM Model Projects Selected in June 2018 (4 out of 17 projects in Indonesia)

Partner Country	Representative Participant	Project Title	Expected CO2 Emission Reductions (tCO ₂ /year)
Mongolia	Sharp Energy Solutions Corporation	21MW Solar Power Project in Bayanchandmani	27,008
Vietnam	Nihon Crant Co. Ltd.	Modal Shift from Truck to Cargo Ship with Freshness Preservation Reefer Container	11,025
Vietnam	Yokohama Water Co., Ltd.	Energy Saving by Introduction of Inverters for Raw Water Intake Pumps	1,043
Indonesia	Takasago Thermal Engineering Co., Ltd.	Introduction of 2.8MW Solar Power System in Healthcare and Food Factories	2,446
Indonesia	Otsuka Pharmaceutical Factory, Inc.	Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory	1,950
Indonesia	Hokusan Co., Ltd.	Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang	1,870
Indonesia	iFORCOM Co.,Ltd.	Energy Saving for Air-conditioning System of Shopping Mall by High Efficiency Centrifugal Chiller and Air-conditioning Control System	1,501
Palau	Sharp Energy Solutions Corporation	Introduction of 0.4MW Rooftop Solar Power System in Supermarket	296
Cambodia	Asian Gateway Corporation	1.5MW Solar Power Project in Kampong Thom	831
Mexico	Sharp Energy Solutions Corporation	30MW Solar Park Project in Guanajuato	36,037
Myanmar	Global Engineering Co., Ltd.	Introduction of 8.8MW Power Generation System by Waste Heat Recovery for Cement Plant	19,241
Thailand	The Kansai Electric Power Company, Incorporated	Introduction of Gas Co-generation System and Absorption Chiller to Fiber Factory	17,851
Thailand	Tokyo Century Corporation	25MW Rooftop and Floating Solar Power Project in Industrial Park	10,620
Thailand	Toyota Motor Corporation	Introduction of 3.4 MW Rooftop Solar Power System in Technical Center and Office Buildings	1,617
Philippines	Chodai Co., Ltd.	2.5MW Rice Husk Power Generation Project in Butuan City, Mindanao	※CO ₂ only 5,118
Philippines	Sharp Energy Solutions Corporation	Introduction of 4MW Rooftop Solar Power System in Tire Factory	2,858
Philippines	Chodai Co., Ltd.	0.16MW Micro Hydro Power System in Taguibo Water Supply Facility, Mindanao	682

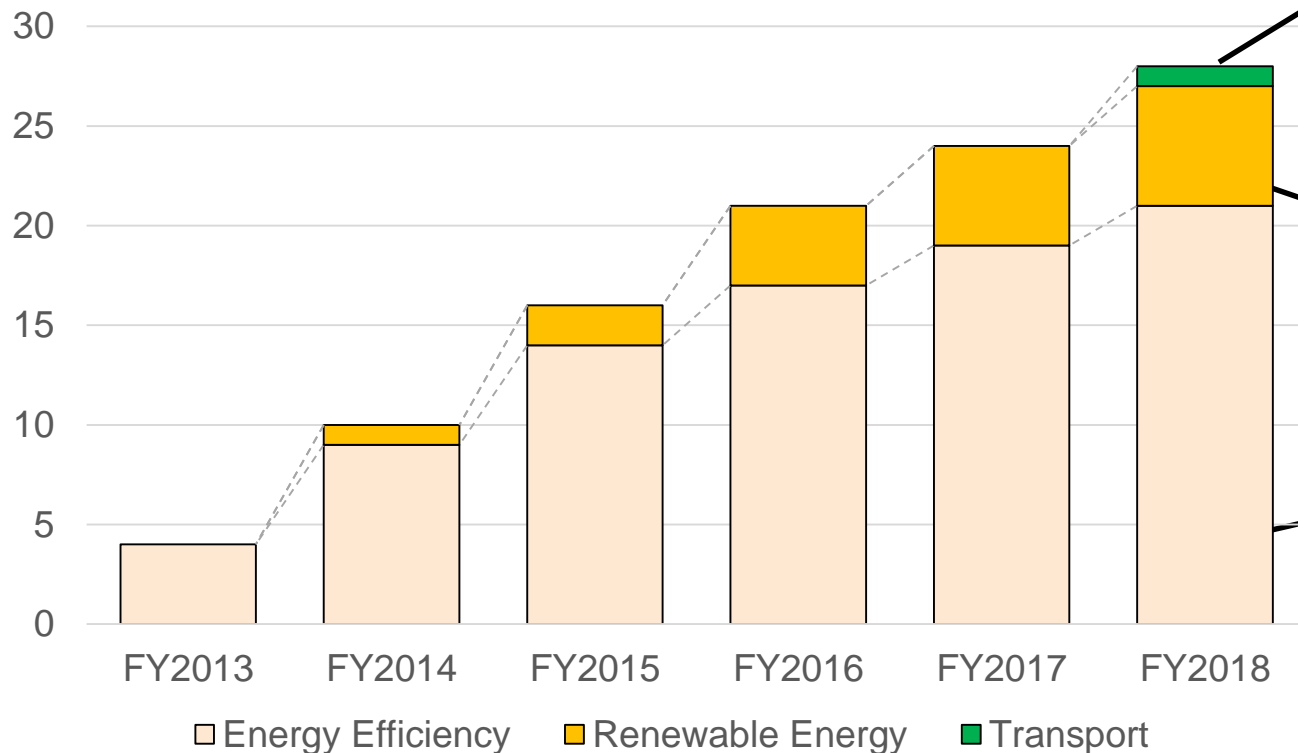
2. Trend and Consideration of JCM Model Projects in Indonesia

The screenshot displays the JCM website interface. At the top, the JCM logo is followed by the text 'THE JOINT CREDITING MECHANISM'. To the right, it says 'Global Environment Centre Foundation' with a search bar and a language dropdown set to 'Japanese'. Below this is a navigation menu with links for 'Overview', 'Call for Proposals', 'Projects/ Studies', 'News', 'Publications', and 'Contact'. The main content area features a large banner for a seminar titled 'Seminar on the Joint Crediting Mechanism (JCM) Project Implementation in Indonesia' held on 12th July 2017 in Bogor, Indonesia. A group photo of attendees is shown. To the right of the photo is a blue text box with the title 'Result of Seminar on the JCM Project Implementation in Indonesia' and a 'Read More' button. Below the banner is a section titled 'About the JCM' with three columns:

- Basic concept of the JCM**: The JCM is facilitating diffusion of leading low carbon technologies, products, systems, services and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Calls for Proposals**: Find the information about calls for proposal
- Projects/Studies**: Introducing examples of projects/studies that have been conducted or ongoing.

Trend of JCM Model Projects in Indonesia

Cumulative Number of JCM Model Projects by Sector

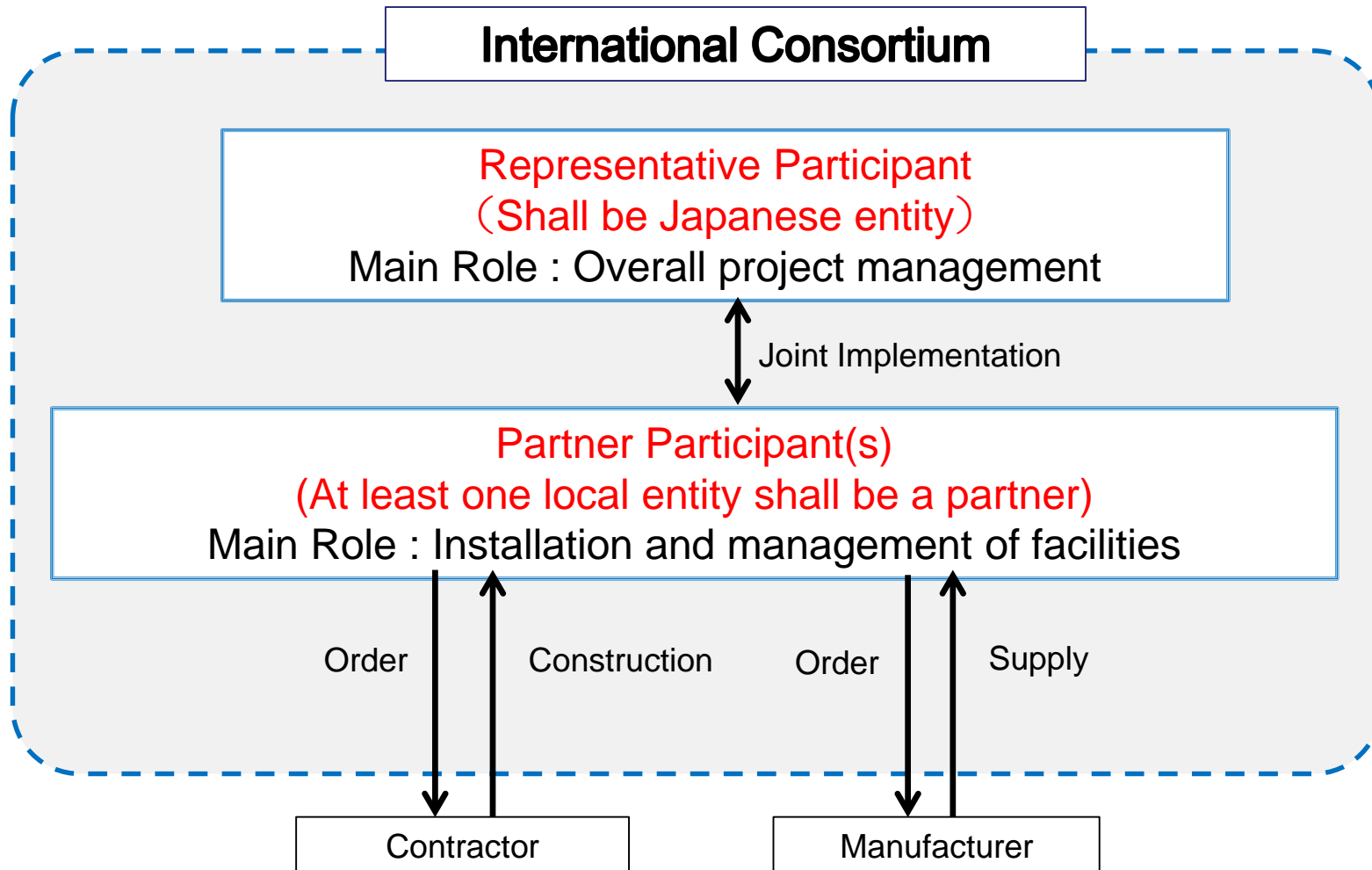


Newly selected
1 project
in Transport Sector

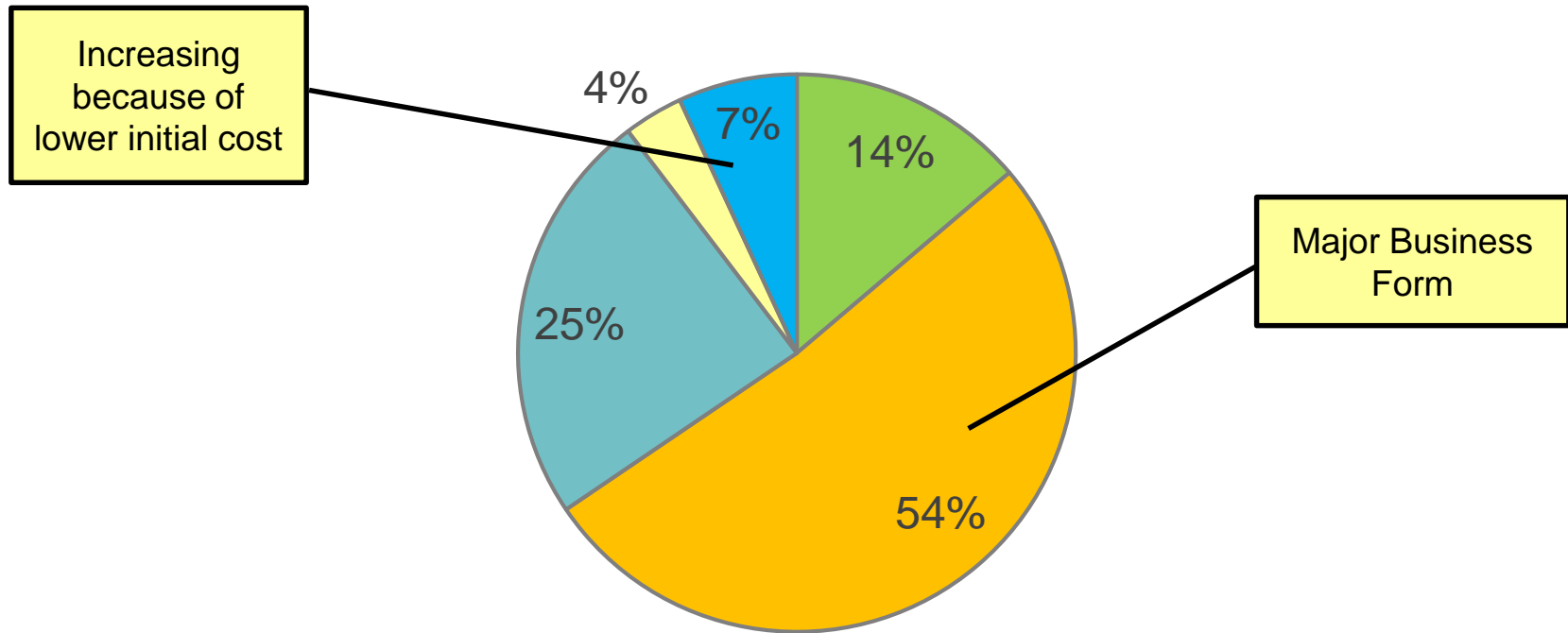
Relatively small number of projects compared with other countries
- 4 PVs
- 2 Mini Hydro Power Plants

Steadily increasing

Typical Example of International Consortium



JCM Model Projects in Indonesia Categorized by Business Form



- Model 1 : Manufacturer
- Model 2 : Trading CO. / Engineering CO.
- Model 3 : Parent and Subsidiary
- Model 4 : SPC
- Model 5 : Leasing

List of JCM Model Projects in Indonesia (2013~2018: 28 projects)

 As of July 24th, 2018

No.	Year	Project Title	Entity	Sector	Business Form Model No.
1	2016	Introduction of 0.5MW Solar Power System to Aroma and Food Ingredients Factory	Next Energy & Resources Co., Ltd.	Renewable Energy	1
2	2014	Energy Saving for Textile Factory Facility Cooling by High-efficiency Centrifugal Chiller	Ebara Refrigeration Equipment & Systems Co., Ltd.	Energy Efficiency	1
3	2013	Energy Efficient Refrigerants to Cold Chain Industry	Mayekawa Manufacturing Co., Ltd.	Energy Efficiency	1
4	2013	Energy Saving for Air-conditioning and Process Cooling at Textile Factory	Ebara Refrigeration Equipment & Systems Co., Ltd.	Energy Efficiency	1
5	2014	Power Generation by Waste-heat Recovery in Cement Industry	JFE Engineering Corporation	Energy Efficiency	2
6	2018	Energy Saving for Air-conditioning System of Shopping Mall by High Efficiency Centrifugal Chiller and Air-conditioning Control System	iFORCOM Co.,Ltd.	Energy Efficiency	2
7	2018	Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang	Hokusan Co., Ltd.	Transport	2
8	2017	10MW Mini Hydro Power Plant Project in Lae Ordi River in North Sumatra	CHODAI Co.,Ltd,	Renewable Energy	2
9	2016	Energy Saving in Industrial Wastewater Treatment System for Rubber Industry	EMATEC	Energy Efficiency	2
10	2016	Introduction High Efficiency Looms in Weaving Mill	Nisshinbo Textile Inc.,	Energy Efficiency	2
11	2016	10MW Mini Hydro Power Plant Project in North Sumatra	Toyo Energy Farm Co., Ltd.,	Renewable Energy	2
12	2015	Energy Saving for Industrial Park with Smart LED Street Lighting System	NTT FACILITIES, INC.	Energy Efficiency	2
13	2015	Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller	NTT FACILITIES, INC.	Energy Efficiency	2
14	2015	1.6MW Solar PV Power Plant Project in Jakabaring Sport City	Sharp Energy Solutions Company	Renewable Energy	2
15	2015	Installation of Gas Co-generation System for Automobile Manufacturing Plant	Toyota Tsusho Corporation	Energy Efficiency	2
16	2014	Installation of Solar Power System and Storage Battery to Commercial Facility	Itochu Corporation	Renewable Energy	2
17	2014	Introduction of High Efficient Old Corrugated Cartons Process at Paper Factory	Kanematsu Corporation	Energy Efficiency	2
18	2014	Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding Furnace of the Automotive Components Manufacturer	Toyotsu Machinery Corporation	Energy Efficiency	2
19	2013	Energy Saving by Installation of Double Bundle-type Heat Pump	Toyota Tsusho Corporation	Energy Efficiency	2
20	2017	Introduction of Gas Co-generation System and Absorption Chiller to Motor Parts Factory	DENSO	Energy Efficiency	3
21	2016	Introduction of LED Lighting to Sales Stores	FAST RETAILING CO., LTD.	Energy Efficiency	3
22	2018	Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory	Otsuka Pharmaceutical Factory, Inc.	Energy Efficiency	3
23	2015	Introduction of High-efficiency Once-through Boiler System in Film Factory	Mitsubishi Chemical Corporation	Energy Efficiency	3
24	2015	Introduction of High Efficiency Once-through Boiler in Golf Ball Factory	Sumitomo Rubber Industries, Ltd.	Energy Efficiency	3
25	2014	Reducing GHG Emission at Textile Factories By Upgrading to Air-saving Loom	Toray Industries, Inc.	Energy Efficiency	3
26	2013	Installation of Inverter-type Air Conditioning System, LED Lighting and Separate Type Fridge Freezer Showcase to Grocery Stores in Republic of Indonesia	Lawson, Inc.	Energy Efficiency	3
27	2018	Introduction of 2.8MW Solar Power System in Healthcare and Food Factories	Takasago Thermal Engineering Co., Ltd.	Renewable Energy	4, 5
28	2017	Introduction of Absorption Chiller to Chemical Factory	Tokyo Century Corporation	Energy Efficiency	5

Indonesia would keep the top position in JCM Model Projects by:

1. Focusing on City-to-City Collaboration based on Environment Infrastructure Strategy of MOEJ.
2. Scaling up to larger projects through active partnership between Indonesian and Japanese business partners.

MOEJ and GEC will be happy to provide support in planning and implementation phases of JCM Model Projects.

3. Outreach Activities of GEC

- GEC website on JCM <http://gec.jp/jcm/>
- GEC's JCM Twitter https://twitter.com/GEC_JCM_Info

Terima Kasih !

Thank you for your attention!

**Please enjoy through the
end of this seminar !**

Any questions or discussions are
quite welcome in any time !!!

GEC members in this seminar

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Reference Materials

1. Overview of JCM Model Projects in FY2018 in Indonesia
2. Business Form Models in Indonesia

1. Project Overview of JCM Model Projects in FY2018 in Indonesia

1. Takasago Thermal Engineering Co., Ltd
2. Otsuka Pharmaceutical Factory, Inc
3. Hokusan Co.,Ltd
4. iFORCOM Co., Ltd.,

Introduction of 2.8MW Solar Power System in Healthcare and Food Factories

PP (Japan): Takasago Thermal Engineering Co., Ltd.

PP (Indonesia): PT. Engie Infrastructure Indonesia, PT. Indolakto, P&G Indonesia

Outline of GHG Mitigation Activity

This project will introduce 2.8MW Solar Power System in Healthcare and Food Factories near Jakarta. Electricity generated by Solar Power System replaces grid electricity to reduce GHG emission.

Site 1: PT. Indolakto

Electric-generating capacity : 0.8MW

Installation location : Roof top of the factory

Site 2: P&G Indonesia

Electric-generating capacity : 2.0MW

Installation location : Idle land next to the factory

①PT.Indolakto



②P&G Indonesia



Expected GHG Emission Reductions

2,446tCO₂/year

Site 1: PT. Indolakto

590tCO₂/year

Site 2: P&G Indonesia

1,856tCO₂/year

$$ER = RE - PE$$

ER: Emission reductions [tCO₂/y]

RE: Reference emissions [tCO₂/y]

The quantity of the electricity generated by PV system [MWh] × CO₂ emission factor [tCO₂/MWh]

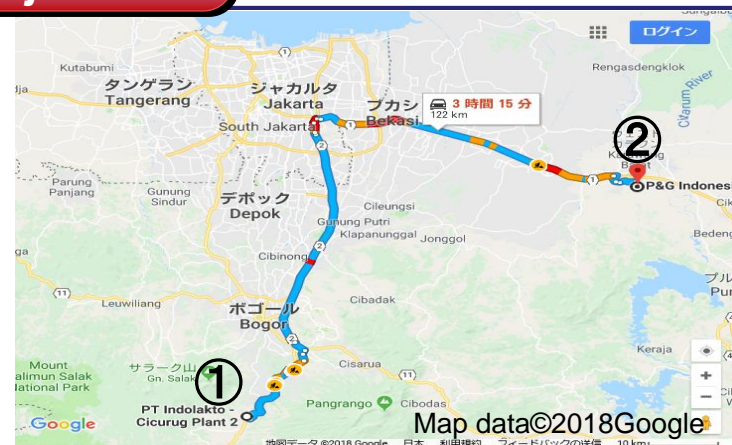
PE: Project emissions 0[tCO₂/y]

Sites of Project

Project Site

①PT. Indolakto
About 73km South from Central Jakarta

②P&G Indonesia
About 60km Southeast from Central Jakarta



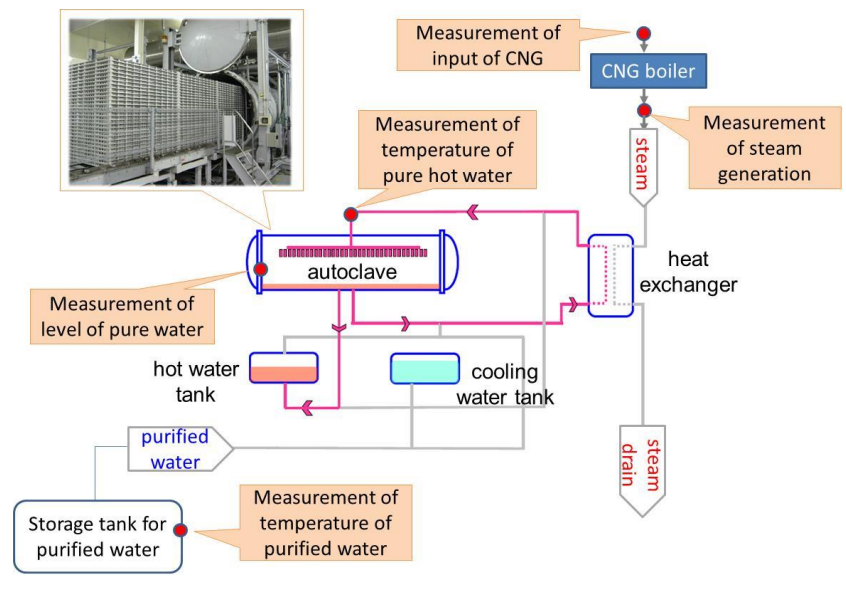
Energy Saving by Introducing High Efficiency Autoclave to Infusion Manufacturing Factory

PP (Japan): Otsuka Pharmaceutical Factory, Inc. PP (Indonesia): PT. Otsuka Indonesia

Outline of GHG Mitigation Activity

At an infusion manufacturing factory 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 for CO₂ emission as well as to assure 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 without being discharged, the amount of pure water is also greatly saved.



Expected GHG Emission Reductions

1,950 tCO₂/year

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

- CNG consumption volume = temp. rising cycle X theoretical required steam X coef. of theoretical required steam X coef. of CNG/steam.
- temp. rising cycle = annual production volume / max volume of batch.
- theoretical required steam = heat required for heating pure water at each cycle / evaporation latent heat.
- coef. of theoretical required steam = steam generation volume in boiler / theoretical required steam.
- coef. of CNG/steam = input volume of CNG / steam generation in boiler.

Sites of Project

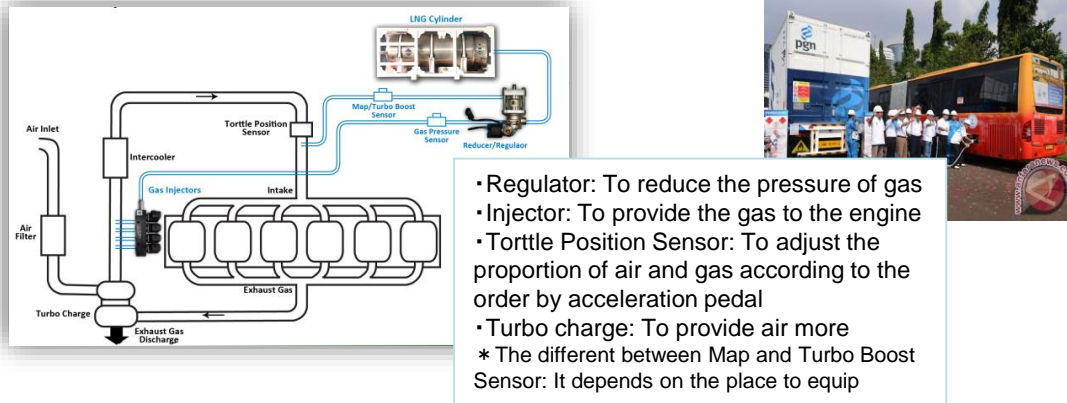


Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang

PP from Japan: Hokusan Co.,Ltd. / PP from Indonesia: BLU UPTD Trans Semarang

Outline of GHG Mitigation Activity

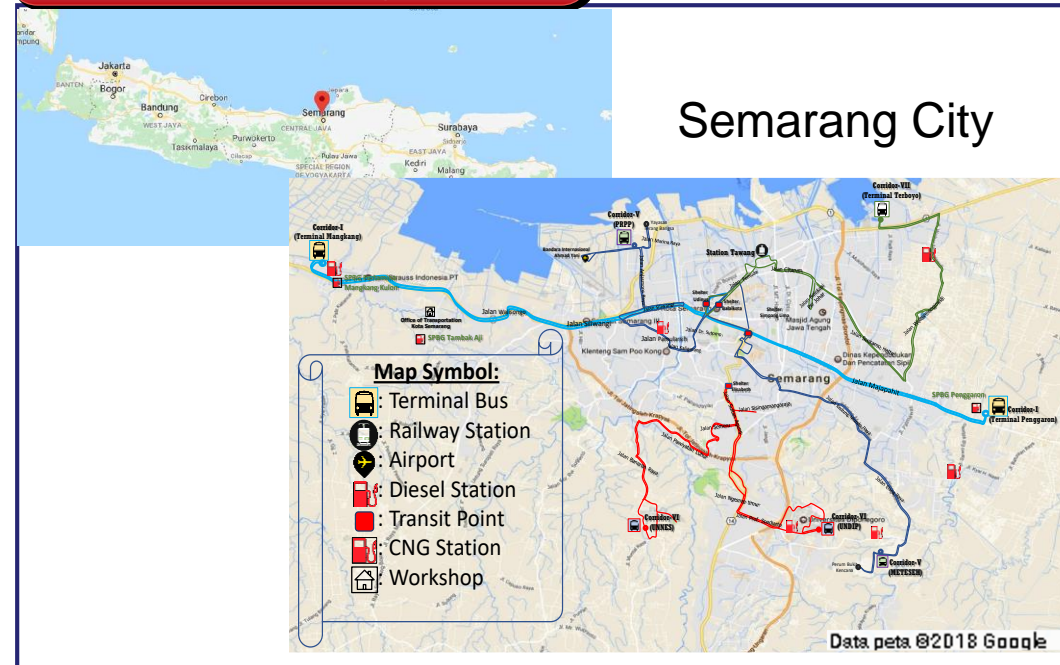
Toyama City has concluded a cooperation agreement between Semarang City to realize low carbon society under inter-city cooperation. Based on the cooperation agreement, this project aims to reduce GHG emissions through fuel switch from diesel to CNG. In the project, 72 diesel buses owned by Trans Semarang, including 25 large-sized buses and 47 mid-sized buses, are retrofitted from diesel engine to hybrid engine with CNG system available. These buses are considered more cost-effective through fuel switching.



The diagram shows the flow of air and gas into an engine. Air enters through an air filter and turbocharger, passes through an intercooler, and then through gas injectors into the intake manifold. The engine's exhaust gas goes through an exhaust gas discharge system. A separate line from an LNG cylinder provides gas, which passes through a Map/Turbo Boost Sensor, a Gas Pressure Sensor, and a Reducer/Regulator before entering the engine. A Turtle Position Sensor is also connected to the system.

- Regulator: To reduce the pressure of gas
- Injector: To provide the gas to the engine
- Turtle Position Sensor: To adjust the proportion of air and gas according to the order by acceleration pedal
- Turbo charge: To provide air more
- * The different between Map and Turbo Boost Sensor: It depends on the place to equip

Sites of Project



Expected GHG emission reduction

1,870 tCO₂/year

← Reference GHG emission – Project GHG emission
 = Reference fuel consumption x Fuel-based emission factor -
 Project fuel consumption x Fuel-based emission factor

Reference fuel consumption
 = Diesel fuel consumption based for bus operation x emission factor of Diesel fuel
 Project fuel consumption
 = CNG fuel consumption for bus operation x emission factor of CNG + Diesel fuel consumption for bus operation x emission factor of Diesel fuel

Energy saving for Air-conditioning System of Shopping Mall by High Efficiency Centrifugal Chiller and Air-conditioning Control System

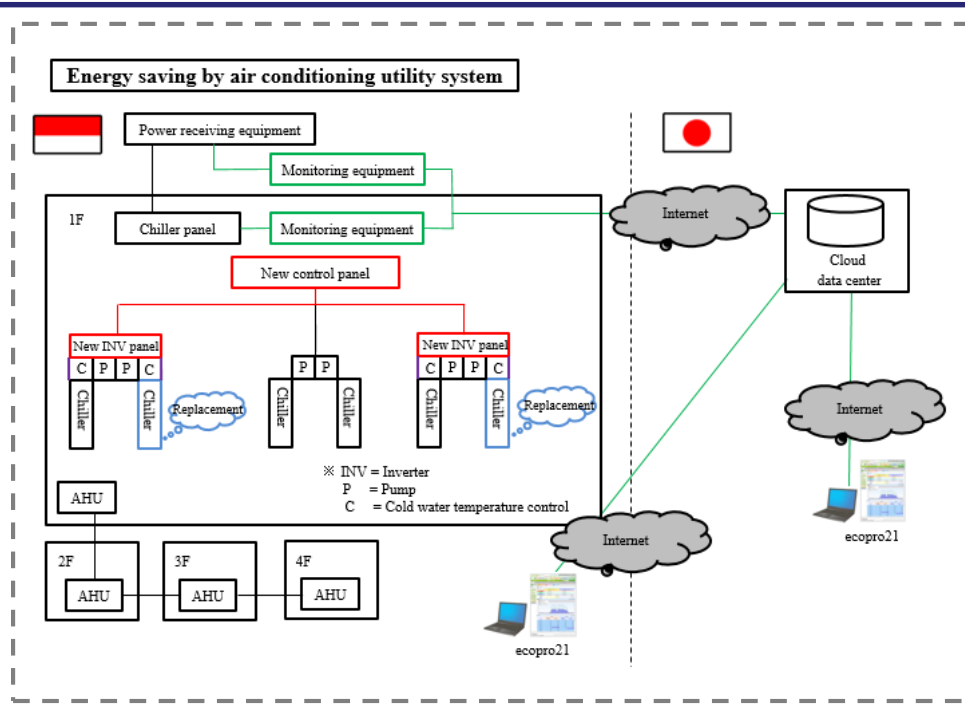
PP(Japan): iFORCOM Co., Ltd., PP (Indonesia): PT Federal Investindo

Outline of GHG Mitigation Activity

This project will improve facilities and operation of air conditioning utility system in a shopping mall in Batam, called Mega Mall Batam Centre, and reduce electricity consumption as well as CO2 emissions.

This project will introduce an energy-saving air-conditioning utility system with automatic control utilizing information technology, based on appropriate environmental construction in the shopping mall with large space.

An optimal energy saving promotion platform will be established through the project.



Expected GHG Emission Reduction

1,501 tCO₂/year

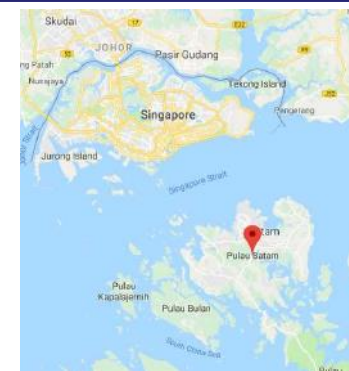
(reference power consumption - project power consumption) x emission factor of grid electric power

Site of Project

Batam island is located about 20 km from the southern coast of Singapore.



Map data©2018Google



Map data©2018Google

2. Business Form Models in Indonesia

Model 1. Manufacturer

Model 2. Trading Co./Engineering Co.

Model 3. Parent and Subsidiary

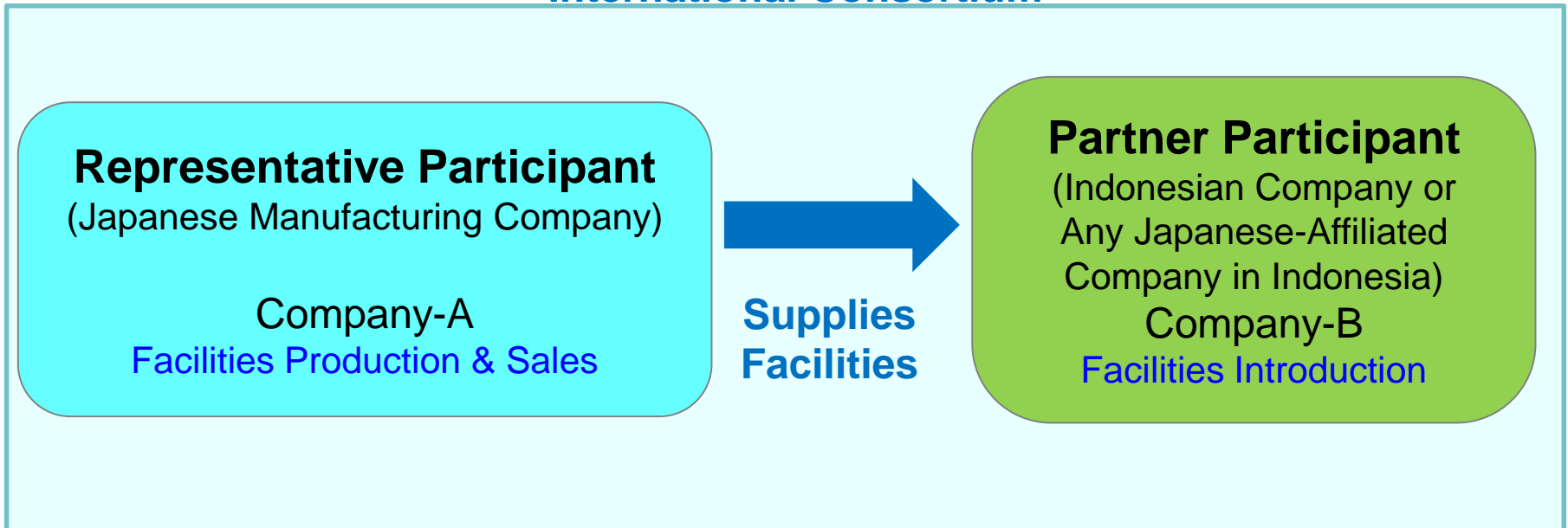
Model 4. SPC

Model 5. Leasing

Model 1. Manufacturer

A Japanese manufacturer acts as the Representative Participant (RP) and supplies its own products to the Indonesian Partner Participant (PP).

International Consortium



Model 2. Trading Co./Engineering Co.

A Japanese trading company or engineering company acts as the RP.
The Indonesian PP procures through the RP or directly from a third party.

International Consortium

Representative Participant

(Japanese Trading Company or
Engineering Company)

Company-A

Facilities Intermediation



Intermediates
Facilities

Partner Participant

(Indonesian Company or
Any Japanese-Affiliated-Company)

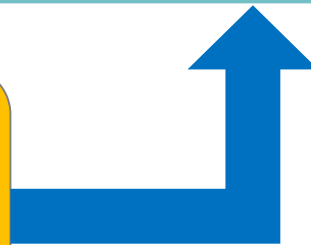
Company-B

Direct Facilities Introduction

Facility Manufacturer

Company-C

Facilities production & Sales

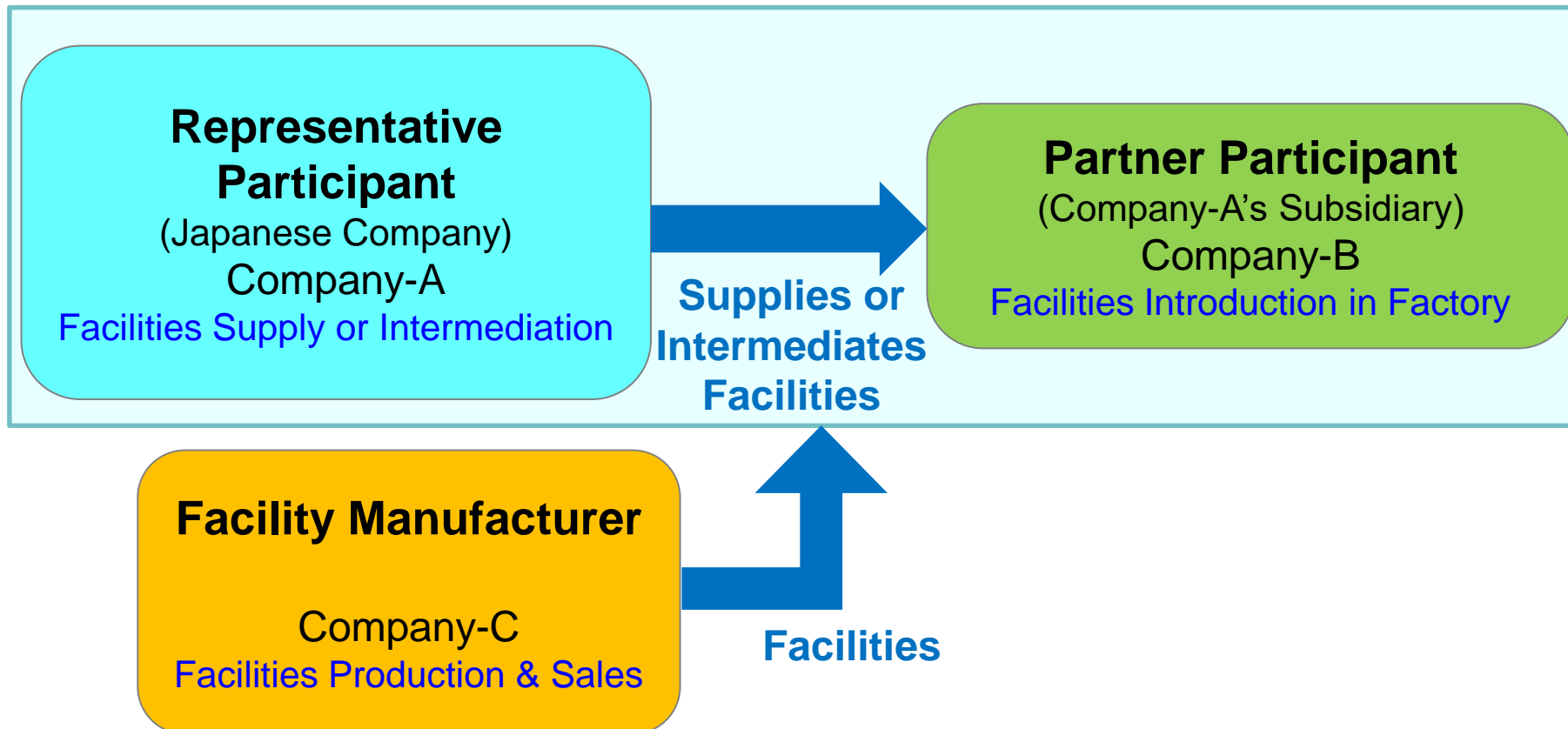


Facilities

Model 3. Parent and Subsidiary

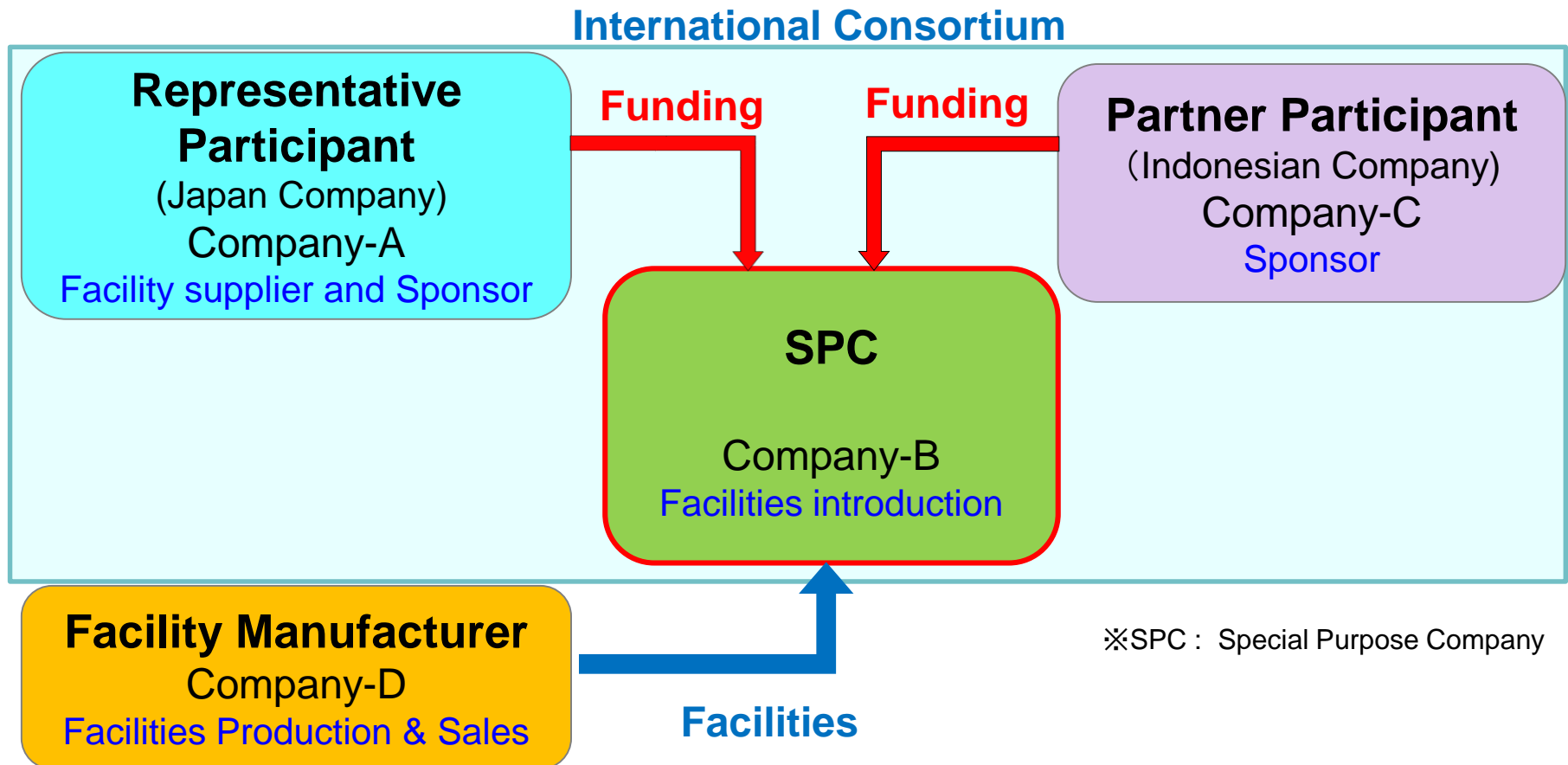
The Japanese parent company (that is RP) procures facilities and supplies to its Indonesian subsidiary (that is PP), or intermediates facilities.

International Consortium



Model 4. SPC

The Japanese RP and Indonesian PP make investment to establish a Special Purpose Company (SPC). SPC procures facilities and implements the project.



Model 5. Leasing

A Japanese leasing company acts as RP, and its Indonesian subsidiary owns and leases facilities to the Indonesian PP, reducing the initial cost.

International Consortium

