The Joint Crediting Mechanism and Article 6

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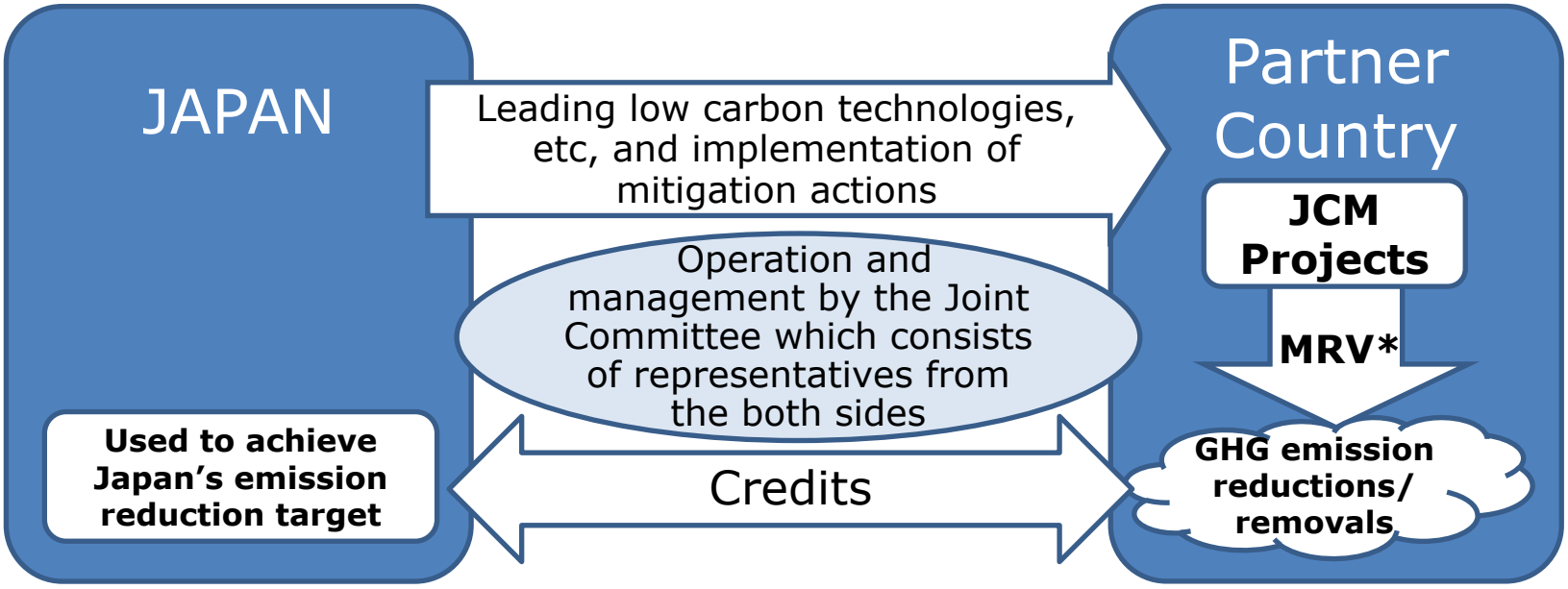
Ministry of the Environment, Japan

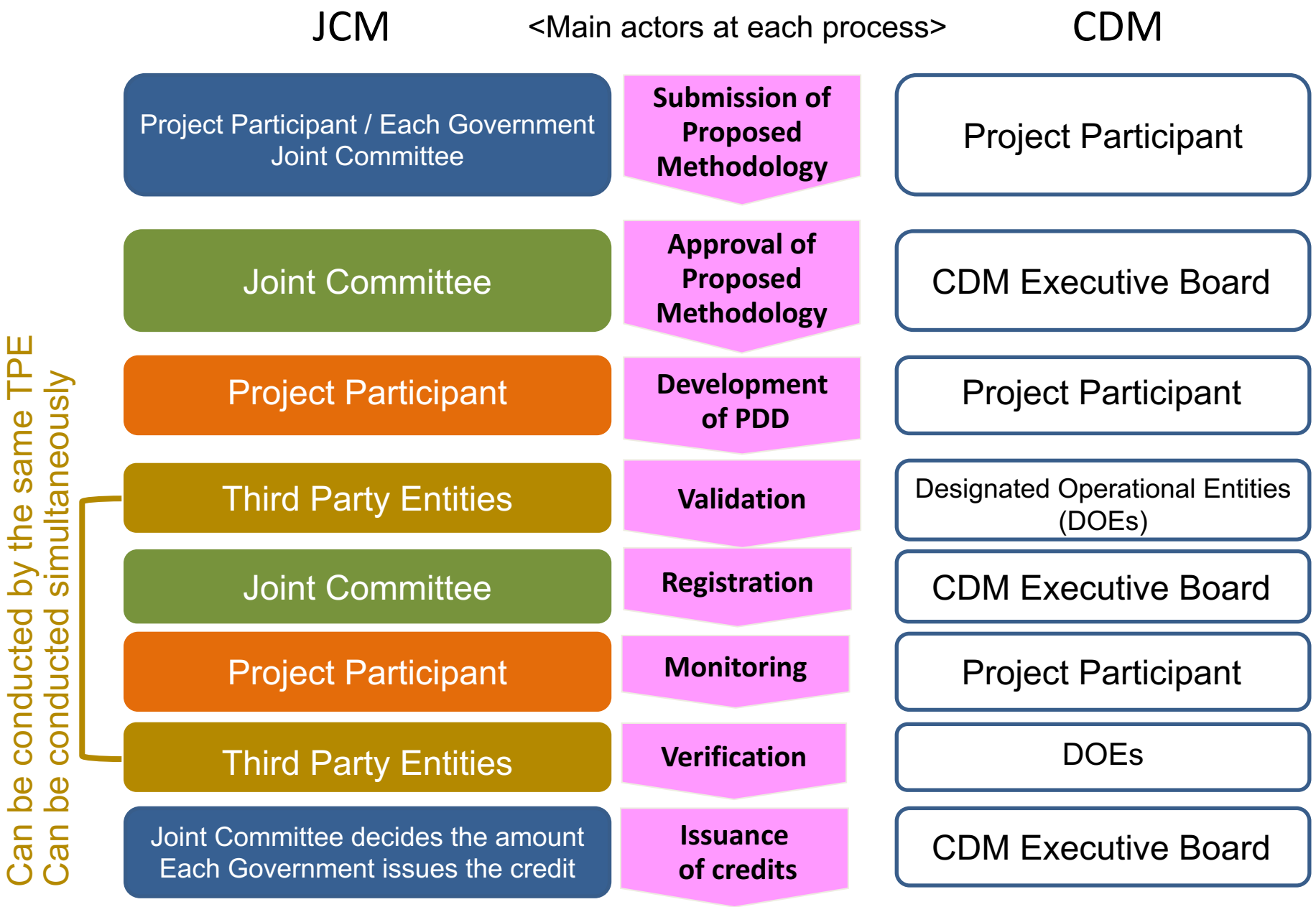
Basic Concept of the JCM

- 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.
- Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner and use them to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals.



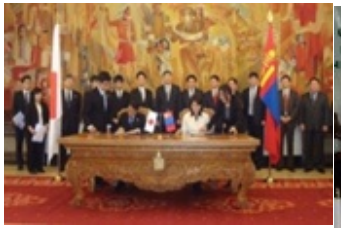
*measurement, reporting and verification

Project Cycle of the JCM and the CDM



JCM Partner Countries

- 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)

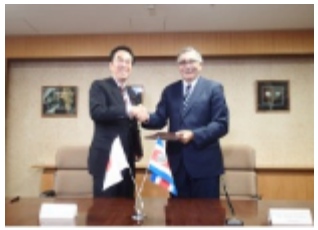
Kenya
Jun. 12,2013
(Nairobi)

Maldives
Jun. 29, 2013
(Okinawa)

Viet Nam
Jul. 2, 2013
(Hanoi)

Lao PDR
Aug. 7, 2013
(Vientiane)

Indonesia
Aug. 26, 2013
(Jakarta)



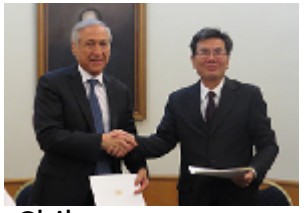
Costa Rica
Dec. 9, 2013
(Tokyo)

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)

the Philippines
Jan. 12, 2017
(Manila)

Progress of the JCM in each partner country as of July 23 2018

Partner countries	Start from	No. of JC	No. of registered projects	No. of approved methodologies	Pipeline (JCM Financing Programme & Demonstration Projects in FY 2013-2018)
Mongolia	Jan 2013	5	5	3	8
Bangladesh	Mar 2013	4	1	3	5
Ethiopia	May 2013	3		3	2
Kenya	Jun 2013	3		3	3
Maldives	Jun 2013	3	1	1	2
Viet Nam	Jul 2013	6	5	9	21
Lao PDR	Aug 2013	3	1	1	4
Indonesia	Aug 2013	8	13	16	33
Costa Rica	Dec 2013	2		3	2
Palau	Apr 2014	5	3	1	4
Cambodia	Apr 2014	4	1	2	6
Mexico	Jul 2014	2		1	5
Saudi Arabia	May 2015	2		1	1
Chile	May 2015	2		1	1
Myanmar	Sep 2015	2		1	6
Thailand	Nov 2015	4	4	7	26
Philippines	Jan 2017	1			8
Total	17	59	34	56	137

Issuance of JCM Credits

- Total of 15 projects issued credits under the JCM
- Total amount of credits issued are 11,469 t-CO2

Country	Notification date	Amounts of credits issued（tCO2）				
		Total	Japanese government	Japanese company	Partner government	Partner company
Indonesia	2016/05/12 2018/07/10	745	380	70	279	16
Mongolia	2016/09/29 2017/10/24	9,104	6,372	911	1,821	0
Vietnam	2017/10/10	439	277	29	45	88
Palau	2016/12/19 2018/01/30	881	659	0	222	0
Thailand	2018/04/20	300	151	0	0	149




The Paris Agreement Article 6 and the JCM

The JCM related Articles in the Paris Agreement

Article 6 of the Agreement

2. Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

3. The use of internationally transferred mitigation outcomes to achieve nationally determined contributions under this Agreement shall be voluntary and authorized by participating Parties.

- Use of market mechanisms, including the JCM, is articulated under Article 6 which prescribes for the use of emission reductions realized oversees towards national emission reduction targets.
- The amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction in accordance with the Paris Agreement.
- The development of the guidance for robust accounting including for avoidance of double counting to be adopted by the CMA*.

*the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement

The JCM, SD, Environmental Integrity, Governance

Article 6 of the Agreement

2. Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, **promote sustainable development** and **ensure environmental integrity and transparency**, including in **governance**, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

Bilateral Document between Japan and each JCM partner country

1. The Japanese side and the [Name of Partner Country] side (hereinafter referred to as "both sides"), in pursuit of the ultimate objective of the United Nations Framework Convention on Climate Change (hereinafter referred to as the "Convention") as stated in its Article 2 and of **achieving sustainable development**, and in order to continue to address climate change in cooperation beyond 2012, promote the Low Carbon Growth Partnership as follows.

Rule of implementation for the JCM

1. Purpose of the JCM

The JCM has the following purposes:

(a) To facilitate diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and **contributing to sustainable development** of [Name of Partner Country];

SD Guidelines implemented in Indonesia and Japan

- ◆"Guidelines for Developing Sustainable Development Implementation Plan and Report" (SD guidelines)
- ◆At the time of requesting registration, project participant submits Sustainable Development Implementation Plan (SDIP), which includes answers and action plans
- ◆At the time of requesting credit issuance, project participant submit Sustainable Development Implementation Report (SDIR) which includes the implementation of projects and corrective actions for the identified impact and is evaluated by the Joint Committee.

No.	Items	Questions
1	EIA	Does the proposed project require official/legal process of EIA?
2	Pollution Control (No need to answer if EIA is required)	Does the proposed project emit air pollutants?
3		Does the proposed project discharge water pollutants or substances which influence BOD, COD or ph, etc.?
4		Does the proposed project generate waste?
5		Does the proposed project increase noise and/or vibration from the current level?
6		Does the proposed project cause ground subsidence?
7		Does the proposed project cause odor?
8	Safety and health	Does the proposed project create dangerous condition for local communities as well as individuals involved in the project, during either its construction or its operation?
9	Natural Environment and biodiversity	Is the proposed project site located in protected areas designated by national laws or international treaties and conventions?
10		Does the proposed project change land use of the community and protected habitats for endangered species designated by national laws or international treaties and conventions?
11		Does the proposed project bring foreign species?
12		Does the proposed project include construction activities considered to affect natural environment and biodiversity (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?
13		Does the proposed project use surface water, ground water and/or deep ground water?
14	Economy	Does the proposed project have negative impact on local workforce capacity?
15		Does the proposed project have negative impact on local community's welfare?
16	Social Environment and Community Participation	Does the proposed project cause any resettlement or other types of conflict?
17		Does the proposed project fail to involve activities to respond to, and follow up, comments and complaints that have been received from local communities, particularly from the public consultation?
18		Do the project participants violate any laws and/or ordinances associated with the working conditions of local communities which the project participants should observe in the project?
19	Technology	Does the proposed project fail to involve activities to build capacity of human resources through technology transfer and technical assistance?
20		Does the proposed project fail to describe information of technology specification that consists of manual book and ways to overcome the problems that may occur when being operated on the site, at least in English and in Bahasa Indonesia as applicable?

JCM and Environmental Integrity

Net Emission Reductions

The transfer and use of ITMOs must not result in an increase in global emissions. In order to achieve this, **the JCM methodology requires to set conservative reference emissions, which will be calculated below business-as-usual (BaU) emissions**. This approach will ensure that trading of credits/units, can realize real global emission reductions.

Transparency

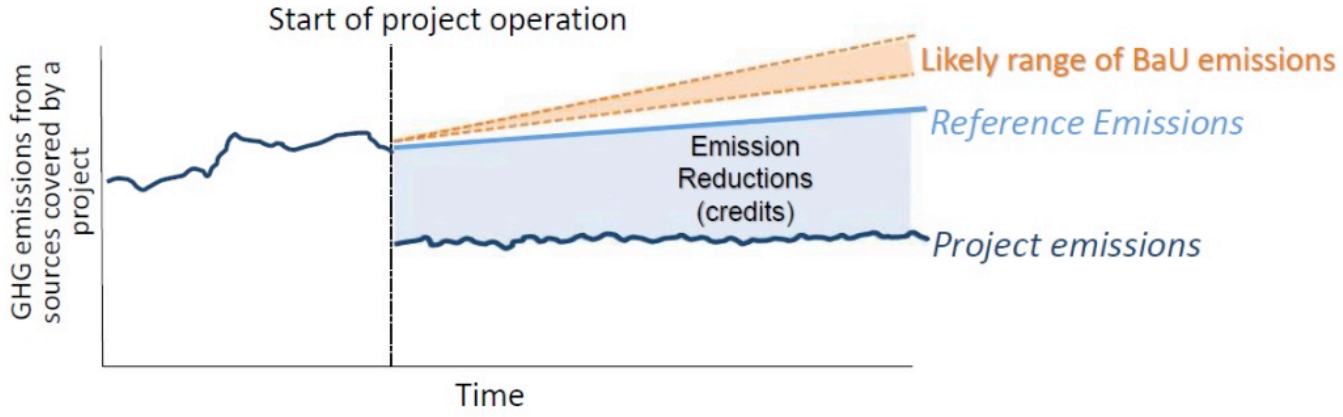
All the JCM related decisions including rules and guidelines, methodologies, registered projects, and issuance of credits, are published in the **publicly accessible JCM website for public scrutiny. Local stakeholder consultation** is also required and documented in the project design document, which will be also posted in the JCM website for public comments.

Avoidance of Double Counting

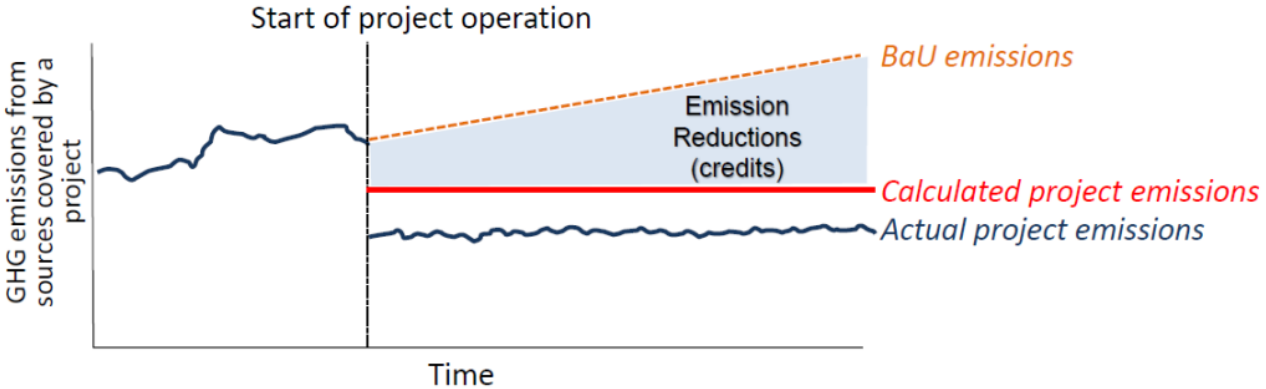
The JCM has developed its own rules and procedures, **to avoid double registration of project, double issuance of credit and double usage of already issued credits or allocated allowances**. It is important to define a robust accounting rule **to avoid double claiming of credit under the Paris Agreement**.

Achieving net emission reductions under the JCM

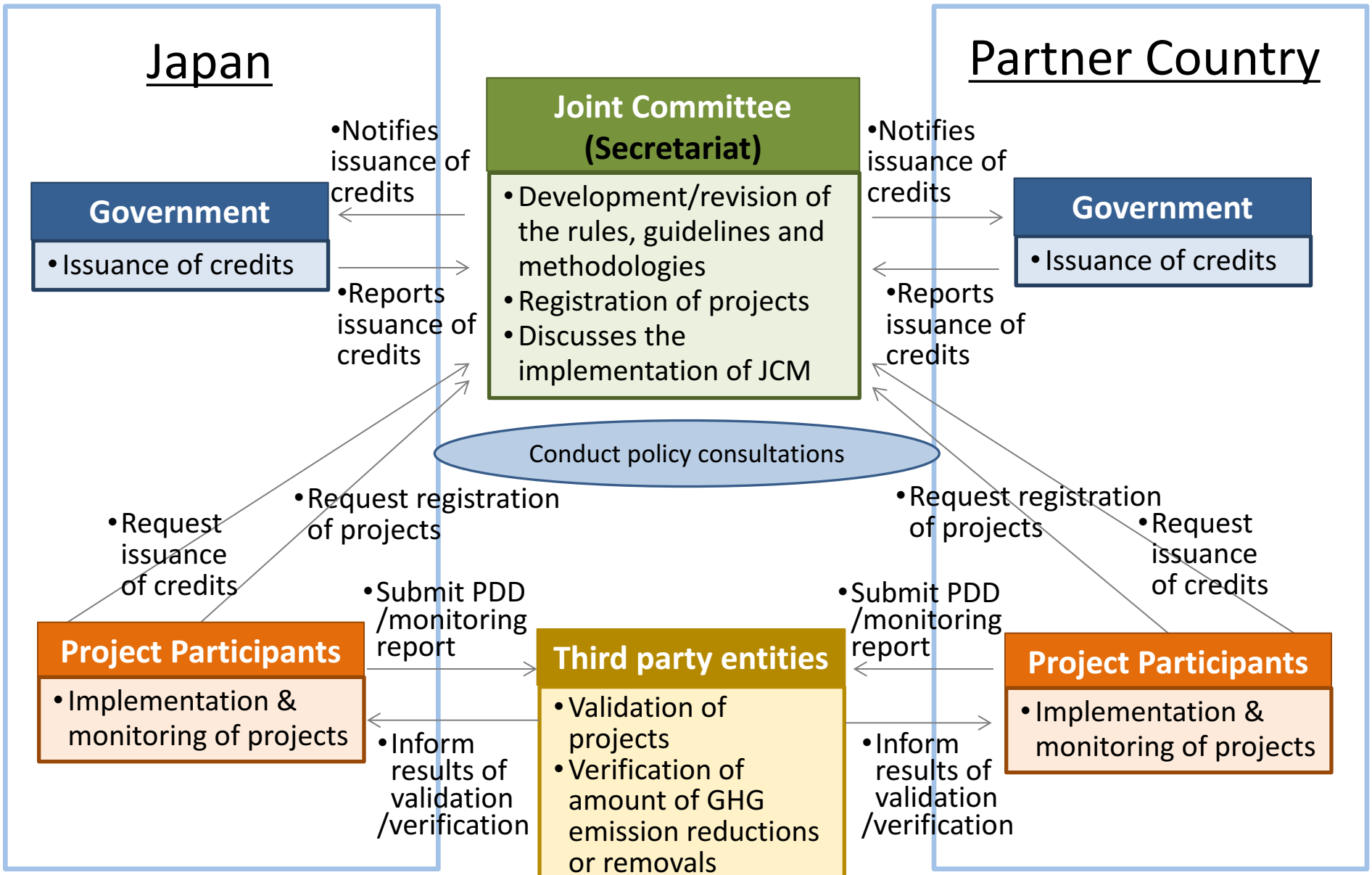
A. The reference emissions are calculated below business-as-usual (BaU) emissions.



B. The amount of project emissions can be calculated larger by using higher default values.



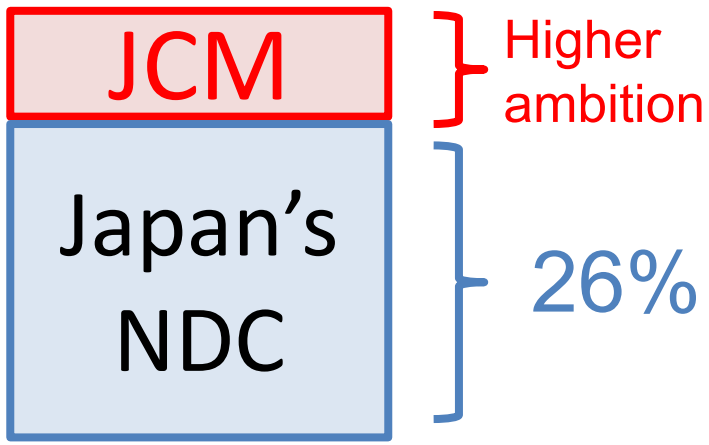
Governance Scheme of the JCM



Contribution to NDC through the JCM

Japan's emission reduction target and the JCM

- Japan will achieve the target of 26% reduction through domestic emission reductions and removals without using international credits while the amount of credits acquired by Japan under the JCM will be appropriately counted as Japan's reduction.
- 10 million tCO2 is expected to be realized by 2030 from the pipeline projects.
- Implementation of JCM projects is to be scaled-up through further mobilization of private sector finance.

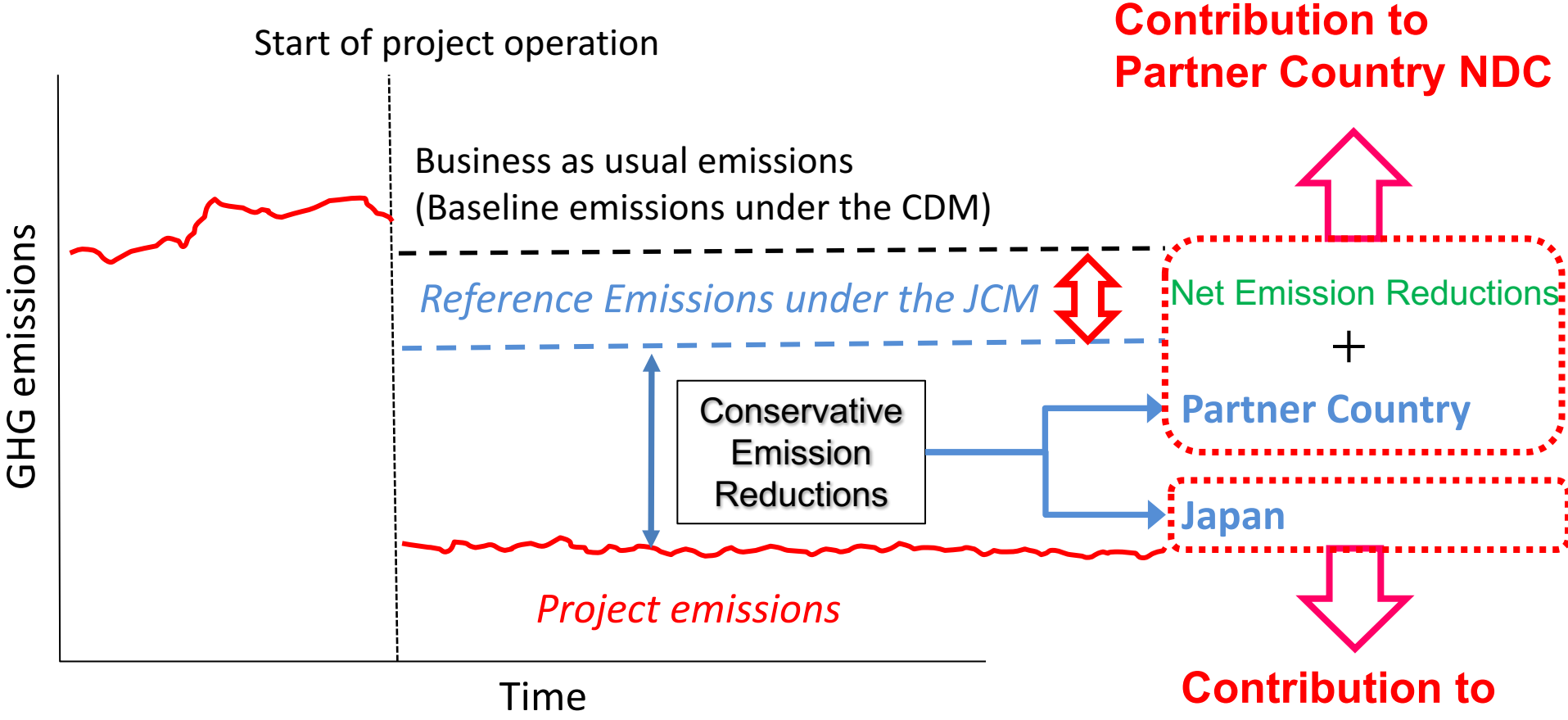


"Plan for Global Warming Countermeasures (Cabinet Decision, May 2016)"

- *Apart from contributions achieved through private-sector based projects, accumulated emission reductions or removals by FY 2030 through governmental JCM programs to be undertaken within the government's annual budget are estimated to be ranging from 50 to 100 million t-CO2.*
- *The JCM is not included as a basis of the bottom-up calculation of Japan's emission reduction target, but the amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction.*

JCM's Contribution to NDC

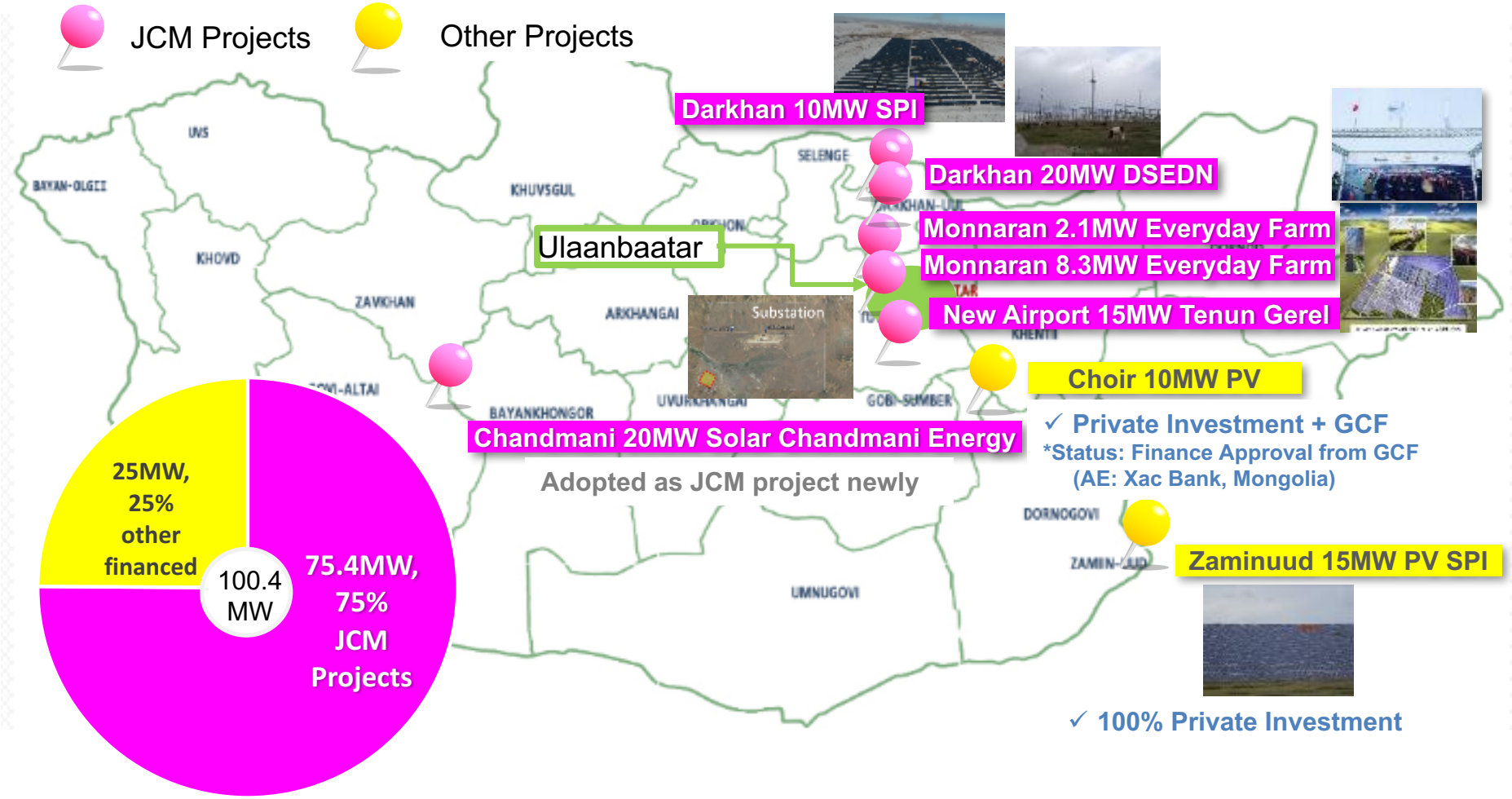
- JCM's conservative emission reduction calculation (reference emissions below BaU emissions) will ensure a net decrease and/or avoidance of GHG emissions.
- This part of emission reductions will automatically contribute to the achievement of NDC.



The Case of JCM's Contribution to NDC (Mongolia)

- Emission reduction of 14% is aimed to be realized by 2030 in total national GHG emissions, compared to the projected emissions under BAU scenario.
- In energy sector, the share of renewable electricity capacity to be increased up to 30% of total electricity generation capacity by 2030, from 7.62% in 2014.

75% of solar PV power facilities so far have been installed by the JCM as of June 2018

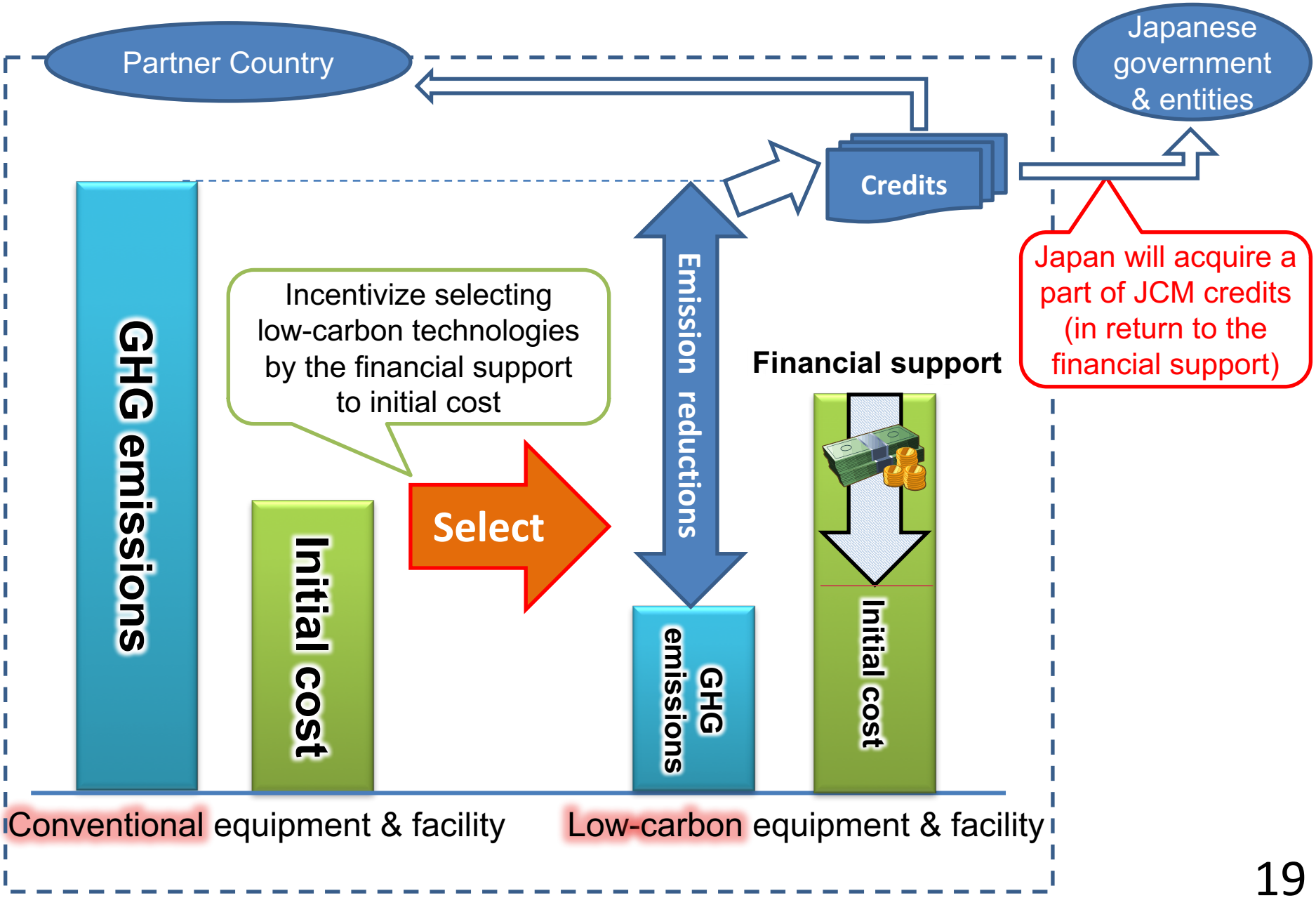


***JCM related Contribution for NDC in Mongolia**: **75 MW**

*Private Investment PV Project by the trigger of successful JCM projects: 25MW

Support Scheme by the Ministry of the Environment (MOE)

Contributions from Japan



JCM Model Projects by MOE

The budget for projects starting from FY 2018 is 6.9 billion JPY (approx. USD 69 million) in total by FY2020

(1 USD = 100 JPY)

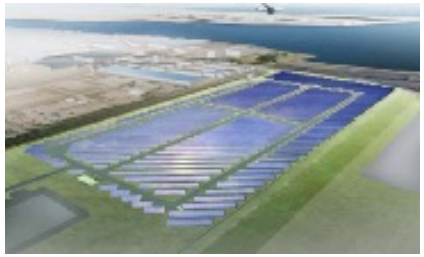
※Includes collaboration with projects supported by JICA and other governmental-affiliated financial institute.

Government of Japan

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

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 CO_2 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.

The JCM Model Projects

- Facilitating diffusion of leading low carbon technologies through contributions from Japan and evaluating realized GHG emission reductions or removals in a quantitative manner to use them for achieving Japan's emission reduction target.
- Japan will address the high initial cost barrier of introducing advanced low-carbon technologies in the Partner countries (17 countries) through the JCM (GoJ implements several supporting schemes)

Waste heat recovery in Cement Industry, JFE engineering, Indonesia

Eco-driving with Digital Tachographs, NITTSU, Vietnam

Energy saving at convenience stores, Panasonic, Indonesia

High efficiency air-conditioning and process cooling, Ebara refrigeration equipment & systems, Indonesia

High-efficiency Heat only Boilers, Suuri-Keikaku, Mongolia

Upgrading air-saving loom at textile factory, TORAY etc., Indonesia, Thai, Bangladesh

Installing solar PV system, PCKK, Palau Maldives

Amorphous transformers in power distribution, Hitachi Materials, Vietnam

Co-generation system at factory, Toyota, Nippon Steel & Sumikin Engineering, Indonesia, Thai

High efficiency air-conditioning system, Hitachi, Daikin, Vietnam

Solar PV System at Salt Factory, PCKK, Kenya

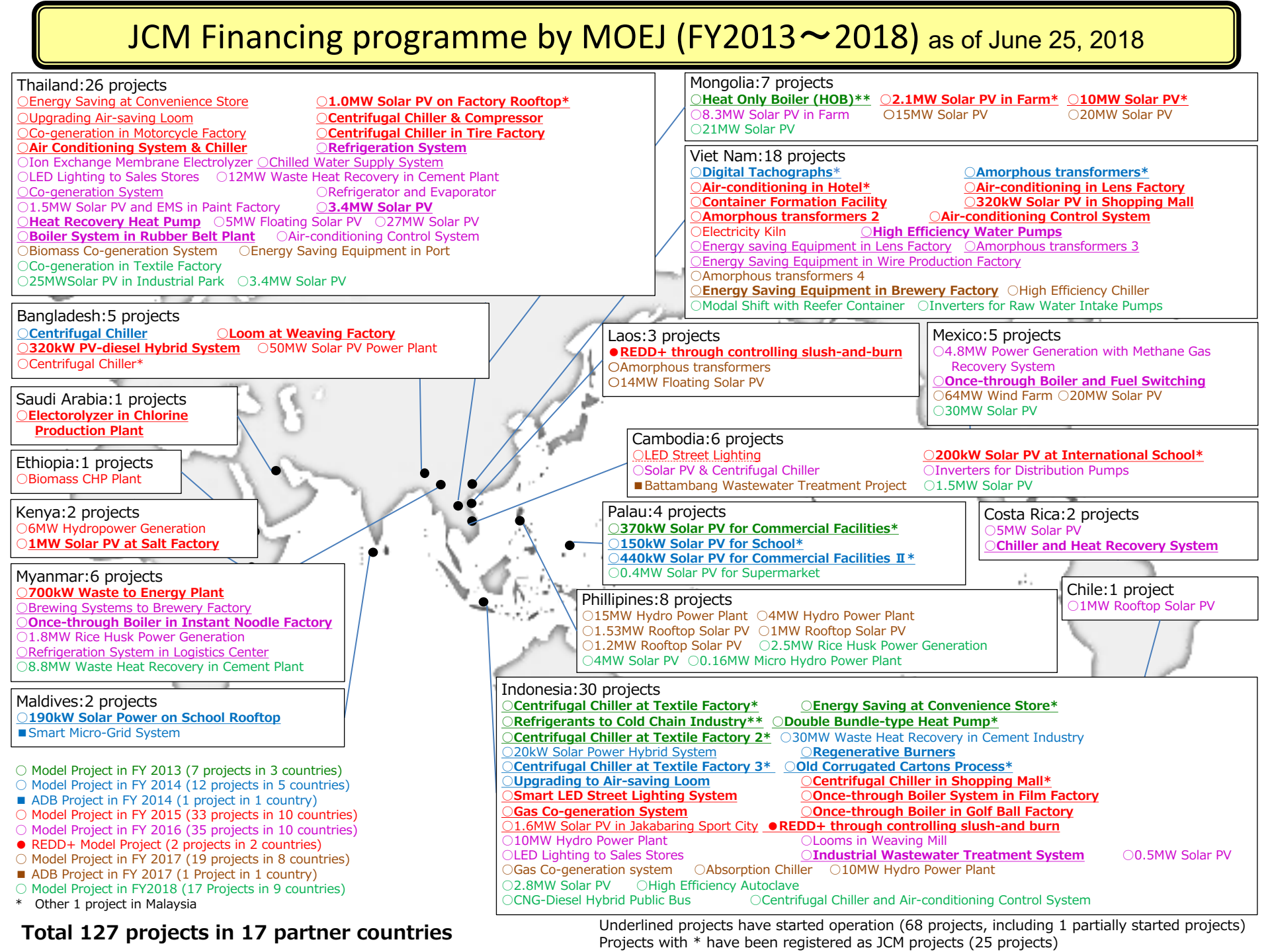
Waste to Energy Plant, JFE engineering, Myanmar

High efficient refrigerator, Mayekawa MFG, Indonesia

Regenerative Burners in industries, Toyotsu Machinery, Indonesia

LED street lighting system with wireless network control, MinebeaMitsumi, Cambodia

JCM Financing programme by MOEJ (FY2013～2018) as of June 25, 2018



Thailand:26 projects
- ○Energy Saving at Convenience Store
- ○Upgrading Air-saving Loom
- ○Co-generation in Motorcycle Factory
- ○**Air Conditioning System & Chiller**
- ○Ion Exchange Membrane Electrolyzer
- ○LED Lighting to Sales Stores
- ○Co-generation System
- ○1.5MW Solar PV and EMS in Paint Factory
- ○**Heat Recovery Heat Pump**
- ○**Boiler System in Rubber Belt Plant**
- ○Biomass Co-generation System
- ○Co-generation in Textile Factory
- ○25MWSolar PV in Industrial Park
- ○**1.0MW Solar PV on Factory Rooftop***
- ○**Centrifugal Chiller & Compressor**
- ○**Centrifugal Chiller in Tire Factory**
- ○**Refrigeration System**
- ○Chilled Water Supply System
- ○12MW Waste Heat Recovery in Cement Plant
- ○Refrigerator and Evaporator
- ○**3.4MW Solar PV**
- ○5MW Floating Solar PV
- ○27MW Solar PV
- ○Air-conditioning Control System
- ○Energy Saving Equipment in Port
- ○3.4MW Solar PV

Mongolia:7 projects
- ○**Heat Only Boiler (HOB)****
- ○8.3MW Solar PV in Farm
- ○21MW Solar PV
- ○**2.1MW Solar PV in Farm***
- ○15MW Solar PV
- ○**10MW Solar PV***
- ○20MW Solar PV

Viet Nam:18 projects
- ○**Digital Tachographs***
- ○**Air-conditioning in Hotel***
- ○**Container Formation Facility**
- ○**Amorphous transformers 2**
- ○Electricity Kiln
- ○Energy saving Equipment in Lens Factory
- ○Energy Saving Equipment in Wire Production Factory
- ○Amorphous transformers 4
- ○**Energy Saving Equipment in Brewery Factory**
- ○Modal Shift with Reefer Container
- ○**Amorphous transformers***
- ○**Air-conditioning in Lens Factory**
- ○**320kW Solar PV in Shopping Mall**
- ○**Air-conditioning Control System**
- ○**High Efficiency Water Pumps**
- ○Amorphous transformers 3
- ○High Efficiency Chiller
- ○Inverters for Raw Water Intake Pumps

Bangladesh:5 projects
- ○**Centrifugal Chiller**
- ○**320kW PV-diesel Hybrid System**
- ○Centrifugal Chiller*
- ○**Loom at Weaving Factory**
- ○50MW Solar PV Power Plant

Laos:3 projects
- ●**REDD+ through controlling slush-and-burn**
- ○Amorphous transformers
- ○14MW Floating Solar PV

Mexico:5 projects
- ○4.8MW Power Generation with Methane Gas Recovery System
- ○**Once-through Boiler and Fuel Switching**
- ○64MW Wind Farm
- ○20MW Solar PV
- ○30MW Solar PV

Saudi Arabia:1 projects
- ○**Electorolyzer in Chlorine Production Plant**

Cambodia:6 projects
- ○LED Street Lighting
- ○Solar PV & Centrifugal Chiller
- ■Battambang Wastewater Treatment Project
- ○**200kW Solar PV at International School***
- ○Inverters for Distribution Pumps
- ○1.5MW Solar PV

Ethiopia:1 projects
- ○Biomass CHP Plant

Kenya:2 projects
- ○6MW Hydropower Generation
- ○**1MW Solar PV at Salt Factory**

Palau:4 projects
- ○**370kW Solar PV for Commercial Facilities***
- ○**150kW Solar PV for School***
- ○**440kW Solar PV for Commercial Facilities Ⅱ***
- ○0.4MW Solar PV for Supermarket

Costa Rica:2 projects
- ○5MW Solar PV
- ○**Chiller and Heat Recovery System**

Myanmar:6 projects
- ○**700kW Waste to Energy Plant**
- ○Brewing Systems to Brewery Factory
- ○**Once-through Boiler in Instant Noodle Factory**
- ○1.8MW Rice Husk Power Generation
- ○Refrigeration System in Logistics Center
- ○8.8MW Waste Heat Recovery in Cement Plant

Phillipines:8 projects
- ○15MW Hydro Power Plant
- ○4MW Hydro Power Plant
- ○1.53MW Rooftop Solar PV
- ○1MW Rooftop Solar PV
- ○1.2MW Rooftop Solar PV
- ○2.5MW Rice Husk Power Generation
- ○4MW Solar PV
- ○0.16MW Micro Hydro Power Plant

Chile:1 project
- ○1MW Rooftop Solar PV

Maldives:2 projects
- ○**190kW Solar Power on School Rooftop**
- ■Smart Micro-Grid System

Indonesia:30 projects
- ○**Centrifugal Chiller at Textile Factory***
- ○**Refrigerants to Cold Chain Industry****
- ○**Centrifugal Chiller at Textile Factory 2***
- ○20kW Solar Power Hybrid System
- ○**Centrifugal Chiller at Textile Factory 3***
- ○**Upgrading to Air-saving Loom**
- ○**Smart LED Street Lighting System**
- ○**Gas Co-generation System**
- ○1.6MW Solar PV in Jakabaring Sport City
- ○10MW Hydro Power Plant
- ○LED Lighting to Sales Stores
- ○Gas Co-generation system
- ○2.8MW Solar PV
- ○CNG-Diesel Hybrid Public Bus
- ○**Energy Saving at Convenience Store***
- ○**Double Bundle-type Heat Pump***
- ○30MW Waste Heat Recovery in Cement Industry
- ○**Regenerative Burners**
- ○**Old Corrugated Cartons Process***
- ○**Centrifugal Chiller in Shopping Mall***
- ○**Once-through Boiler System in Film Factory**
- ○**Once-through Boiler in Golf Ball Factory**
- ●**REDD+ through controlling slush-and burn**
- ○Looms in Weaving Mill
- ○**Industrial Wastewater Treatment System**
- ○Absorption Chiller
- ○10MW Hydro Power Plant
- ○High Efficiency Autoclave
- ○Centrifugal Chiller and Air-conditioning Control System
- ○0.5MW Solar PV

○ Model Project in FY 2013 (7 projects in 3 countries)
○ Model Project in FY 2014 (12 projects in 5 countries)
■ ADB Project in FY 2014 (1 project in 1 country)
○ Model Project in FY 2015 (33 projects in 10 countries)
○ Model Project in FY 2016 (35 projects in 10 countries)
● REDD+ Model Project (2 projects in 2 countries)
○ Model Project in FY 2017 (19 projects in 8 countries)
■ ADB Project in FY 2017 (1 Project in 1 country)
○ Model Project in FY2018 (17 Projects in 9 countries)
* Other 1 project in Malaysia

Total 127 projects in 17 partner countries

Underlined projects have started operation (68 projects, including 1 partially started projects)
Projects with * have been registered as JCM projects (25 projects)

Technologies Transferred through JCM(FY2013-2018)

- Total of 127 **JCM Model Projects** being developed in 17 partner countries
- 55% are **energy efficiency** and 34% are **renewable energy** while 7% are **co-generation system**
- Transport, waste to energy and REDD+ project shares 4%

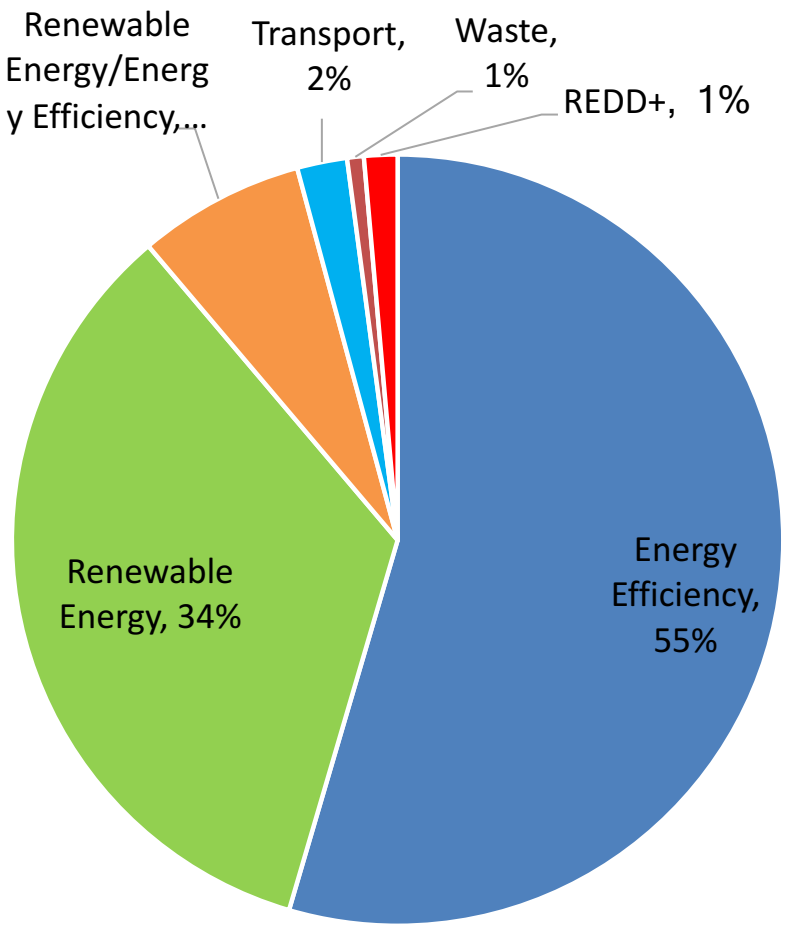
Renewable Energy
Solar
Micro hydro
Biomass
Wind

Renewable Energy/Energy Efficiency
Co-generation System

Transport
Digital Tachographs
Modal Shift
CNG-Diesel Hybrid

Waste
Waste to Energy

REDD+
Controlling Slush and burn



Energy efficiency
Looms
Equipment
Boiler
Burner
Electrolysis tank
LED
Production line
Optimization
Pump
Heat pump/Water heater
Air-conditioning
Refrigerating
Transmission/Transformer
LED Streetlights
Smart Grid

As of June 25, 2018

Business Model Case① :
Replicating through Standard & Institutional Arrangement

- Company succeeded to implement leading low carbon technologies through the JCM
- Using the project as a showcase, their business was developed in ASEAN countries
- Further business development is expected through the establishment of energy efficiency standard s and relevant institutional arrangements

Myanmar:2 JCM model projects (2016)

Thailand:7 projects (2015,2016)

Viet Nam:3 projects (2016,2017)

Chillers/Refrigerator

Indonesia:6 projects (2013-2017)

JCM model project

↓

Demonstration of energy efficiency effects

↓

Establish standards & institutional arrangements

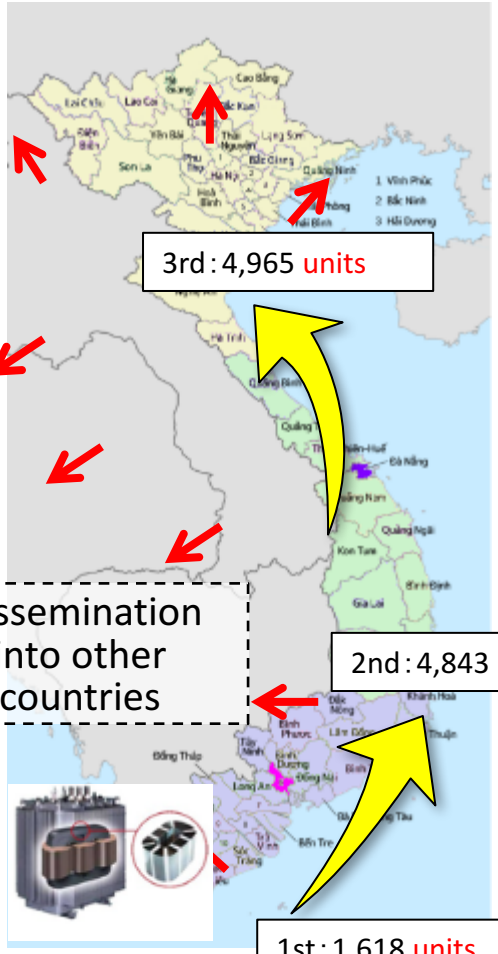
- Regulations
- Standards
- Taxes

↓

Business development in other countries, sectors

Business Model Case② : Replicating through specific actions

- Company succeeded to introduce amorphous high efficiency transformers all over Viet Nam through the JCM
- Local energy distribution company included specifications for hiring the technology in its procurement standard based on understanding on its effectiveness
- Further business development is happening in other countries (e.g. Lao PDR)



Dissemination into other countries

JCM model projects

Demonstration of energy efficiency effects

Specifications included in procurement standard

Sustainable business development

Dissemination of technology domestically and internationally