Implementation of Joint Crediting Mechanism (JCM) in developing countries/Support introduction of low carbon technology

Who am I?

[Name]

Takaaki ITO
(as in passport)

Alaska
(nickname)

[Organisation]

Now in
OECD
Environment Directorate
Environment, Health and Safety Division
(Exposure assessment of chemicals, Pollutant Release and Transfer Register)

Before OECD
Ministry of the Environment Japan

2014~2017 Office of Market Mechanisms
(JCM, J-Credit Scheme)

Today's topic: JCM

1. What is the JCM?

2. How is it implemented?
   a) Realizing emission reduction projects
   b) Issuance of JCM credits

3. Who is involved?

4. What are the next steps?

1. What is the JCM?

[Objective]
- Realize actual GHG emission reduction projects in developing countries
- Not merely planning or capacity building

[Method]
- Japan will contribute for such realization
- Acquire JCM credits in return to the contribution, and count them as Japan's GHG reduction

One of the most important strategies by Japan for promotion of global emission reduction and international collaboration/cooperation

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

Japan establishes and implements the JCM in order both to appropriately evaluate contributions from Japan to GHG emission reductions or removals in a quantitative manner achieved through the diffusion of low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions in developing countries, and to use them to achieve Japan's emission reduction target.

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.
- Japan is going to contribute to 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

Statement by Prime Minister Shinzo Abe at the COP21

PARIS2015
CONFÉRENCE DES NATIONS UNIES
SUR LES CHANGEMENTS CLIMATIQUES
COP21·CMP11

In addition, many of the advanced low-carbon technologies do not generally promise investment-return to developing countries.
Japan will, while lowering burdens of those countries, promote diffusion of advanced low carbon technologies particularly through implementation of the JCM.

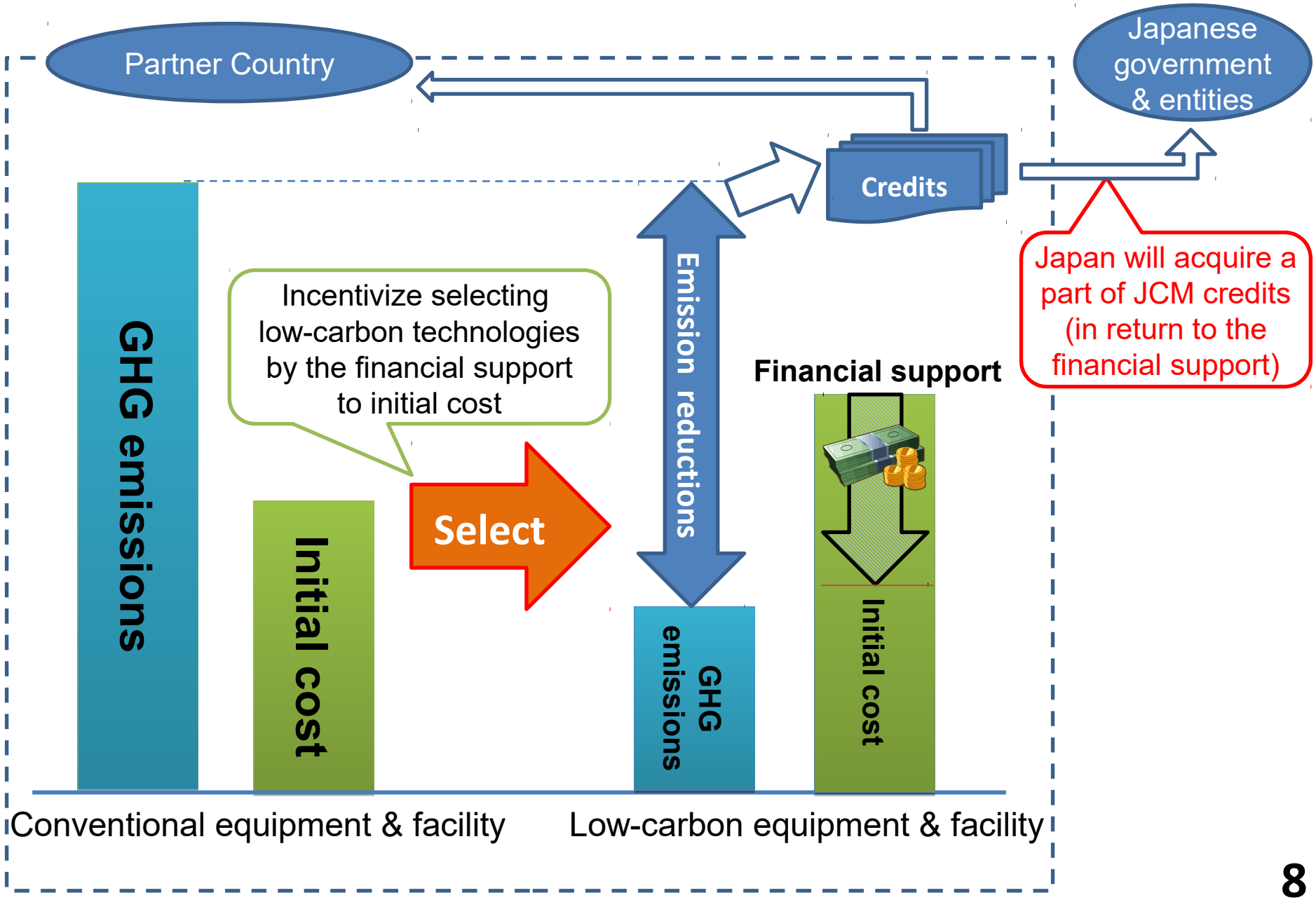
2. How is it implemented?

a) Realizing emission reduction projects

Financial contribution from GoJ

- Model Project
- Demonstration Project
- ADB Trust Fund
- F-gas Recovery and Destruction Model Project
- REDD+ Model Project

Contributions from Japan



JCM Model Projects by MOE

The draft budget for projects starting from FY 2018 is 6.9 billion JPY (approx. 53 million EUR) in total by FY2020

(1 EUR = 130 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.

ADB Trust Fund: Japan Fund for Joint Crediting Mechanism (JFJCM)

Draft budget for FY2018

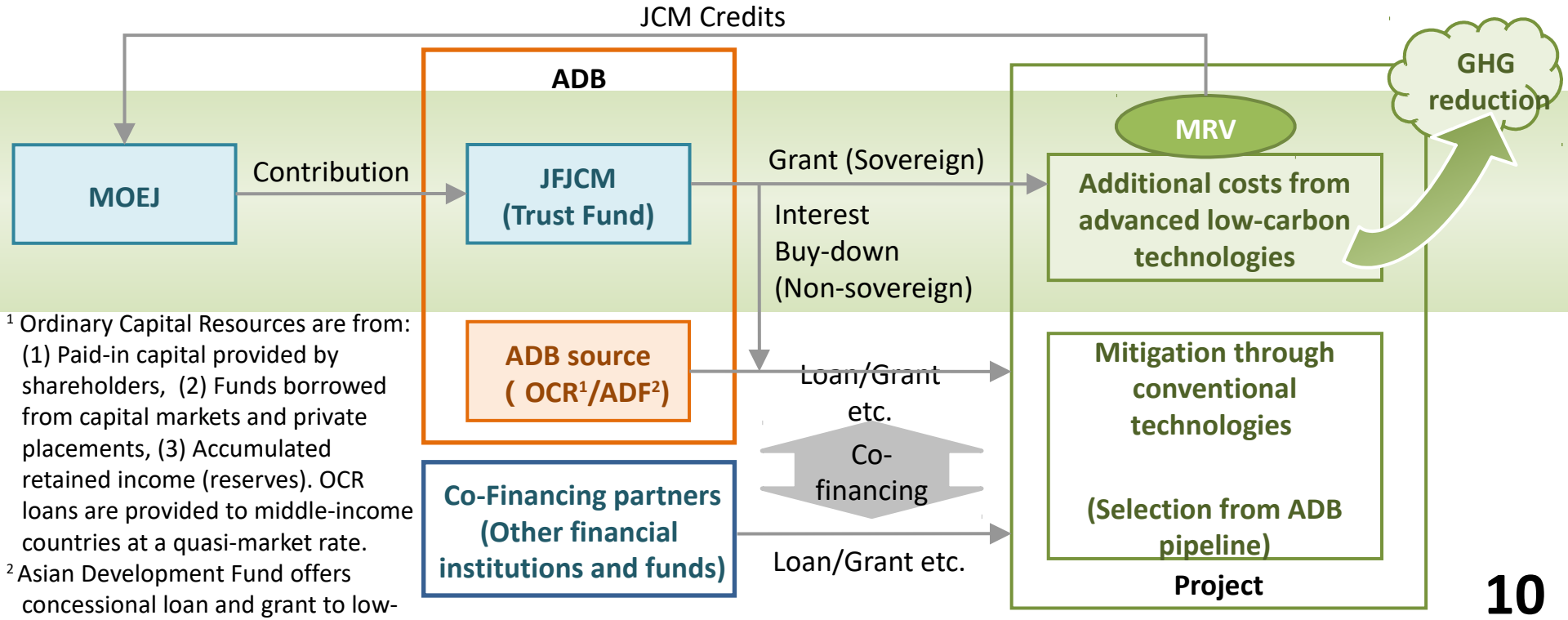
1 billion JPY (approx. 8 million EUR) (1 EUR = 130 JPY)

Scheme

To provide the financial incentives for the adoption of advanced low-carbon technologies which are superior in GHG emission reduction but expensive in ADB(Asian Development Bank)-financed projects

Purpose

To develop ADB projects with sustainable and low-carbon transition perspective by introducing advanced low-carbon technologies as well as to acquire JCM credits



[1] Ordinary Capital Resources are from: (1) Paid-in capital provided by shareholders, (2) Funds borrowed from capital markets and private placements, (3) Accumulated retained income (reserves). OCR loans are provided to middle-income countries at a quasi-market rate.

[2] Asian Development Fund offers concessional loan and grant to low-

JCM F-gas Recovery and Destruction Model Project by MOE

【 Draft budget for FY 2018 】
40 million JPY (approx. 0.3 million EUR) (1 EUR = 130 JPY)

Government of Japan

Finance part of the cost in flat-rate (up to 40 million JPY/year)

Conduct MRV to estimate GHG emission reductions.
At least half or ratio of financial support to project cost (larger ratio will be applied) of JCM credits issued are expected to be delivered to the government of Japan

International consortiums (which include Japanese entities)

Manufacturers of equipment which uses F-gas	Users of equipment which uses F-gas	Entities for recovery and transportation of used F-gas (recycling or scrap entities)	Entities for destruction of used F-gas (may use existing facility for destruction)

Purpose

To recover and destroy F-gas (GHG except for energy-related CO2, etc) from used equipment instead of releasing to air, and reduce emissions

Scope of Financing

- Establish scheme for recovery and destruction
- Install facilities/equipment for recovery/destruction
- Implementation of recovery, transportation, destruction and monitoring

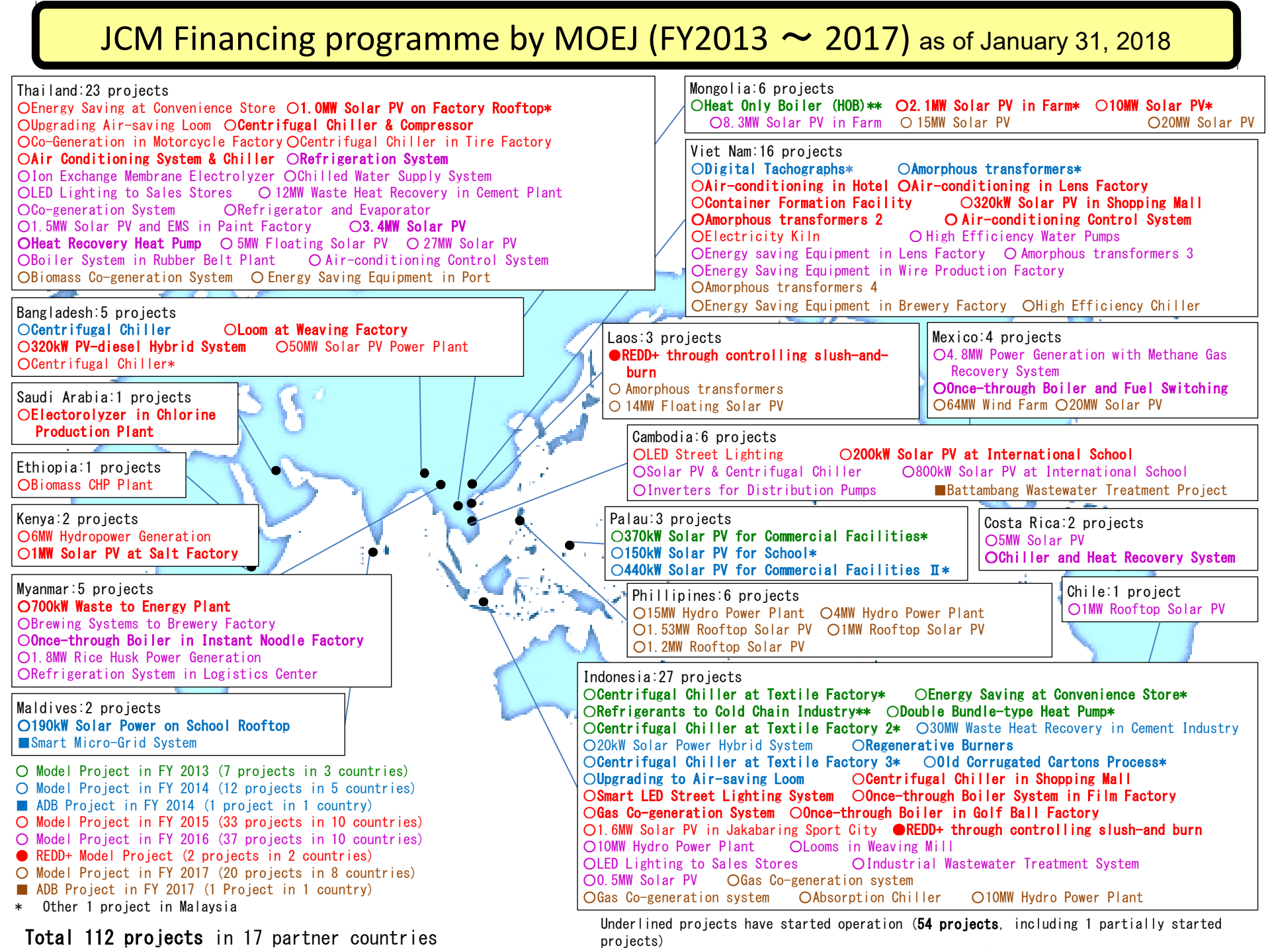
Project Period

Three years in maximum (Ex. 1st year for scheme, 2nd year for facilities, 3rd year for recovery/destruction)

Eligible Projects

- After the adoption of financing, start implementation of recovery/destruction within three years
- Aim for the registration as JCM project and issuance credits

JCM Financing programme by MOEJ (FY2013 ～ 2017) as of January 31, 2018



Thailand:23 projects
○Energy Saving at Convenience Store ○1.0MW Solar PV on Factory Rooftop*
○Upgrading Air-saving Loom ○Centrifugal Chiller & Compressor
○Co-Generation in Motorcycle Factory ○Centrifugal Chiller in Tire Factory
○Air Conditioning System & Chiller ○Refrigeration System
○Ion Exchange Membrane Electrolyzer ○Chilled Water Supply System
○LED Lighting to Sales Stores ○12MW Waste Heat Recovery in Cement Plant
○Co-generation System ○Refrigerator and Evaporator
○1.5MW Solar PV and EMS in Paint Factory ○3.4MW Solar PV
○Heat Recovery Heat Pump ○5MW Floating Solar PV ○27MW Solar PV
○Boiler System in Rubber Belt Plant ○Air-conditioning Control System
○Biomass Co-generation System ○Energy Saving Equipment in Port

Mongolia:6 projects
○Heat Only Boiler (HOB)** ○2.1MW Solar PV in Farm* ○10MW Solar PV*
○8.3MW Solar PV in Farm ○15MW Solar PV ○20MW Solar PV

Viet Nam:16 projects
○Digital Tachographs* ○Amorphous transformers*
○Air-conditioning in Hotel ○Air-conditioning in Lens Factory
○Container Formation Facility ○320kW Solar PV in Shopping Mall
○Amorphous transformers 2 ○Air-conditioning Control System
○Electricity Kiln ○High Efficiency Water Pumps
○Energy saving Equipment in Lens Factory ○Amorphous transformers 3
○Energy Saving Equipment in Wire Production Factory
○Amorphous transformers 4
○Energy Saving Equipment in Brewery Factory ○High Efficiency Chiller

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

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

Mexico:4 projects
○4.8MW Power Generation with Methane Gas Recovery System
○Once-through Boiler and Fuel Switching
○64MW Wind Farm ○20MW Solar PV

Saudi Arabia:1 projects
○Electorolyzer in Chlorine Production Plant

Cambodia:6 projects
○LED Street Lighting ○200kW Solar PV at International School
○Solar PV & Centrifugal Chiller ○800kW Solar PV at International School
○Inverters for Distribution Pumps ■Battambang Wastewater Treatment Project

Ethiopia:1 projects
○Biomass CHP Plant

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

Palau:3 projects
○370kW Solar PV for Commercial Facilities*
○150kW Solar PV for School*
○440kW Solar PV for Commercial Facilities Ⅱ*

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

Myanmar:5 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

Phillipines:6 projects
○15MW Hydro Power Plant ○4MW Hydro Power Plant
○1.53MW Rooftop Solar PV ○1MW Rooftop Solar PV
○1.2MW Rooftop Solar PV

Chile:1 project
○1MW Rooftop Solar PV

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

Indonesia:27 projects
○Centrifugal Chiller at Textile Factory* ○Energy Saving at Convenience Store*
○Refrigerants to Cold Chain Industry** ○Double Bundle-type Heat Pump*
○Centrifugal Chiller at Textile Factory 2* ○30MW Waste Heat Recovery in Cement Industry
○20kW Solar Power Hybrid System ○Regenerative Burners
○Centrifugal Chiller at Textile Factory 3* ○Old Corrugated Cartons Process*
○Upgrading to Air-saving Loom ○Centrifugal Chiller in Shopping Mall
○Smart LED Street Lighting System ○Once-through Boiler System in Film Factory
○Gas Co-generation System ○Once-through Boiler in Golf Ball Factory
○1.6MW Solar PV in Jakabaring Sport City ●REDD+ through controlling slush-and burn
○10MW Hydro Power Plant ○Looms in Weaving Mill
○LED Lighting to Sales Stores ○Industrial Wastewater Treatment System
○0.5MW Solar PV ○Gas Co-generation system
○Gas Co-generation system ○Absorption Chiller ○10MW Hydro Power Plant

○ 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 (37 projects in 10 countries)
● REDD+ Model Project (2 projects in 2 countries)
○ Model Project in FY 2017 (20 projects in 8 countries)
■ ADB Project in FY 2017 (1 Project in 1 country)
* Other 1 project in Malaysia

Total 112 projects in 17 partner countries

Underlined projects have started operation (**54 projects**, including 1 partially started projects)

JCM good practices (1/2)

Project overview	Example	Features
Showcasing advanced technologies, leading to sustainable business development of similar types of projects in developing countries	• Installing Energy Efficient Refrigerants to Cold Chain Industry in Indonesia (JCM Model Project in 2013) High efficiency with natural refrigerant	- Showcasing - Sustainable business development
Elaborating specifications in procurement standard for installing equipment in electricity infrastructure	• Introduction of Amorphous High Efficiency Transformers in Northern, Central and Southern Power Grids in Viet Nam (JCM Model Project in 2014-2017)	- Electricity infrastructure - Elaborating specifications
Facilitating oversee business development by small & medium size firms utilizing support and co-financing	• Introduction of Energy Efficient Refrigeration System in Logistics Center in Myanmar (JCM Model Project in 2016) • Installation of 2.1MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb in Mongolia (JCM Model Project in 2015)	- Co-finance - Small & medium size firms - Oversee business development
Construction of a pilot plant leading to scaling up through fostering understanding on the technologies and effectiveness among stakeholders	• Introduction of Waste to Energy Plant in Yangon City, Myanmar (JCM Model Project in 2015) Solution for both waste and GHG reduction	- City infrastructure - Pilot plant - Scale up

JCM good practices (2/2)

Waste heat recovery in Cement Industry, JFE engineering, Indonesia

Eco-driving with Digital Tachographs, NITTSU, Viet Nam

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, Viet Nam

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

High efficiency air-conditioning system, Hitachi, Daikin, Viet Nam

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

2. How is it implemented?

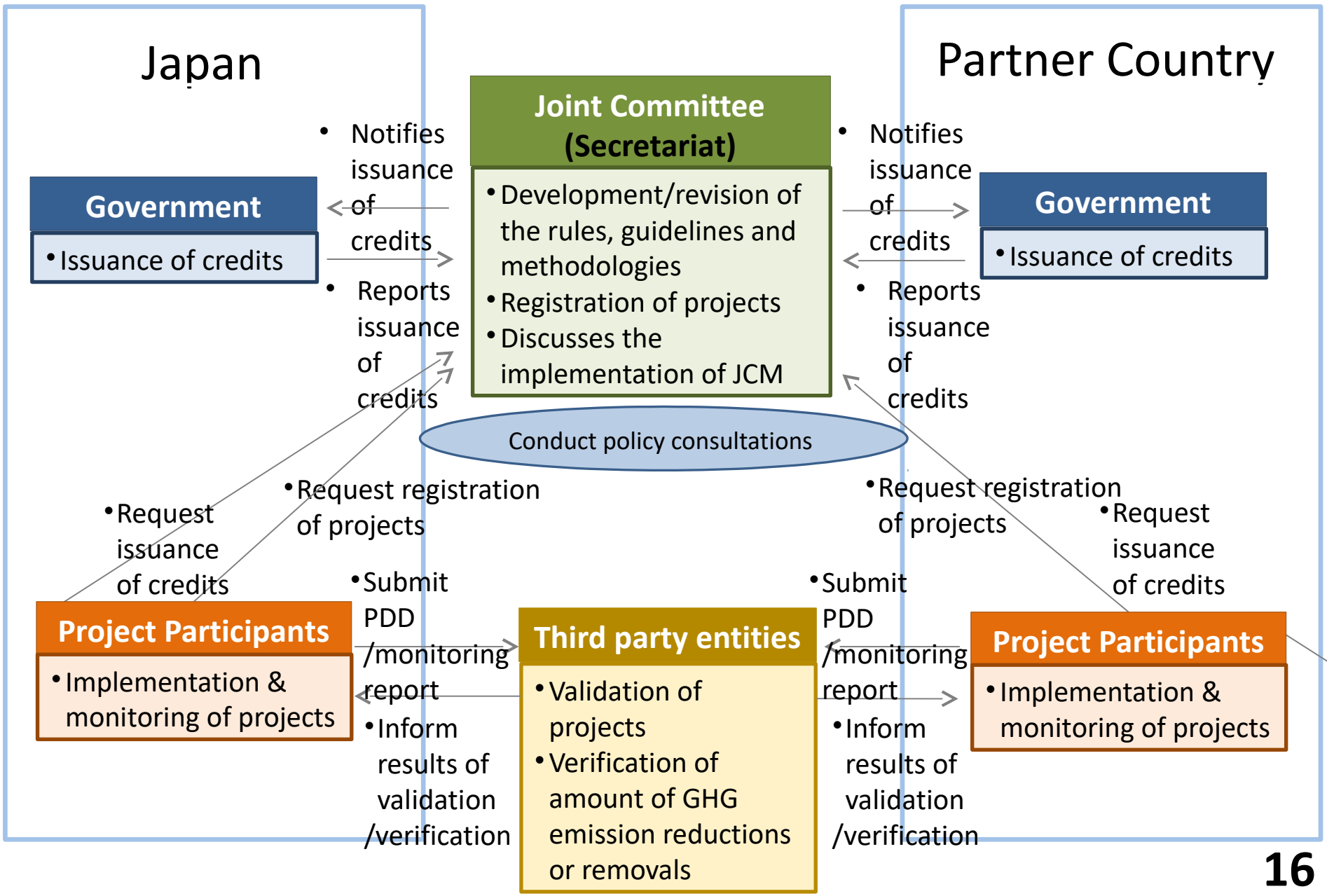
b) Issuance of JCM Credits

Governance and Decision Making

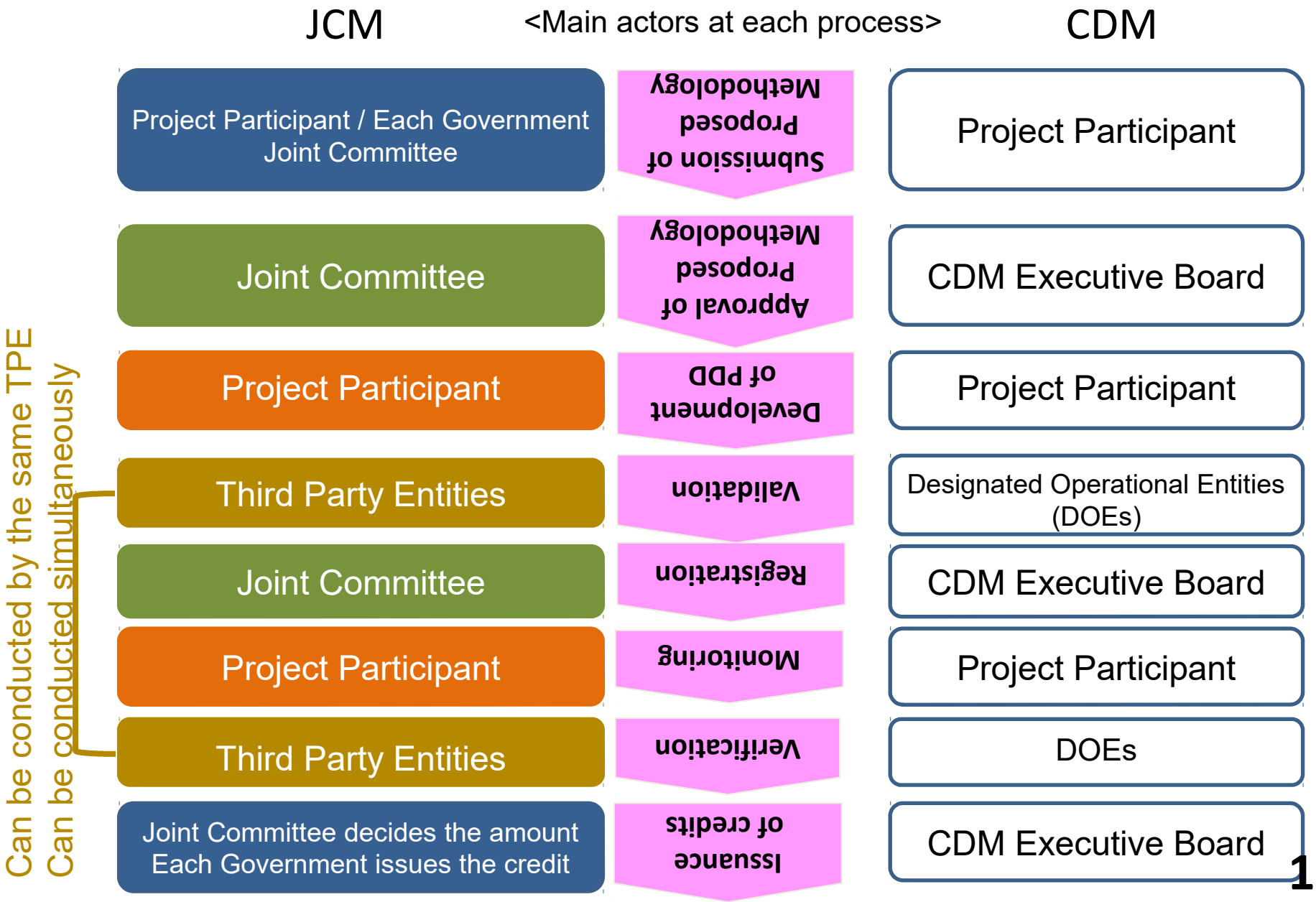
Project Cycle

Net Emission Reductions

Scheme of the JCM

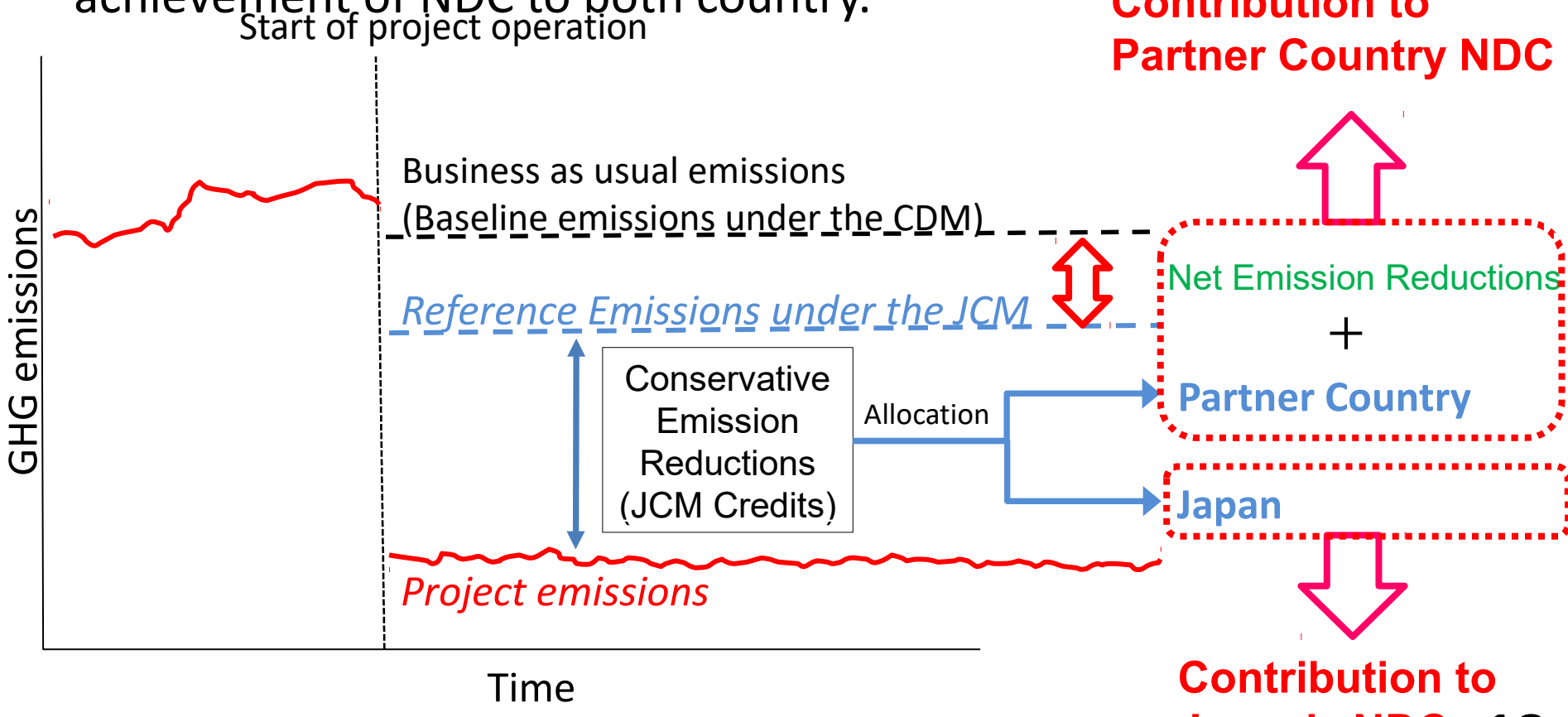


Project Cycle of the JCM and the CDM



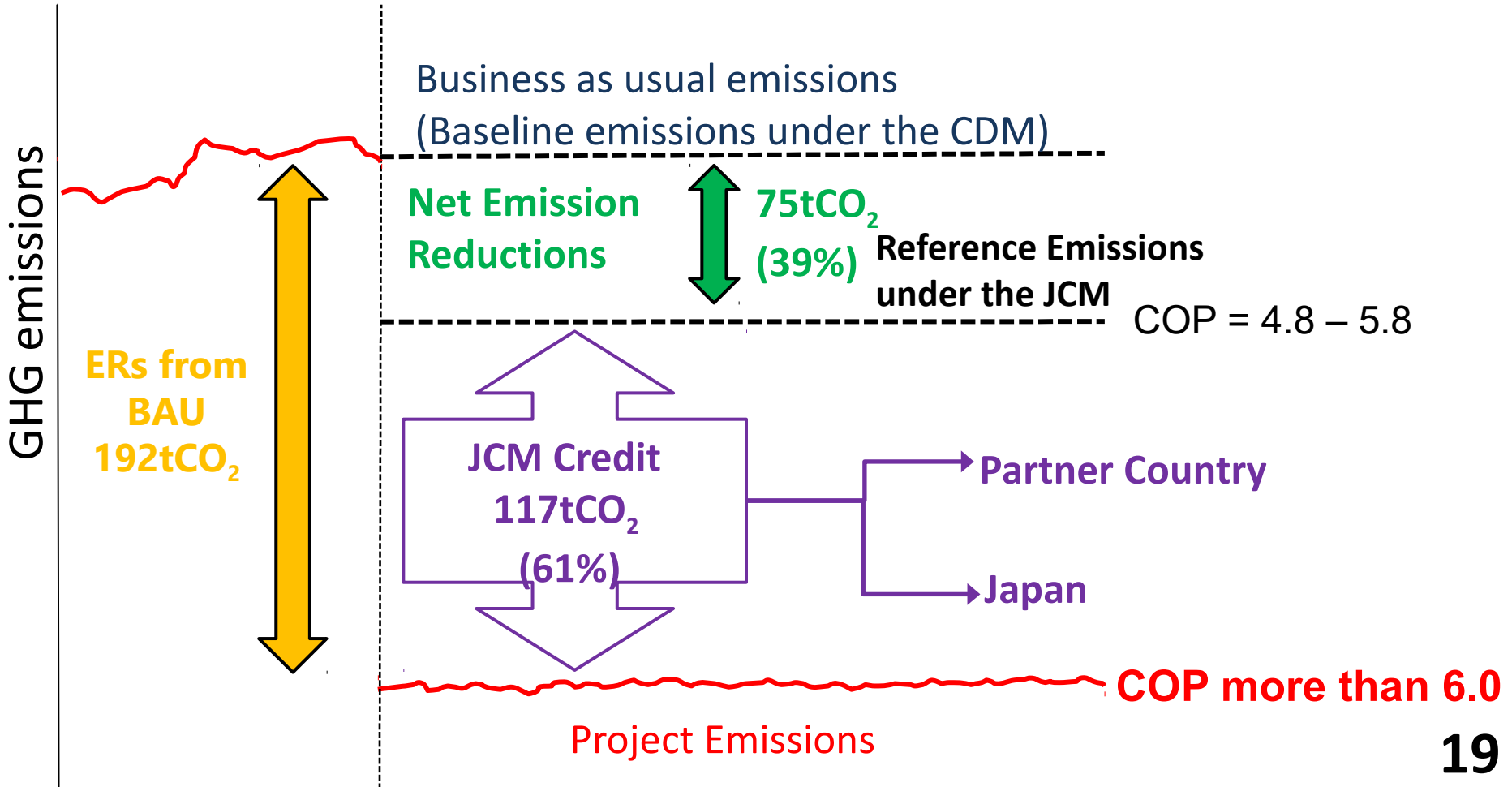
Net emission reduction

- 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 to both country.



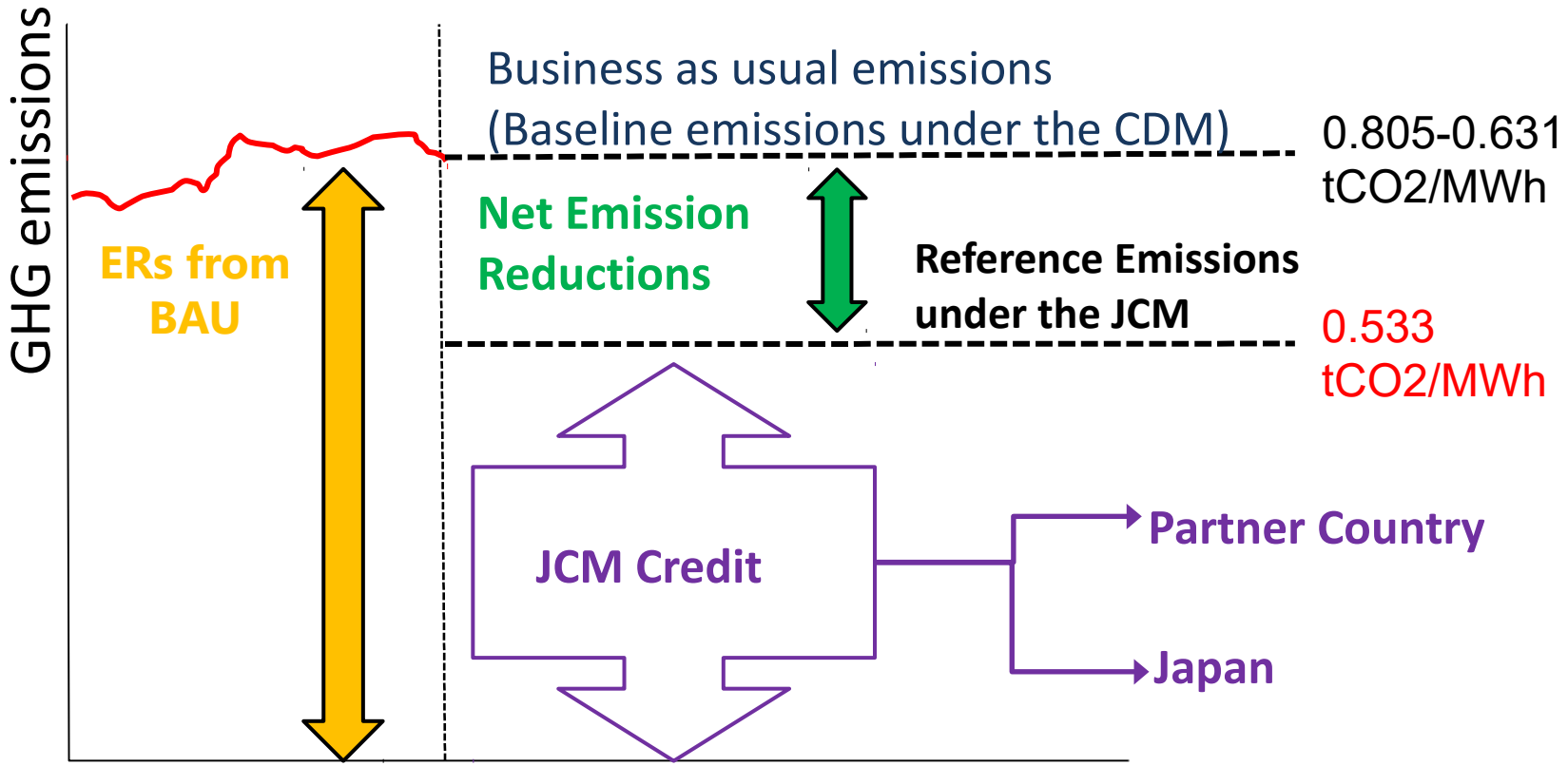
Net Emission Reductions from the JCM: The Case of Chiller

- Introducing high efficiency centrifugal chiller
  - ✓ Non ozone-depleting refrigerant, HFC 245fa
  - ✓ COP (Coefficient of Performance) more than 6.0



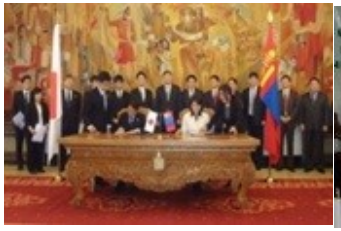
Net Emission Reductions from the JCM: The Case of Solar PV System

	Diesel generators	Power generation efficiency	Emission factor (tCO2/MWh)
BaU	Existing	33-41 %	0.805-0.631
Reference	State-of –the-art (Hypothetical)	49 %	0.533



3. Who is involved?

Japan has held consultations for the JCM with developing countries since 2011 and has established the JCM with following 17 JCM Partner Countries



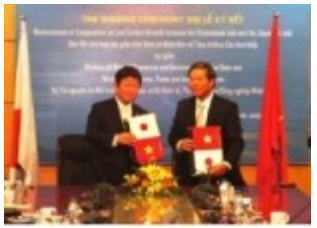
Mongolia
Jan. 8, 2013
（Ulaanbaatar）

Bangladesh
Mar. 19, 2013
(Dhaka)

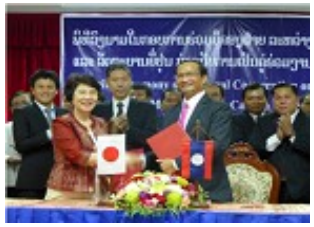
Ethiopia
May 27, 2013
(Addis Ababa)

Kenya
Jun. 12,2013
(Nairobi)

Maldives
Jun. 29, 2013
(Okinawa)

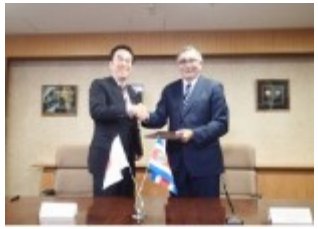


Viet Nam
Jul. 2, 2013
(Hanoi)



Lao PDR
Aug. 7, 2013
(Vientiane)

Indonesia
Aug. 26, 2013
(Jakarta)



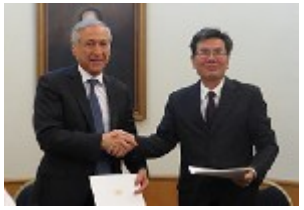
Costa Rica
Dec. 9, 2013
(Tokyo)

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)

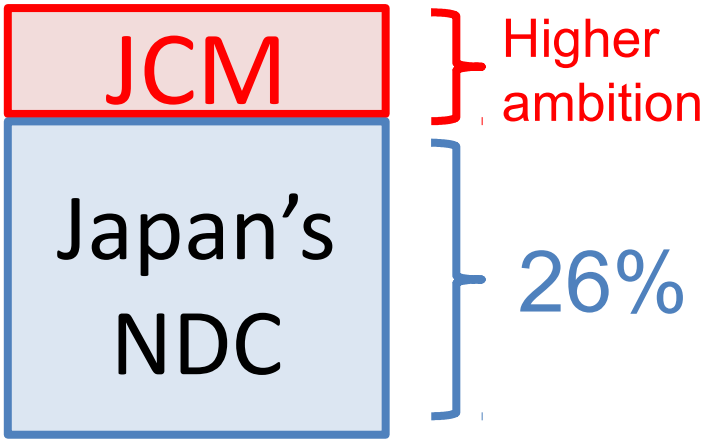
Thailand
Nov. 19, 2015
(Tokyo)

the Philippines
Jan. 12, 2017
(Manila)

4. What are the next steps?

[Goal] 50 to 100 million tCO2 of accumulated GHG reductions/removals by 2030

[So far]
- 650,000/year emission reductions by MOEJ's projects
- Issued 10,464 tCO2 of JCM credits



- 26% reduction target is set based on the amount of domestic emission reductions and removals assumed to be obtained. It is therefore anticipated that Japan will achieve the target through domestic emission reductions and removals without using international reductions and removals (credits).
- The amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction.

"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.*

Progress of the JCM in each partner country as of February 2018

Partner countries	Start from	Registered projects	Approved methodologies	Number of Credit issuance	Project Pipeline (FY2013-2017)
Mongolia	Jan 2013	5	3	3	6
Bangladesh	Mar 2013	1	3		6
Ethiopia	May 2013		3		2
Kenya	Jun 2013		3		3
Maldives	Jun 2013		1		3
Viet Nam	Jul 2013	5	9	2	20
Lao PDR	Aug 2013	1	1		4
Indonesia	Aug 2013	9	14	2	29
Costa Rica	Dec 2013		1		2
Palau	Apr 2014	3	1	3	3
Cambodia	Apr 2014		2		5
Mexico	Jul 2014		1		4
Saudi Arabia	May 2015		1		1
Chile	May 2015		1		2
Myanmar	Sep 2015				5

JCM Credits Issued

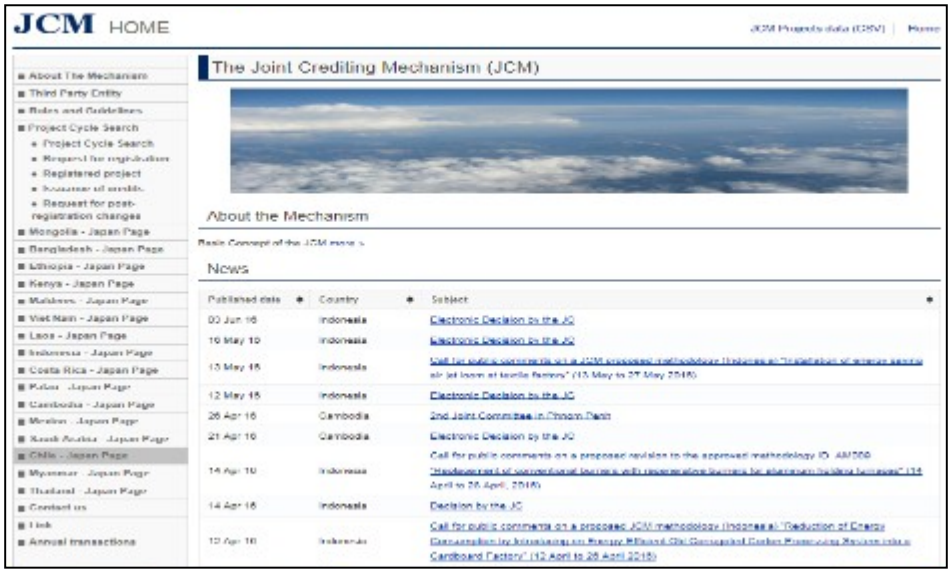
As of February 2018

Partner country	Project title	Issuance Date	Amount (t-CO2) Partner Country	Amount (t-CO2) Japan
Indonesia	Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing	2016/5/12	3	8
Indonesia	Project of Introducing High Efficiency Refrigerator to a Food Industry	2016/5/12	6	23
Mongolia	Installation of high-efficiency Heat Only Boilers in 118th School	2016/9/30	10	40
Mongolia	Installation of high-efficiency Heat Only Boilers in Bornuur soum Project	2016/9/30	22	85
Palau	Small scale solar power for commercial facilities	2016/12/22	74	222
Viet Nam	Eco-Driving by Utilizing Digital Tachograph	2017/10/17	(58)	230
Viet Nam	Amorphous high efficiency transformers	2017/10/17	(75)	76
Mongolia	10 MW Solar Power in Darkhan	2017/10/24	1,789	7,158
Palau	Small scale solar power for commercial facilities II	2018/1/30	111	329
Palau	Small scale solar power for schools	2018/1/30	37	108
			2,185	8,279

JCM Websites

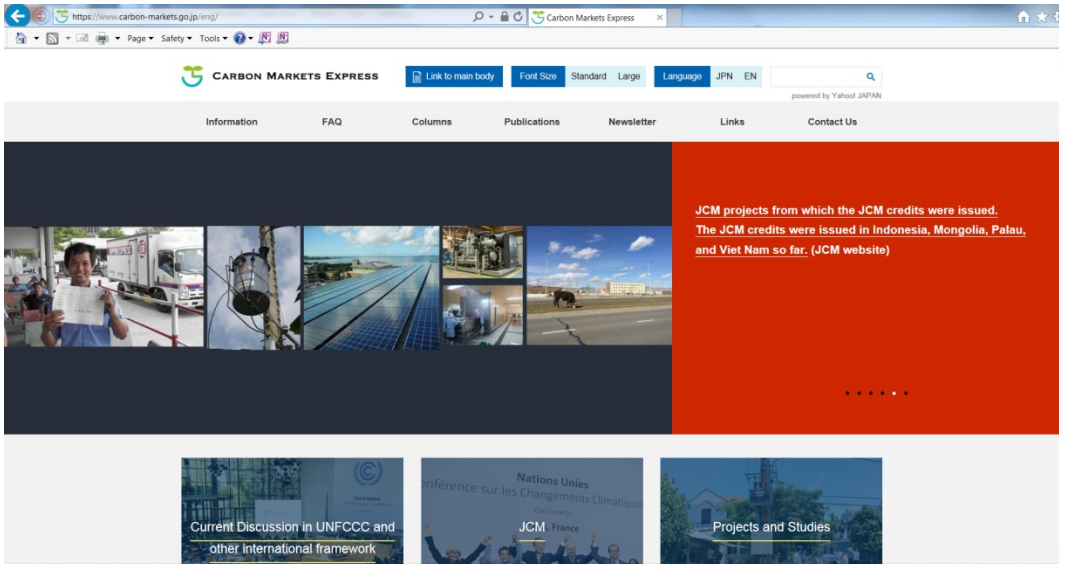
Official Page

- the JC decisions,
- rules and guidelines,
- methodologies,
- projects,
- call for public inputs/comments,
- status of TPEs, etc.



Carbon Markets Express

- news and events,
- updates including governments and institutions,
- good practices, newsletters, brochures, etc.



Thank you for your attention!

Alaska takaaki.ito@oecd.org
MOEJ jcm@env.go.jp