

Recent Development of the JCM and JCM Model Project

Ministry of the Environment
July 2018



Overview of the JCM

The Joint Crediting Mechanism

- ▶ 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



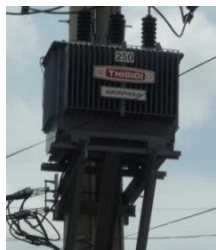
High-efficiency Heat only Boilers, Suuri-Keikaku, Mongolia



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



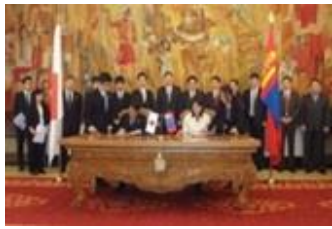
Regenerative Burners in industries, Toyotsu Machinery, Indonesia



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

JCM 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)



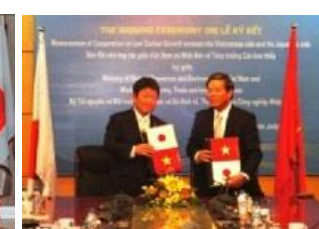
Ethiopia
May 27, 2013
(Addis Ababa)



Kenya
Jun. 12, 2013
(Nairobi)



Maldives
Jun. 29, 2013
(Okinawa)



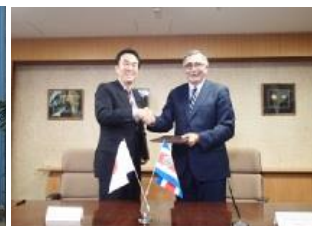
Viet Nam
Jul. 2, 2013
(Hanoi)



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)

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 overseas 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

Japan's INDC (Excerpt)

Japan's INDC

- Japan's INDC towards post-2020 GHG emission reductions is at the level of a reduction of **26.0% by fiscal year (FY) 2030 compared to FY 2013** (25.4% reduction compared to FY 2005) (approximately 1.042 billion t-CO₂eq. as 2030 emissions), ensuring consistency with its energy mix, set as a feasible reduction target by bottom-up calculation with concrete policies, measures and individual technologies taking into adequate consideration, *inter alia*, technological and cost constraints, and set based on the amount of domestic emission reductions and removals assumed to be obtained. .

Information to facilitate clarity, transparency and understanding

- 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.**

Reference information

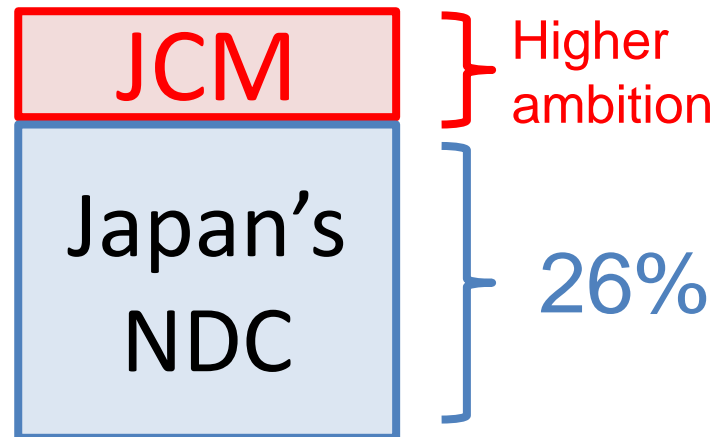
GHG emissions and removals

JCM and other international contributions

- 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.
- 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.**

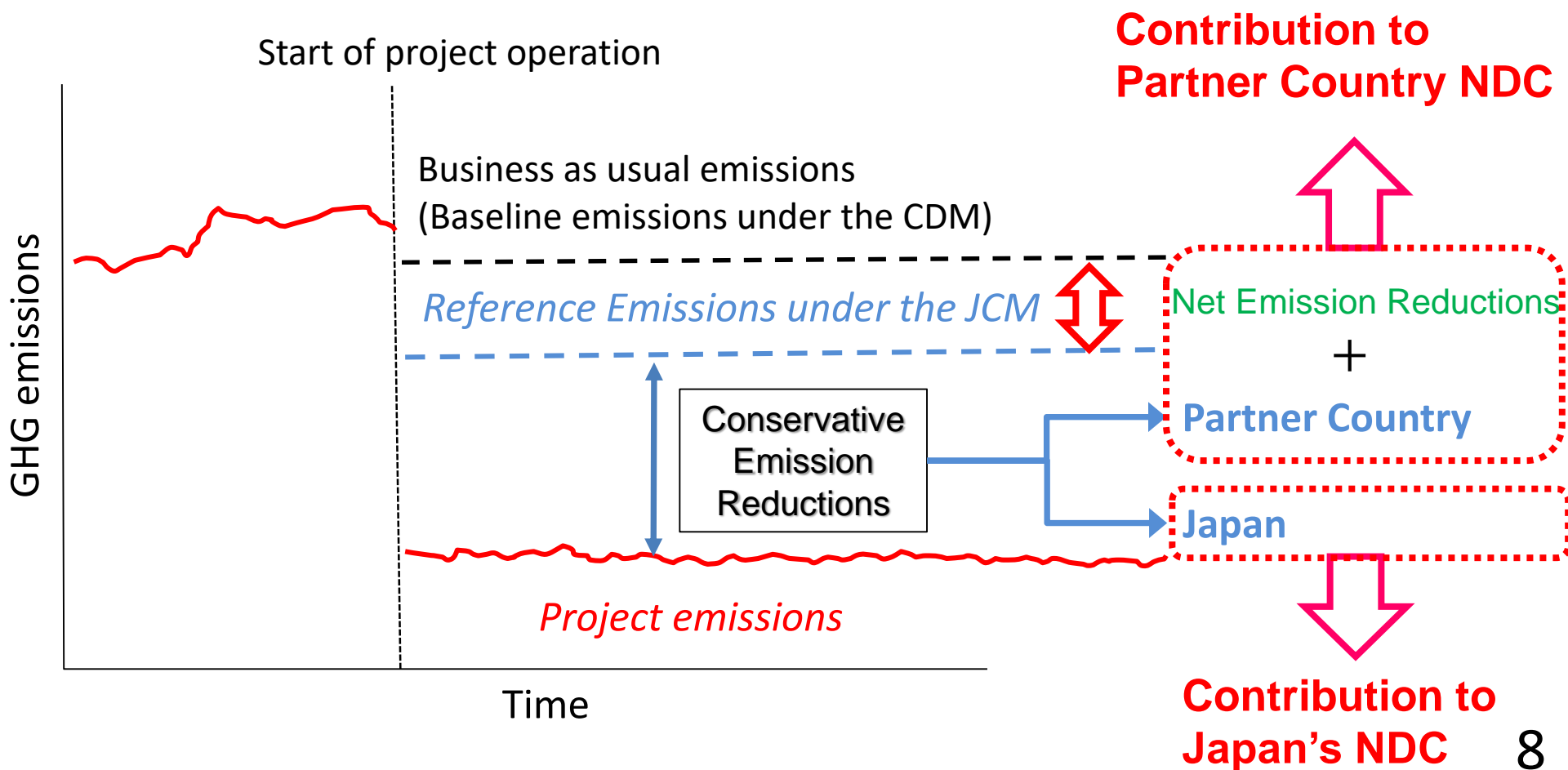
Japan's INDC and JCM

- As stated in Japan's INDC, the 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.



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.



JCM Support by the Ministry of the Environment, Japan

JCM Model Projects by MOE

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

(1 USD = 100 JPY)

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

Finance part of an investment cost (less than half)

Government of Japan

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

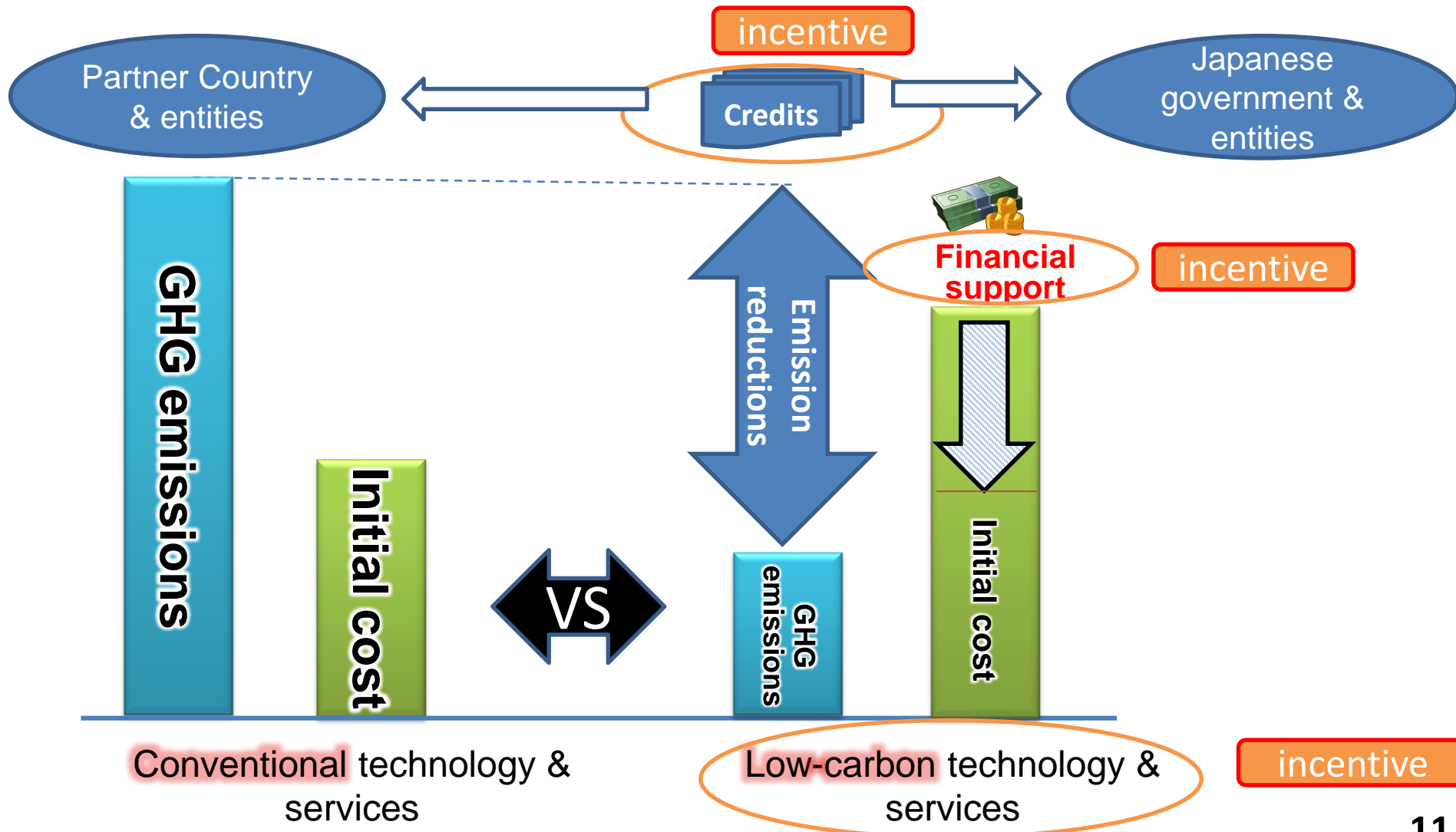
International consortiums
(which include Japanese entities)



- 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.

JCM Financial Support Programme

- Japan will address the high initial cost barrier of introducing advanced low-carbon technologies in the Partner countries through the JCM (GoJ implements several supporting schemes)



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 ○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
○Co-generation in Textile Factory
○25MW Solar PV in Industrial Park ○3.4MW Solar PV

Mongolia: 7 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
○21MW Solar PV

Viet Nam: 18 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
○Modal Shift with Reefer Container ○Inverters for Raw Water Intake Pumps

Bangladesh: 5 projects

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

Saudi Arabia: 1 projects

○Electrolyzer in Chlorine Production Plant

Ethiopia: 1 projects

○Biomass CHP Plant

Kenya: 2 projects

○6MW Hydropower Generation
○1MW Solar PV at Salt Factory

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

Maldives: 2 projects

○190kW Solar Power on School Rooftop
■ Smart Micro-Grid System

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

Cambodia: 6 projects

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

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

Chile: 1 project

○1MW Rooftop Solar PV

Philippines: 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

Indonesia: 30 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 ○Absorption Chiller ○10MW Hydro Power Plant
○2.8MW Solar PV ○High Efficiency Autoclave
○CNG-Diesel Hybrid Public Bus ○Centrifugal Chiller and Air-conditioning Control System

○ 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%

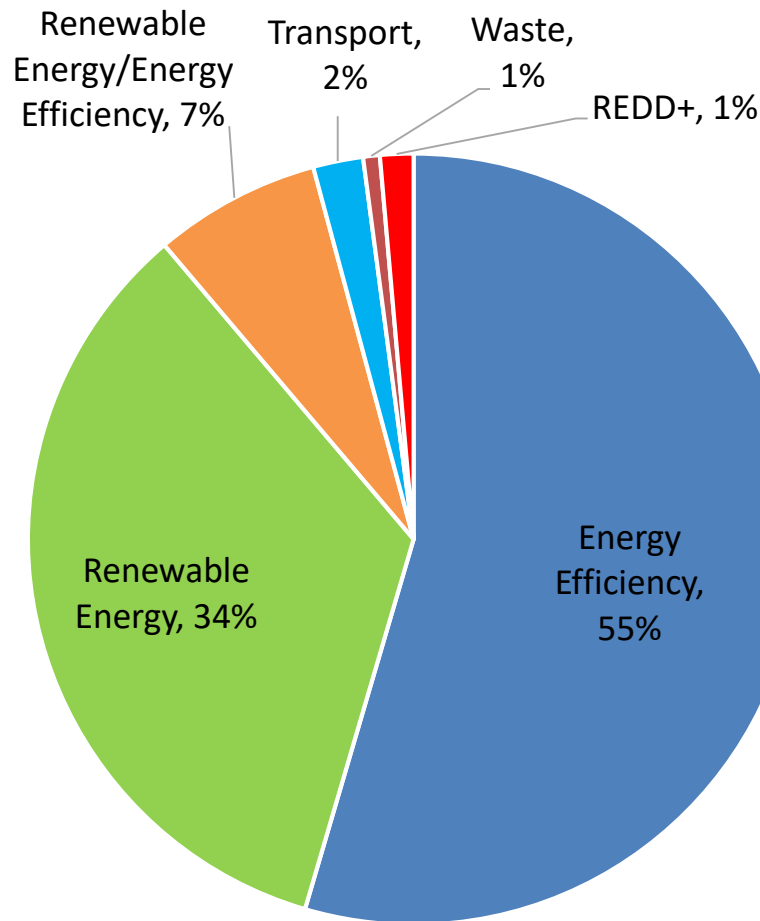
Renewable Energy
Solar
Micro hydro
Biomass
Wind

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

JCM F-gas Recovery and Destruction Model Project by MOE

【Budget for FY 2018】
40 million JPY (approx. 0.4
million USD) (1 USD = 100 JPY)

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

Government of Japan

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 and Contribution to Indonesia

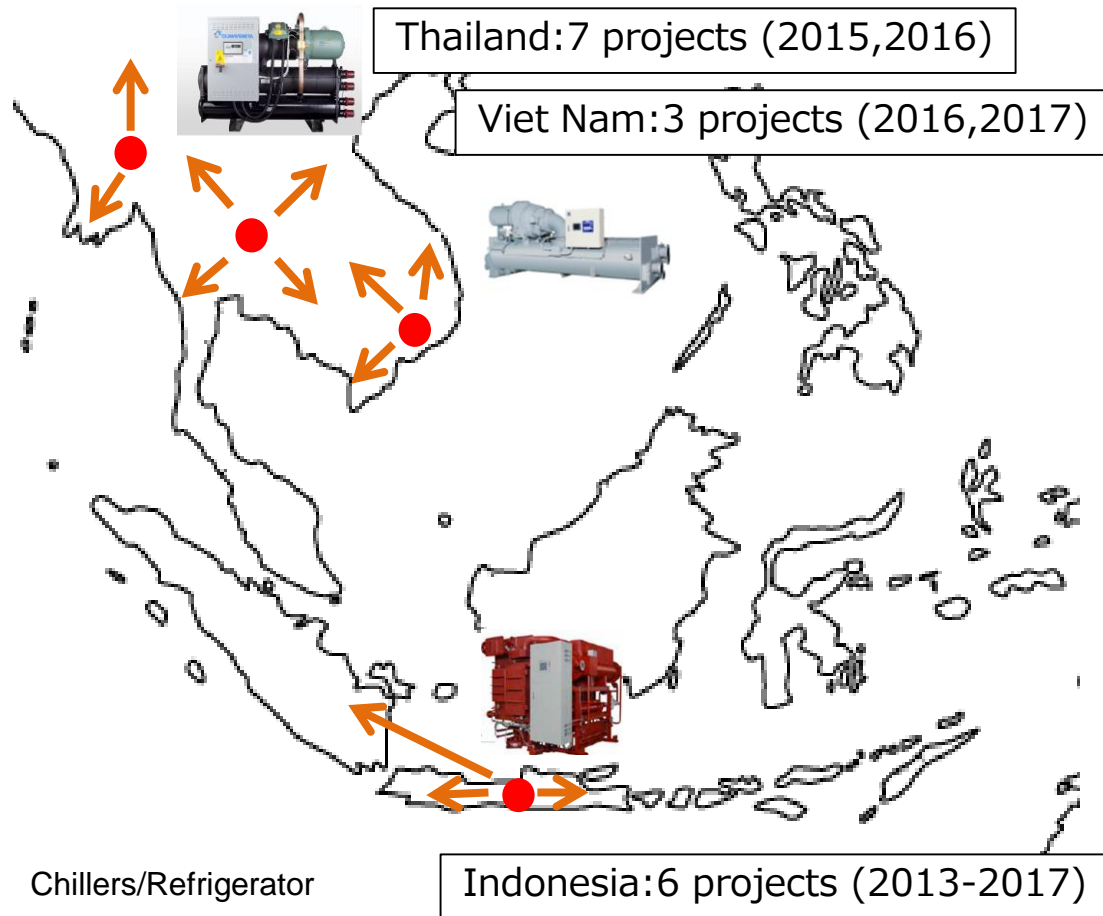
Business Model Case① : Replicating through Standard & Institutional Arrangement

- 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 standards and relevant institutional arrangements

Myanmar:2 JCM model projects (2016)

Thailand:7 projects (2015,2016)

Viet Nam:3 projects (2016,2017)



Indonesia:6 projects (2013-2017)

JCM model project

Demonstration of energy
efficiency effects

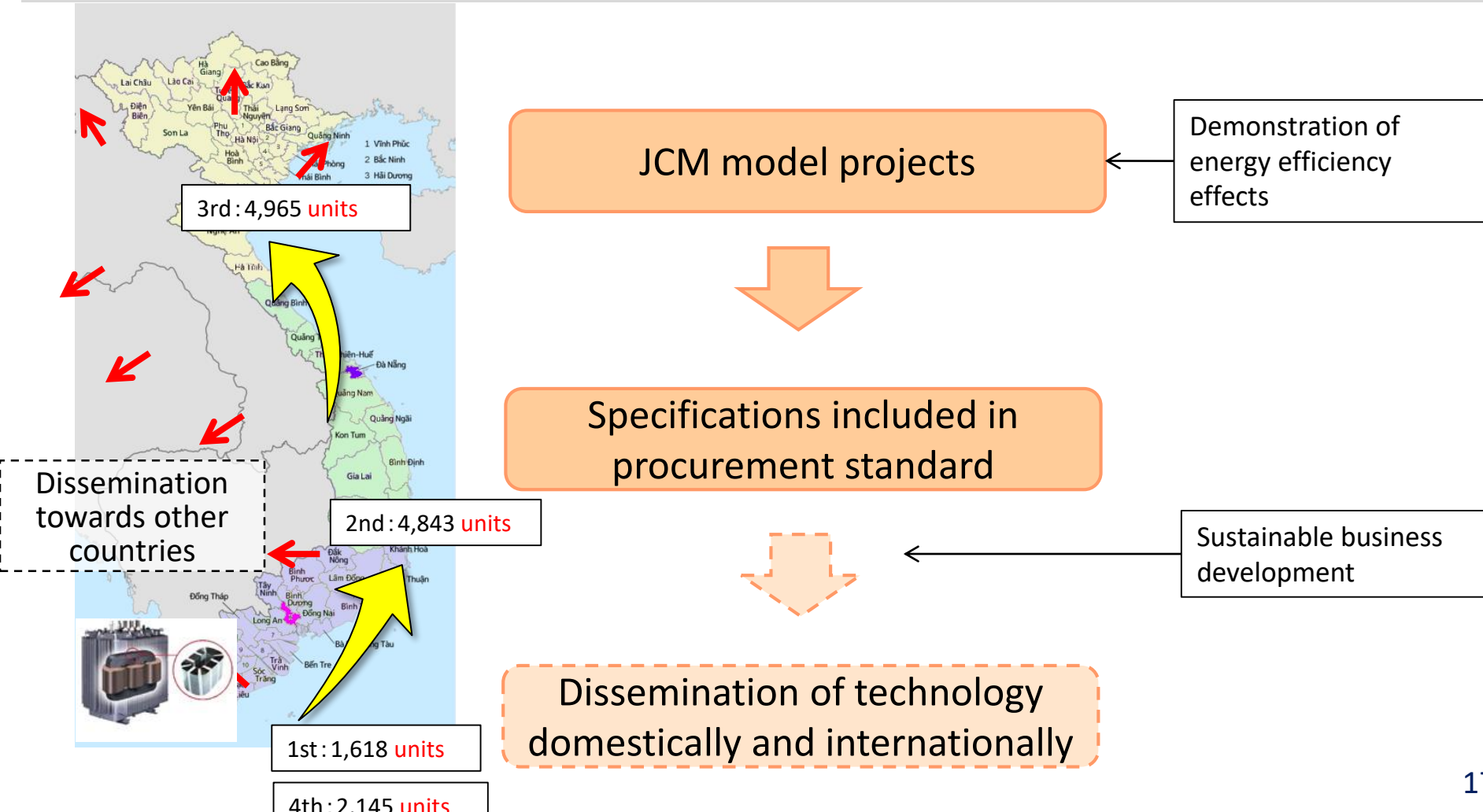
Establish standards &
institutional arrangements

- Regulations
- Standards
- Taxes

Business development in other
countries, sectors

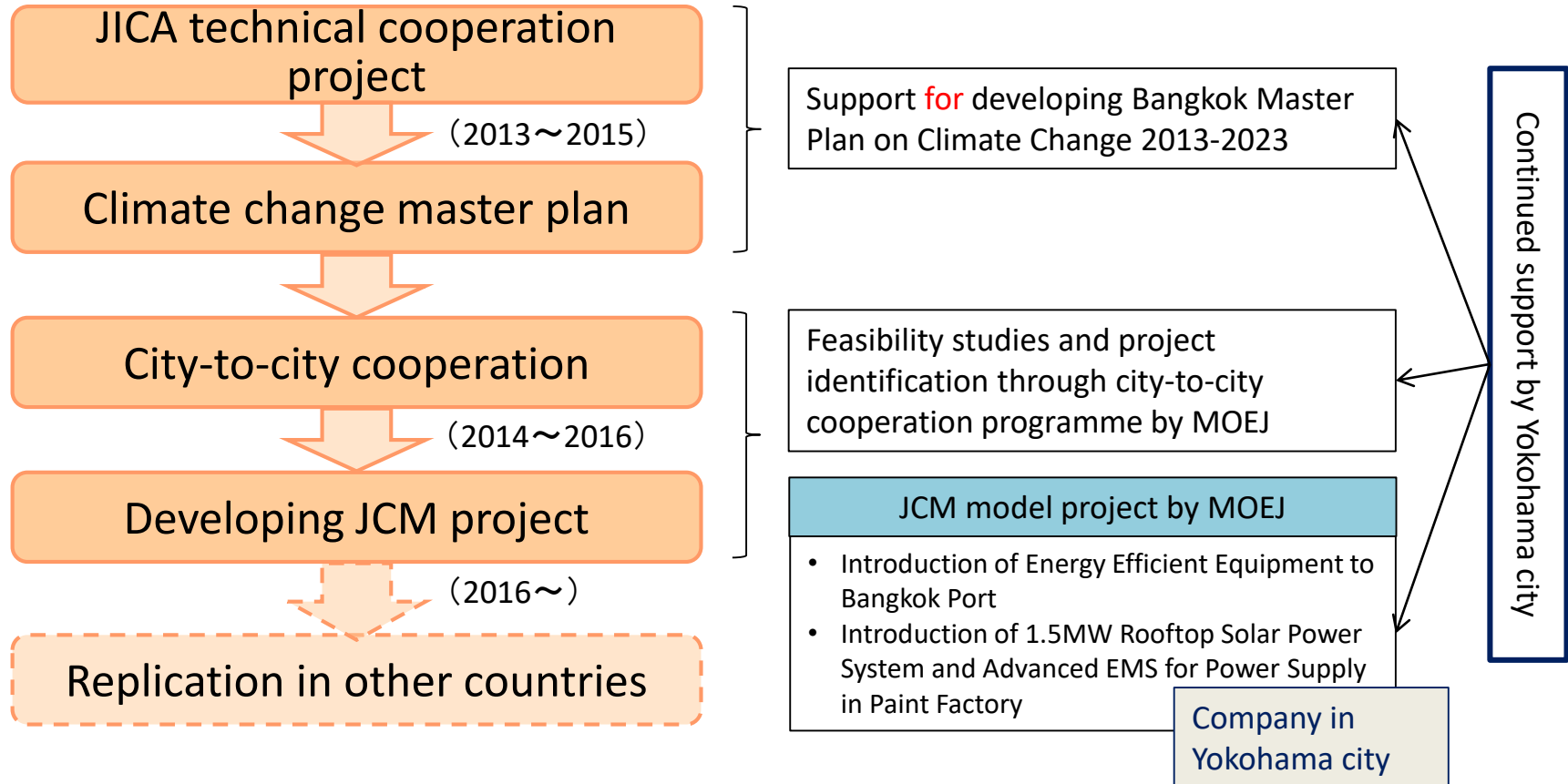
Business Model Case② : Replicating through specific actions

- 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)



Support for upstream policy planning to project development

- Bangkok Metropolitan Administration, in cooperation with Yokohama city, established the upstream policy plan of “Bangkok Master Plan on Climate Change 2013-2023” through JICA’s technical cooperation project
- Yokohama city, in cooperation with a company in its jurisdiction, implemented City-to-city cooperation project supported by MOEJ, eventually lead to identification and implementation of JCM model project



Comprehensive & coordinated policy support to JCM project implementations

- Comprehensive policy support on energy efficiency through JICA's climate change program loan in Vietnam
- The program established basis for introducing low carbon technologies where city-to-city cooperation and JCM model projects facilitated uptake of low carbon project implementation which then supported back the climate change mitigation policy in Vietnam

