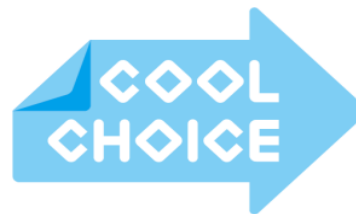
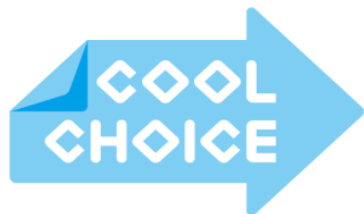


# Update on the Joint Crediting Mechanism (JCM) and Financing Programme

January 2019

@Workshop on the Joint Crediting Mechanism (JCM)

Mr. Kentaro Takahashi,  
Programme Manager,  
Climate and Energy Area, IGES



# 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



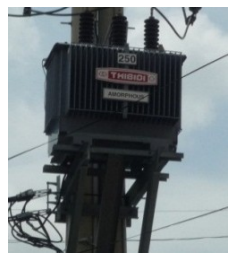
High-efficiency Heat only Boilers, Suuri-Keikaku, Mongolia



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

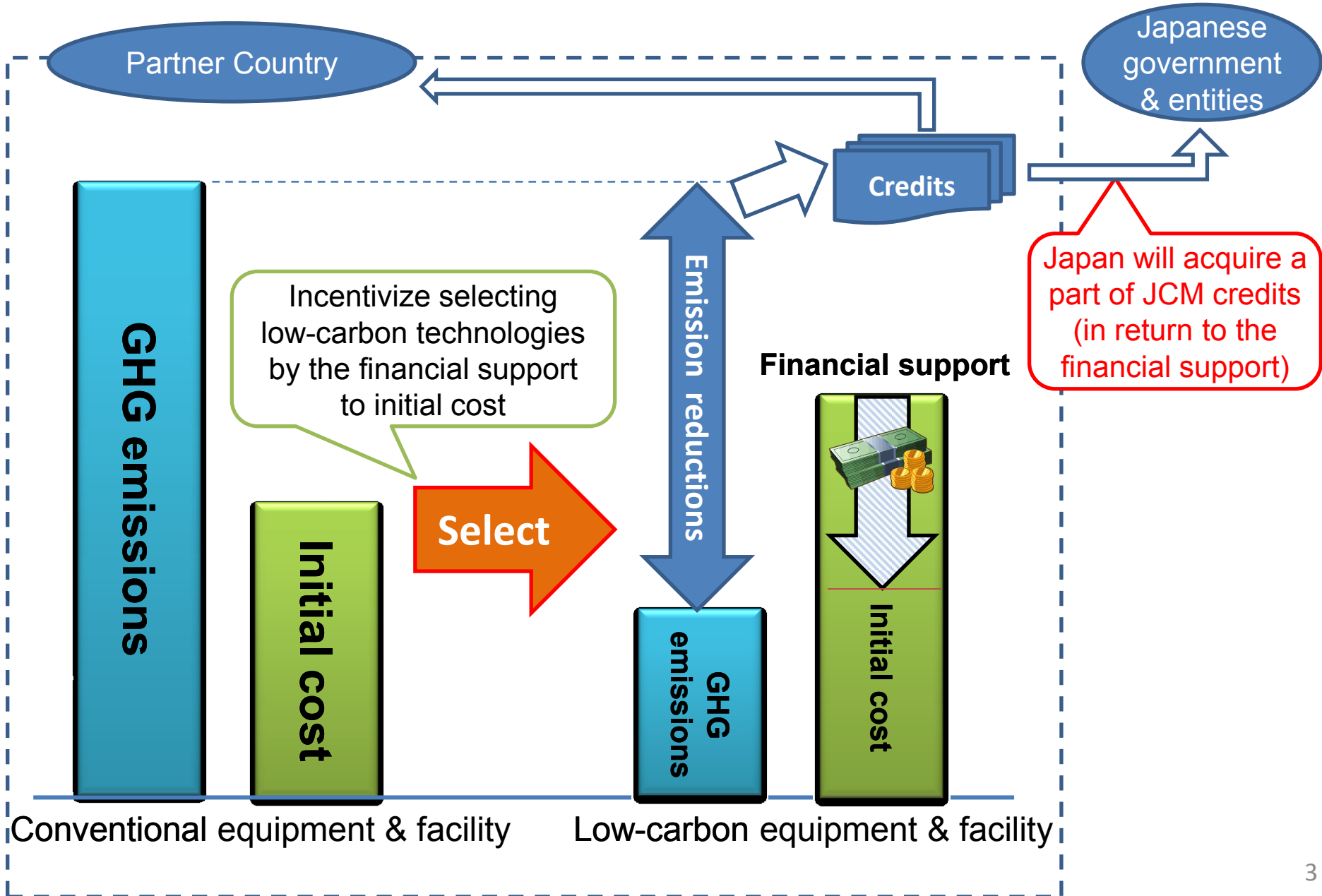


Regenerative Burners in industries, Toyotsu Machinery, Indonesia



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

# Contributions from Japan





# 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)



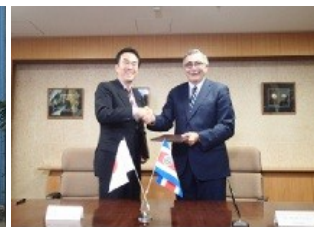
Viet Nam  
Jul. 2, 2013  
(Hanoi)



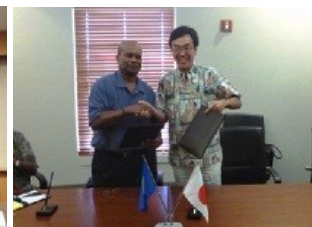
Lao PDR  
Aug. 7, 2013  
(Vientiane)



Indonesia  
Aug. 26, 2013  
(Jakarta)



Costa Rica  
Dec. 9, 2013  
(Tokyo)



Palau  
Jan. 13, 2014  
(Ngerulmud)



Cambodia  
Apr. 11, 2014  
(Phnom Penh)



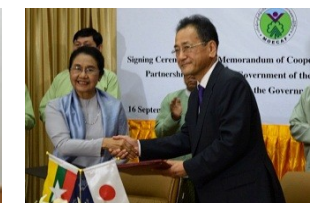
Mexico  
Jul. 25, 2014  
(Mexico City)



Saudi Arabia  
May 13, 2015



Chile  
May 26, 2015  
(Santiago)



Myanmar  
Sep. 16, 2015  
(Nay Pyi Taw)



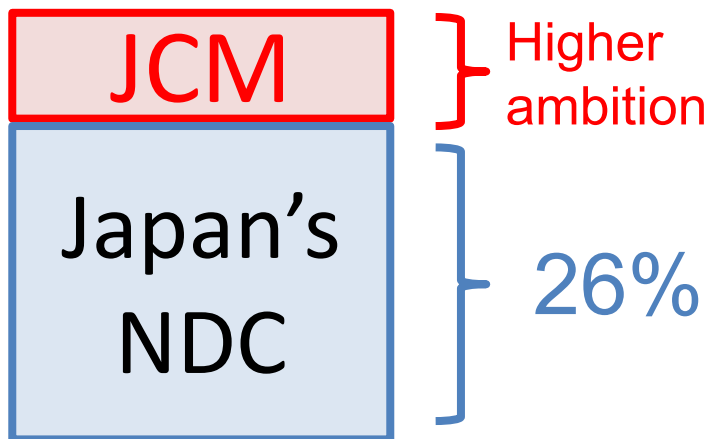
Thailand  
Nov. 19, 2015  
(Tokyo)



the Philippines  
Jan. 12, 2017  
(Manila)

# 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 tCO<sub>2</sub> 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.

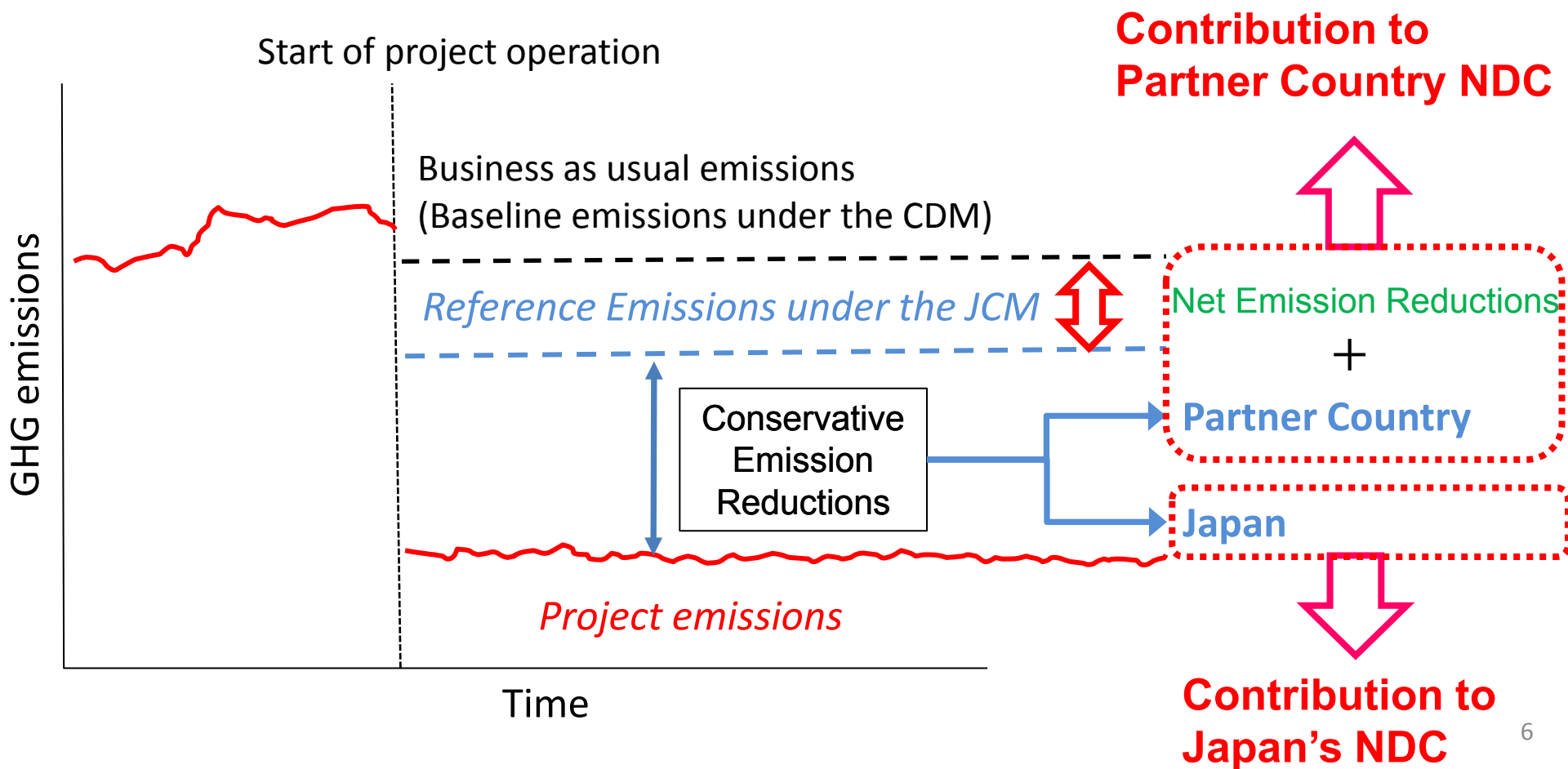


“Plan for Global Warming Countermeasures (Cabinet Decision, May 2016)”

- *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-CO<sub>2</sub>.*
- *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.



# Progress of the JCM in each partner country as of Dec 3 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	6	5	3	9
Bangladesh	Mar 2013	4	1	3	6
Ethiopia	May 2013	3		3	2
Kenya	Jun 2013	3		3	2
Maldives	Jun 2013	3	1	1	2
Viet Nam	Jul 2013	7	9	14	22
Lao PDR	Aug 2013	4	1	3	4
Indonesia	Aug 2013	8	14	16	34
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	6
Saudi Arabia	May 2015	2	1	1	1
Chile	May 2015	2		1	2
Myanmar	Sep 2015	2		1	7
Thailand	Nov 2015	4	4	7	27
Philippines	Jan 2017	1			8
<b>Total</b>	<b>17</b>	<b>62</b>	<b>40</b>	<b>63</b>	<b>144</b>

# JCM Model Projects by MOE

Draft budget for projects starting from FY 2019 is **9.9 billion JPY (approx. USD 99 million)** in total by FY2021

✂ 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 CO<sub>2</sub> 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 F-gas Recovery and Destruction Model Project by MOE

【Draft budget for FY 2019】  
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 CO<sub>2</sub>, 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

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

## Draft budget for FY2019

JPY 1 billion (approx. USD 10 million)

(1 USD = 100 JPY)

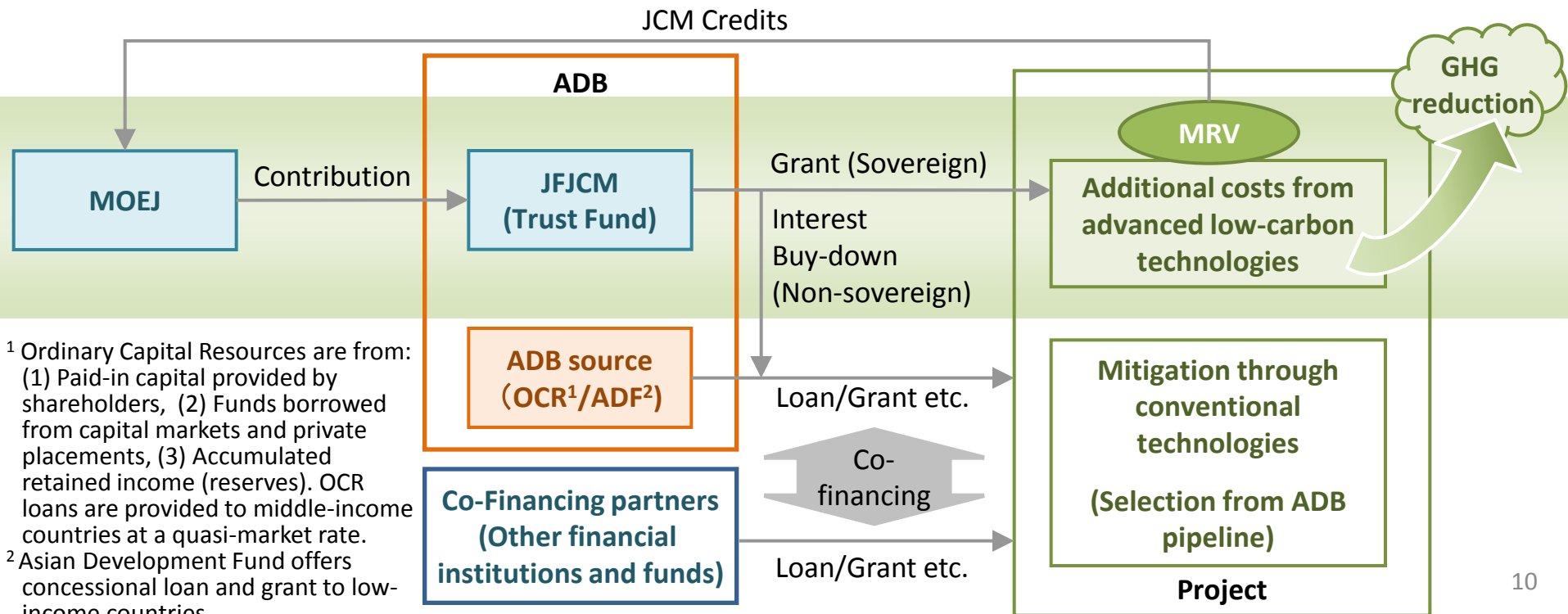
※A total of JPY 6.8 billion is contributed by Ministry of the Environment, Japan (MOEJ) as of Jan 2019.

## 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



# JCM Financing Programme by MOEJ (FY2013 ~ 2018) as of December 03, 2018

Thailand: 27 projects

Energy Saving at Convenience Store  
Upgrading Air-saving Loom\*  
Centrifugal Chiller in Tire Factory  
Air Conditioning System & Chiller\*  
 (Ion Exchange Membrane Electrolyzer  
 (LED Lighting to Sales Stores  
Co-generation System  
 (2MW Solar PV  
Heat Recovery Heat Pump  
 (27MW Solar PV  
Air-conditioning Control System  
 (Energy Saving Equipment in Port  
 (25MW Solar PV in Industrial Park  
 ▲ Introduction of Scheme for F-gas Recovery and Destruction

1MW Solar PV on Factory Rooftop\*  
Centrifugal Chiller & Compressor\*  
Co-generation in Motorcycle 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  
Boiler System in Rubber Belt Plant  
 (Biomass Co-generation System  
 (Co-generation in Fiber Factory  
 (3.4MW Solar PV

Mongolia: 8 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 ■ Upscaling Renewable Energy Sector

Viet Nam: 19 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  
 ▲ Collection Scheme and Dedicated System of F-gas

Bangladesh: 6 projects

Centrifugal Chiller (Loom at Weaving Factory  
315kW PV-diesel Hybrid System (50MW Solar PV Power Plant  
Centrifugal Chiller\* ■ High Efficiency Transmission Line

Laos: 3 projects

● REDD+ through controlling slash-and-burn  
 (Amorphous transformers  
 (14MW Floating Solar PV

Mexico: 6 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 (Energy Efficient Distillation System

Saudi Arabia: 1 projects

Electrolyzer in Chlorine Production Plant

Ethiopia: 1 projects

(Biomass CHP Plant

Kenya: 1 projects

1MW Solar PV at Salt Factory

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

Myanmar: 7 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  
 (Brewing Systems and Biogas Boiler to Brewery Factory

Palau: 4 projects

370kW Solar PV for Commercial Facilities\*  
155kW Solar PV for School\*  
445kW Solar PV for Commercial Facilities II\*  
 (0.4MW Solar PV for Supermarket

Costa Rica: 2 projects

5MW Solar PV  
Chiller and Heat Recovery System

Maldives: 2 projects

186kW Solar Power on School Rooftop\*  
 ■ Smart Micro-Grid System

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

Chile: 2 projects

1MW Rooftop Solar PV  
 (2MW Solar PV and 4MWh Strage Battery

Indonesia: 31 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\*  
507kW 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 slash-and burn  
 (10MW Hydro Power Plant (Looms in Weaving Mill (LED Lighting to Sales Stores  
 (Absorption Chiller (0.5MW Solar PV (Gas Co-generation system  
 (High Efficiency Autoclave (10MW Hydro Power Plant (2.8MW Solar PV  
 (Centrifugal Chiller and Air-conditioning Control System (CNG-Diesel Hybrid Public Bus  
 (Rehabilitation of 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 (32 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)
- ADB Project in FY 2018 (2 projects in 2 country)
- ▲ F-gas Project in FY 2018 (2 projects in 2 country)
- Other 1 project in Malaysia

**Total 134 projects in 17 partner countries**

Underlined projects have started operation (77 projects, including 1 partially started projects)  
 Projects with \* have been registered as JCM projects (31 projects)

# Technologies Transferred through JCM by MOEJ(FY2013-2018)

- ◆ Total of 134 **JCM Model Projects** being developed in 17 partner countries
- ◆ 53% are **energy efficiency** and 39% are **renewable energy**
- ◆ Transport, waste to energy, F-gas Recovery and Destruction and REDD+ project shares 8%

## Transport 2%

- Digital Tachographs
- Modal Shift
- CNG-Diesel Hybrid

## Waste 2%

- Waste to Energy

## REDD+ 2%

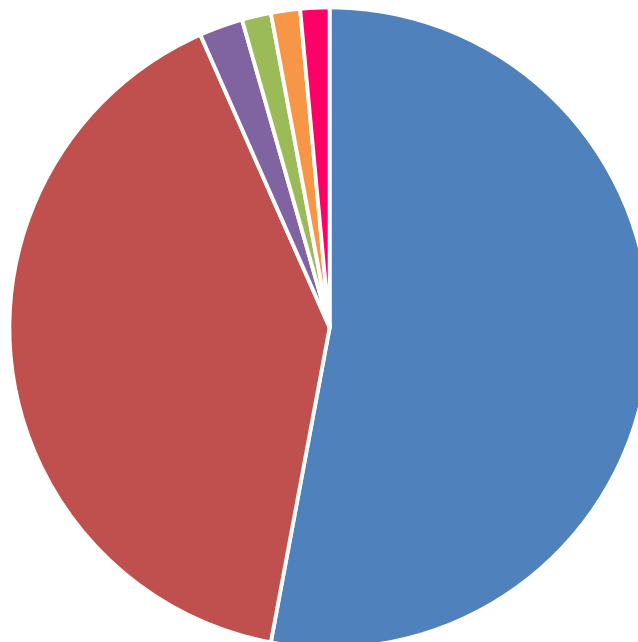
- Controlling slush and burn

## F-gas counter measure 2%

- Recovery & Destruction

## Renewable energy 40%

- Solar
- Micro hydro
- wind
- Biomass

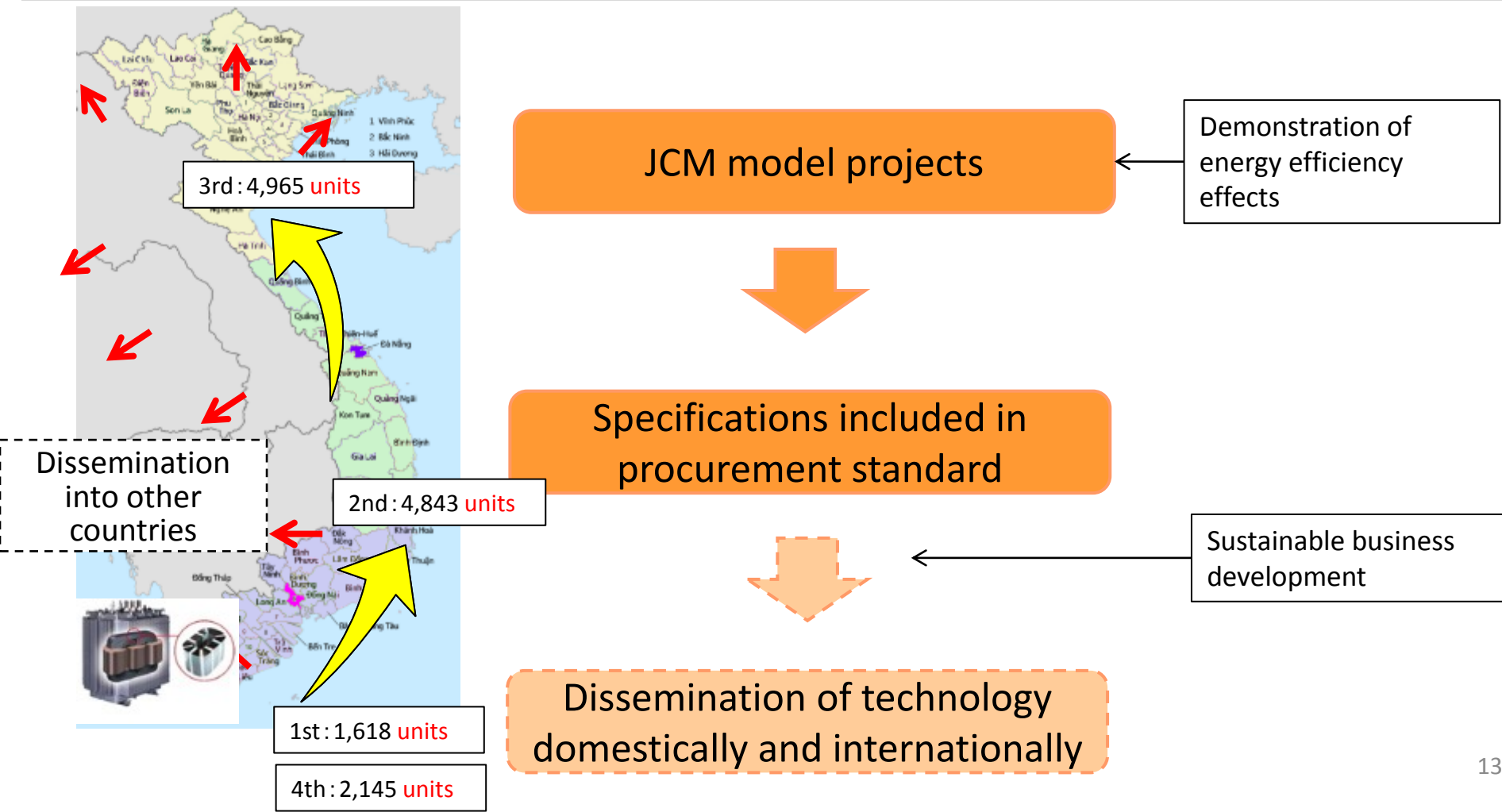


## Energy efficiency 52%

- Boiler
- Air Conditioning
- Refrigerating
- Chiller
- Looms
- Transformer
- Gas Co-generation
- LED Lighting

# Business Model Case① : 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)





# Business Model Case② : Replicating through Standard & Institutional Arrangement

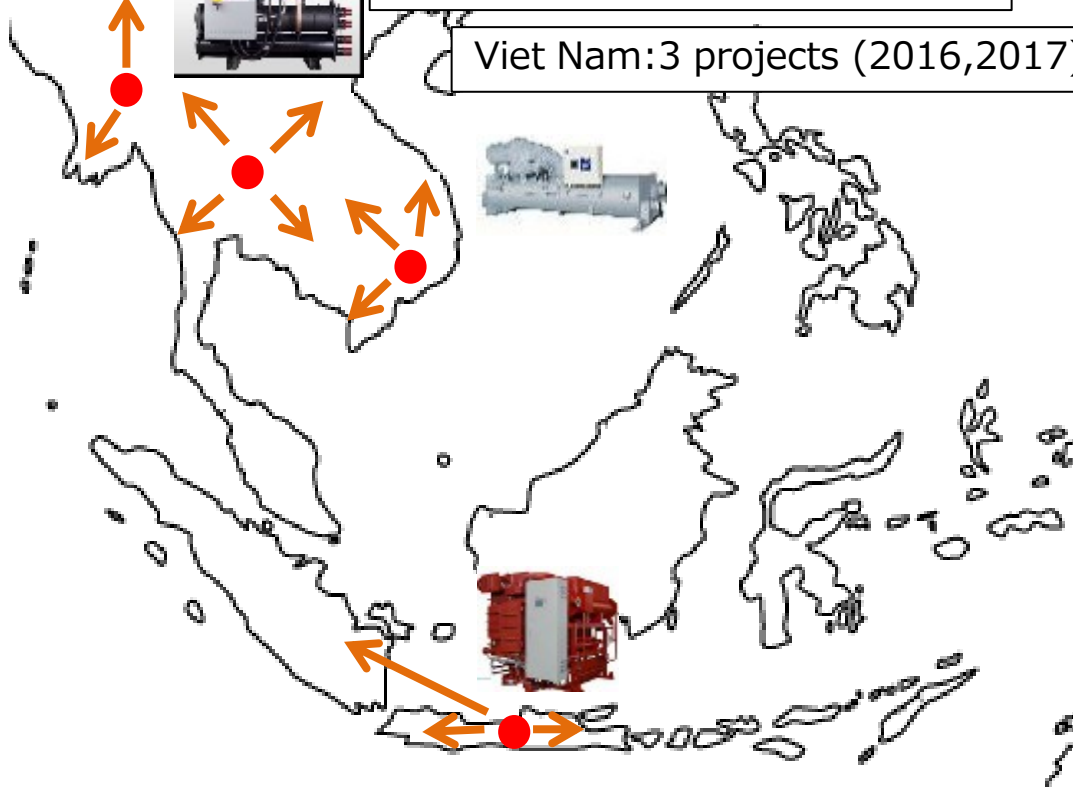
- Company succeeded to implement leading low carbon technologies through the JCM
- Using the project as a showcase, their business was developed in ASEAN countries
- Further business development is expected through the establishment of energy efficiency standards and relevant institutional arrangements

Myanmar: 2 JCM model projects (2016)



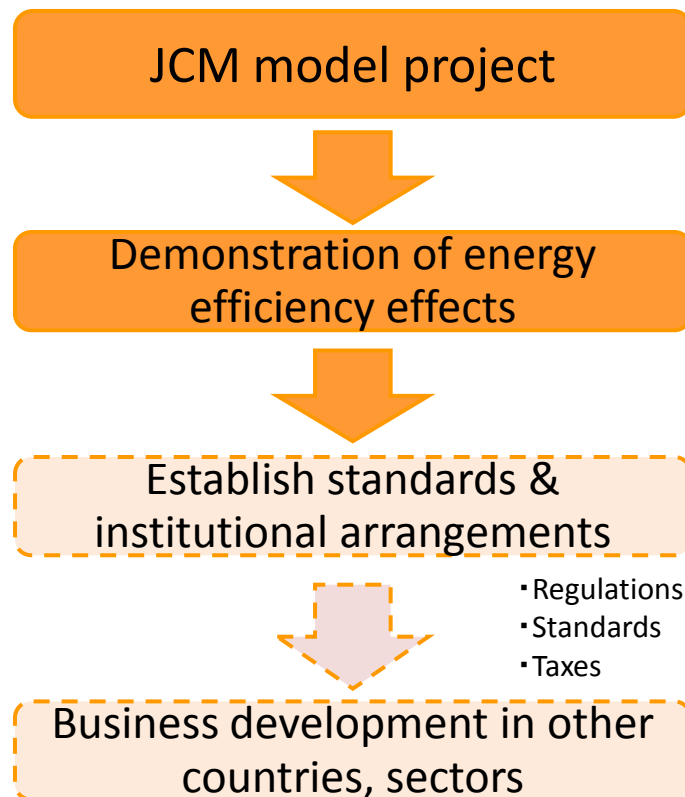
Thailand: 7 projects (2015, 2016)

Viet Nam: 3 projects (2016, 2017)



Indonesia: 6 projects (2013-2017)

Chillers/Refrigerator



Thank you  
for your attention

