Ministry of the Environment

Introduction to the Joint Crediting Mechanism

December 10, 2019

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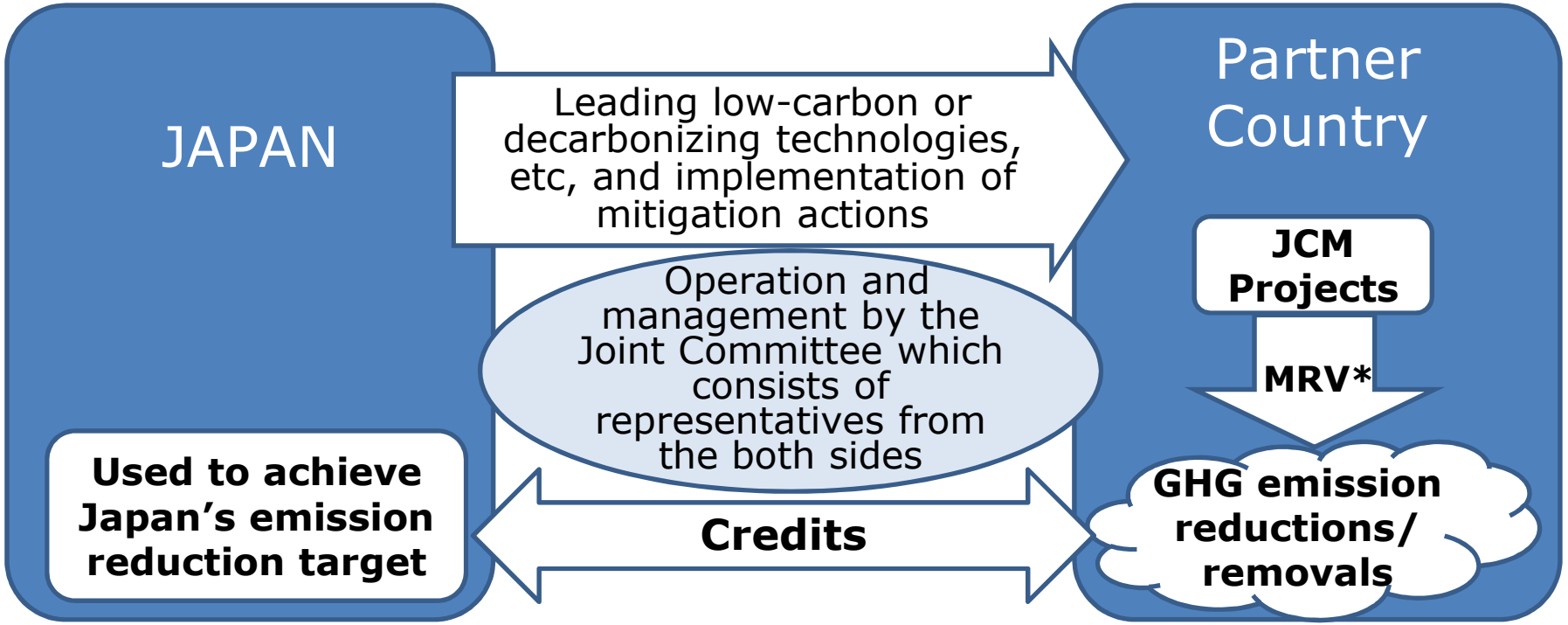
Ministry of the Environment ,Japan

Basic Concept of the Joint Crediting Mechanism (JCM)

- Facilitating diffusion of leading low-carbon or decarbonizing technologies ,etc 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

The Joint Crediting Mechanism (JCM)

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 power ,Farmdo Co., Ltd.,Mongolia

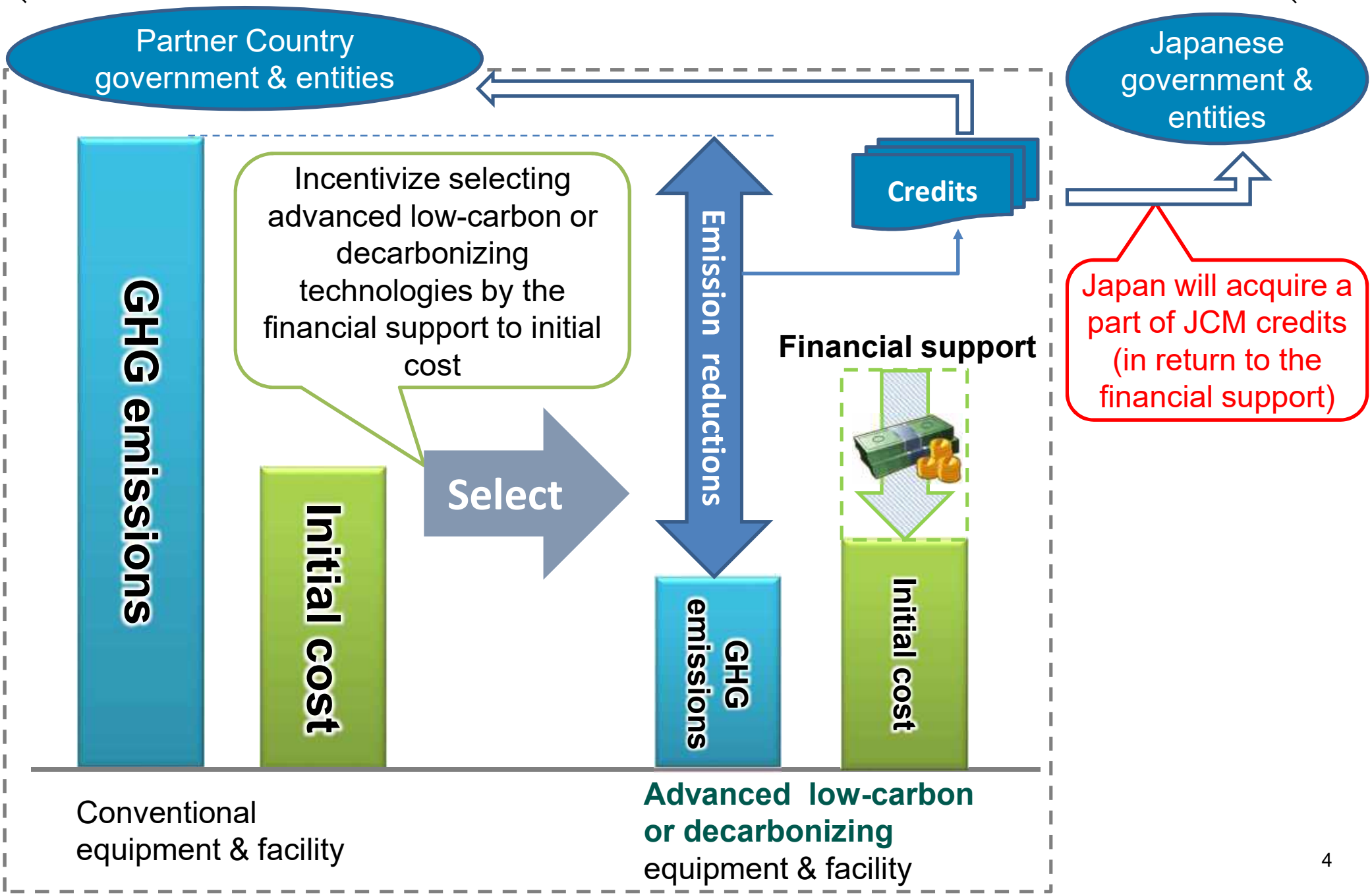
Waste to Energy Plant, JFE engineering, Myanmar

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

Bangladesh
Mar. 19, 2013
(Dhaka)

Ethiopia
May 27, 2013
(Addis Ababa)

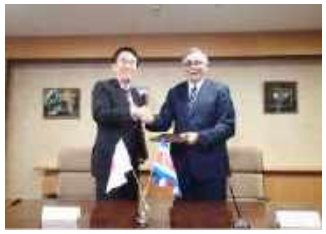
Kenya
Jun. 12,2013
(Nairobi)

Maldives
Jun. 29, 2013
(Okinawa)

Viet Nam
Jul. 2, 2013
(Hanoi)

Lao PDR
Aug. 7, 2013
(Vientiane)

Indonesia
Aug. 26, 2013
(Jakarta)



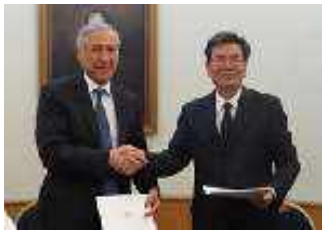
Costa Rica
Dec. 9, 2013
(Tokyo)

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)

JCM Financing Programme and Collaboration with MDBs

1. **JCM Model Projects by Ministry of the Environment**
2. **JCM F-gas Recovery and Destruction Model Project**
3. **ADB Trust Fund: Japan Fund for Joint Crediting Mechanism**
4. **Collaboration with the World Bank Group**

JCM Model Projects by MOE

Budget for projects starting from FY 2019 is 9.9 billion JPY (approx. USD 99 million) in total by FY2021 (1 USD = 100 JPY)

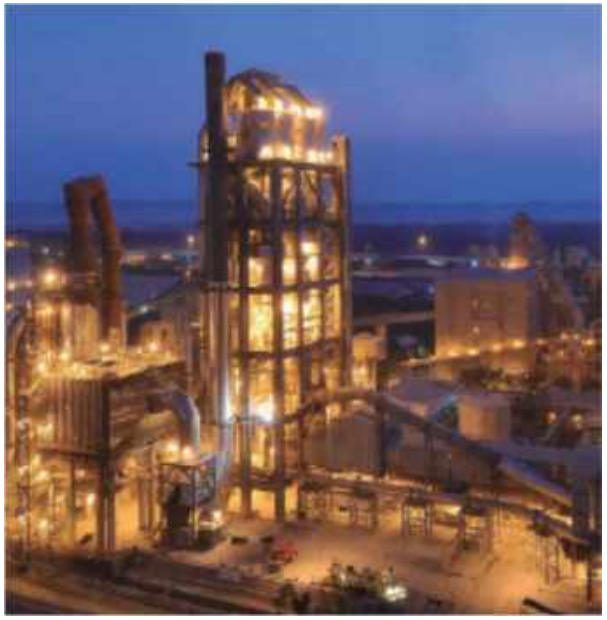
※Includes collaboration with projects supported by JICA and other governmental-affiliated financial institute.

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)



JCM F-gas Recovery and Destruction Model Project by MOE

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

ADB Trust Fund: Japan Fund for Joint Crediting Mechanism

Draft Budget for FY2019

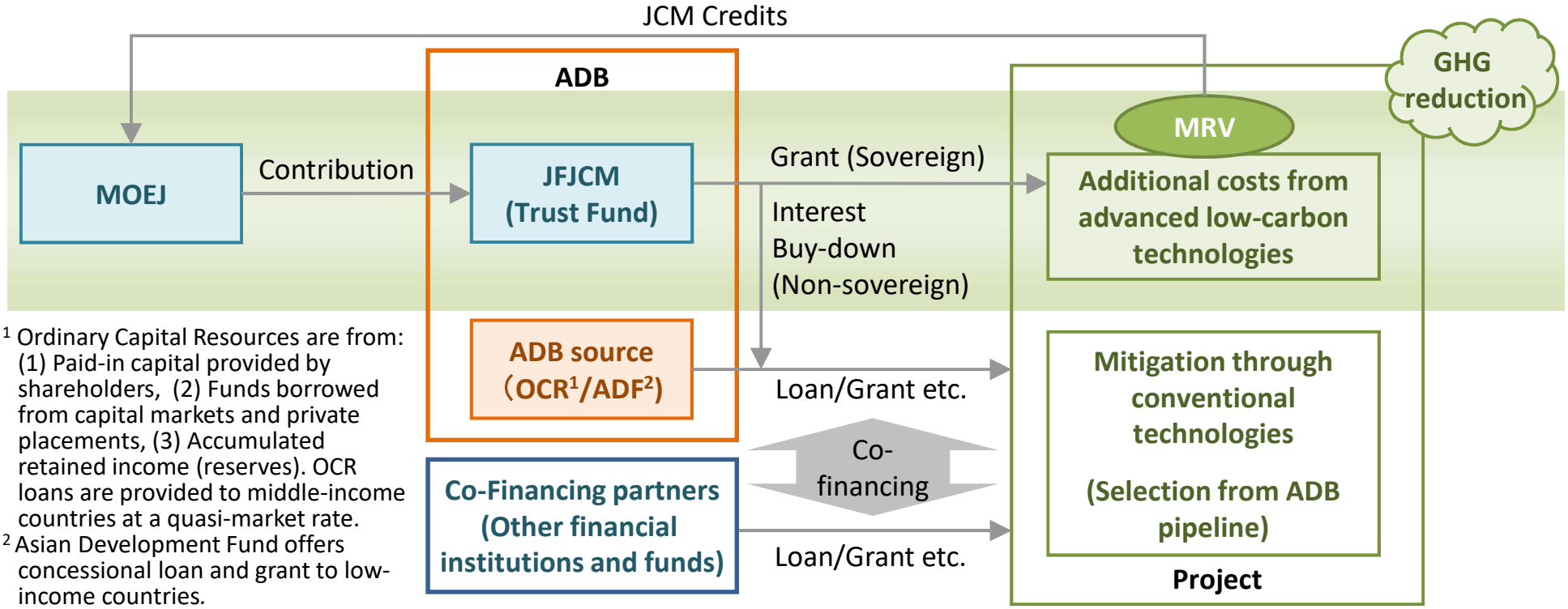
•JPY 1 billion (approx. USD 10 million

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-income countries.

JCM Financing Programme by MOEJ (FY2013～2019) as of Nov 26, 2019

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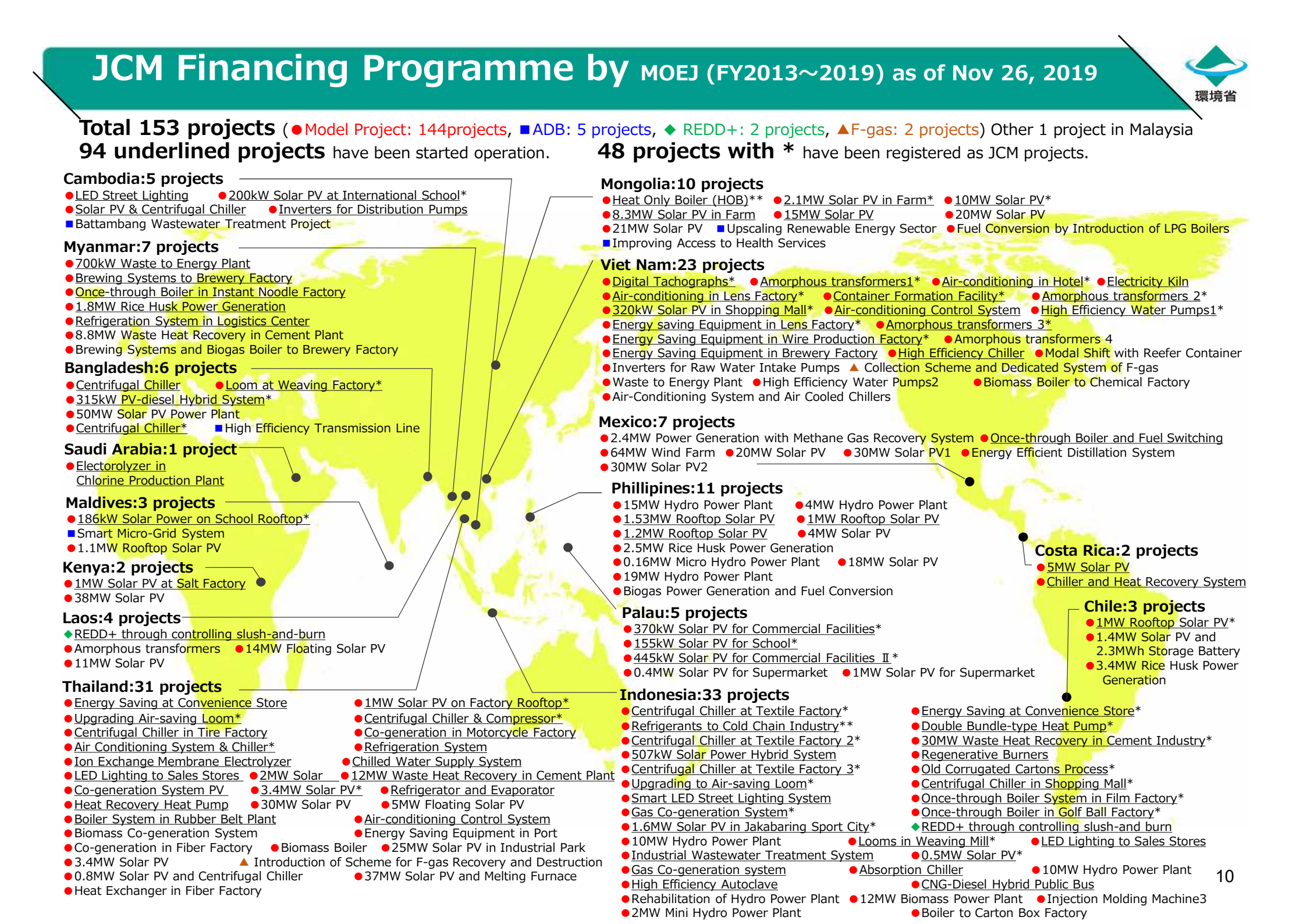
Total 153 projects (●Model Project: 144projects, ■ADB: 5 projects, ◆ REDD+: 2 projects, ▲F-gas: 2 projects) Other 1 project in Malaysia
94 underlined projects have been started operation. **48 projects with *** have been registered as JCM projects.



Cambodia:5 projects
- LED Street Lighting
- 200kW Solar PV at International School*
- Solar PV & Centrifugal Chiller
- Inverters for Distribution Pumps
- ■Battambang Wastewater Treatment Project

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

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

Saudi Arabia:1 project
- Electorolyzer in Chlorine Production Plant

Maldives:3 projects
- 186kW Solar Power on School Rooftop*
- ■Smart Micro-Grid System
- 1.1MW Rooftop Solar PV

Kenya:2 projects
- 1MW Solar PV at Salt Factory
- 38MW Solar PV

Laos:4 projects
- ◆REDD+ through controlling slush-and-burn
- Amorphous transformers
- 14MW Floating Solar PV
- 11MW Solar PV

Thailand:31 projects
- Energy Saving at Convenience Store
- 1MW Solar PV on Factory Rooftop*
- Upgrading Air-saving Loom*
- Centrifugal Chiller & Compressor*
- Centrifugal Chiller in Tire Factory
- Co-generation in Motorcycle Factory
- Air Conditioning System & Chiller*
- Refrigeration System
- Ion Exchange Membrane Electrolyzer
- Chilled Water Supply System
- LED Lighting to Sales Stores
- 2MW Solar
- 12MW Waste Heat Recovery in Cement Plant
- Co-generation System PV
- 3.4MW Solar PV*
- Refrigerator and Evaporator
- Heat Recovery Heat Pump
- 30MW Solar PV
- 5MW Floating Solar PV
- Boiler System in Rubber Belt Plant
- Air-conditioning Control System
- Biomass Co-generation System
- Energy Saving Equipment in Port
- Co-generation in Fiber Factory
- Biomass Boiler
- 25MW Solar PV in Industrial Park
- 3.4MW Solar PV
- ▲Introduction of Scheme for F-gas Recovery and Destruction
- 0.8MW Solar PV and Centrifugal Chiller
- 37MW Solar PV and Melting Furnace
- Heat Exchanger in Fiber Factory

Mongolia:10 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
- Fuel Conversion by Introduction of LPG Boilers
- ■Improving Access to Health Services

Viet Nam:23 projects
- Digital Tachographs*
- Amorphous transformers1*
- Air-conditioning in Hotel*
- Electricity Kiln
- Air-conditioning in Lens Factory*
- Container Formation Facility*
- Amorphous transformers 2*
- 320kW Solar PV in Shopping Mall*
- Air-conditioning Control System
- High Efficiency Water Pumps1*
- 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
- Waste to Energy Plant
- High Efficiency Water Pumps2
- Biomass Boiler to Chemical Factory
- Air-Conditioning System and Air Cooled Chillers

Mexico:7 projects
- 2.4MW Power Generation with Methane Gas Recovery System
- Once-through Boiler and Fuel Switching
- 64MW Wind Farm
- 20MW Solar PV
- 30MW Solar PV1
- Energy Efficient Distillation System
- 30MW Solar PV2

Phillipines:11 projects
- 15MW Hydro Power Plant
- 4MW Hydro Power Plant
- 1.53MW Rooftop Solar PV
- 1MW Rooftop Solar PV
- 1.2MW Rooftop Solar PV
- 4MW Solar PV
- 2.5MW Rice Husk Power Generation
- 0.16MW Micro Hydro Power Plant
- 18MW Solar PV
- 19MW Hydro Power Plant
- Biogas Power Generation and Fuel Conversion

Palau:5 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
- 1MW Solar PV for Supermarket

Indonesia:33 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 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
- High Efficiency Autoclave
- CNG-Diesel Hybrid Public Bus
- Rehabilitation of Hydro Power Plant
- 12MW Biomass Power Plant
- Injection Molding Machine3
- 2MW Mini Hydro Power Plant
- Boiler to Carton Box Factory

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

Chile:3 projects
- 1MW Rooftop Solar PV*
- 1.4MW Solar PV and 2.3MWh Storage Battery
- 3.4MW Rice Husk Power Generation

Technologies Transferred through JCM by MOEJ(FY2013-2019)

- Total of 147**JCM Projects** being developed in 17 partner countries
- 48% are **energy efficiency** and 43% are **renewable energy**
- Effective use of Energy, Transport, Waste to energy, F-gas Recovery and Destruction and REDD+ project shares 9%

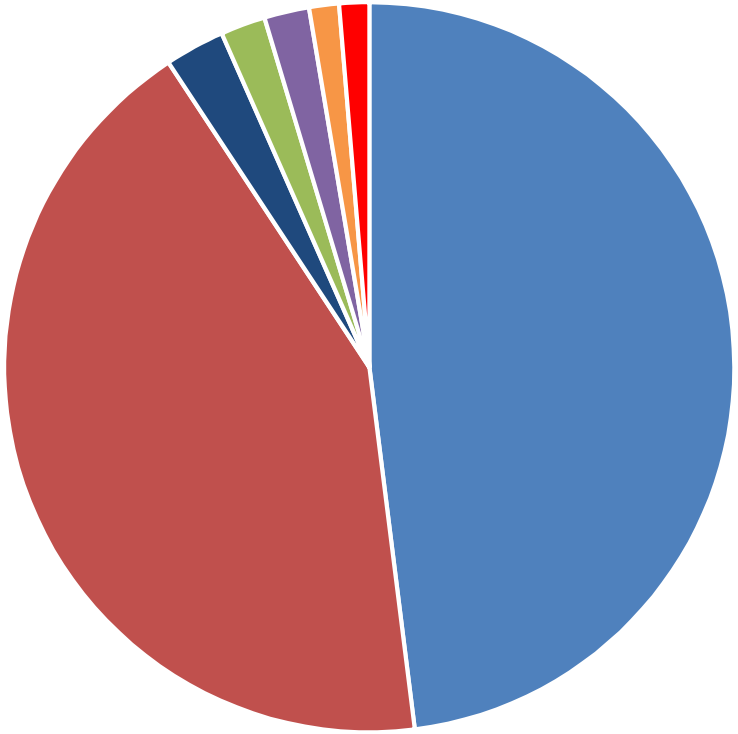
Waste 2%
- Waste to Energy

Transport 2%
- Digital Tachographs
- Modal Shift
- CNG-Diesel Hybrid

REDD+ 1%
- Controlling slush and burn

F-gas counter measure 1%
- Recovery & Destruction

Effective Use of Energy 3%
- Waste Heat Recovery
- Gas Co-generation



Renewable energy 43%
- Solar
- Micro hydro
- wind
- Biomass

Energy efficiency 48%
- Boiler
- Air Conditioning
- Refrigerating
- Chiller
- Looms
- Transformer
- LED Lighting

As of August 2, 2019

Memorandum of Cooperation between World Bank Group & MOEJ

- Identify suitable WBG programs where the MOEJ could potentially participate through appropriate identified means and jointly develop mitigation outcomes from the projects using the JCM methodology
- Explore the possibility to scale up the JCM projects under the PMR and PMR Successor Program
- Share information on identified candidate programs with the MOEJ to explore and examine potential arrangements of the pilot projects with the JCM including utilization of Measurement, Reporting and Verification ("MRV") methodologies

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2 Areas of Cooperation

Piloting Article 6 of the Paris Agreement

- Collaboration with World Bank supported programs
- Replication and scale-up JCM projects under the Bank program
- Application of JCM methodologies

Partnership for Market Readiness (PMR)

- Collaboration with PMR and next phase
- Scale-up JCM projects under the PMR and next phase

Carbon Pricing Leadership Coalition (CPLC)

- Showcasing MOEJ's initiatives and business case for carbon pricing.

Innovate 4 Climate (I4C)

- Participation and cooperate to I4C

JCM Business Matching Site “JCM Global Match”

https://gec.force.com/JCMGlobalMatch/

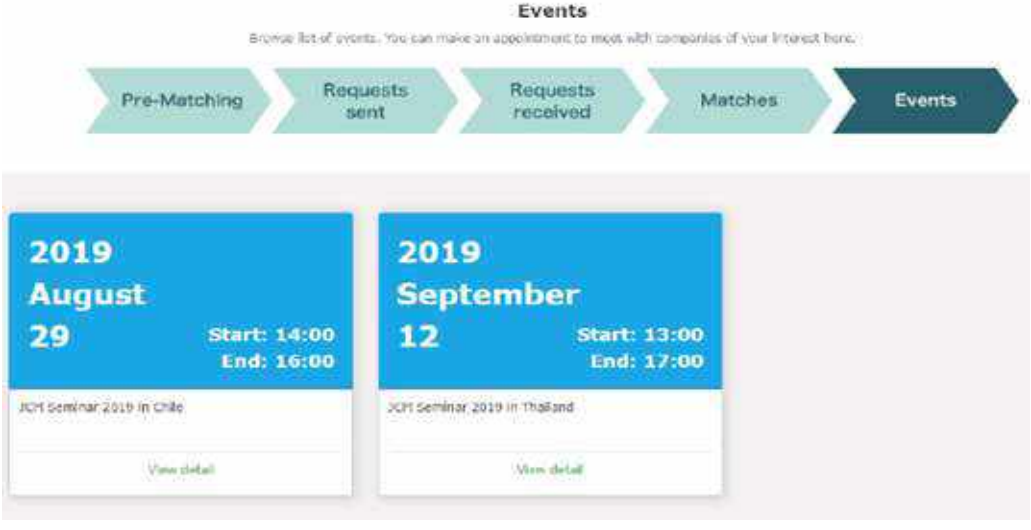
QR code
to see the website

◆Objectives

- To facilitate business match making of sellers and buyers of low and zero carbon technology for the JCM project

◆Features

- Automated match-making website based on registered information
- Arrangement of face-to-face meetings
- Financial institutions and consulting firms can also participate for match-making



Muchas gracias!

Thank you for your attention!

Ministry of the Environment

Government of Japan