

# Joint Crediting Mechanism (JCM) Updates

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# 1. Initiative for Climate Action Plan in Developing Countries



## Initiative for Climate Action Plan in **Developing Countries**

"Japan's Assistance Initiative to Address Climate Change" was released at COP22

#### <5 Pillars>

- Diffusion of Advanced Low-carbon Technologies via JCM etc.
- Enhancement of Adaptation Capacity through Sharing Knowledge and Experience
- Improvement of Measurement, Reporting, and Verification (MRV) Capabilities through Human Resource Development That Will Lead to a Transparency Framework
- 4. Promotion of Building of a System for Comprehensive Measures for Controlling Emission of **Fluorocarbons**
- 5. Support for Sustainable Societies in Conjunction with measures addressing Climate Change





# 2. Purpose of MOEJ project support for 3E Nexus



# Purpose of MOEJ project support for 3E Nexus

- ✓ To disseminate the information about JCM to the people who are influential to policy/decision makers in national/local governments of developing countries, especially JCM partner countries.
- ✓ To contribute the capacity development in the developing countries for creating low carbon society.
- ✓ To receive strong support from academic network for JCM project formulation, planning, implementation and maintenance in developing countries, especially JCM partner countries.

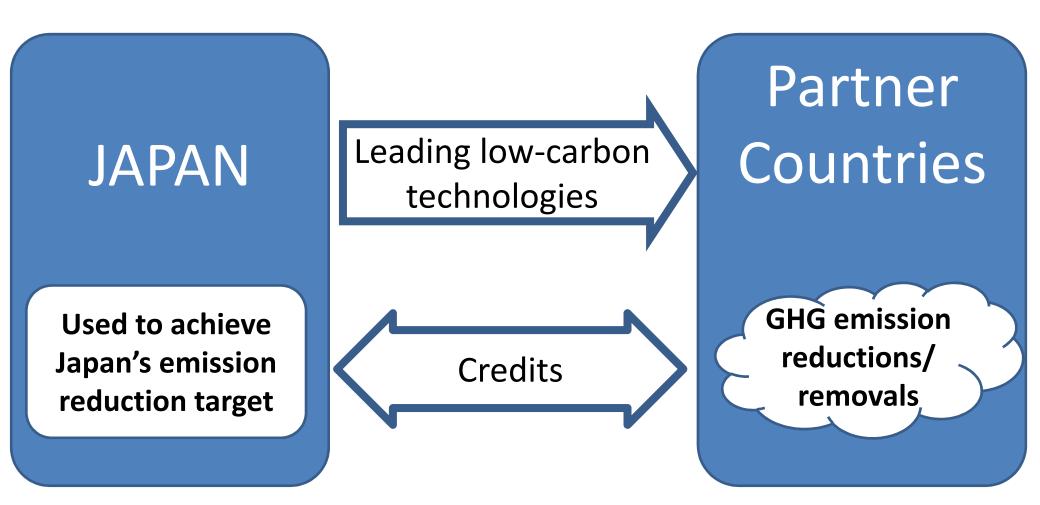


Concrete outcome will be reflected to the final report in March

## 3. General Information about JCM



## **Joint Crediting Mechanism**



Operation and management by Joint Committees



## **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)



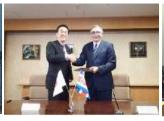
Viet Nam Jul. 2, 2013 (Hanoi)



Lao PDR Aug. 7, 2013 (Vientiane)



Indonesia Aug. 26, 2013 (Jakarta)



Costa Rica Dec. 9, 2013 (Tokyo)



Palau Jan. 13, 2014 (Ngerulmud)



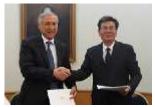
Cambodia
Apr. 11, 2014
(Phnom Penh)



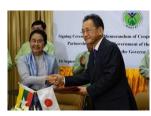
Mexico Jul. 25, 2014 (Mexico City)



Saudi Arabia May 13, 2015



Chile
May 26, 2015
(Santiago)



Myanmar Sep. 16, 2015 (Nay Pyi Taw)



Thailand
Nov. 19, 2015
(Tokyo)



Philippines
Jan. 12, 2017
(Manila)





## JCM Partner Countries at COP22



- JCM partner countries' high-level meeting was organized at COP22
- Minister Yamamoto and representatives welcomed JCM progress and acknowledged further cooperation

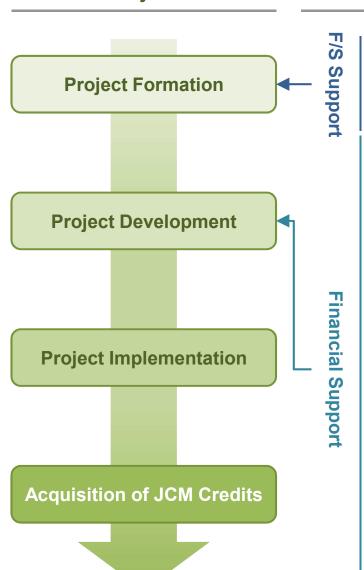


# JCM Project Flow & JCM Support program by MOEJ

**JCM Project Flow** 

**JCM Supports by MOEJ** 

\*USD1=JPY100



#### JCM Capacity Building Programmes and Feasibility Studies

FY16: JPY1.1B (USD 11MM) FY17: JPY1.4B (USD 14MM)

• Include: JCM City-to-City Collaboration Program

#### JCM Model Project Program

FY16: JPY6.7B (USD 67MM) over 3 years FY17: JPY6.0B (USD 60MM) over 3 years

 Small/medium-scale projects (JPY several tens of million to several hundreds of million)

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

FY16: JPY1.2B (USD 12MM) FY17: JPY1.0B (USD 10MM)

Infrastructure (ADB pipeline projects) (JPY several billion to over 10 billion)

# 4. JCM Support program by MOEJ

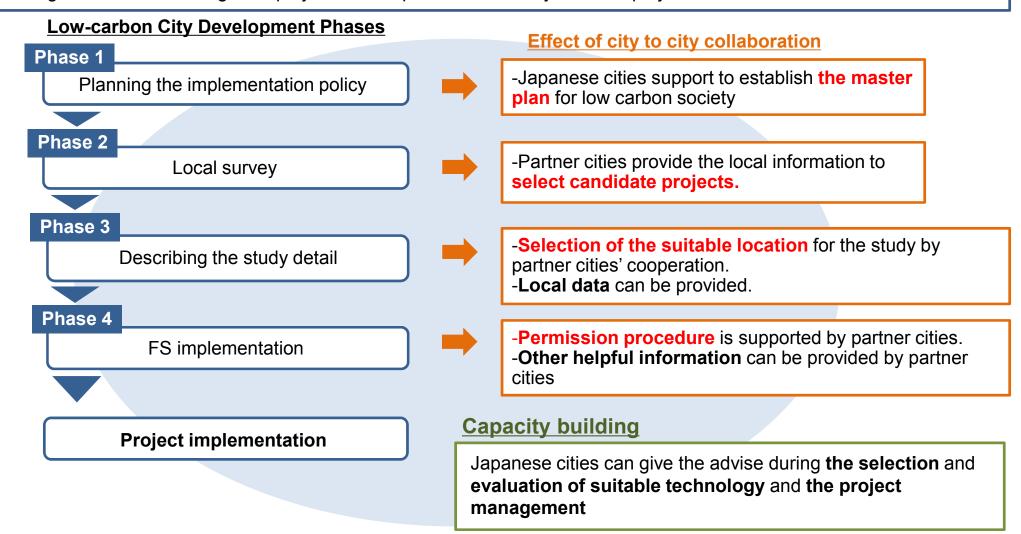




### Feasibility study for JCM project by city to city collaboration

#### **Outline**

- -The feasibility study supports overseas cities' effort to create the low carbonized, resilient and sustainable society by means of the sufficient experience and know how that Japanese cities have.
- -The goals are establishing JCM projects and expand continuously the JCM projects into the other areas





### City-to-City Collaboration for low-carbon development

- The role of cities was articulated at COP21 and G7 environment ministers meeting
- It is necessary to establish low carbon societies (LCS) in developing and emerging countries in order to globally reduce GHG emission to achieve 2 degree target.
- City-to-city collaboration can realize continuous diffusion of advanced low carbon technologies as well as transfer of knowledge and know-how to foreign cities from Japanese municipalities with long-term support



The Government of Japan emphasizes and supports the "city-to-city collaboration"

Advanced low carbon technologies



Transferred Japan's experience, knowledge and know-how

- Overcome of pollution and establishment of LCS
- Operation experiences of institutions and infrastructures



Contribution to establishment of low carbon societies in developing countries



## Result of City-to-City Collaboration FY2014-2016

	FY2014	FY2015	FY2016
No. of projects	7	16	19
No. of countries	4	8	7
No. of cities in the developing countries	7	14	11
No. of Cities participating from Japan	5	7	8



#### FY2016 Feasibility studies with city-to-city collaboration

- 1. The high-efficiency heat pump installation and PV solar project in Mongolia (<u>Ulaanbaatar City-Sapporo City/Hokkaido Prefecture</u>)
- 2. The cogeneration and exhaust heat recovery projects in Vietnam (Hai Phong City-Kitakyushu City)
- 3. The PV solar project and high-efficiency boiler installation projects in Myanmar (Yangon City-Kawasaki City)
- 4. The water treatment system installation and WtE\* project in Myanmar (<u>Pathein City-Fukushima City</u>)
- 5. The biomass power generation and PV solar project in Cambodia (Siem Reap State-Kanagawa Prefecture)
- 6. The WtE, cogeneration and exhaust heat recovery project in Thailand (Rayong Province-Kitakyushu City)
- 7. The PV solar and Energy saving equipment installation project in Thailand (Bangkok city- Yokohama City)
- 8. The WtE and EV installation project in Cambodia (Phnom Penh city-Kitakyushu City)
- 9. The cogeneration and high-efficiency air conditioning system installation project in Malaysia
  - (<u>Iskandar Development Region-Kitakyushu City</u>)
- 10. The high-efficiency air conditioning system and heat desorption unit installation project in Indonesia
  - (Batam City-Yokohama City)
- 11. The study of waste to energy plant installation in Indonesia (Bali province- Clean Authority of Tokyo)





Project in 2014 Project in 2015 Project in 2016

### JCM projects generated from city to city collaboration

The following map shows the areas of JCM projects developed from city to city collaboration study

#### **Myanmar:** Waste to Energy Plant in Yangon Thailand: Brewing Systems to Beer Factory in Yanogn Waste Heat Recovery in Cement Plant in Rayong •Once-through Boiler in Instant Noodle Factory in Yangon •Solar PV and EMS in Paint Factory in Bangkok •Rice Husk Power Generation in Ayeyarwady Region Cambodia: • Solar PV & Centrifugal Chiller in Phnom Penh Vietnam: • Digital Tachographs for eco driving in Ho chi minh • Solar PV in Shopping Mall in Ho chi minh • Air-conditioning Control System in Ho chi minh •Water Pumps in Da nang Malaysia: Indonesia: Solar PV in Iskandar Centrifugal Chiller in Shopping Mall Slabaya •Smart LED Street Lighting System in Bandung •Air-conditioning Utility System in Airport in Batam

17



#### City-to-city Collaboration between Kitakyushu and Hai Phong

Hai Phong is aiming to create a Green Port City through self-implementing actions

> Hai Phone's Actions
> Residents **Green Growth Promotion Plan of the** City of Hai Phong

- ✓ Vision
- Basic policies
- Specific measures
- Pilot projects

**Settling on Broad Policies** concerning Green Growth by Hai Phong City

Governen Businesses



The mayor of Hai Phong City was received this plan by the mayor of Kitakyushu on May of 2015

Kitakyushu Model (Experience, Know-how)

**Hai Phong Green Port City** 





## Hai Phong Green Growth Promotion Plan



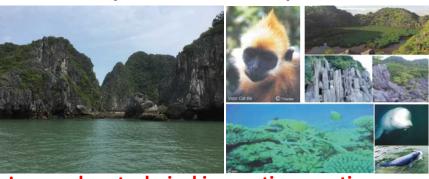
## **Promoting 15 Pilot Projects**

Waste	①Separation and composting of household waste ②Waste heat recovery power generation & utilization of industrial waste ③Recycling of e-waste
Energy	4 Energy savings and introduction of decentralized energy systems in factories & buildings
Transportation	⑤Introduction of low-emission buses
Transportation	6 Promotion of the use of public transportation
Cat Ba Island	7 Development of comprehensive resource recycling system
Cat ba isiailu	8 Energy savings and introduction of renewable energy and EV buses in Cat Ba Island
Water & Sewage,	9U-BCF expansion project
Rainwater	①Handicraft village wastewater measures
Drainage	①Introduction of sewerage registry system
Environmental	®Restoration of Tay Nam canal
Protection	③Development of air and noise monitoring systems
Green	(I)Installation of high-efficiency furnaces in foundries
Production	15 Promotion of green agriculture



#### **Conservation Projects on Cat Ba Island**

## Demonstration run of EV bus in conjunction with solar power



Low-carbon technical innovation creation project for developing countries

Demonstration period: Dec 2015 to Feb 2020

Joint development by local company, Soft Energy Controls, with a Chinese company (provider of technologies to control storage batteries)

Introduction of first EV bus in Viet Nam

- Temporary import measures → Approved by prime minister
- Demonstration run→Development of guidelines by the Ministry of Transport





#### **Development of Comprehensive Resource Recycling System** Solid fuel **Tourists** Plastic protection tax production Tourism industry factory Cat Ba Island Application to be listed as a World Natural Heritage Site Purified water Ecological Organic waste agriculture **Biogas**

- Production of biogas from wet waste and sludge
- Ecological agriculture using liquid fertilizer
- Processing solid fuel from dry waste









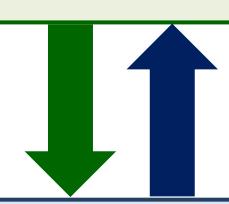
# (2) JCM Model Project Program



## JCM Model Project Program

## **Government of Japan**

Finance part of an investment cost (less than half)



MRV and deliver at least half of JCM credits

# International consortiums (which include Japanese entities)







The draft budget for FY 2017: 6.0 billion JPY (approx. USD 60million)



## **Examples of JCM Model Projects**





tachograph



Vietnam

Indonesia

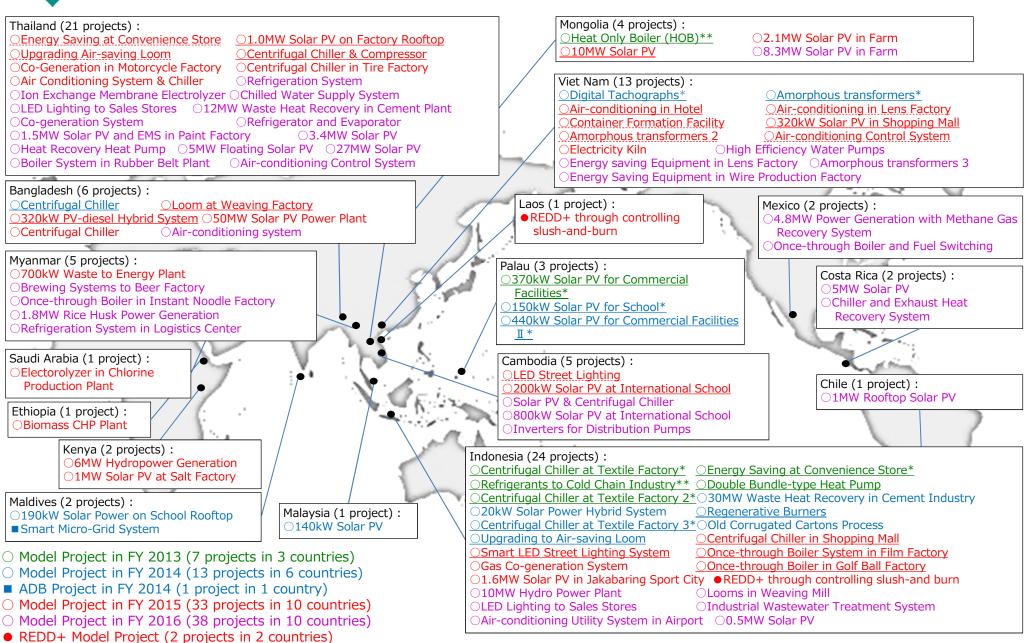








#### JCM Financing programs by MOEJ (FY2013~2016) as of Jan 2017



Total 93 projects in 16 partner countries

Underlined projects have started operation (34 projects, including 7 partially started projects) Projects with \* have been registered as JCM projects (13 projects)



## Progress of the JCM in each partner country as of Jan 2017

Partner countries	Start from	No. of JC	No. of registered projects	No. of approved methodologies	Pipeline (JCM Financing Programme & Demonstration Projects in FY 2013-2016)
Mongolia	Jan 2013	4	2	3	5
Bangladesh	Mar 2013	3		1	6
Ethiopia	May 2013	2		1	2
Kenya	Jun 2013	2		1	4
Maldives	Jun 2013	2		1	3
Viet Nam	Jul 2013	5	4	6	17
Lao PDR	Aug 2013	2		1	2
Indonesia	Aug 2013	5	6	10	26
Costa Rica	Dec 2013	1			2
Palau	Apr 2014	4	3	1	3
Cambodia	Apr 2014	2		1	5
Mexico	Jul 2014	1			2
Saudi Arabia	May 2015	1			1
Chile	May 2015	1			1
Myanmar	Sep 2015	1			5
Thailand	Nov 2015	2		2	21
Philippines	Jan 2017				
Total	16	38	15	28	105



## **Approved Methodologies (1/4)**

No.	Country	Sectoral Scope	Methodology Title	GHG Emission Reduction Measures
MN_ AM001	Mongolia	Energy distributio n	Installation of energy-saving transmission lines in the Mongolian Grid	Reduction of transmission loss by introduction of LL-ACSR/SA (Low Electrical Power Loss Aluminum Conductors, Aluminum-Clad Steel Reinforced).
MN_ AM002	Mongolia	Energy industries	Replacement and Installation of High Efficiency Heat Only Boiler (HOB) for Hot Water Supply Systems	Installation of new HOB for hot water supply system and the replacement of existing coal-fired HOB. The boiler efficiency of the reference HOB is typically lower than that of the project HOB. Therefore, the project activity leads to the reduction of coal consumption, resulting in lower emission of GHGs as well as air pollutants.
MN_ AM003	Mongolia	Energy industries	Installation of Solar PV System	Displacement of grid electricity and/or captive electricity by installation and operation of solar PV system(s).
BD_ AM001	Bangladesh	Energy demand	Energy Saving by Introduction of High Efficiency Centrifugal Chiller	Saving energy by introducing high efficiency centrifugal chiller for the target factory, commerce facilities etc.
ET_ AM001	Ethiopia	Energy industries	Electrification of communities using Micro hydropower generation	Displacement of electricity using diesel fuel and/or lighting using kerosene by installation and operation of the micro hydropower generation unit.
KE_ AM001	Kenya	Energy industries	Electrification of communities using Micro hydropower generation	Displacement of electricity using diesel fuel and/or lighting using kerosene by installation and operation of the micro hydropower generation unit.
MV_ AM001	Maldives	Energy industries	Displacement of Grid and Captive Genset Electricity by Solar PV System	Displacement of grid electricity and/or captive electricity using diesel fuel as a power source by installation and operation of the solar PV system(s)



# Approved Methodologies (2/4)

No.	Country	Sectoral Scope	Methodology Title	GHG Emission Reduction Measures
VN_ AM001	Viet Nam	Transport	Transportation energy efficiency activities by installing digital tachograph systems	Improvement of driving efficiency by installation of digital tachograph system to freight vehicle fleets providing to the drivers a real-time feedback against inefficient driving.
VN_ AM002	Viet Nam	Energy demand	Introduction of Room Air Conditioners Equipped with Inverters	Energy saving achieved by introduction of RACs equipped with inverters.
VN_ AM003	Viet Nam	Energy demand	Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment	Reduction of electricity and fossil fuel consumed by existing facilities is achieved by replacing or substituting these facilities with high efficiency equipment.
VN_ AM004	Viet Nam	Waste handling and disposal	Anaerobic digestion of organic waste for biogas utilization within wholesale markets	Avoid the emissions of methane to the atmosphere from organic waste that have been left to decay anaerobically at a solid waste disposal site and to introduce renewable energy technologies that supply biogas that displaces fossil fuel use.
VN_ AM005	Viet Nam	Energy distributio n	Installation of energy efficient transformers in a power distribution grid	Installation of energy efficient transformers (transformers with amorphous metal core) in a power distribution grid to reduce noload losses by transformers, which leads to reduction of losses for grid electricity.
VN_ AM006	Viet Nam	Energy demand	Introduction of air conditioning system equipped with inverters	Saving energy by introducing air-conditioning system with inverter.
LA_ AM001	Laos	Energy demand	Installation and operation of energy- efficient container-based data center (DC) in the Lao PDR	Energy reduction which leads to reductions of GHG is achieved by introducing energy-efficient container-based project DC in place of the reference DC.



# Approved Methodologies (3/4)

No.	Country	Sectoral Scope	Methodology Title	GHG Emission Reduction Measures
ID_ AM001	Indonesia	Energy industries	Power Generation by Waste Heat Recovery in Cement Industry	Waste heat recovery (WHR) system generates electricity through waste heat recovered from cement production facility. Electricity generated from the WHR system replaces grid electricity resulting in GHG emission reductions of the connected grid system.
ID_ AM002	Indonesia	Energy demand	Energy Saving by Introduction of High Efficiency Centrifugal Chiller	Saving energy by introducing high efficiency centrifugal chiller for the target factory, commerce facilities etc.
ID_ AM003	Indonesia	Energy demand	Installation of Energy-efficient Refrigerators Using Natural Refrigerant at Food Industry Cold Storage and Frozen Food Processing Plant	Saving energy by introducing high efficiency refrigerators to the food industry cold storage and frozen food processing plants.
ID_ AM004	Indonesia	Energy demand	Installation of Inverter-Type Air Conditioning System for Cooling for Grocery Store	Saving energy by introducing inverter-type air conditioning system for cooling for grocery store.
ID_ AM005	Indonesia	Energy demand	Installation of LED Lighting for Grocery Store	Saving energy by introducing LED (Light Emitting Diode) lighting for grocery store.
ID_ AM006	Indonesia	Energy demand	GHG emission reductions through optimization of refinery plant operation in Indonesia	Introduction of plant optimization control systems (APC) that reduce energy consumption in the hydrogen production unit (HPU) and hydro cracking unit (HCU) at a refinery plant.
ID_ AM007	Indonesia	Energy demand	GHG emission reductions through optimization of boiler operation in Indonesia	The project achieves energy conservation in boilers, through operation optimization by applying Utility Facility Operation Optimization Technology.
ID_ AM008	Indonesia	Energy demand	Installation of a separate type fridge- freezer showcase by using natural refrigerant for grocery store to reduce air conditioning load inside the store	Saving total energy of in-store showcase and air conditioning system by introducing a separate type natural refrigerant fridge-freezer showcase for grocery store, which leads to GHG emission reductions, through the reduction of air conditioning electricity load demand by not releasing waste heat inside the store.



## **Approved Methodologies (4/4)**

No.	Country	Sectoral Scope	Methodology Title	GHG Emission Reduction Measures
ID_ AM009	Indonesia	Energy demand	Replacement of conventional burners with regenerative burners for aluminum holding furnaces	By replacing conventional burners with regenerative burners for aluminum holding furnaces, consumption of natural gas is reduced, which leads to the reduction of GHG emissions.
ID_ AM010	Indonesia	Energy demand	Introducing double-bundle modular electric heat pumps to a new building	The project contributes to GHG emission reductions at a new building, by reducing electricity and oil consumption with efficient double-bundle modular electric heat pumps where heating/cooling energy is simultaneously generated.
PW_ AM001	Palau	Energy industries	Displacement of Grid and Captive Genset Electricity by a Small-scale Solar PV System	Displacement of grid electricity and/or electricity using diesel fuel as a power source by installation and operation of the solar PV system(s).
KH_ AM001	Cambodia	Energy demand	Installation of LED street lighting system with wireless network control	The street lighting system that introduces LED lamps and lighting control devices with utilization of wireless network is installed on streets to save electricity consumption.
TH_ AM001	Thailand	Energy industries	Installation of Solar PV System	Displacement of grid electricity and/or captive electricity using fossil fuel as power source by installation and operation of the solar PV system(s)
TH_ AM002	Thailand	Energy demand	Energy Saving by Introduction of Multi-stage Oil-Free Air Compressor	Introducing multi-stage oil-free air compressor in manufacturing process of semiconductors.

# (3) Japan Fund for JCM (JFJCM)



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

#### **Draft Budget for FY2017**

X Budget will be fixed after approval by the Parliament

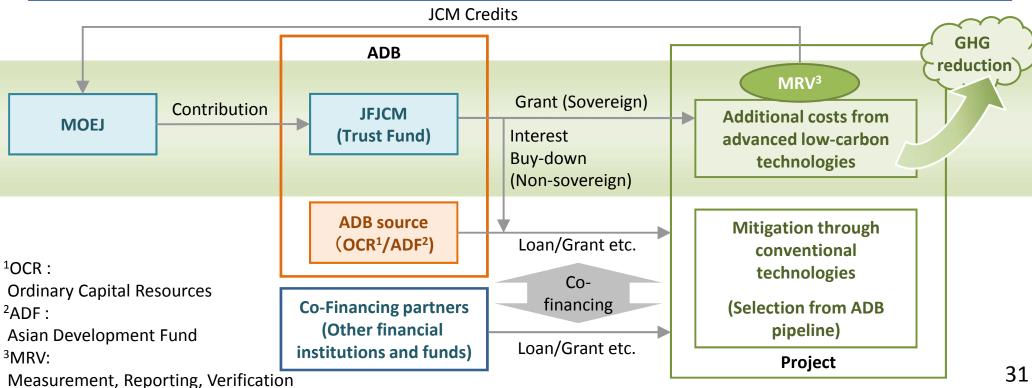
JPY 1 billion (approx. USD 10 million) XJPY 1.2 billion in 2016, and 1.8 billion in 2015 and 2014 respectively

#### **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 lowcarbon technologies as well as to acquire JCM credits





## 1st Project adopted by JFJCM

#### **Use of Proceeds Location (Atolls and Islands)** USD PV **38MM** POISED Phase 1 **Maldives ADB Grant** 5 islands Khurendhoo USD **12MM** ADB-administered Goidhoo Strategic Climate Fund (CIF SREP) Buruni USD Vilingili **50MM** European Investment Bank Addu Grid Diesel USD 10MM After Phase 2 Islamic Development Bank Total 160 islands Improvement of energy efficiency and reduction of energy-derived CO2 emission in Addu USD Addu 5MM **JFJCM**

Lithium-ion

**Battery** 

**EMS** 

Addu has a population of

over 23,000 inhabitants,

island in Maldives.

the second largest habited

\*POISED: Preparing Outer Islands for Sustainable Energy Development

(Japan Fund for JCM)

## 5. Reference



## For more information, please visit

<New Mechanism Information Platform>
http://www.mmechanisms.org/e/index.html

<JCM Model Project Program>
http://gec.jp/jcm/index.html

<Japan Fund for Joint Crediting Mechanism (JFJCM)>
<a href="http://www.adb.org/site/funds/funds/japan-fund-for-joint-crediting-mechanism">http://www.adb.org/site/funds/funds/japan-fund-for-joint-crediting-mechanism</a>

<Web Portal for Low Carbon Development in Asia (City-to-City collaboration program)> <a href="http://www.env.go.jp/earth/coop/lowcarbon-asia/english/index.html">http://www.env.go.jp/earth/coop/lowcarbon-asia/english/index.html</a>



# Thank you for your attention!