

# Recent Development of The Joint Crediting Mechanism (JCM)

November 2016

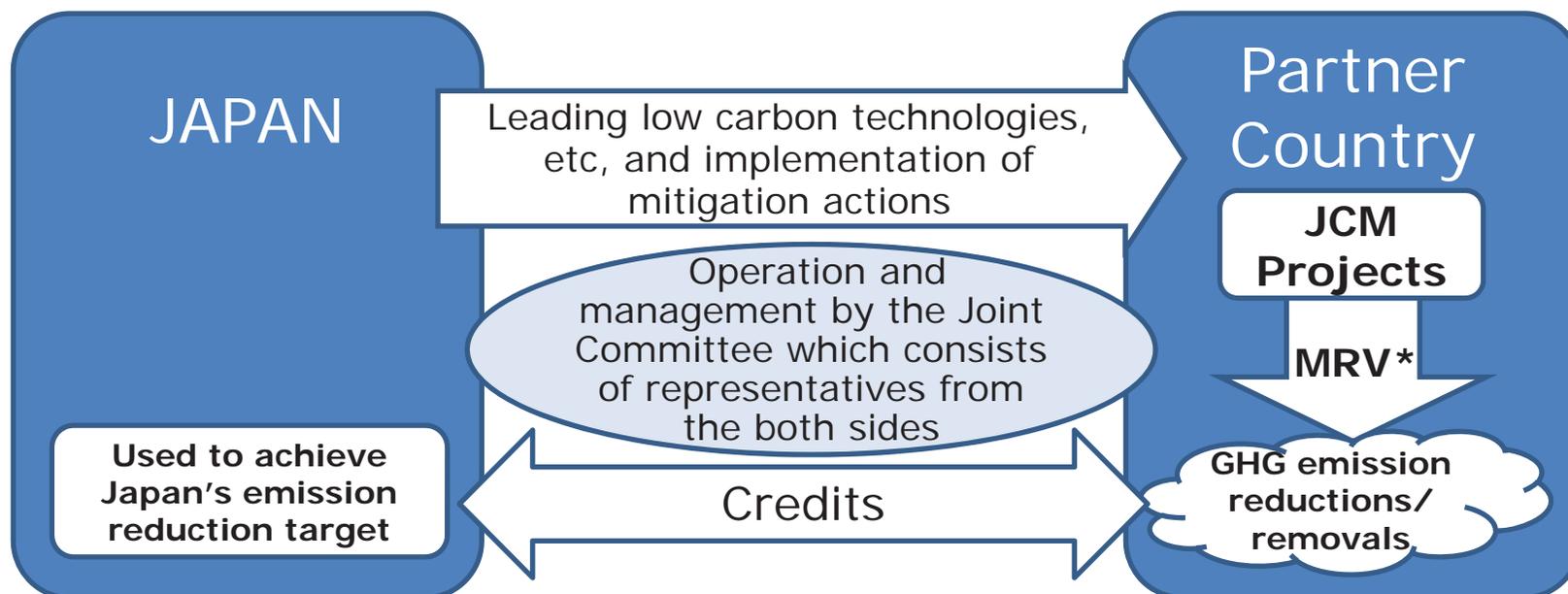
Ministry of the Environment, Japan

Takaaki Ito

*All ideas are subject to further consideration and discussion with partner countries*

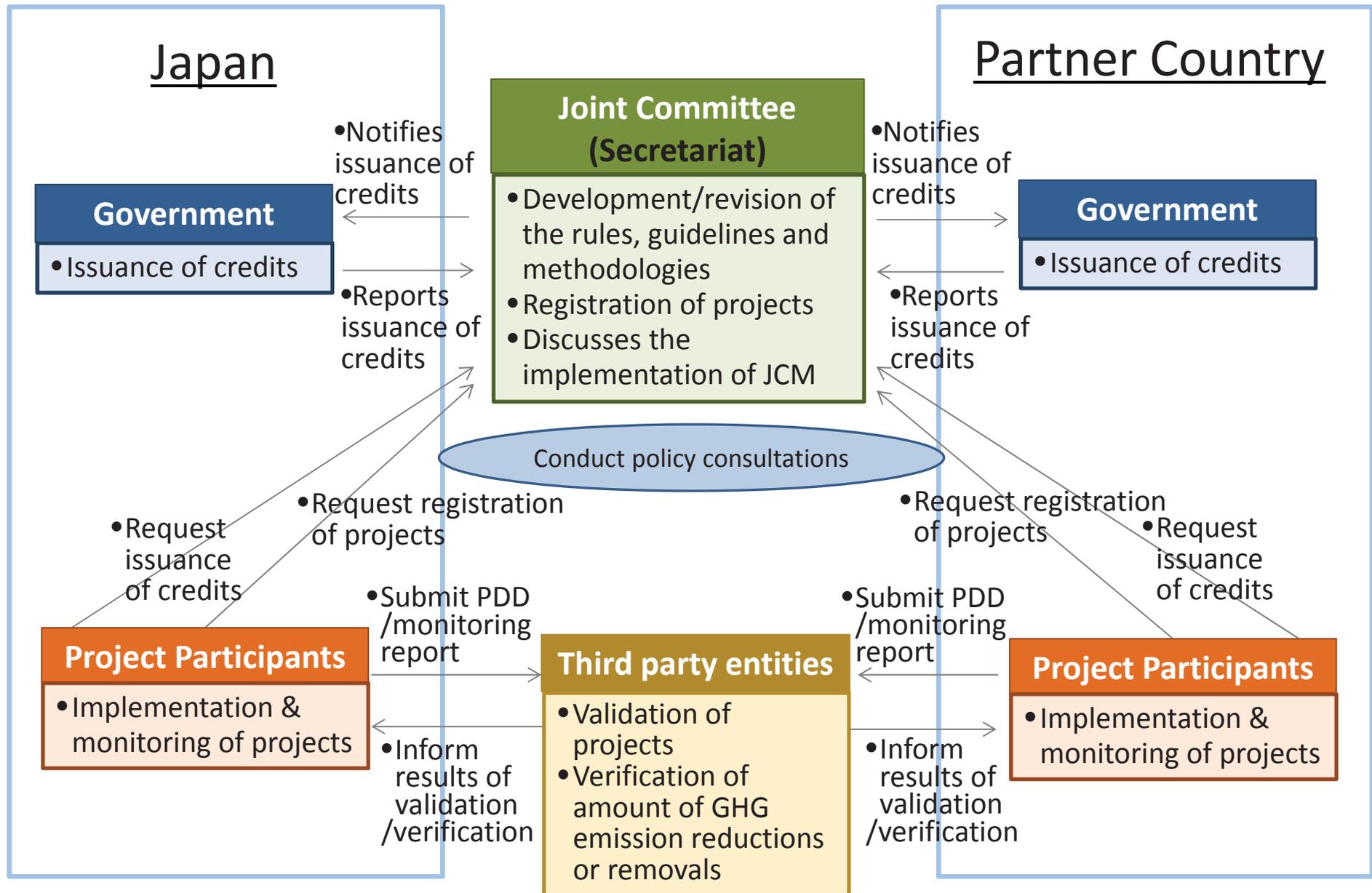
## Basic Concept of the JCM

- Facilitating diffusion of leading low carbon technologies, products, systems, services, 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.

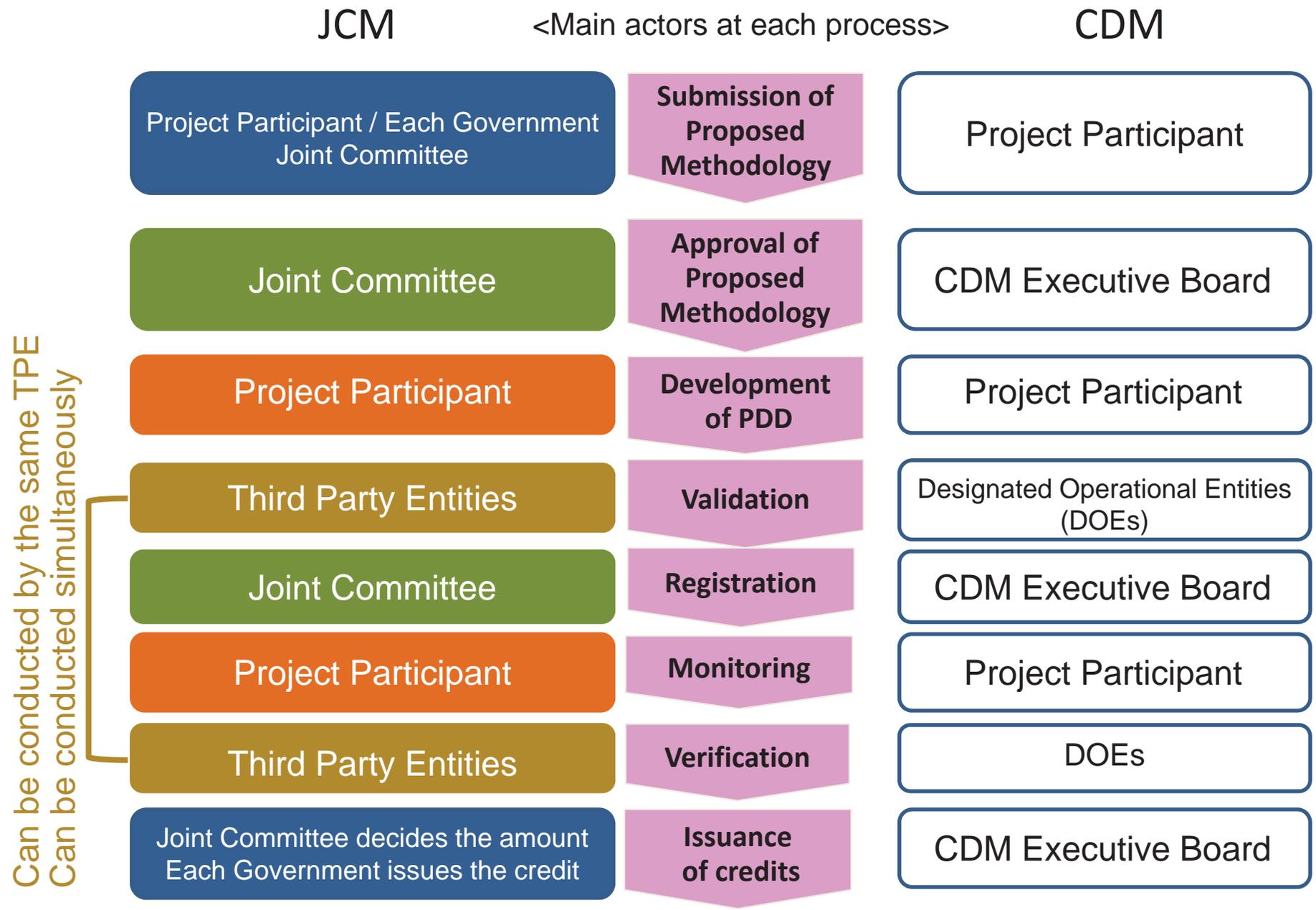


\*measurement, reporting and verification

# Scheme of the JCM



# Project Cycle of the JCM and the CDM



## 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 and Thailand.



Mongolia  
Jan. 8, 2013  
(Ulaanbaatar)



Bangladesh  
Mar. 19, 2013  
(Dhaka)



Ethiopia  
May 27, 2013  
(Addis Ababa)



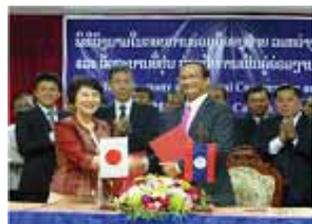
Kenya  
Jun. 12, 2013  
(Nairobi)



Maldives  
Jun. 29, 2013  
(Okinawa)



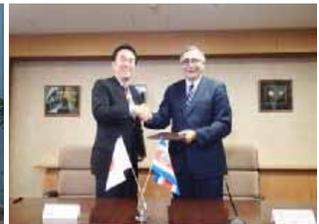
Viet Nam  
Jul. 2, 2013  
(Hanoi)



Lao PDR  
Aug. 7, 2013  
(Vientiane)



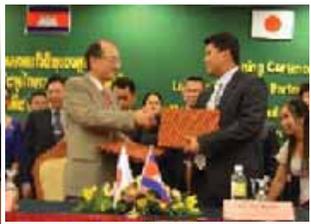
Indonesia  
Aug. 26, 2013  
(Jakarta)



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)

- In addition, the Philippines and Japan signed an aide memoire with intent to establish the JCM.

## Statement by Prime Minister Shinzo Abe at the COP21 (Excerpt)



The second component of Japan's new set of contribution is innovation. The key to acting against climate change without sacrificing economic growth is the development of innovative technologies. To illustrate, there are technologies to produce, store and transport hydrogen towards realizing CO<sub>2</sub>-free societies, and a next-generation battery to enable an electric car to run 5 times longer than the current level. By next spring Japan will formulate the "Energy and Environment Innovation Strategy." Prospective focused areas will be identified and research and development on them will be strengthened. (snip)

**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.**

# 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-CO<sub>2</sub>eq. 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-CO .

## The UNFCCC documents related to the JCM (2/2)

### Decision 19/CP18

Common tabular format for  
“UNFCCC biennial reporting guidelines for developed country Parties”

Table 4(b) Reporting on progress

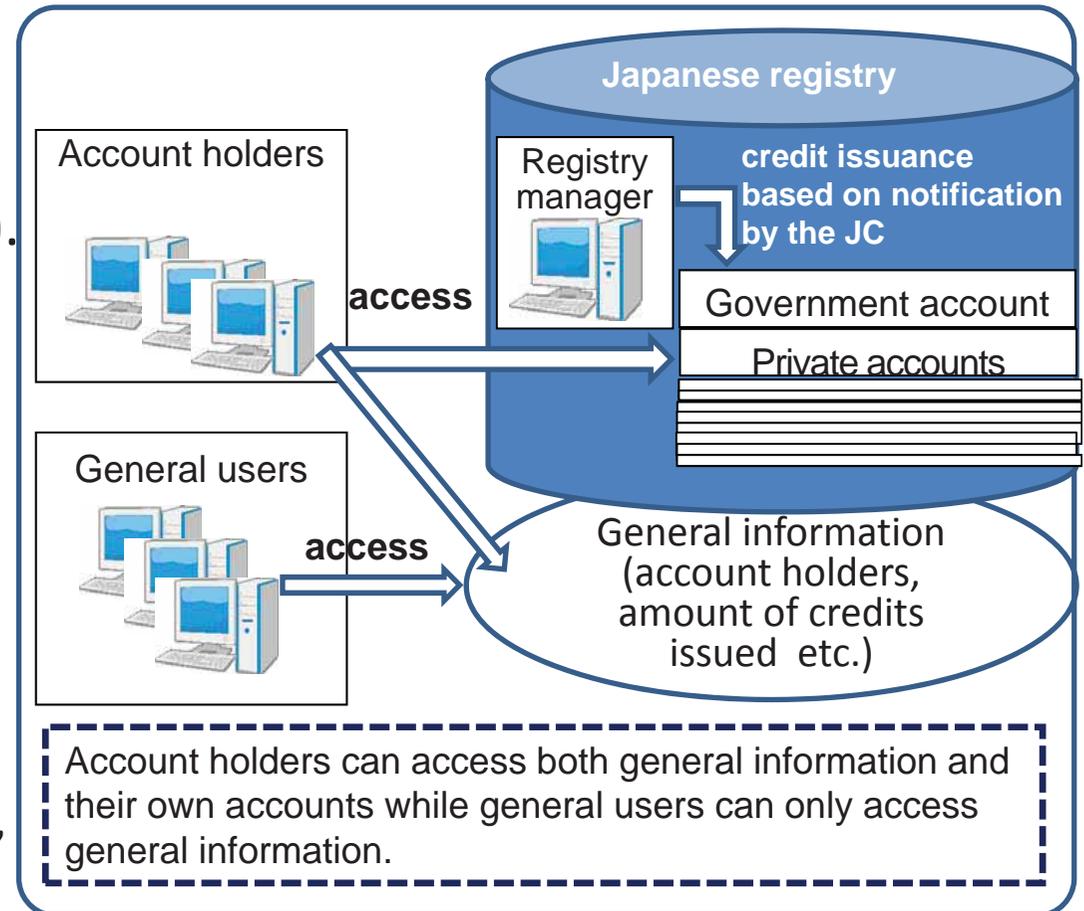
Kyoto Protocol units <sup>d</sup> (kt CO <sub>2</sub> eq)										Other units <sup>d,e</sup> (kt CO <sub>2</sub> eq)			
AAUs		ERUs		CERs		tCERs		lCERs		Units from market-based mechanisms under the Convention		Units from other market-based mechanisms	
20XX-3	20XX-2	20XX-3	Year X-2	20XX-3	20XX-2	20XX-3	20XX-2	20XX-3	20XX-2	20XX-3	20XX-2	20XX-3	20XX-2
Quantity of units										20XX-3		20XX-2	
<b>Total</b>													

- The JCM is one of various approaches based on Decision 1/CP.18, jointly developed and implemented by Japan and partner countries, and Japan intends to contribute to elaborating the framework for such approaches under the UNFCCC.
- Japan has reported and will report to the COP the use of the JCM in Biennial Reports including the Common Tabular in line with Decision 19/CP18.

# JCM Registry

## Establishment & operation

- A registry will be established by each side (RoI (draft) para13 (b)).
- The registries need to share “Common specifications”, e.g.,
  - functions (e.g. issuance, retirement, holding, cancelation of credits)
  - account type (e.g. holding account, government holding account, cancellation account, and retirement account)
  - rules of serial number of the credit
  - information sharing
- Japan has established its registry and started operation in Nov. 2015.
- The partner countries will also establish their own registry.



# JCM Website

URL: <https://www.jcm.go.jp/>

## Contents

- General information page
- Individual JCM Partner countries-  
Japan page

## Function

- **Information sharing** to the public, e.g.,
  - the JC decisions,
  - rules and guidelines,
  - methodologies,
  - projects,
  - call for public inputs/comments,
  - status of TPEs, etc.
- **Internal information sharing** for the JC members, e.g.,
  - File sharing for electric decisions by the JC

The screenshot shows the JCM HOME website. The main heading is "The Joint Crediting Mechanism (JCM)". Below the heading is a large image of a blue sky with white clouds. Underneath the image, there is a section titled "About the Mechanism" with a link to "Basic Concept of the JCM more »". Below this is a "News" section with a table of recent updates.

Published date	Country	Subject
03 Jun 16	Indonesia	<a href="#">Electronic Decision by the JC</a>
10 May 16	Indonesia	<a href="#">Electronic Decision by the JC</a>
13 May 16	Indonesia	<a href="#">Call for public comments on a JCM proposed methodology (Indonesia) "Installation of energy saving air jet loom at textile factory" (13 May to 27 May 2016)</a>
12 May 16	Indonesia	<a href="#">Electronic Decision by the JC</a>
26 Apr 16	Cambodia	<a href="#">2nd Joint Committee in Phnom Penh</a>
21 Apr 16	Cambodia	<a href="#">Electronic Decision by the JC</a>
14 Apr 16	Indonesia	<a href="#">Call for public comments on a proposed revision to the approved methodology ID_AM009 "Replacement of conventional burners with regenerative burners for aluminum holding furnaces" (14 April to 28 April 2016)</a>
14 Apr 16	Indonesia	<a href="#">Decision by the JC</a>
12 Apr 16	Indonesia	<a href="#">Call for public comments on a proposed JCM methodology (Indonesia) "Reduction of Energy Consumption by Introducing an Energy-Efficient Old Corrugated Carton Processing System into a Cardboard Factory" (12 April to 26 April 2016)</a>

Image of the general information page

The screenshot shows the JCM Partner Country - Japan website. The main heading is "About the Mechanism". Below the heading is a link to "Basic Concept of the Joint Crediting Mechanism (JCM) more »". Below this is a "News" section with a link to "07 Aug 13 The Bilateral Document Signed by Laos and Japan".

Image of the individual JCM Partner countries-Japan page

## Progress of the JCM in each partner country as of October 31 2016

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	2
Viet Nam	Jul 2013	5	4	6	19
Lao PDR	Aug 2013	2		1	2
Indonesia	Aug 2013	5	6	10	28
Costa Rica	Dec 2013	1			2
Palau	Apr 2014	4	3	1	3
Cambodia	Apr 2014	2		1	4
Mexico	Jul 2014	1			2
Saudi Arabia	May 2015	1			1
Chile	May 2015	1			
Myanmar	Sep 2015	1			4
Thailand	Nov 2015	2		2	18
<b>Total</b>	<b>16</b>	<b>38</b>	<b>15</b>	<b>28</b>	<b>102</b>

## Registered Projects (1/2)

No.	Country	Project Title	General description of project
MN001	Mongolia	Installation of High-Efficiency Heat Only Boilers in 118th School of Ulaanbaatar City Project	Introducing high-efficiency HOBs to fulfill the demand of new heat facilities for the school buildings. Optimizing boiler operation through the implementation of operation management and technical guidance.
MN002	Mongolia	Centralization of Heat Supply System by Installation of High-Efficiency Heat Only Boilers in Bornuur soum Project	Introducing high-efficiency HOBs to fulfill the demand for heat supply system in the public buildings. Optimizing boiler operation through the implementation of operation management and technical guidance.
VN001	Viet Nam	Eco-Driving by Utilizing Digital Tachograph System	Improving transportation fuel efficiency by installing digital tachographs, in which the quantity of fuel consumption and running distance are continuously analyzed and provide feedbacks and advices to the drivers based on the analyzed data.
VN002	Viet Nam	Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam	Installing inverter room air conditioners (RACs) and Energy Management System (EMS) to optimize operation of multiple inverter RACs in national hospitals
VN003	Viet Nam	Low carbon hotel project in Vietnam: Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment	Installing high-efficiency equipment of hot water supply, air conditioning management system and LED lighting for improving the energy efficiency of hotels
VN004	Viet Nam	Introduction of amorphous high efficiency transformers in power distribution systems in the southern part of Viet Nam	Introducing 1,618 amorphous high efficiency transformers which reduce transmission and distribution loss in the power distribution system of southern Vietnam.
ID001	Indonesia	Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller	Improving energy saving for air-conditioning and process cooling by introducing high-efficiency centrifugal chiller equipped with high-performance economizer cycle, and super-cooling refrigerant cycle in a textile factory.

## Registered Projects (2/2)

No.	Country	Project Title	General description of project
ID002	Indonesia	Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia	Introducing advanced energy efficient cooling system using natural refrigerant in the food industry cold storage.
ID003	Indonesia	Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia	Introducing advanced energy efficient cooling system using natural refrigerant in the frozen food processing plant.
ID004	Indonesia	Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Karawang, West Java	Improving energy saving for air-conditioning and process cooling by introducing high-efficiency centrifugal chiller equipped with high-performance economizer cycle, and super-cooling refrigerant cycle in a textile factory.
ID005	Indonesia	Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Batang, Central Java (Phase 2)	Improving energy saving for air-conditioning and process cooling by introducing high-efficiency centrifugal chiller equipped with high-performance economizer cycle, and super-cooling refrigerant cycle in a textile factory.
ID006	Indonesia	Installation of Inverter-type Air Conditioning System, LED Lighting and Separate Type Fridge Freezer Showcase to Grocery Stores in Republic of Indonesia	Introducing high-efficiency facilities to the grocery stores for saving energy as below; <ul style="list-style-type: none"> <li>- Inverter-type air conditioner</li> <li>- LED lighting</li> <li>- Fridge freezer showcase with natural refrigerant</li> </ul>
PW001	Palau	Small Scale Solar Power Plants for Commercial Facilities in Island States	Installing high quality solar cell modules with high conversion efficiency with a monitoring system which realizes appropriate operation and management.
PW002	Palau	Small Scale Solar Power Plants for Schools in Island States	Installing high quality solar cell modules with high conversion efficiency with a monitoring system which realizes appropriate operation and management.
PW003	Palau	Small Scale Solar Power Plants for Commercial Facilities in Island States II	Installing high quality solar cell modules with high conversion efficiency with a monitoring system which realizes appropriate operation and management.

# Issued Credit(1/2)

## INDONESIA

(1) Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia

Reference No.	Monitoring period	Date of JC decision on notification	Date of issuance	Amounts of credits issued
ID003	02 Feb 15 - 31 Jul 15	12-May-16	12-May-16	3 t-CO2
			12-May-16	8 t-CO2

(2) Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia

Reference No.	Monitoring period	Date of JC decision on notification	Date of issuance	Amounts of credits issued
ID002	02 Feb 15 – 31 Jul 15	12-May-16	12-May-16	6 t-CO2
			12-May-16	23 t-CO2

## Issued Credit(2/2)

### MONGOLIA

(1) Centralization of heat supply system by installation of high-efficiency Heat Only Boilers in Bornuur soum Project

Reference No.	Monitoring period	Date of JC decision on notification	Date of issuance	Amounts of credits issued
MN002	15 Sep 15 – 02 May 16	29-Sep-16	30-Sep-16	22 t-CO2
			30-Sep-16	85 t-CO2

(2) Installation of high-efficiency Heat Only Boilers in 118th School of Ulaanbaatar City Project

Reference No.	Monitoring period	Date of JC decision on notification	Date of issuance	Amounts of credits issued
MN001	20 Sep 15 – 15 May 16	29-Sep-16	30-Sep-16	10 t-CO2
			30-Sep-16	40 t-CO2

## Programmes by Government of Japan

- ◆ JCM Demonstration Projects and JCM Financing Programme
- ◆ Feasibility Studies
- ◆ Capacity Building

# JCM Promotion Scheme by METI

## JCM Demonstration Projects (Budget for FY2016: 2.4 billion yen)

- JCM Demonstration Projects are implemented by NEDO (New Energy and Industrial Technology Development Organization), which supports the project costs necessary to verify the amount of GHG emission reduction in line with JCM rules and guidelines.
- Coverage of project cost: Cost of the JCM Demonstration Projects necessary for MRV  
e.g. Cost of design, machines, materials, labor, travel, etc.
- Eligibility for the JCM Demonstration Projects:
  - Concrete Projects to demonstrate the effectiveness of leading Japanese technologies and/or products installed and operated in the projects, and the amount of their GHG emission reduction with MRV methodology by actual operation
  - Project Participants consist of entities from both countries, only the Japanese entities can apply for the JCM Demonstration projects. The projects shall be completed within 3 years.

## JCM Feasibility Study (FS)

- The study to promote potential JCM projects and to survey their feasibility as well as to check the practicality of the MRV methodology.

## MRV Application Study

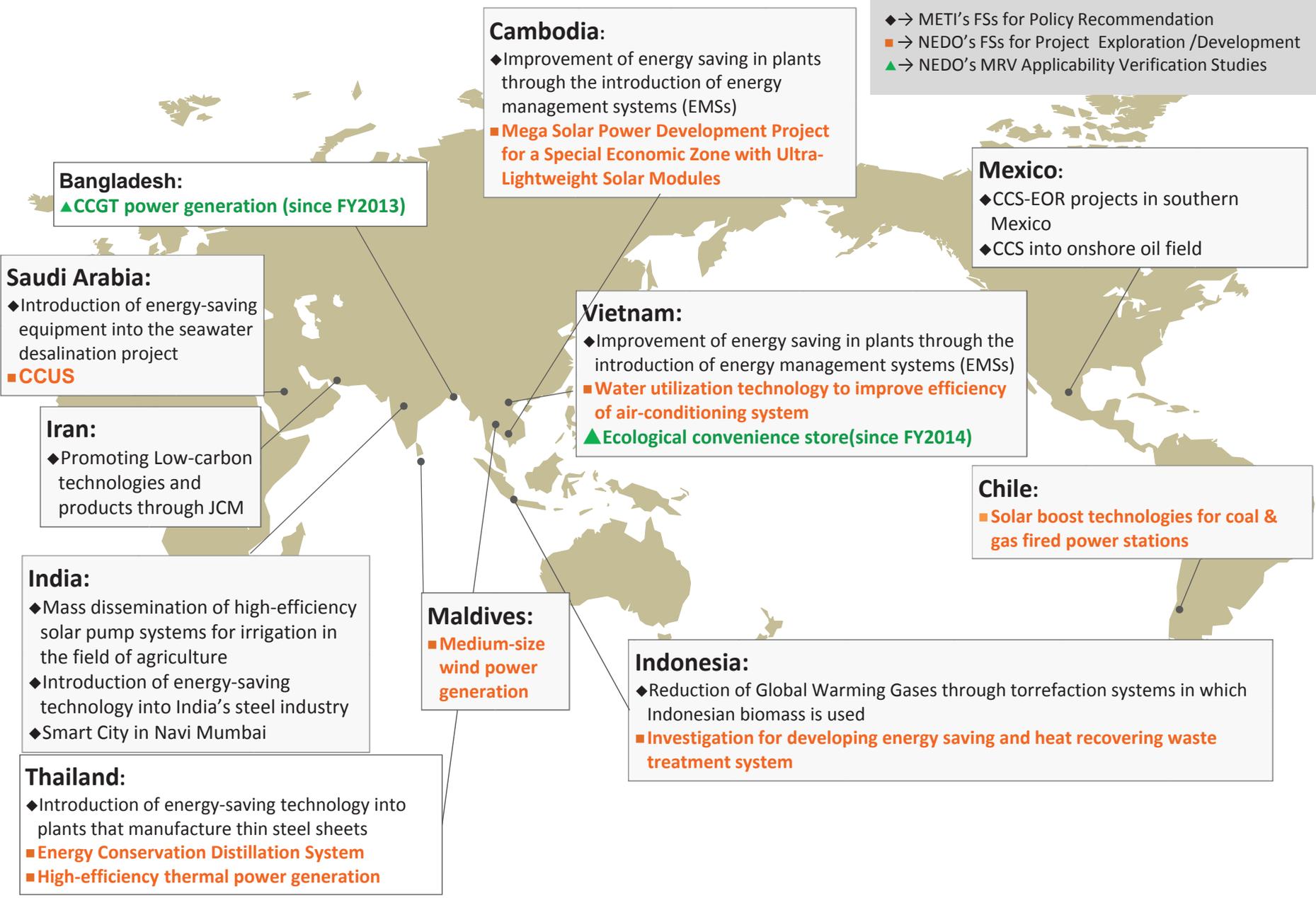
- By applying MRV methodology to the facility with low-carbon technologies that have already been installed or will certainly be installed in any JCM signatory country; 1) to obtain verification by third party entity under the JCM; and 2) to conduct review and feedback on efficiency and applicability of MRV.

## Capacity Building Programmes

- Variety of capacity building activities to increase technical experts (e.g.,) Experts on measuring amount of emission reductions by introducing low carbon technologies and products in the host country.

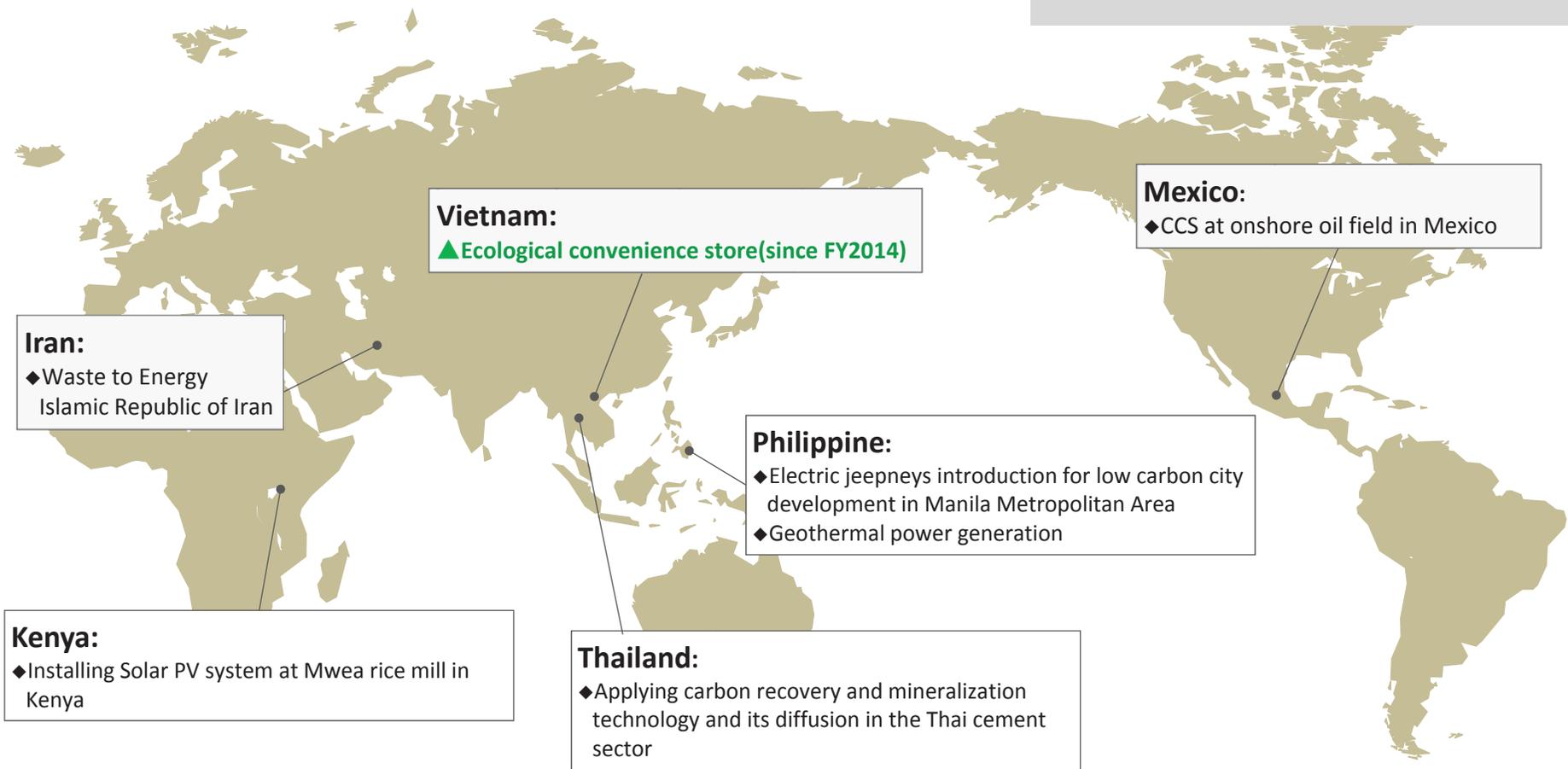
# JCM Feasibility Studies, MRV Applicability and Verification Studies by METI & NEDO in FY2015

◆ → METI's FSs for Policy Recommendation  
 ■ → NEDO's FSs for Project Exploration /Development  
 ▲ → NEDO's MRV Applicability Verification Studies



# JCM Feasibility Studies, MRV Applicability and Verification Studies by METI & NEDO in FY2016

◆→ METI's FSs for Policy Recommendation  
▲→ NEDO's MRV Applicability Verification Studies



## JCM Demonstration Projects by NEDO in FY2016

### Mongolia:

- **High efficiency and low loss power transmission and distribution system (Hitachi) ※since FY2013**

Reduction of transmission loss by introduction of LL-ACSR/SA (Low Electrical Power Loss Aluminum Conductors, Aluminum-Clad Steel Reinforced).

### Kenya, Ethiopia:

- **Rural Electrification Project for Communities by Micro Hydro Power in Ethiopia and Kenya (NTT Data Institute of Management consulting, Inc.) ※since FY2012**

Introduction of "micro hydro power systems" which can generate electricity at ultra low head in off grid community.

※implemented by UNIDO (covering Kenya and Ethiopia)

### Lao PDR:

- **Lao PDR Energy efficient data center(LEED) (Toyota Tsusho Corporation, Internet Initiative Japan) ※since 2014**

Utilizing high energy efficient container-type data centers, related technologies will be demonstrated under Lao PDR environment, such as unstable power supply, hot and humid atmosphere etc.

### Vietnam:

- **Energy saving by inverter air conditioner optimum operation at National Hospital (Mitsubishi Electric) ※since FY2013**

Installing inverter room air conditioners (RACs) and Energy Management System (EMS) to optimize operation of multiple inverter RACs in national hospitals.

- **Energy saving by BEMS optimum operation at Hotel (Hibiya Engineering) ※since FY2013**

Integrating highly-proven energy saving technologies for hot water supply and lighting combined with energy management system to optimize these technologies.

- **Energy saving paper making process(Marubeni) ※since FY2014**

Introduction of high efficient and environment friendly machines to alter old papermaking process in paper production line.

- **Energy Saving and Work Efficiency Improvement Project by special LED Equipment with new technology, COB(Stanley Electric) ※since FY2015**

Introducing the special LED lighting equipment with new technology, COB module as a source of light into the fishing vessels currently equipped with the metal halide light and incandescent lamps.

### Indonesia:

- **Energy saving by optimum operation at Oil factory (Yokogawa Electric) ※since FY2013**

Multivariable model predictive control (MMPC), a kind of advanced optimization control at oil refinery plants, is added on existing DCS (Distributed Control System) and realizes the automatic operation control for the optimum production.

- **Utility facility operation optimization technology into Oil factory (Yokogawa) ※since FY2013**

The project achieves energy conservation in boilers, through operation optimization by applying Utility Facility Operation Optimization Technology.

- **Thin-Film solar power plant (Sharp) ※since FY2013**

Installing Thin-film PV and verifying its GHG emission reduction effect by the remote auto-monitoring system which complement the monitoring lacking data, with the minimum equipment composition.

- **The low carbonization of mobile communication's BTS (Base Transceiver Station) by the Introduction of "TRIBRID system" (KDDI) ※since FY2015**

Energy management system for BTS "TRIBRID system" will be installed at 22 locations in Off-grid and Poor-grid area.

Total: 12 projects (6 countries)  
Underlined Project in Vietnam is registered as a JCM project.

# JCM Project Development & Outreach Programme by MOEJ

## JCM Project development

- To **identify barriers and needs** for JCM project development in partner countries in terms of technology, financing and partnership, and **provide solutions for overcoming barriers** through consultations and matching between companies.
- To **enhance overall capacity for JCM project implementation** through facilitating understanding on the JCM rules & guidelines, and MRV methodologies by workshops, seminars, training courses and site visits.
- To **conduct feasibility studies** on specific projects for elaborating investment plan with considering expected emission reductions. To see reports, access: <<http://gec.jp>>



### Types of Feasibility Studies (FS)

- FS on JCM Project by City to City Collaboration
- FS on JCM large-scale CO2 reduction project



## Outreach

- **New Mechanisms Information Platform website** provides information on the latest updates on the JCM and on the relevant programme such as JCM promotion schemes by the Government of Japan. <<http://www.mmechanisms.org/e/index.html>>
- **Mail magazine** and up-to-date information are distributed regularly. To register, access:  
(for JP) <<http://www.mmechanisms.org/newsletter/index.html>>  
(for EN) <<http://www.mmechanisms.org/e/newsletter/index.html>>



## JCM Model Projects by MOEJ

The budget for projects starting from FY 2016 is 6.7 billion JPY (approx. USD 67 million) in total by FY2018

✕ 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.

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

## Budget for FY2016

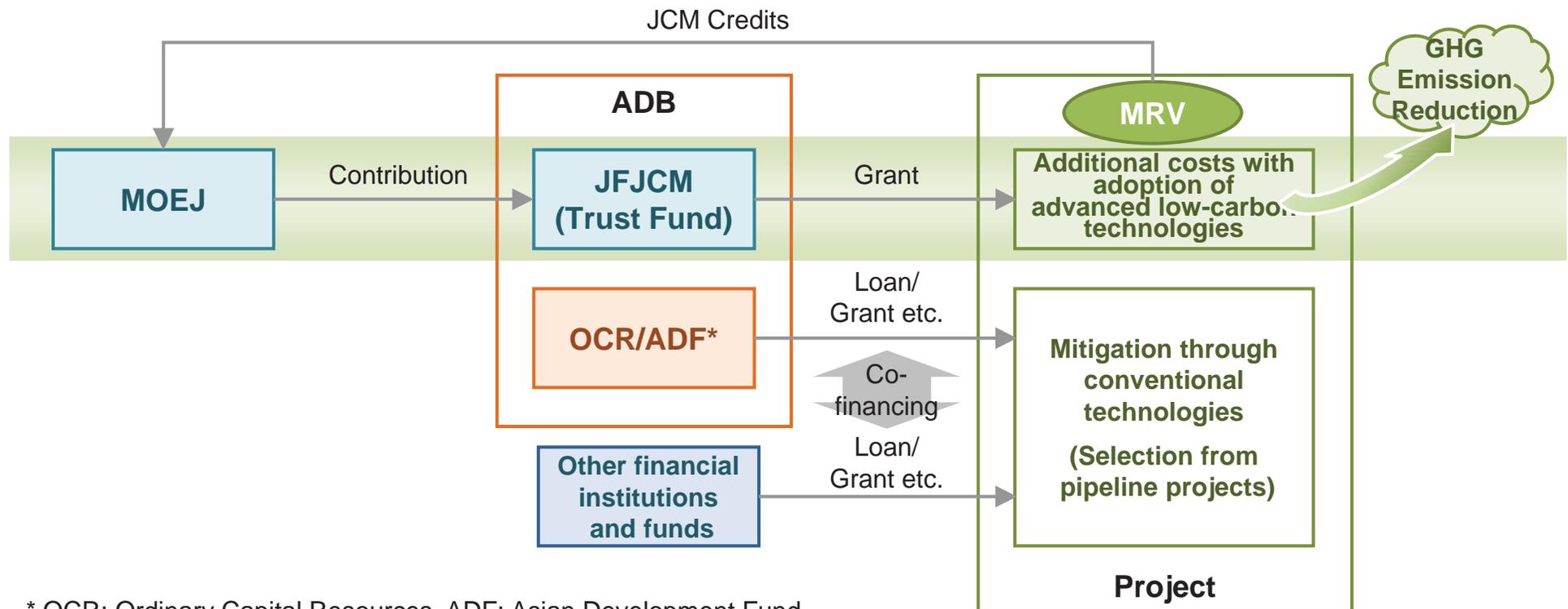
1.2 billion JPY (approx. USD 12 million)

## Scheme

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

## Purpose

To develop ADB projects as the “Leapfrog” developments by the advanced technologies and to seek to acquire JCM credits for achievement of Japan’s GHG emission reduction target.



\* OCR: Ordinary Capital Resources, ADF: Asian Development Fund

# JCM REDD+ Model Projects by MOEJ



## 【Background】

- Deforestation and forest degradation in developing countries
- 17 demonstration feasibility studies from 2011 to 2014

## 【Expected outcome】

- Participatory monitoring of illegal logging, disaster prevention, and forest restoration
- Provision of alternative livelihoods



## 《 Projects outline 》

【The budget for FY 2016】80 million JPY (approx. USD 0.8 million)

**Government of Japan**

Finance part of the cost



**International consortiums (which include Japanese entities)**

Deliver JCM credits issued\*



\*At least half or ratio of financial support to project cost of JCM credits issued are expected to be delivered to the government of Japan except the amount which is allocated to the partner country based on its legislation.

※These projects may be implemented in cooperation with other organizations such as JICA

※REDD+ (Reducing Emissions from Deforestation and Forest Degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries )

## Purpose

Implement activities for REDD+ and seek to acquire JCM credits for achievement of Japan's GHG emission reduction target

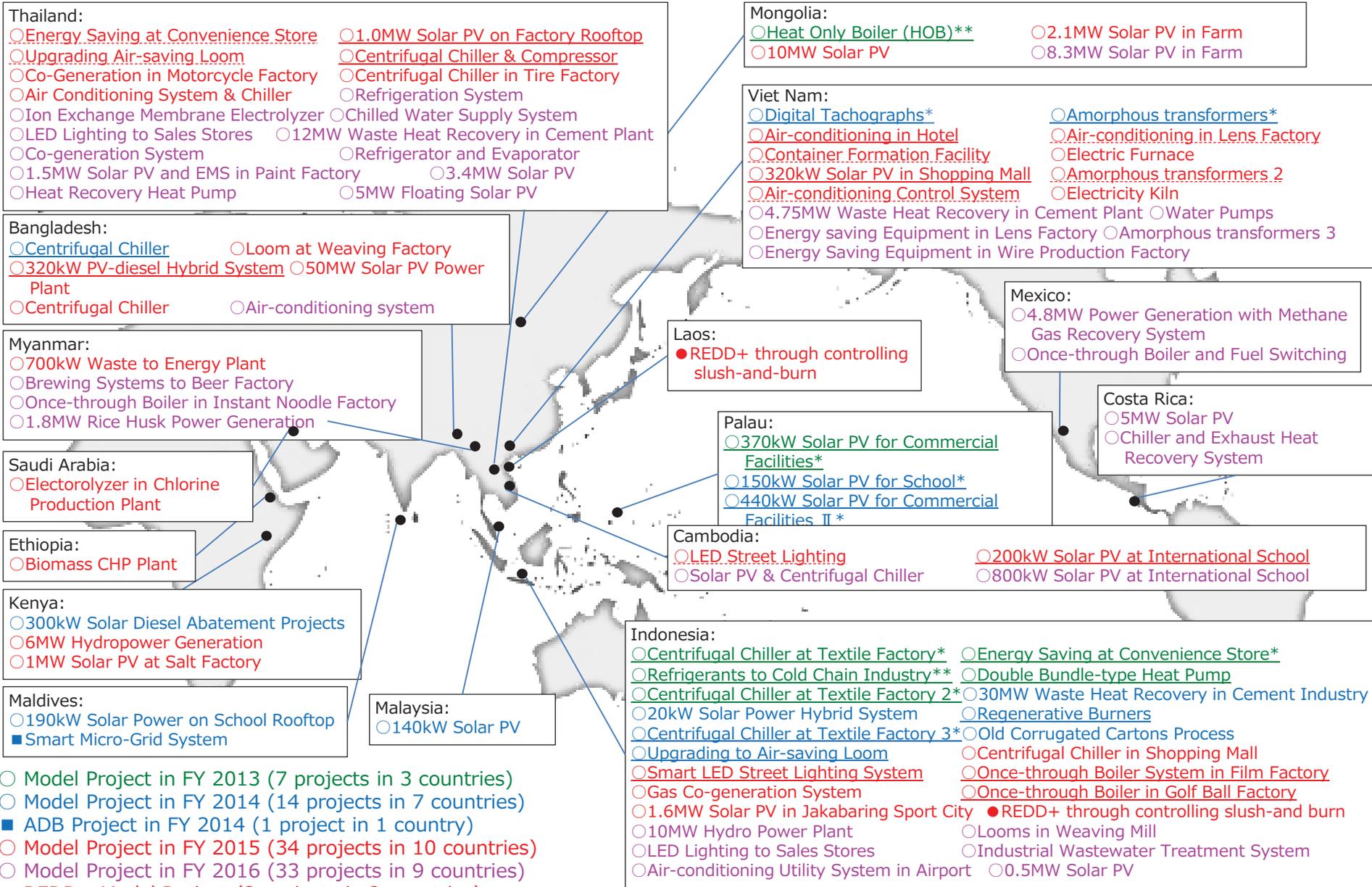
## Project budget and implementation term

Up to 40 million JPY/year (fixed)

## Eligible Companies

Japanese corporation(the representative of international consortiums)

# JCM Financing programme by MOEJ (FY2013 ~ 2016) as of November 14, 2016



- Model Project in FY 2013 (7 projects in 3 countries)
- Model Project in FY 2014 (14 projects in 7 countries)
- ADB Project in FY 2014 (1 project in 1 country)
- Model Project in FY 2015 (34 projects in 10 countries)
- Model Project in FY 2016 (33 projects in 9 countries)
- REDD+ Model Project (2 projects in 2 countries)

**Total 90 projects in 15 partner countries**

Underlined projects have started operation (31 projects, including 7 partially started projects)  
 Projects with \* have been registered as JCM projects (13 projects)

# JCM Planning/Feasibility Studies in FY2015 by MOEJ

- ◆-- JCM Project Planning Study (PS)
- ◆-- JCM Feasibility Study (FS)

**Myanmar:**  
 ◆ Rice husk power generation in rice mill factory in Ayeyarwady

**Bangladesh:**  
 ◆ Energy saving by utilizing lithium-ion batteries at base transceiver stations in unstable-grid areas

**Thailand:**  
 ◆ Energy saving by introducing regenerative energy storage system in Skytrain  
 ◆ Saving Energy for station facilities utilizing regenerative energy from trains  
 ◆ Energy saving by co-generation project in the fiber factory

**Mongolia:**  
 ◆ Distributed heat supply system using biomass and coal mixture combustion type boiler

**Lao PDR:**  
 ◆ Utilization of agricultural biomass in Cement Kiln  
 ◆ Biogas recovery and utilization in tapioca starch factory

**Viet Nam:**  
 ◆ Recovery and utilization of biogas from agricultural processing waste in Ninh Binh Province  
 ◆ Waste Heat Recovery Power Generation at Cement Factory in Quang Ninh Province

**Philippines:**  
 ◆ Talubin Mini-Hydropower Project

**Cambodia:**  
 ◆ Installation of high-efficiency chillers in large-scale hotels

**Indonesia:**  
 ◆ Energy saving in industrial wastewater treatment for rubber industry  
 ◆ Hybrid Power Generation Project Using Biogas and Solar Power  
 ◆ Development of District Energy Supply Business by introducing co-generation  
 ◆ Introduction of co-generation and solar power generation systems in large shopping malls

**Costa Rica:**  
 ◆ Low-carbon project by introducing PV and energy saving equipment in Hotel, Office Building and others

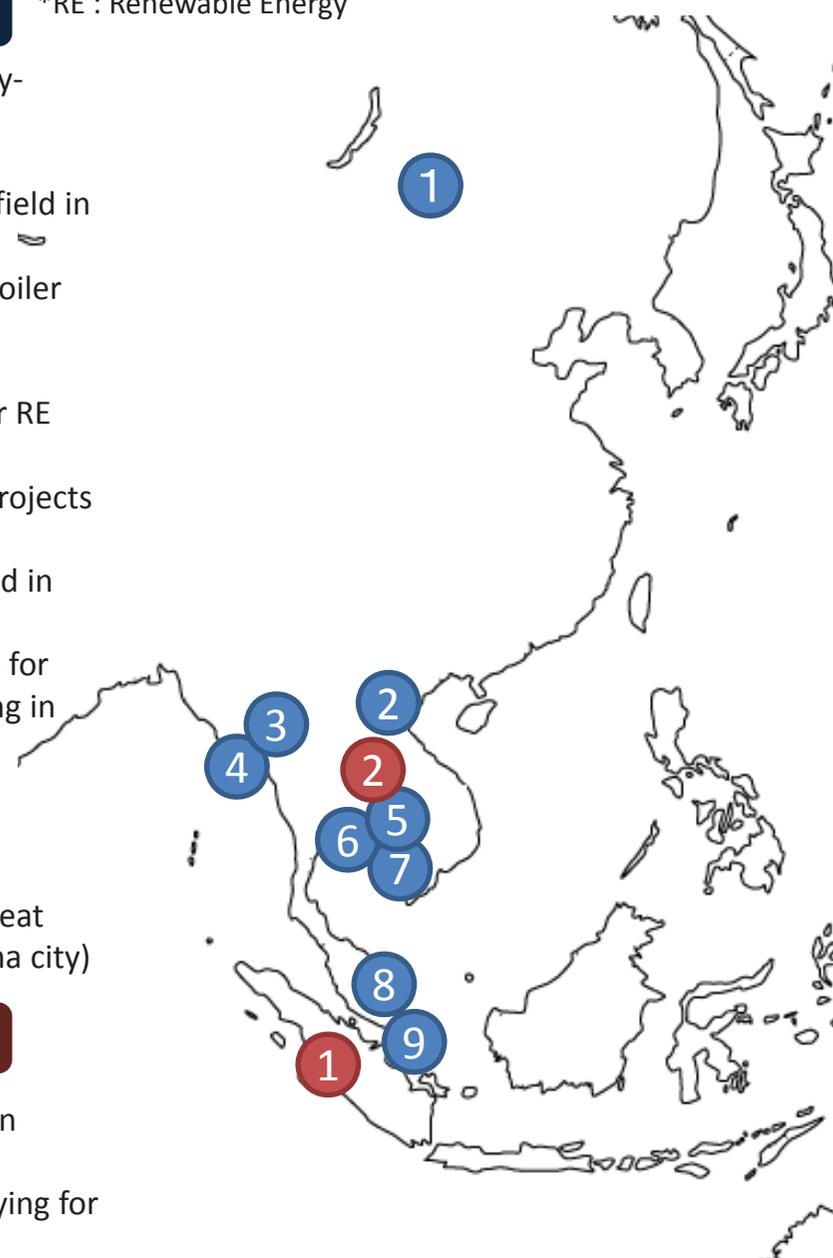
**Chile:**  
 ◆ Geothermal Power Generation in the south of Santiago

## FY2016 Feasibility studies on JCM projects by MOEJ

### Feasibility Study on JCM Project by City to City Collaboration

\*RE : Renewable Energy

1. The study of high-efficiency heat pump installation projects for Energy-saving field and PV generation projects for RE\* field in Mongolia(Ulaanbaatar city-Sapporo city/Hokkaido)
2. The study of cogeneration and exhaust heat recovery projects for RE field in Vietnam(Hai phong city-Kitakyushu city)
3. The study of PV generation projects for RE field and high-efficiency boiler installation projects for Energy-saving field in Myanmar(Yangon city-Kawasaki city)
4. The study of water treatment system installation and WtE projects for RE field in Myanmar(Pathein city-Fukushima city)
5. The study of biomass power generation projects and PV generation projects for RE field in Cambodia(Siem reap state-Kanagawa pref.)
6. The study of WtE, cogeneration and exhaust heat recovery for RE field in Thailand(Rayong prov.-Kitakyushu city)
7. The study of project formulation by assisting planning the action plan for the climate change strategy and projects for RE field and Energy-saving in Cambodia(Phnom Penh city-Kitakyushu city)
8. The study of cogeneration projects for RE field and high-efficiency air conditioning system installation projects for Energy-saving field in Malaysia(Iskandar development region-Kitakyushu city)
9. The study of high-efficiency air conditioning system installation and heat desorption unit installation projects in Indonesia(Batam city-Yokohama city)



### Feasibility Study on JCM large-scale CO2 reduction project

1. The study of a biomass power generation project by rice hull and grain waste for RE field in Indonesia(West Sumatra prov.)
2. The study of refining waste water and residue into bio gas and supplying for vehicles for RE field in Thailand(Ubon Ratchathani prefecture etc.)