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
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.
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.
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.

<table>
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<th>Time</th>
<th>GHG emissions</th>
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<td>Start of project operation</td>
<td>Reference Emissions under the JCM</td>
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<td>Business as usual emissions (Baseline emissions under the CDM)</td>
<td>Conservative Emission Reductions</td>
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<td>Project emissions</td>
<td>Net Emission Reductions</td>
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Contribution to Partner Country NDC

Contribution to Japan’s NDC
JCM Support by the Ministry of the Environment, Japan
The budget for projects starting from FY 2018 is 6.9 billion JPY (approx. USD 69 million) in total by FY2020.

Finance part of an investment cost (less than half)

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.

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

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

Total 127 projects in 17 partner countries

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
- LED Lighting to Sales Stores
- Co-generation System
- 1.5MW Solar PV and EMS in Paint Factory
- Heat Recovery Heat Pump
- Boiler System in Rubber Belt Plant
- Biomass Co-generation System
- Co-generation in Textile Factory
- 25.5MW 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
- 1.5MW Solar PV
- 21MW Solar PV

Viet Nam: 18 projects
- Digital Tachographs
- Air-conditioning in Hotel
- Container Formation Facility
- Amorphous transformers 2
- Air-conditioning Control System
- Electricity Kilo
- 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

Bangladesh: 5 projects
- Centrifugal Chiller
- 320kW PV-diesel Hybrid System
- Loom at Weaving Factory
- Centrifugal Chiller
- 50MW Solar PV Power Plant

Saudi Arabia: 1 project
- Electrolyzer in Chlorine Production Plant

Kenya: 2 projects
- 6MW Hydropower Generation
- 1MW Solar PV at Salt Factory

Cambodia: 6 projects
- LED Street Lighting
- Solar PV & Centrifugal Chiller
- Battambang Wastewater Treatment Project

Laos: 3 projects
- REDD+ through controlling slash-and-burn
- Amorphous transformers
- 14MW Floating Solar PV

Maldives: 2 projects
- 190kW Solar Power on School Rooftop
- Smart Micro-Grid System

Indonesia: 30 projects
- Centrifugal Chiller at Textile Factory
- Refrigerants to Cold Chain Industry
- 20kW Solar Power Hybrid System
- Centrifugal Chiller at Textile Factory 2
- Old Corrugated Cartons Process
- Upgrading to Air-saving Loom
- Smart LED Street Lighting System
- Gas Co-generation System
- Gas Co-generation system
- Gas Co-generation system
- Absorption Chiller
- 2.8MW Solar PV
- High Efficiency Autoclave
- CNG-Diesel Hybrid Public Bus
- Centrifugal Chiller and Air-conditioning Control System

Bangladesh: 5 projects
- Centrifugal Chiller
- LED at Weaving Factory
- 50MW Solar PV Power Plant

Ethiopia: 1 project
- Biomass CHP Plant

Indonesia: 30 projects
- Energy Saving at Convenience Store
- Double Bundle-type Heat Pump
- Centrifugal Chiller at Textile Factory 2
- Regenerative Burners
- Centrifugal Chiller at Textile Factory 3
- Old Corrugated Cartons Process
- Upgrading to Air-saving Loom
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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

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**As of June 25, 2018**
JCM F-gas Recovery and Destruction Model Project by MOE

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

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)

【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)

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.
JCM and Contribution to Indonesia
Company succeeded to implement leading low carbon technologies through the JCM project. 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.

- **Thailand**: 7 projects (2015, 2016)
- **Viet Nam**: 3 projects (2016, 2017)
- **Indonesia**: 6 projects (2013-2017)
- **Myanmar**: 2 JCM model projects (2016)
Company succeeded to introduce amorphous high efficiency transformers all over Vietnam 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).

Dissemination of technology domestically and internationally.

Specifications included in procurement standard.

Demonstration of energy efficiency effects.

Sustainable business development.

JCM model projects.

Dissemination towards other countries.
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.

Support for upstream policy planning to project development

- JICA technical cooperation project (2013~2015)
- Climate change master plan
- City-to-city cooperation (2014~2016)
- Developing JCM project (2016~)
- Replication in other countries

Support for developing Bangkok Master Plan on Climate Change 2013-2023

Feasibility studies and project identification through city-to-city cooperation programme by MOEJ

JCM model project by MOEJ
- Introduction of Energy Efficient Equipment to Bangkok Port
- Introduction of 1.5MW Rooftop Solar Power System and Advanced EMS for Power Supply in Paint Factory

Continued support by Yokohama city

Company in Yokohama city
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

![Diagram of Climate Change Program Loan]

Climate Change Program Loan

- (since 2009)
- Establishing framework for addressing climate change (institutional arrangement, planning, financing)
- Establishing framework for installing low carbon technologies, short listing of technologies

City-to-city cooperation

- KitaKyusyu-Hải Phòng
- Osaka-Hồ Chí Minh
- Yokohama-Dà Nẵng

Development of JCM projects

- Installing low carbon technologies

Replication in other cities & countries

Phase 5th of the program loan included “numbers of JCM pilot project” in its key performance indicator

Policy actions are established through the program loan in coordination with Vietnamese government as well as other development partners including World bank & AFD

- Evaluating policy action by Vietnamese government and financing through ODA
- Examples of policy actions include establishment of energy efficiency law, institutional arrangements for road map on energy efficiency measures and drafting master plan for renewable energy