Recent Development of The Joint Crediting Mechanism (JCM)

April 2019
Ministry of the Environment, Japan
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

Incentivize selecting low-carbon technologies by the financial support to initial cost of GHG emissions.

Japanese government & entities

Credits

Partner Country

Partner Country

Select

Conventional equipment & facility

Low-carbon equipment & facility

Financial support

Japan will acquire a part of JCM credits (in return to the financial support)
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)
The Budget for projects starting from FY 2019 is 9.9 billion JPY (approx. USD 99 million) in total by FY2021.(1 USD = 100 JPY)

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.

Government of Japan

International consortiums (which include Japanese entities)

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

Finance part of an investment cost (less than half)

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

※ Includes collaboration with projects supported by JICA and other governmental-affiliated financial institute.
JCM Expansion Example①: High efficiency amorphous transformers from Vietnam to Lao PDR

- Transformers in Vietnam are being replaced with amorphous high efficiency transformers from 2015 through 2020.
- Succeeded in developing the same product and technology in Lao PDR since 2018. Preparing for expansion to other countries.
- Providing excellent amorphous alloy low carbon technology. A total of 10,000 transformers introduced throughout Vietnam.

Amount of amorphous transformer introduced (as of JAN2019)

<table>
<thead>
<tr>
<th>ベトナム</th>
<th>FY2015</th>
<th>FY2016</th>
<th>FY2017</th>
<th>FY2018</th>
<th>Total</th>
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<tr>
<td>EVN SPC</td>
<td>1,618</td>
<td>2,686</td>
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<tr>
<td>EVN HCMC</td>
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<td>340</td>
<td>892</td>
<td>892</td>
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<tr>
<td>EVN CPC</td>
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<td></td>
<td>981</td>
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<tr>
<td>EVN Danang</td>
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<tr>
<td>EVN HANOI</td>
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<td>65</td>
<td>186</td>
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<tr>
<td>KHPC</td>
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<td>305</td>
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<tr>
<td>DON NAI PC</td>
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<td>580</td>
<td>207</td>
<td>955</td>
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<tr>
<td>Total</td>
<td>1,618</td>
<td>4,901</td>
<td>3,797</td>
<td>237</td>
<td>10,553</td>
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<table>
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<tr>
<th>ラオス</th>
<th>FY2015</th>
<th>FY2016</th>
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<th>FY2018</th>
<th>Total</th>
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<tr>
<td>EDL</td>
<td></td>
<td></td>
<td></td>
<td>465</td>
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</tbody>
</table>

Expanding to other JCM partner countries

- High efficiency amorphous transformer
- Made by Hitachi Metals
- TIBIDI (Manufacturers in Vietnam)
★ 70% energy saving is achieved by LED street light in emerging city and world heritage.
★ Commenced joint study with local partners to build smart city environment by wireless network environment deployment.
★ LED street light of 5,600 installed in Cambodia such as Phnom Penh and Angkor Wat (total installation area is 120㎢ in total).

The total footprint of the LED street light is 1.5 times that of Manhattan Island (120㎢).

Deploying various IOT sensors and wireless networking environments will enable the Smart City environmental infrastructure.

December 2016
Received Minister of the Environment Award in Cambodia
JCM Expansion Example③: Basic infrastructure of water business in Vietnam

★ Yokohama City and Da Nang City signed a Memorandum of Understanding on Technical Cooperation for Sustainable Urban Development.
★ Representative participant utilized JCM Model Project to Danang municipal water supply corporation, introduced high efficiency pumps and conducted monitoring.
★ About 80% of the water treatment volume of Da Nang City is treated by JCM introduction pump.

Introduction of high efficiency pump to Danang municipal water supply corporation (representative Participant: Yokohama Water Co., Ltd.)

Distribution Pumps
Intake Pumps
Monitoring

High efficiency pumps
(Da Nang City Water Corporation)

Distributed Pumps
Intake Pumps
Monitoring

Vietnam

[Danang City Water Corporation]
Explained the effectiveness of JCM Model Project and high efficiency pump at the ceremony

[Ho Chi Minh City Water Treatment Plant]
Using the ceremony as an opportunity, JCM Model Project was utilized implementation of inverter of water intake pump (project ongoing)

79%
(75,228,480 m³)

95,042,222 m³
Total Water Processed in 2018 for Danang City

21%
Other pumps

Pumps installed through the JCM project process major part of Danang water demand.
The representative participant aims to realize a stable supply of basic infrastructure by participating in and investing in power generation and water supply against the unstable infrastructure of Butuan City.

Small/micro hydropower generation and biomass power generation are being implemented by three JCM Model Projects.

Partnering with local leading partners, developing three projects. Supply 10% of peak demand in Northern Agusan.

Taguibo River Small Hydroelectric Power Project / Taguibo River Water Treatment Plant Micro Hydro Power Project / Butuan City Rhinoceros Power Generation Project (Representative Participant: CHODAI CO., LTD.)

Both IPPs to supply 11% power for Agusan del Norte region

Regional Demand: 57 MW (peak)

2017 JCM Model PJT (Implementing)
1. Taguibo 4MW small hydropower generation PJT
2. Butuan City 2.5 MW rice husk power generation PJT
3. Taguibo River WTP Micro hydro power generation PJT

2019 JCM Model Project (Implementing)

Partnership with local leading partners
Utilizing JCM Model Projects with consulting, construction and O & M, develop renewable energy business as basic infrastructure of regional development.

Financial Support

Japan MOEJ GHG Credit Joint Committee

Philippines Int. Consortium Int. Consortium Int. Consortium

CHODAI CO., LTD.

Japan WGEF CBPC TASC

Philippines Partner Representative Philippines Partner Representative Philippines Partner Representative

EPCC (Construction contractor) etc

Philippines Partner Representative

Low carbon type Industrial park Dev. PJT (Not covered by JCM)

Rice mill Rice polishing machine

Water purification plant (30,000tons / day) as part of the In-house power Usage (0.16 MW)

Water supply PJT (Not covered by JCM)
JCM Expansion Example⑤: Large-scale photovoltaic power generation projects in Mongolia

- Implemented six large-scale solar power projects using Japanese superior technologies in various places in Mongolia from 2015 to 2018. Promoted new private investments triggered by introduction in JCM.
- Sharp Energy Solutions has implemented four projects (currently operating at two locations and introducing at two locations).
- Firm Do has implemented a new model by combining agriculture and PV power generation at Monnaran.

**Financial Support**
- Joint Committee
- MOEJ
- GEC

**International Consortium**
- Primary Representative: Firm Do
- Partner Representative: Everyday Firm

**Japan to Mongolia**
- GHG Credit

**Projects**
- 2015: Darkhan 10MW SPI
- 2017: Darkhan 20MW DSEDN
- 2017: Monnaran 2.1MW Everyday Farm
- 2017: Monnaran 8.3MW Everyday Farm
- 2017: New Airport 15MW Tenun Gerel
- 2018: Choir 10MW PV
- 2018: Sainshand 30MW PV
- 2015: Zaminuud 15MW PV SPI

**Smart energy projects**
- Bayanchandmani 21MW Solar Energy Chandmani
- Solar Energy Chandmani

**Private Investment**
- 100% Private Investment + EBRD and other loan

**Other Projects**
- Ulaanbaatar
- 131 MW
- 55MW, 42%
- 76MW, 58%
- JCM project

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★ Sharp Energy Solutions has implemented four projects (currently operating at two locations and introducing at two locations).
★ Firm Do has implemented a new model by combining agriculture and PV power generation at Monnaran.
Project Cycle of the JCM and the CDM

**JCM**

- Submission of Proposed Methodology
- Approval of Proposed Methodology
- Development of PDD
- Validation
- Registration
- Monitoring
- Issuance of credits

**CDM**

- Project Participant
- CDM Executive Board
- Designated Operational Entities (DOEs)
- Project Participant
- DOEs
- CDM Executive Board

**Main actors at each process**

- **JCM**
  - Project Participant / Each Government
  - Joint Committee
  - Project Participant
  - Third Party Entities
  - Joint Committee
  - Project Participant
  - Third Party Entities

- **CDM**
  - Project Participant
  - CDM Executive Board
  - Designated Operational Entities (DOEs)
  - Project Participant
  - DOEs
  - CDM Executive Board

- **Can be conducted by the same TPE**
- **Can be conducted simultaneously**