Seminar on JCM Implementation in Republic of Maldives

Overview of the Financing Programme for JCM Model Projects

11th July 2019

Global Environment Centre Foundation (GEC)

Agenda

1. Basic concept of the JCM Model Projects
2. Project Map of JCM Financing Programme
3. JCM Model Projects in Moldives
4. Eligible Projects
5. Basic Structure of International Consortium
6. Costs Eligible for Financing
7. Cost-effectiveness of emission reductions of GHG
8. Overview of JCM Model Projects in FY2019
9. JCM Model Projects Schedule in FY2019
10. Categorization by Technology Type for JCM Model Project
11. Infrastructure through JCM
12. GEC JCM Promotion

Basic concept of the JCM Model Projects

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Facilitating diffusion of advanced low-carbon or decarbonizing technologies, products, system, services and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing country.

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

Basic concept of the JCM Model Projects (2)

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MOEJ

Incentivizes selecting low-carbon technologies by the financial support to initial cost

GEC

Provides funds to cover up to half of project's investment cost.

Collaboration with "City-to-City Collaboration Programme for Low-Carbon Society"

Collaboration with various international financing schemes under JICA, JBIC, ADB, World Bank, etc.

International Consortium

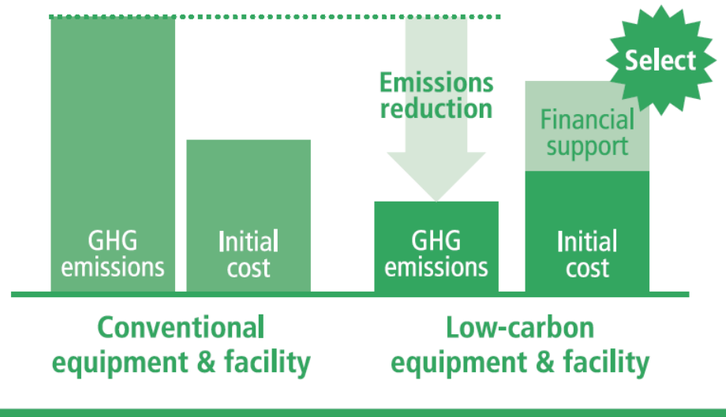
Japanese entity A
representative participant

Project management & report MRV result

JCM partner-country entity B
partner participant

Installation and maintenance of equipment & conduct MRV

Project in the partner country



Japanese government & entities

Japan will acquire a part of JCM credits (in return to the financial support)

JCM

Expected to deliver at least half of JCM credits issued

The consortium conducts MRV to estimate GHG emission reductions

Partner country government & entities

Project Map of JCM Financing Programme

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Thailand:29 projects

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

Mongolia:9 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

Viet Nam:21 projects

- ○Digital Tachographs*
- ○Air-conditioning in Hotel*
- ○Container Formation Facility*
- ○Amorphous transformers 2*
- ○Electricity Kiln
- ○Energy saving Equipment in Lens Factory*
- ○Energy Saving Equipment in Wire Production Factory*
- ○Energy Saving Equipment in Brewery Factory
- ○Modal Shift with Reefer Container
- ▲ Collection Scheme and Dedicated System of F-gas
- ○High Efficiency Water Pumps2
- ○Amorphous transformers1*
- ○Air-conditioning in Lens Factory*
- ○320kW Solar PV in Shopping Mall*
- ○Air-conditioning Control System
- ○High Efficiency Water Pumps1*
- ○Amorphous transformers 3*
- ○Amorphous transformers 4
- ○High Efficiency Chiller
- ○Inverters for Raw Water Intake Pumps
- ○Waste to Energy Plant

Bangladesh:6 projects

- ○Centrifugal Chiller
- ○315kW PV-diesel Hybrid System*
- ○Centrifugal Chiller*
- ○Loom at Weaving Factory*
- ○50MW Solar PV Power Plant
- ■High Efficiency Transmission Line

Laos:4 projects

- ●REDD+ through controlling slush-and-burn
- ○Amorphous transformers
- ○14MW Floating Solar PV
- ○11MW Solar PV

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

Saudi Arabia:1 project

- ○Electorolyzer in Chlorine Production Plant

Kenya:2 projects

- ○1MW Solar PV at Salt Factory
- ○38MW Solar PV

Phillipines:10 projects

- ○15MW Hydro Power Plant
- ○4MW Hydro Power Plant
- ○1.53MW Rooftop Solar PV
- ○1MW Rooftop Solar PV
- ○1.2MW Rooftop Solar PV
- ○2.5MW Rice Husk Power Generation
- ○0.16MW Micro Hydro Power Plant
- ○4MW Solar PV
- ○19MW Hydro Power Plant
- ○18MW Solar PV

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

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

Costa Rica:2 projects

- ○5MW Solar PV
- ○Chiller and Heat Recovery System

Chile:2 projects

- ○1MW Rooftop Solar PV
- ○2MW Solar PV and 4MWh Storage Battery

Cambodia:5 projects

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

Maldives:2 projects

- ○186kW Solar Power on School Rooftop*
- ■Smart Micro-Grid System

Indonesia:31 projects

- ○Centrifugal Chiller at Textile Factory*
- ○Refrigerants to Cold Chain Industry**
- ○Centrifugal Chiller at Textile Factory 2*
- ○507kW Solar Power Hybrid System
- ○Centrifugal Chiller at Textile Factory 3*
- ○Upgrading to Air-saving Loom*
- ○Smart LED Street Lighting System
- ○Gas Co-generation System*
- ○1.6MW Solar PV in Jakabaring Sport City*
- ○10MW Hydro Power Plant
- ○Industrial Wastewater Treatment System
- ○Absorption Chiller
- ○High Efficiency Autoclave
- ○12MW Biomass Power Plant
- ○Energy Saving at Convenience Store*
- ○Double Bundle-type Heat Pump*
- ○30MW Waste Heat Recovery in Cement Industry*
- ○Regenerative Burners
- ○Old Corrugated Cartons Process*
- ○Centrifugal Chiller in Shopping Mall*
- ○Once-through Boiler System in Film Factory
- ○Once-through Boiler in Golf Ball Factory
- ●REDD+ through controlling slush-and burn
- ○Looms in Weaving Mill
- ○LED Lighting to Sales Stores
- ○0.5MW Solar PV*
- ○Gas Co-generation system
- ○10MW Hydro Power Plant
- ○CNG-Diesel Hybrid Public Bus
- ○Rehabilitation of Hydro Power Plant
- ○Injection Molding Machine

- ○ Model Project in FY 2013 (7 projects in 3 countries)
- ○ Model Project in FY 2014 (12 projects in 5 countries)
- ■ ADB Project in FY 2014 (1 project in 1 country)
- ○ Model Project in FY 2015 (31 projects in 9 countries)
- ○ Model Project in FY 2016 (35 projects in 9 countries)
- ● REDD+ Model Project (2 projects in 2 countries)
- ○ Model Project in FY 2017 (19 projects in 7 countries)
- ■ ADB Project in FY 2017 (1 project in 1 country)
- ○ Model Project in FY2018 (24 projects in 11 countries)
- ■ ADB Project in FY 2018 (2 projects in 2 country)
- ▲ F-gas Project in FY 2018 (2 projects in 2 country)
- ○ Model Project in FY 2019 (7 projects in 5 countries)
- • Other 1 project in Malaysia

Total 143 projects in 16 partner countries as of June 27, 2019

Underlined projects have started operation (90 projects)
Projects with * have been registered as JCM projects (42 projects)

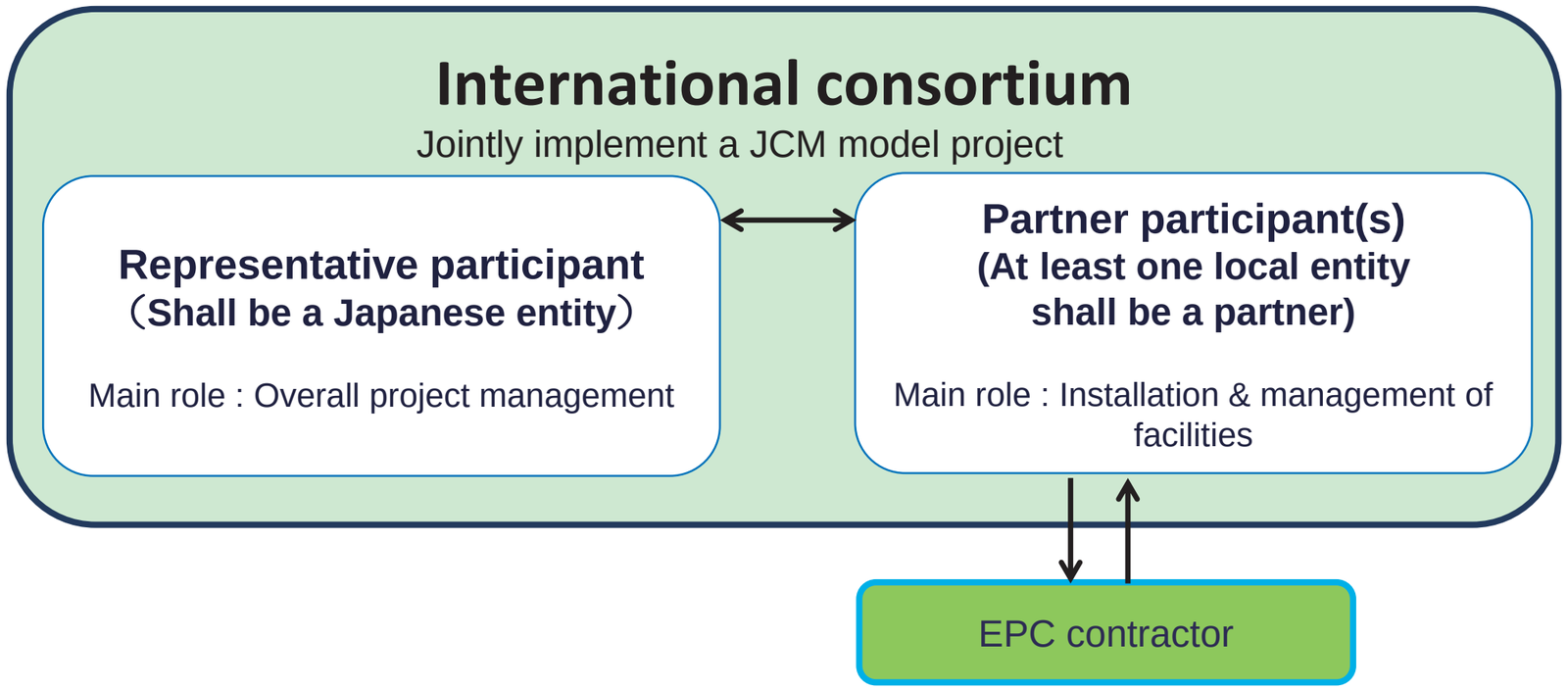
What kind of projects are supported by this financing programme?

- Reduce energy-related CO2 emissions with leading low carbon technologies in partner countries
- Contribute to the sustainable development in partner countries.
- Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.
- Facilities installed by the projects do not receive any other subsidy by the Government of Japan.

Guideline for Submitting JCM model project proposal in **FY2019**

Basic Structure of International Consortium

Global Environment Centre Foundation



- Consortium must include both an owner and user of facility which installed by the model project.

(a) A representative participant of the model project shall be a Japanese entity of an international consortium.
(b) A participant shall have capability for the implementation, such as technical capacity to appropriately implement the eligible project.
(c) A participant shall have a financial basis to bear the costs necessary to appropriately implement the eligible project.
(d) A participant shall have adequate management structures and handling capacity for accounting and other administrative work related to the eligible project;
(e) A participant shall explain the contents, effect on GHG emission reductions, details of the cost, investment plan, etc. of the eligible project.

Guideline for Submitting JCM model project proposal in FY2019

What kind of cost is covered & not covered by this programme?

✓ COVERED

(a) Main construction work
(b) Ancillary work
(c) Machinery and appliances
(d) Surveying and testing
(e) Facilities/equipment (including monitoring equipment)
(f) Administrative work; and
(g) Other necessary costs approved by GEC

What is the criteria of cost-effectiveness?

JPY4,000/tCO2equivalent

$$= \frac{\text{Amount of financial support[JPY]}}{\text{Emission reductions of GHG [tCO2equivalent/y]} \times \text{legal durable years[y]}}$$

Legal durable years of the facilities is stipulated by the Japanese low, and are dependent on the industry classification.

JPY3,000/tCO2equivalent

In case the number of PV JCM Model Projects by each country is 5 or more. (Mongolia and Thailand)

Overview of JCM Model Projects in FY2019

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Budget	JPY9.9 billion (Approx. USD90million)
Executing Entity	International Consortium that consists of a Japanese entity and a JCM partner-country entity(ies)
Scope of Financing	Facilities, equipment, vehicles, etc. which reduce CO2 from fossil fuel combustion as well as construction cost for installing those facilities, etc.
Eligible Projects	Start installation after the Contract of Finance is concluded and finish installation within 3 years.
Maximum percentage of Financial Support	Maximum of 50% and reduce the percentage according to the number of already selected project(s) using a similar technology in each partner country. ※ Number of already selected project(s) using a similar technology in each partner country : none (0) = up to 50%, up to 3 (1-3) = up to 40%, more than 3 (>3) = up to 30%. The percentage of financial support will be determined by GEC.
Cost-effectiveness	Cost-effectiveness of GHG emission reductions is expected to be JPY4,000/tCO2eq or better. ※ If the number of PV projects in a partner country is 5 or more, cost-effectiveness is expected to be JPY3,000/tCO2eq or better.

Financial support per project

From ¥50million to ¥2billion (approx.)

Guideline for Submitting JCM model project proposal in **FY2019**

JCM Model Projects Schedule in FY2019

Global Environment Centre Foundation

4 April | 5 May | 6 June | 7 July | 8 August | 9 September | 10 October | 11 November | 12 December | 1 January | 2 February | 3 March | 4 April

From April 5 to November 29 : Proposal acceptance period

Call for proposal

Evaluation of proposals
Proposal Review & interview with applicants

Submission of application

Review of application documents

Start Model projects

- Selection of model projects
- documentation briefing for the notice of contract of financing

Notice of Contract of Financing

Implementation of model projects

Inspection

Disbursement of financial support

1-year project
- ☑ Submission of final reports
- ☑ Onsite inspection

2 or 3-year project
- ☑ Submission of midterm reports
- ☑ Midterm inspection

On May 14, the 1st selection starts ▶▶▶ Review

1-year project:
Disbursement of financial support
2 or 3-year project:
Disbursement of financial support (rough estimate)

Guideline for Submitting JCM model project proposal in FY2019

Categorization by Technology Type for JCM Model Projects

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Percentage of Financial Support : White 0 project = Up to 50% Yellow 1-3 project(s) = Up to 40% Orange more than 4 projects = Up to 30%

Sector	Technoloogy	JCM Methodology	Mongolia MN	Bangladesh BD	Ethiopia ET	Kenya KE	Maldives MV	Viet Nam VN	Lao PDR LA	Indonesia ID	Costa Rica CR	Palau PW	Cambodia KH	Mexico MX	Saudi Arabia SA	Chile CL	Myanmar MM	Thailand TH	Philippine PH	Total
1. Energy Efficiency	Air Conditioning System	VN_AM006, ID_AM004						2		1								1		4
	Chiller	BD_AM001, VN_AM011, ID_AM002, CR_AM002, TH_AM003, TH_AM005		2				3		4	1		1					3		14
	Refrigerator	ID_AM003, TH_AM008								1							2	4		7
	Absorption Chiller Using Waste Heat									2								2		4
	Swirling Induction Type Air-conditioning System	TH_AM006																1		1
	Double Bundle-type Heat Pump	VN_AM012, ID_AM010						1		1								1		3
	Fridge and Freezer Showcase	ID_AM008								1								1		2
	Boiler	MN_AM002, ID_AM015	1					1		2				1			2	1		8
	Water Heater Using Waste Heat	CR_AM003									1									1
	Waste Heat Recovery System																2	1		3
	Transformer	VN_AM005, LA_AM003						4	1											5
	LED Lighting	ID_AM005								2								2		4
	LED Street Lighting with Dimming System	ID_AM018, KH_AM001								1			1							2
	Pump	VN_AM013						1												1
	Air Compressor	TH_AM002						1										1		2
	Aeration System									1										1
	Regenerative Burners	ID_AM009								1										1
	Gas Fired Furnace	VN_AM010						1												1
	Air Conditioning Control System							1										1		2
	Freaquency Inverter for Pump							1					1							2
	Loom	BD_AM003, ID_AM011, TH_AM004		1						2								1		4
	Old Corrugated Cartons Process	ID_AM012								1										1
	Battery Case Forming Device	VN_AM009						1												1
	Electrolyzer in Chlorine Production	SA_AM001													1			1		2
	Wire Stranding Machines	VN_AM014						1												1
	Gantry crane																	1		1
	Electric Forklift																	1		1
	Autoclave									1										1
	Multi-effect Distillation System													1						1
	Injection Modling Machine									1										1
2. Renewable Energy	Solar Power Plant	MN_AM003, BD_AM002, KE_AM002, MV_AM001, VN_AM007, LA_AM002, ID_AM013, CR_AM001, PW_AM001, KH_AM002, MX_AM001, CL_AM001, TH_AM001	6	2		2	1	1	2	2	1	4	2	2		1		9	4	39
	Solar Power Plant with Battery	ID_AM017								1						1				2
	Small Hydropower Plant	KE_AM003								3									3	6
	Wind Power Plant													1						1
	Biomass Power Plant									1							1		1	3
	Biomas boiler																	1		1
	Biogas boiler																1			1
	Biomass Co-generation	ET_AM003			1													1		2
3.Effective Use of Energy	Power Generation by Waste Heat Recovery	ID_AM001, TH_AM007								1							1	1		3
	Gas Co-generation	ID_AM016, TH_AM009								2								3		5
4. Waste Handling and Disposal	Waste-to-Energy Plant	MM_AM001															1			1
	Power Generation by Methane Recovery													1						1
5. Transportation	Digital Tachograph System	VN_AM001						1												1
	CNG-Diesel Hybrid Bus									1										1
	Reefer Container							1												1
Total	Number of technology : 45	No. of Methodology : 53	7	5	1	2	1	21	3	33	3	4	5	6	1	2	10	38	8	150

New Technologies Selected in FY2018

- Autoclave
- Multi-effect Distillation System
- Injection Molding Machine
- Biogas Boiler
- Reefer Container
- CNG-Diesel Hybrid Bus

Infrastructure through JCM

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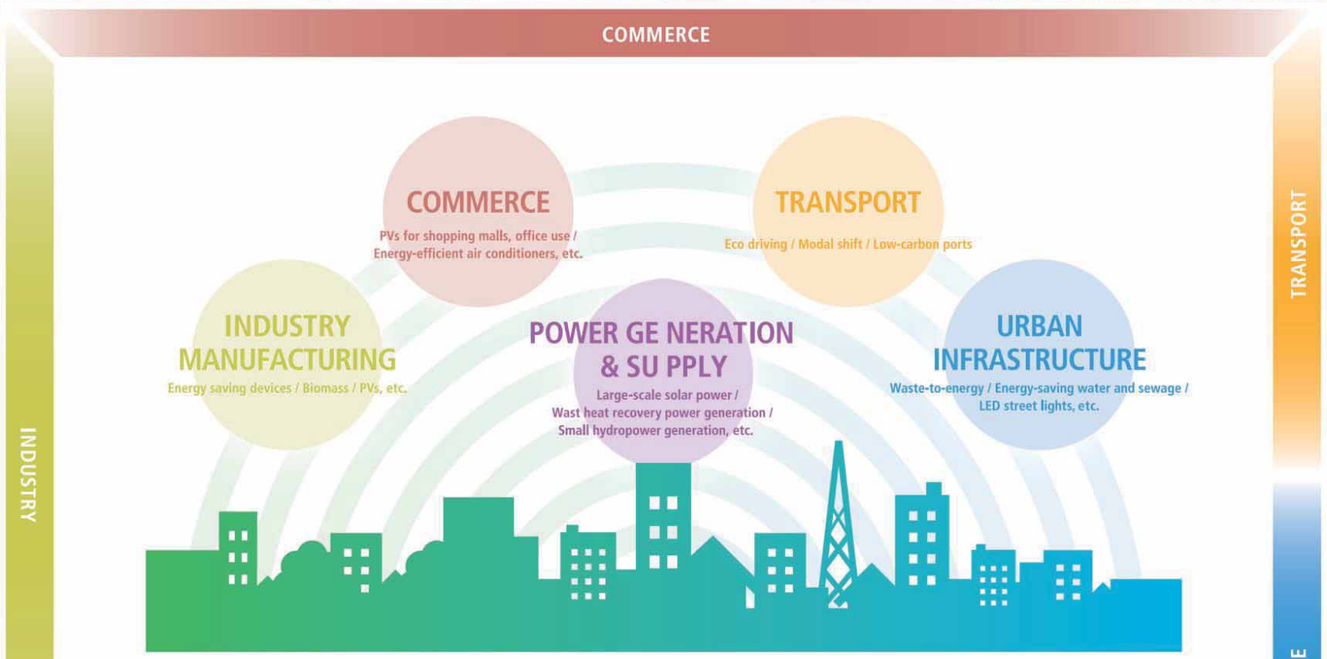
1 Thailand / FAST RETAILING CO., LTD.
High Efficiency LED Lighting
2 Cambodia / AEON MALL Co., Ltd.
Solar Power System and High Efficiency Centrifugal Chiller
1 Bangladesh / Ebara Refrigeration Equipment & Systems Co., Ltd.
High Efficiency Centrifugal Chiller
2 Mexico / Suntory Spirits Limited
Once-through Boiler and Fuel Switching

3 Palau / Pacific Consultants Co., Ltd.
Solar Power Plants for Commercial Facilities
4 Indonesia / Toyota Tsusho Corporation
Double-Bundle type Heat Pump
1 Indonesia / Hokusan Co., Ltd.
CNG-Diesel Equipment to Public Bus
2 Thailand / Yokohama Port Corporation
Energy Efficient Equipment to Bangkok Port



COMMERCE

INDUSTRY

TRANSPORT

URBAN INFRASTRUCTURE

Accelerating International Promotion of Infrastructure through JCM

Along with the Overseas Development Strategy (Environment) compiled by Cabinet Office, Government of Japan in June 2018, the JCM model project aims to contribute to global GHG emission reductions, through the diffusion of leading low carbon or decarbonizing technologies.

POWER GENERATION AND SUPPLY

3 Indonesia / Environmental Management and Technology Center
Energy Saving in Industrial Wastewater Treatment System
4 Myanmar / Kirin Holdings Company, Limited.
Energy Saving Brewing Systems
1 Thailand / TSB Co., Ltd.
Floating Solar Power System
2 Mexico / NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.
Power Generation with Methane Gas Recovery System

1 Viet Nam / Yuko Keiso Co., Ltd.
Amorphous High Efficiency Transformers in power grid
2 Viet Nam / Yokohama Water Co., Ltd.
High Efficiency Water Pumps
3 Myanmar / JFE Engineering Corporation
Waste to Energy Plant in Yangon City
3 Myanmar / Fujita Corporation
Rice Husk Power Generation

05

06

Business Matching Site (under development)

GEC is developing an online platform that assists Japanese companies that offer superior low-carbon or decarbonizing technologies meet with companies in JCM partner countries. Initially after the launch, some partner countries will be invited to use the platform starting in summer 2019, with more countries joining gradually afterwards. Details will be provided on the GEC website.

Suitable for Finding a project partner such as a technology supplier, an implementing company, etc.

Consultation by GEC

GEC provides application consultation in order to assist project formation for entities interested in JCM Model Project. Please feel free to contact us. Please send an e-mail to jcm-info@gec.jp. Subject of e-mail should be "Consultation on application for JCM Model Project (Your company name)".

Suitable for Getting advice on your proposal at various phases.

GEC JCM Promotion (2)

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Outreach Activities of GEC

- GEC website on JCM
  http://gec.jp/jcm/
- GEC's JCM Twitter
  https://twitter.com/GEC_JCM_Info
- JCM Seminar

Thank you !

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