Overview of the Financing Programmes for JCM Model Projects

28th January 2020

Global Environment Centre Foundation (GEC)



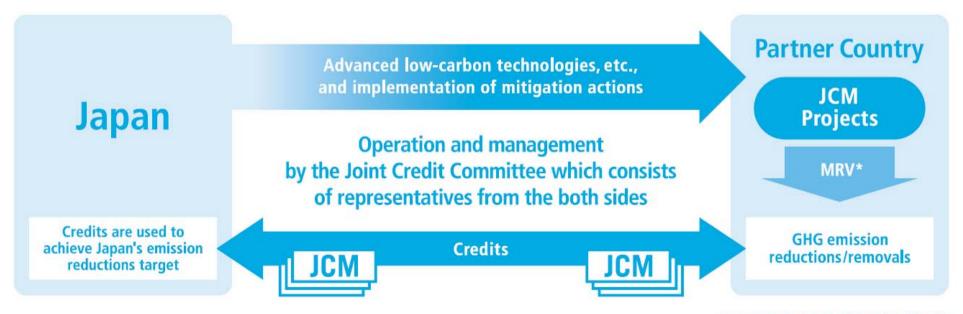
- 1. Basic concept of the JCM Model Projects
- 2. JCM Model Projects in Kenya
- 3. Guideline for Project Proposal
- 4. Project Map, Technology and Infrastructure through JCM
- 5. JCM Global Match
- 6. JCM Promotion

1. Basic concept of the JCM Model Projects (1) G Global Environment Centre Foundation

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

MOEJ

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





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 partnercountry entity B

partner participant

Installation and maintenance of equipment & conduct MRV

Project in the partner country Emissions reduction **Financial** support Initia Initial GHG GHG emissions cost emissions cost **Conventional** Low-carbon equipment & facility equipment & facility

Japanese government & entities

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



Expected to deliver at least half of JCM credits issued

The consortium conducts MRV to estimate GHG emission reductions

Partner country government & entities



Introduction of Solar PV System at Salt Factory

Representative Participant

Pacific Consultants Co., Ltd.

Partner Participant: Krystalline Salt Limited (Kaysalt)

Host Country	Kenya	
Year	2015	
Туре	JCM Model Project	
Sector	Renewable Energy	

Outline of GHG Mitigation Activity

This project aims to reduce CO2 emissions by introducing a 991kW solar PV system at a salt factory of Krystalline Salt Limited (Kaysalt). All of the generated electricity is used in the factory. The factory usually uses grid electricity but also uses captive diesel power generation during power outages. Therefore the project introduces a controller device which enables safe operation of the solar PV system together with the diesel generators. The generated electricity will displace electricity use from both grid and diesel generators.

Solar PV system DC AC kw Solar PV module Inverter Power meter Controller Salt Factory

Site of JCM Project

Expected GHG Emission Reductions

888 tCO2/year

- = PV generation
 - × Reference emission factor
- = 1,667 [MWh/year] x 0.533 [tCO2/MWh]





38MW Solar Power Project in Makueni county

Representative Participant

Sharp Energy Solutions Corporation

Partner Participant: rAREH Icon Solar Limited, responsability Renewable Energy Holding, Legacy Energy Limited

Host Country	Kenya	
Year	2018	
Туре	JCM Model Project	
Sector	Renewable Energy	

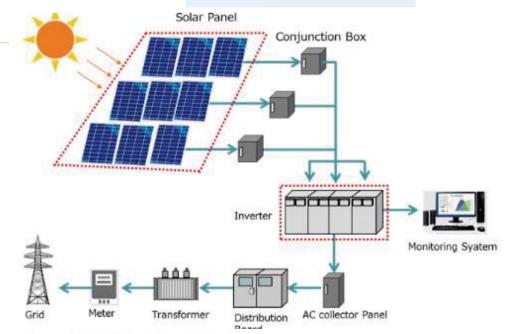
Outline of GHG Mitigation Activity

Sharp Energy Solutions Corporation together with rAREH Icon Solar Limited and its shareholders, responsAbility Renewable Energy Holding and Legacy Energy Limited, will introduce a 38MW solar power plant in Makueni county, Kenya.

All the net generated solar power is to be connected to the power grid. This project contributes to achieving Kenya energy policy to increase photovoltaic power plants up to 800MW by 2030.

Site of JCM Project





Expected GHG Emission Reductions

35,034tC02/year

- = (Reference CO2 emissions) [tCO2/year]
- (Project CO2 Emission) [tCO2/year]
- = ((Reference Power consumption) [MWh/year]
- 0 [MWh/year]))×Emission Factor [tCO2/MWh]

What kind of projects are supported by this financing programme?



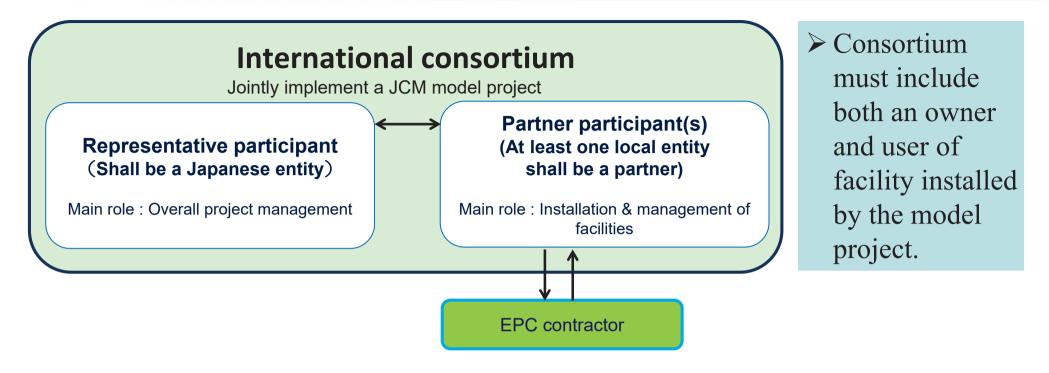
- Reduce energy-related CO2 emissions with leading low carbon technologies in partner countries
- Contribute to the sustainable development in partner countries.
- Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.
- Facilities installed by the projects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

Guideline

for Submitting
JCM model project proposal in FY2019

3. International Consortium





- (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

Guideline

for Submitting JCM model project proposal in FY2019

What is the criteria of cost-effectiveness?

JPY4,000/tCO2equivalent

Amount of financial support[JPY]

Emission reductions of GHG [tCO2equivalent/y] × legal durable years[y]

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

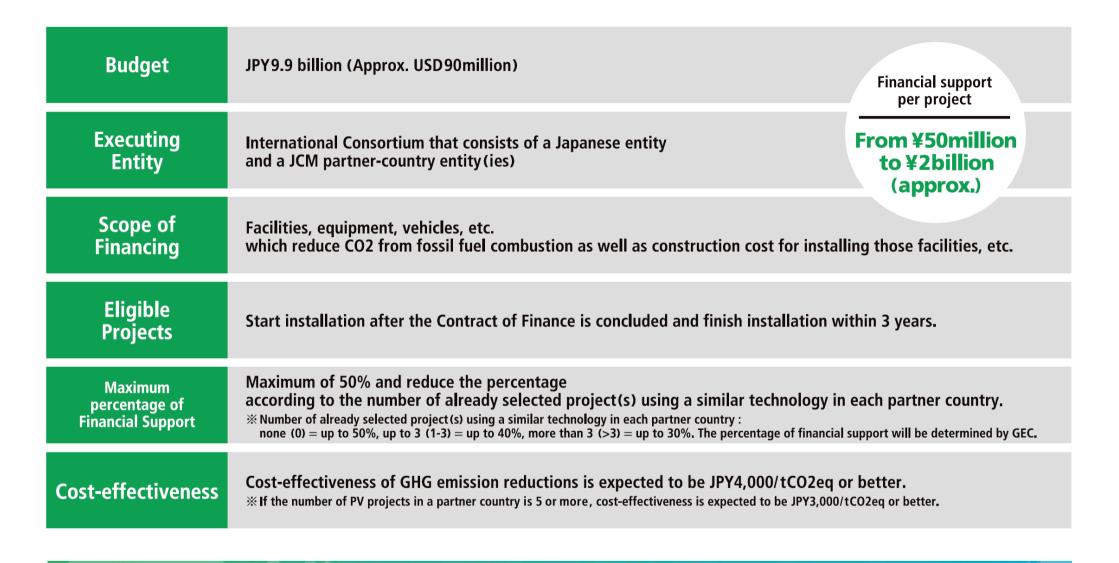
JPY3,000/tCO2equivalent

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

Guideline

for Submitting
JCM model project proposal in FY2019

3. Overview of JCM Model Projects in FY2019 Global Environment Centre Foundation



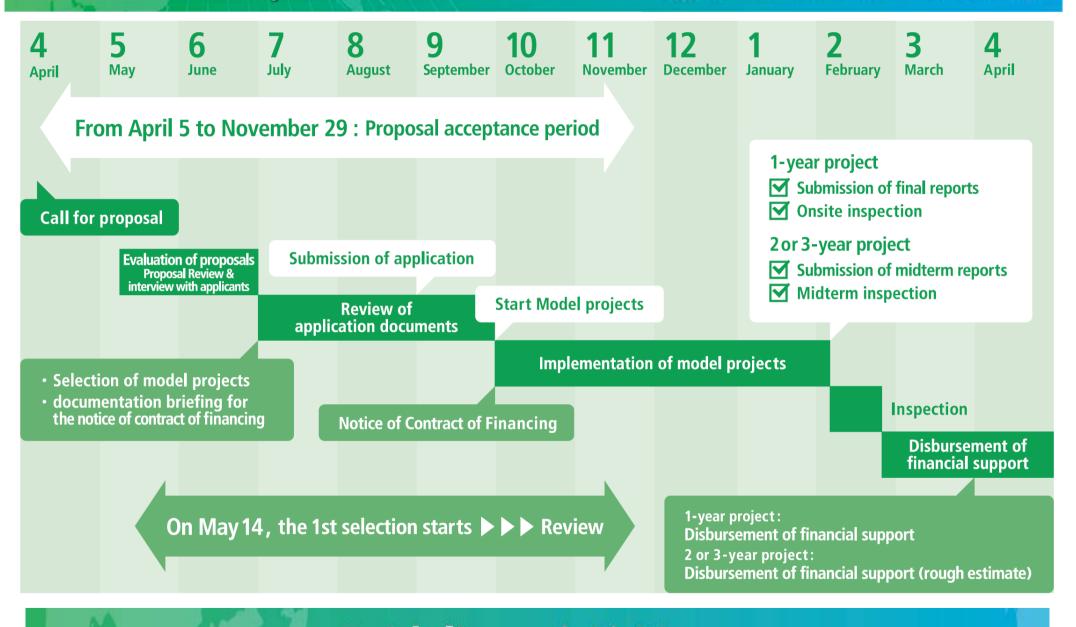
Guideline

for Submitting
JCM model project proposal in FY2019

3. JCM Model Projects Schedule in FY2019



Global Environment Centre Foundation



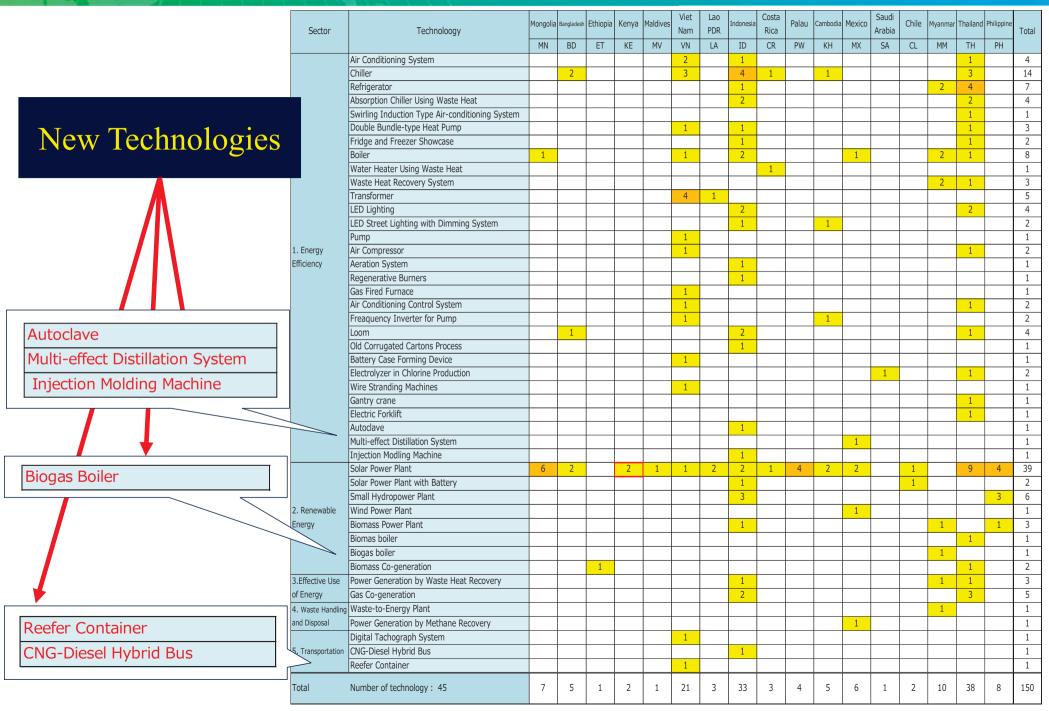
Guideline

for Submitting JCM model project proposal in FY2019

4. Project Map of JCM Financing Programme Global Environment Centre Foundation

Total 159 projects (● Model Project: 150projects, ■ ADB: 5 projects, ◆ REDD+: 2 projects, ▲ F-gas: 2 projects) Other 1 project in Malaysia **95underlined projects** have been started operation. **48 projects with *** have been registered as JCM projects. Cambodia:7 projects Mongolia:10 projects LED Street Lighting 200kW Solar PV at International School* ● Heat Only Boiler (HOB)** ● 2.1MW Solar PV in Farm* ● 10MW Solar PV* • Solar PV & Centrifugal Chiller • Inverters for Distribution Pumps •8.3MW Solar PV in Farm •15MW Solar PV • 20MW Solar PV ■ Battambang Wastewater Treatment Project ● 21MW Solar PV ■ Upscaling Renewable Energy Sector ● Fuel Conversion by Introduction of LPG Boilers ● Solar PV & Biomass Power Plant ●1.1MW Solar PV ■Improving Access to Health Services Myanmar:7 projects • 700kW Waste to Energy Plant Viet Nam:23 projects Brewing Systems to Brewery Factory Digital Tachographs*
 Amorphous transformers1*
 Air-conditioning in Hotel*
 Electricity Kiln Once-through Boiler in Instant Noodle Factory Air-conditioning in Lens Factory*
 Container Formation Facility*
 Amorphous transformers 2* • 1.8MW Rice Husk Power Generation • 320kW Solar PV in Shopping Mall* • Air-conditioning Control System • High Efficiency Water Pumps1* Refrigeration System in Logistics Center Energy saving Equipment in Lens Factory*
 Amorphous transformers 3* 8.8MW Waste Heat Recovery in Cement Plant Energy Saving Equipment in Wire Production Factory*
 Amorphous transformers 4 Brewing Systems and Biogas Boiler to Brewery Factory Energy Saving Equipment in Brewery Factory
 High Efficiency Chiller
 Modal Shift with Reefer Container Bangladesh: 6 projects ● Inverters for Raw Water Intake Pumps ▲ Collection Scheme and Dedicated System of F-gas Centrifugal Chiller
 Loom at Weaving Factory* Biomass Boiler to Chemical Factory
 Air-Conditioning System and Air Cooled Chillers
 44MW solar PV 315kW PV-diesel Hybrid System* Air-Conditioning System and High Efficiency Chiller • 50MW Solar PV Power Plant Centrifugal Chiller*
 High Efficiency Transmission Line Mexico:6 projects Saudi Arabia: 1 project • 2.4MW Power Generation with Methane Gas Recovery System • Once-through Boiler and Fuel Switching Electorolyzer in ● 20MW Solar PV ● 30MW Solar PV1 ● Energy Efficient Distillation System ● 30MW Solar PV2 Chlorine Production Plant Maldives: 3 projects Phillipines:12 projects • 186kW Solar Power on School Rooftop* 15MW Hydro Power Plant •4MW Hydro Power Plant ■ Smart Micro-Grid System • 1.53MW Rooftop Solar PV • 1MW Rooftop Solar PV • 1.1MW Rooftop Solar PV ●1.2MW Rooftop Solar PV •4MW Solar PV Ethiopia:1 projects • 2.5MW Rice Husk Power Generation Costa Rica: 2 projects • 120MW Solar PV 0.16MW Micro Hvdro Power Plant18MW Solar PV 5MW Solar PV ●19MW Hydro Power Plant ●47MW Wind Power Kenva:2 projects Chiller and Heat Recovery System Biogas Power Generation and Fuel Conversion • 1MW Solar PV at Salt Factory Kenva: 4 projects Palau:5 projects ● 38MW Solar PV ● 1MW Rooftop Solar PV* 370kW Solar PV for Commercial Facilities* • 1.4MW Solar PV and Laos:4 projects 155kW Solar PV for School* 2.3MWh Storage Battery ◆ REDD+ through controlling slush-and-burn 445kW Solar PV for Commercial Facilities II * •3.4MW Rice Husk Power Amorphous transformers
 14MW Floating Solar PV ● 0.4MW Solar PV for Supermarket● 1MW Solar PV for Supermarket Generation • 11MW Solar PV Indonesia:34 projects ■ 3MW Solar PV Thailand:32 projects Centrifugal Chiller at Textile Factory* Energy Saving at Convenience Store* Energy Saving at Convenience Store 1MW Solar PV on Factory Rooftop* Refrigerants to Cold Chain Industry** Double Bundle-type Heat Pump* Centrifugal Chiller & Compressor* Upgrading Air-saving Loom* Centrifugal Chiller at Textile Factory 2* 30MW Waste Heat Recovery in Cement Industry* Centrifugal Chiller in Tire Factory Co-generation in Motorcycle Factory • 507kW Solar Power Hybrid System Regenerative Burners Air Conditioning System & Chiller* Refrigeration System Centrifugal Chiller at Textile Factory 3* Old Corrugated Cartons Process* Ion Exchange Membrane Electrolyzer Chilled Water Supply System Upgrading to Air-saving Loom* Centrifugal Chiller in Shopping Mall* LED Lighting to Sales Stores
 2MW Solar
 12MW Waste Heat Recovery in Cement Plant Smart LED Street Lighting System Once-through Boiler System in Film Factory* Co-generation System PV • 3.4MW Solar PV* • Refrigerator and Evaporator Once-through Boiler in Golf Ball Factory* • Gas Co-generation System* 30MW Solar PV • 5MW Floating Solar PV Heat Recovery Heat Pump • 1.6MW Solar PV in Jakabaring Sport City* ◆ REDD+ through controlling slush-and burn Boiler System in Rubber Belt Plant Air-conditioning Control System ● 10MW Hydro Power Plant ● Looms in Weaving Mill* LED Lighting to Sales Stores Biomass Co-generation System Energy Saving Equipment in Port ● 0.5MW Solar PV* Industrial Wastewater Treatment System Co-generation in Fiber Factory
 Biomass Boiler
 25MW Solar PV in Industrial Park Gas Co-generation system Absorption Chiller High Efficiency Autoclave 3.4MW Solar PV ▲ Introduction of Scheme for F-gas Recovery and Destruction ● CNG-Diesel Hybrid Public Bus ■ Rehabilitation of Hydro Power Plant ■ 12MW Biomass Power Plant • 37MW Solar PV and Melting Furnace 0.8MW Solar PV and Centrifugal Chiller • 2MW Mini Hydro Power Plant Injection Molding Machine3 Boiler to Carton Box Factory Heat Exchanger in Fiber Factory 30MW Biomass Power Plant in Sugar Factory ● 10MW Hydro Power Plant • 6MW Hydro Power Plant

4. Categorization by Technology Type for JCM Model Projects Global Environment Centre Foundation



4. Infrastructure through JCM



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









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









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

05













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









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

06

♦Objectives

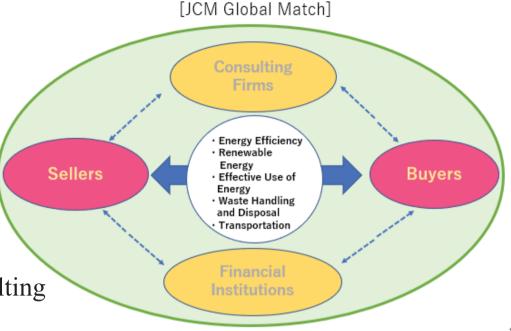
- To facilitate project formation of the JCM
- To provide means to find project partners

◆Features

- Automated match-making website
- Web-based registration for future meetings

Pre-Matching

Supported by financial institutions and consulting firms



Requests Matches Events

Browse list of events. You can make an appointment to meet with companies of your interest here.

received

QR code to see the website



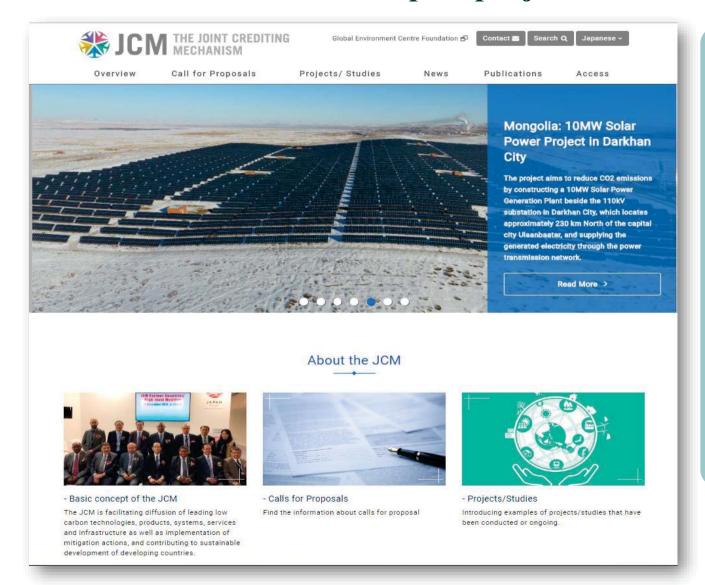
2019
September
12 Start: 13:00
End: 17:00

CH Seminar 2019 in Thailand
View detail



https://gec.force.com/JCMGlobalMatch/

JCM Website— search past projects



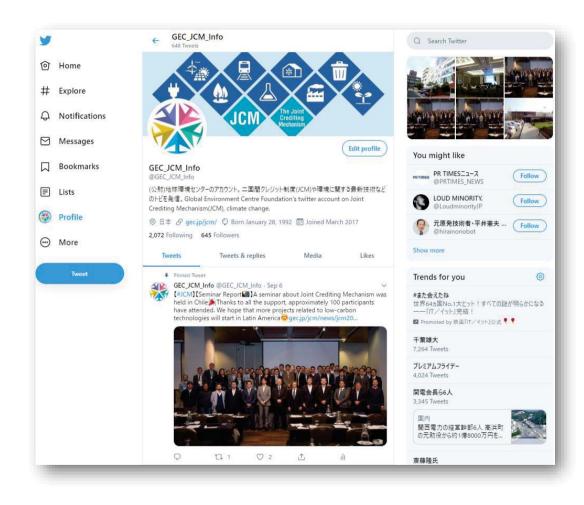
JCM Website contains..

- Overview of JCM
- Application Guidelines
- Search function for the

Past Projects

http://gec.jp/jcm/

Twitter — To Get Updated Information on JCM



Twitter

- Announcement and report of JCM Events
- Multilateral account
 (English, Japanese, sometime Spanish)
- Relevant news
- Just search "@GEC_JCM_Info"

and follow us!

https://twitter.com/GEC JCM Info

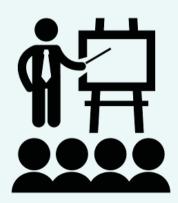
Consultation by GEC

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.





Thank you for your attention

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Appendix



Partner Country	Entity	Project Title	Sector	Expected GHG Emission Reductions (tCO2/y)
Mongolia	Saisan Co.,Ltd.	Fuel Conversion by Introduction of LPG Boilers to Beverage Factory	Energy Efficiency Improvement	5,781
Palau	Sharp Energy Solutions Corporation	Introduction of 1MW Solar Power System on Supermarket Rooftop	Renewable Energy	843
Mexico	Sharp Energy Solutions Corporation	30MW Solar Power Project in La Paz city	Renewable Energy	36,807
Philippines	Voith Fuji Hydro K.K.	19 MW Mini Hydro Power Plant Project in Isabela Province	Renewable Energy	46,836
Philippines	Tokyo Century Corporation	18MW Solar Power Project in Collaboration with Power-supply Company	Renewable Energy	11,981
Vietnam	DAIICHI JITSUGYO CO., LTD.	Introduction of Biomass Boiler to Chemical Factory	Renewable Energy	16,211
Thailand	Toyota Motor Corporation	Introduction of 37 MW Solar Power System and High Efficiency Melting Furnace in Vehicle & Engine Factory	Energy Efficiency Improvement/ Renewable Energy	19,483
Thailand	NIPPON STEEL ENGINEERING CO., LTD.	Efficiency Improvement of Co-generation System by Installation of Heat Exchanger in Fiber Factory	Energy Efficiency Improvement	359
Philippines	ITOCHU Corporation	Biogas Power Generation and Fuel Conversion Project in Pineapple Canneries	Renewable Energy	52,156
Maldives	Sharp Energy Solutions Corporation	1.1MW Rooftop Solar System in Maamigili and Maandhoo Island	Renewable Energy	862
Vietnam	Hitachi-Johnson Controls Air Conditioning, Inc.	Introduction of High Efficiency Air-conditioning System and Air Cooled Chillers to Hotel and Office Buildings	Energy Efficiency Improvement	2,661
Indonesia	Aura Green Energy Co., Ltd	2MW Mini Hydro Power Plant Project in East Nusa Tenggara Province	Renewable Energy	6,839
Indonesia	Japan Pulp and Paper Company Limited	Introduction of High Efficiency Boiler System to Carton Box Factory	Energy Efficiency Improvement	975
Chile	Asian Gateway Corporation	3.4MW Rice Husk Power Generation Project in Maule	Renewable Energy	8,572
Ethiopia	Sharp Energy Solutions Corporation	120MW Solar Power Project in Metehara, Oromia Region	Renewable Energy	30,007
Vietnam	Kanematsu KGK Corp.	49MW Solar Power Project in An Giang Province	Renewable Energy	24,021
Vietnam	Hitachi-Johnson Controls Air Conditioning, Inc.	Introduction of Centrifugal Chillers to Hospital	Energy Efficiency Improvement	270
Indonesia	Voith Fuji Hydro K.K.	10MW Hydro Power Project in Bengkulu Province	Renewable Energy	35,950
Indonesia	Voith Fuji Hydro K.K.	6MW Hydro Power Project in West Sumatera Province	Renewable Energy	17,242
Cambodia	WWB Corporation	Hybrid Power Plant Project with Biomass and Solar Power in Kandal Province	Renewable Energy	1,881
Cambodia	Asian Gateway Corporation	Introduction of 1.1MW Solar Power System at International School	Renewable Energy	503
Chile	FARMLAND Co., Ltd.	3MW Solar Power Project in Chillan, Nuble Region	Renewable Energy	1,899
Thailand	Global Engineering Co., Ltd.	Introduction of 15MW Biomass Power System to Sugar Plant	Renewable Energy	11,999
Philippines	Chodai Co., Ltd.	33MW Wind Power Project in Caraga Region, Mindanao	Renewable Energy	35,350
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End

