



Introduction of Joint Crediting Mechanism (JCM) and potential of JCM model project in Mexico

FY2019 Project formulation to promote JCM (Latin America)

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funded by Ministry of the Environment, Japan

1 NIPPON KOEI

- Nippon Koei is Japan's No.1 International Engineering Consultants.
- During 70 years, Nippon Koei has worked on over 5000 multi-disciplinary infrastructure projects in 160 countries all over the world.

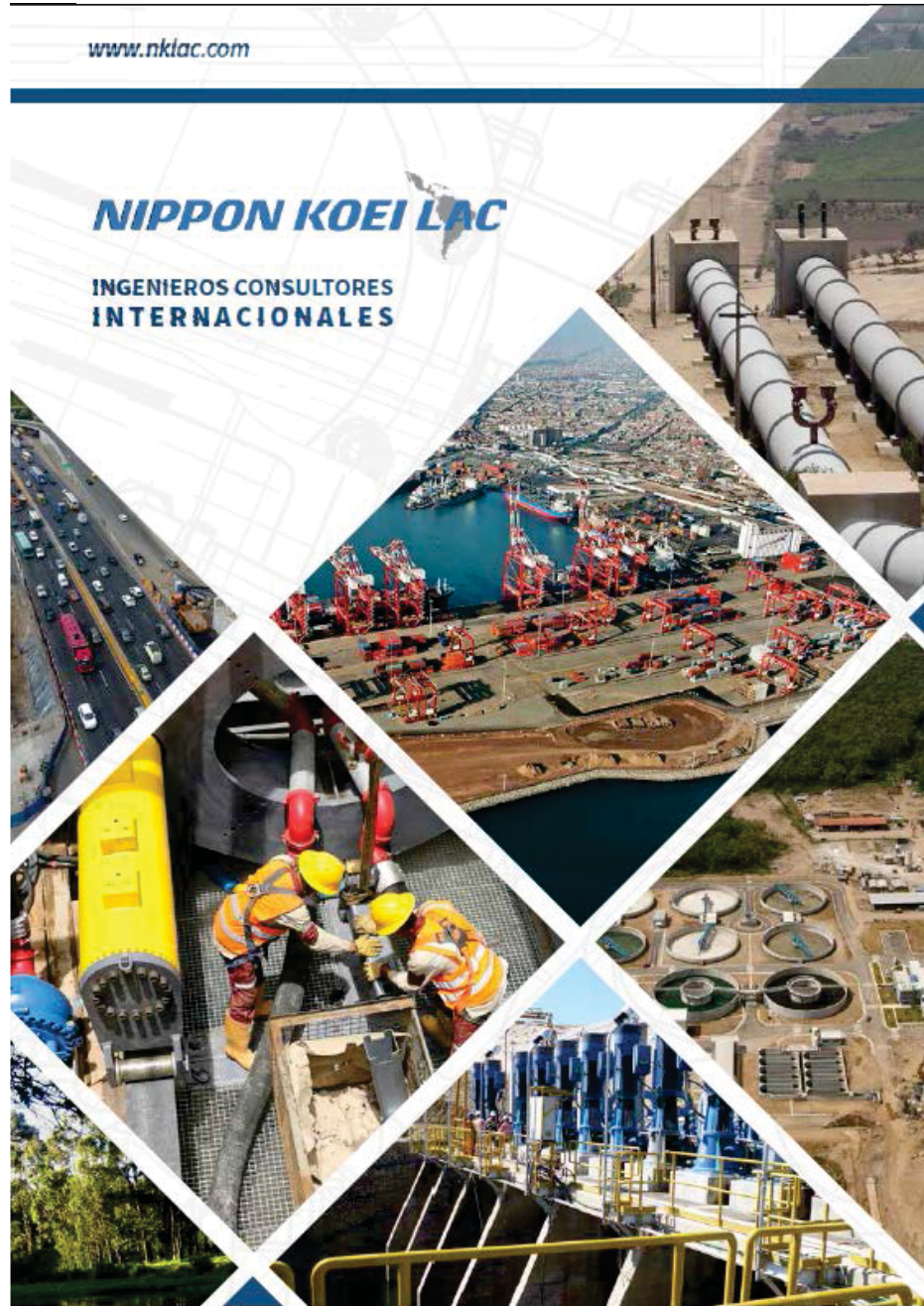


1 NIPPON KOEI

- Nippon Koei has its own network in Latin-America especially through its subsidiary, Nippon Koei LAC based in Panama. Recently an office in Mexico City was opened (not in the map yet)

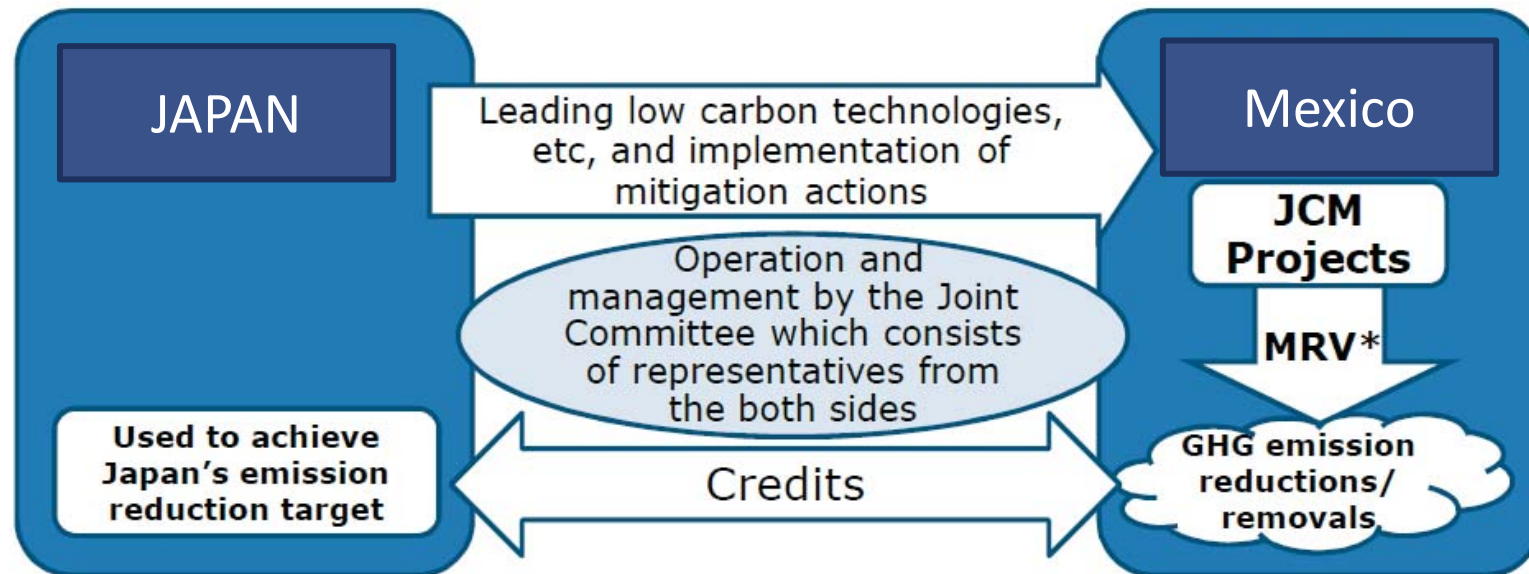


1 NIPPON KOEI LAC



2.1 WHAT IS JCM?

JCM: Joint Crediting Mechanism



Source: MOEJ

*measurement, reporting and verification

- The JCM starts its operation as the **non-tradable** credit type mechanism.
- Facilitating diffusion of **leading low carbon equipment and systems** and contributing to sustainable development of partner countries.
- Evaluating GHG emission reductions by measurement, reporting and verification
- 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.

2.1 WHAT IS JCM? -JOINT COMMITTEE

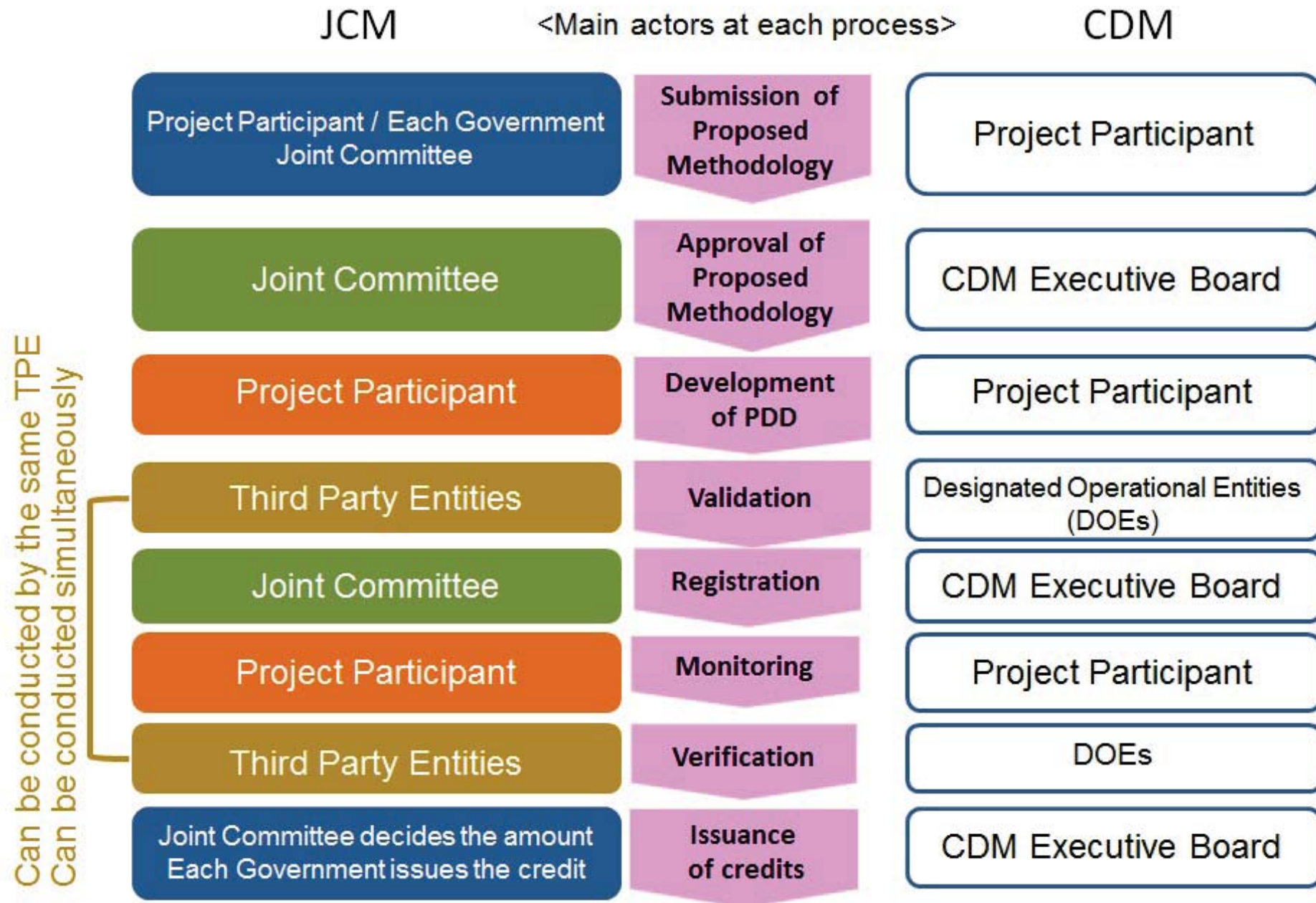
JC Members from the Mexican side

Dr. Rodolfo Godínez Rosales	Ministry of Environment and Natural Resources
Dr. Claudia Alejandra Octaviano Villasana	INECC
Dr. Juana Itzchel Nieto Ruíz	INECC
Ms. Yutsil Sanginés Sayavedra	Ministry of Environment and Natural Resources
Ms. Iris Adriana Jimenez Castillo	Ministry of Environment and Natural Resources
Ms. Diana Guzman Torres	Ministry of Environment and Natural Resources
Ms. Patricia Arendar Lerner	INECC
Mr. Víctor Escalona Gómez	Ministry of Environment and Natural Resources
Ms. Bárbara Urtaza	Ministry of Environment and Natural Resources

JC Members from the Japanese side

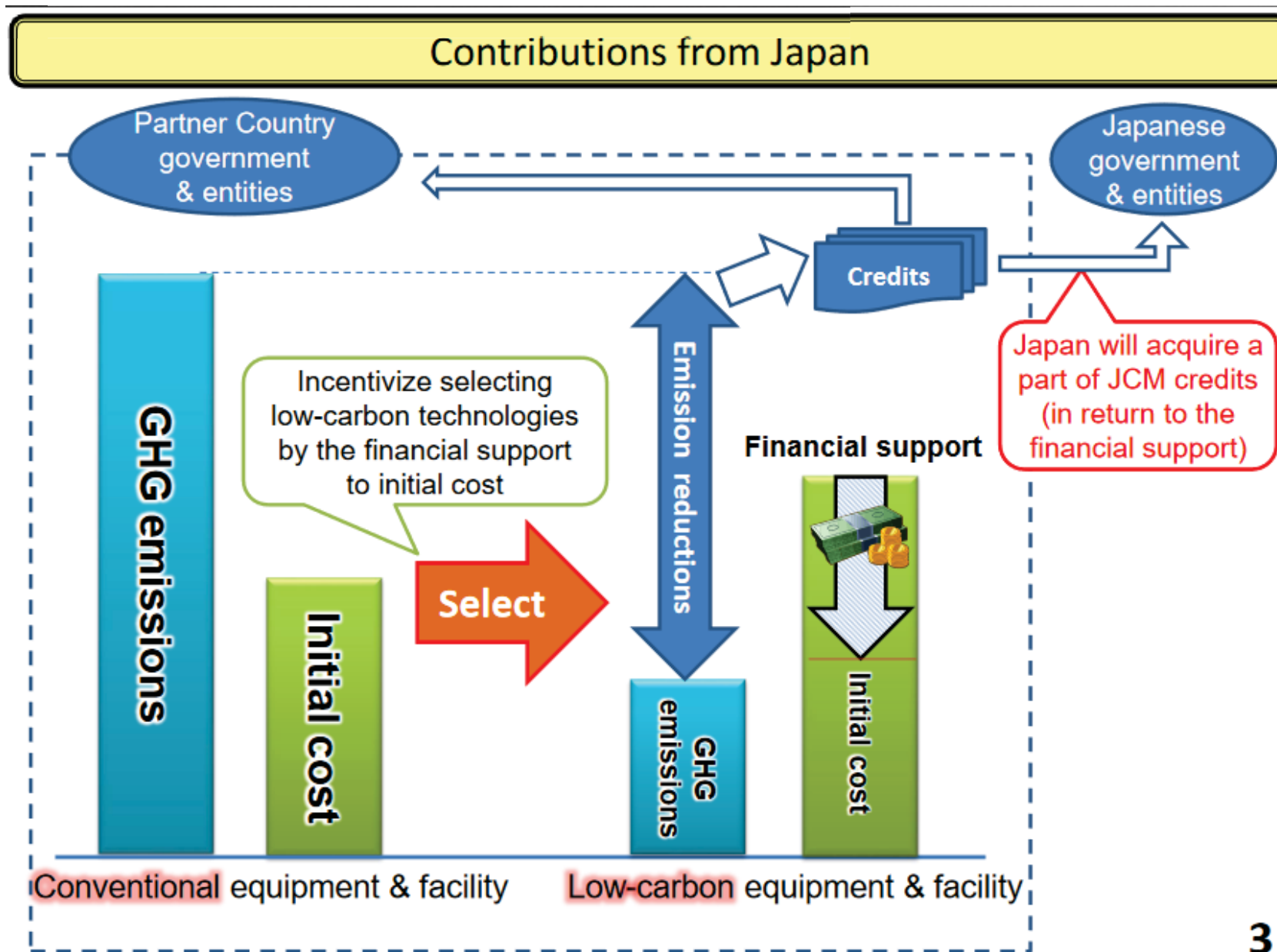
Mr. Ryosuke KUWANA	Embassy of Japan in Mexico
Mr. Kaoru MAGOSAKI	Ministry of Foreign Affairs
Mr. Toshiaki NAGATA	Ministry of Economy, Trade and Industry
Mr. Kazuhisa KOAKUTSU	Ministry of the Environment
Ms. Naoko TSUKADA	Forestry Agency
Mr. Yasuaki SHIMADA	Embassy of Japan in Mexico
Mr. Hiroki ISSHIKI	Embassy of Japan in Mexico

2.2 WHAT IS JCM? –FLOW OF PROJECT



Source: MOEI

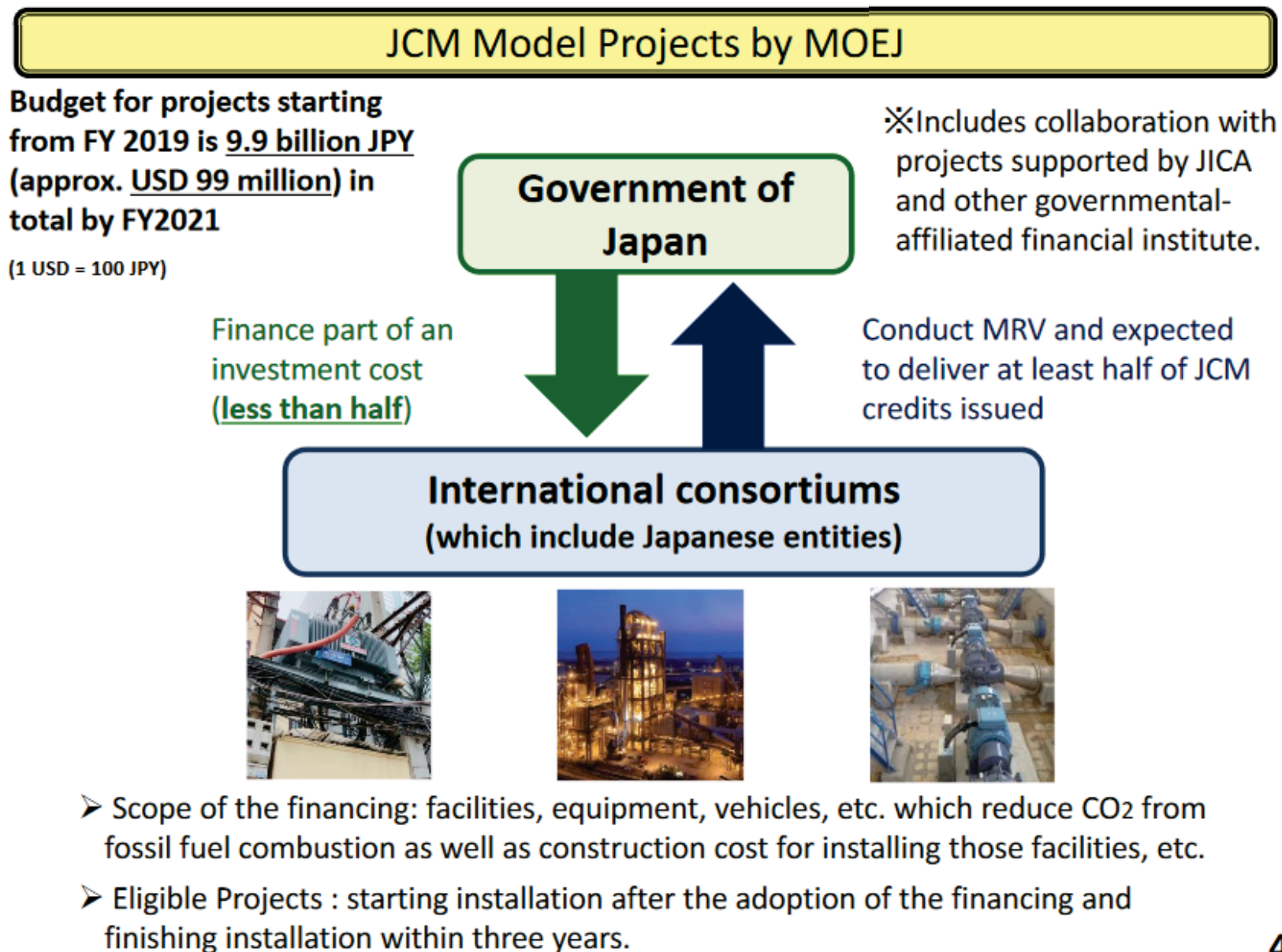
2.3 WHAT IS JCM SUPPORT?



Source: MOEJ

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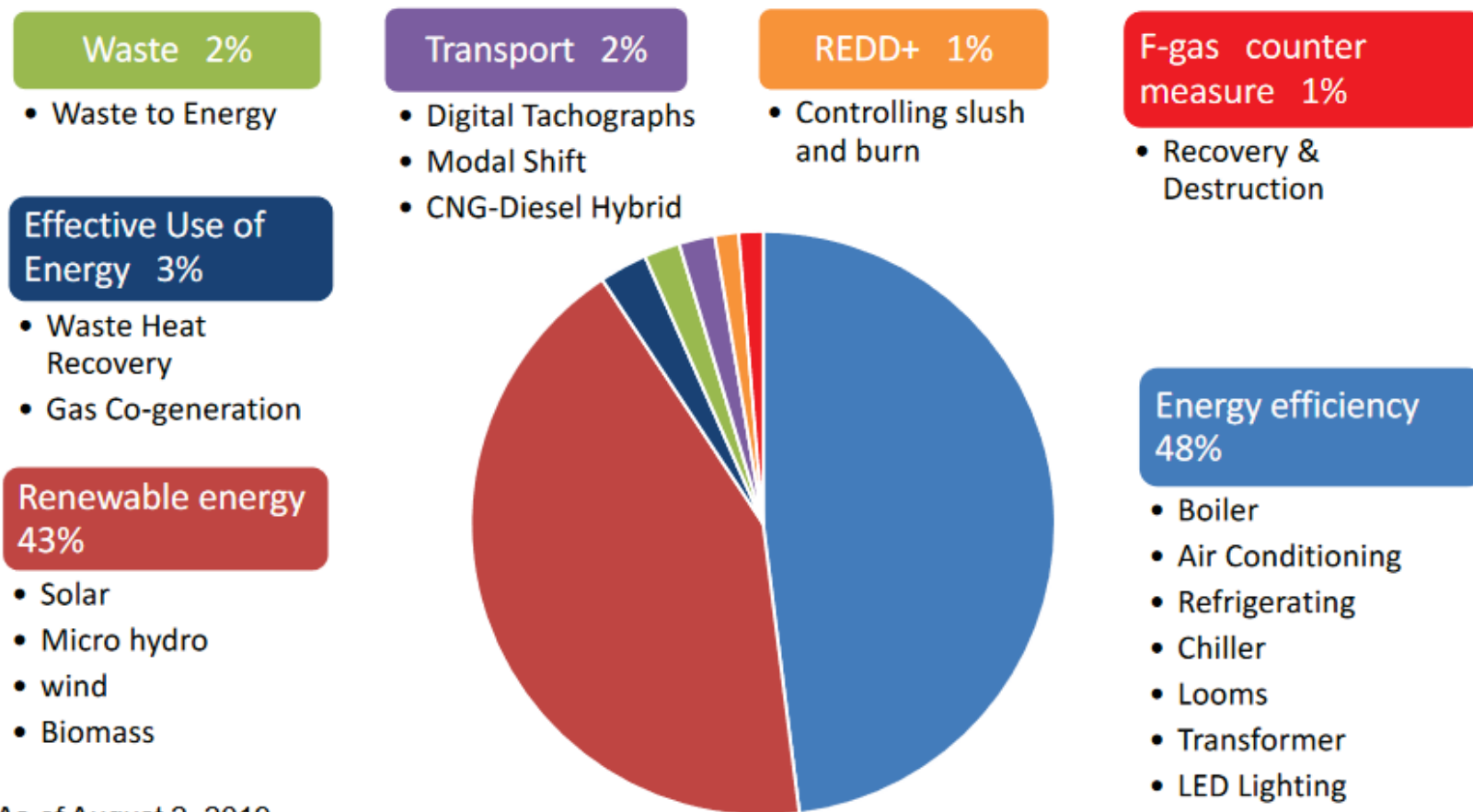


Source: MOEJ

2.3 WHAT IS JCM SUPPORT?

Technologies Transferred through JCM by MOEJ(FY2013-2018)

- ◆ Total of 147 **JCM Projects** being developed in 17 partner countries
- ◆ 48% are **energy efficiency** and 43% are **renewable energy**
- ◆ Effective use of Energy, Transport, Waste to energy, F-gas Recovery and Destruction and REDD+ project shares 9%



As of August 2, 2019

Source: MOEJ

2.3 WHAT IS JCM SUPPORT?

Overview of JCM Model Projects in FY2019



Global Environment Centre Foundation

Budget	JPY9.9 billion (Approx. USD90million)	<div>Financial support per project</div> <div>From ¥50million to ¥2billion (approx.)</div>
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.	

Guideline

for Submitting
JCM model project proposal in FY2019

Source: GEC

NIPPON KOEI

2.3 WHAT IS JCM SUPPORT?

Memorandum of Cooperation between World Bank Group and MOEJ

- Identify suitable WBG programs where the MOEJ could potentially participate through appropriate identified means and jointly develop mitigation outcomes from the projects using the JCM methodology
- Explore the possibility to scale up the JCM projects under the PMR and PMR Successor Program
- Share information on identified candidate programs with the MOEJ to explore and examine potential arrangements of the pilot projects with the JCM including utilization of Measurement, Reporting and Verification (“MRV”) methodologies



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Source: MOEJ

2.4 Outline of JCM Projects in Mexico

- Signed on
July 25, 2014 Mexico – Japan



#	Project Title	Year	Status	Type	Reduction (t-CO ₂ /yr)
1	Introduction of 2.4MW Power Generation with Methane Gas Recovery System	2016	Installing	Waste Handling and Disposal	122,314
2	Introduction of Once-through Boiler and Fuel Switching to Tequila Plant	2016	Active	Energy Efficiency	3,435
3	20MW Solar Power Project in Guanajuato	2017	Installing	Renewable Energy	14,682
4	30MW Solar Park Project in Guanajuato	2018	Installing	Renewable Energy	36,416
5	Introduction of Energy Efficient Distillation System to Tequila Plant	2018	Installing	Energy Efficiency	1,493
6	30MW Solar Power Project in La Paz city	2019	Installing	Renewable Energy	36,807

Source: GEC

ON-GOING JCM MODEL PROJECTS IN MEXICO

#	Project Title	Year	Entity (Representative company)	Status	Type
3	20MW Solar Power Project in Guanajuato	2017	Sharp Corporation	Installing	Renewable Energy
4	30MW Solar Park Project in Guanajuato	2018	Sharp Energy Solutions Corporation	Installing	Renewable Energy
6	30MW Solar Power Project in La Paz city	2019	Sharp Energy Solutions Corporation	Installing	Renewable Energy

Outline of the Project:

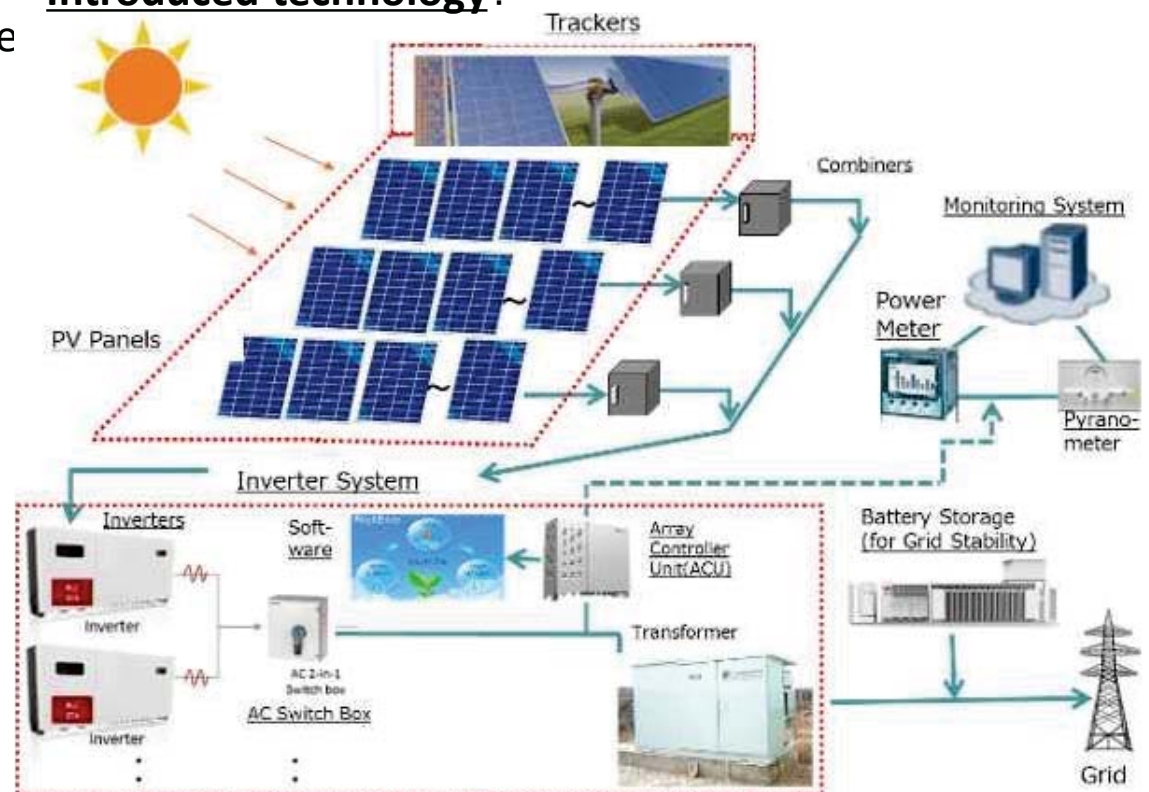
These **solar power projects** contribute to the achievement of Mexico's policy for a Clean Energy ratio target of 35% by 2024. Project #3 is installed solar trackers to maximize the power generation.

Location :



Expected GHG Emission Reductions
87,905 tCO2/year in total

Introduced technology :



ON-GOING JCM MODEL PROJECTS IN MEXICO

#	Project Title	Year	Entity (Representative company)	Status	Type
1	Introduction of 2.4MW Power Generation with Methane Gas Recovery System	2016	NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.	Installing	Waste Handling and Disposal

Outline of the Project:

This project is **power generation by gas engine using collected methane gas from landfill at two landfill sites** in Mexico.

The methane gas recovery system consists of recovery wells, pipelines, gas filters, gas engine generator and transformer. Captured methane gas is transported to the gas engine power generation facilities through pipelines and filters. Electricity generated from the gas engine generator will be sold under long-term PPAs with local municipality.

GHG emission reductions are achieved by replacement of grid electricity and avoidance of methane emission from landfill sites.

Location :



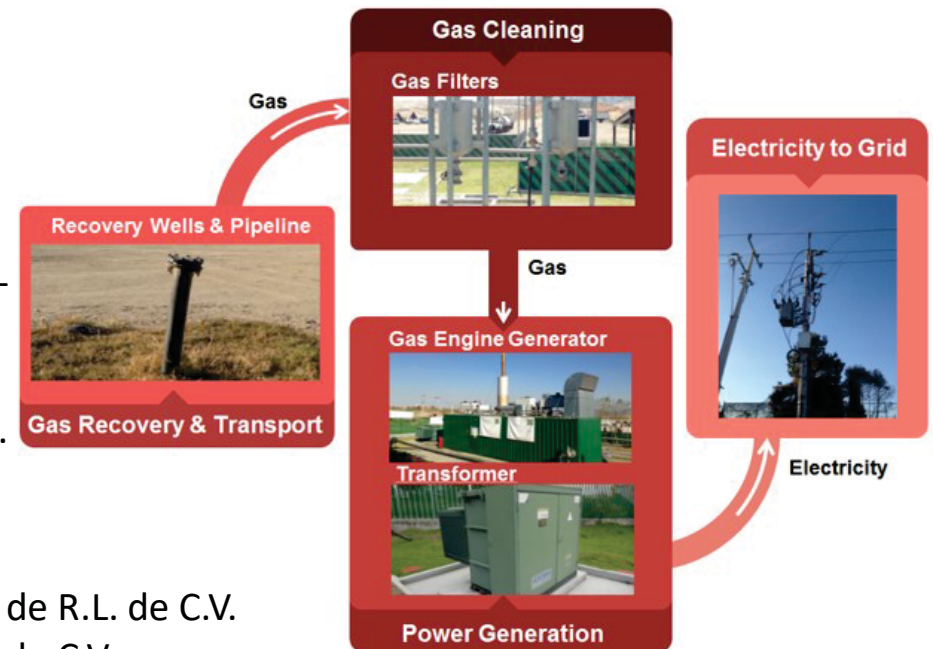
Partner Participant :

MGM Metano Mexicano, S. de R.L. de C.V.
Energreen Holdings, S.A.P.I. de C.V.

Expected GHG Emission Reductions

122,314 tCO2/year

Introduced technology:



ON-GOING JCM MODEL PROJECTS IN MEXICO

#	Project Title	Year	Entity (Representative company)	Status	Type
2	Introduction of Once-through Boiler and Fuel Switching to Tequila Plant	2016	Suntory Spirits Limited	Active	Energy Efficiency

Outline of the Project:

In this project, **Once-through boilers** will be installed instead of the existing fire tube boilers at Tequila Plant in Mexico. This project aims to improve boiler efficiency itself and to reduce the loss when the boilers startup and are low loading.

This project also aims to reduce about 30% CO2 emission **by fuel switching from oil to natural gas.**

Location :



Partner Participant :

Tequila Sauza S. de R.L. de C.V.

Expected GHG Emission Reductions

3,435 tCO2/year

Introduced technology :



Once-through boiler (MIURA)

ON-GOING JCM MODEL PROJECTS IN MEXICO

#	Project Title	Year	Entity (Representative company)	Status	Type
5	Introduction of Energy Efficient Distillation System to Tequila Plant	2018	Suntory Spirits Ltd.	Installing	Energy Efficiency

Outline of the Project:

Tequila Sauza joined Suntory group in 2014, introduces **energy saving distillation system** to reduce the steam in distillation process.

Distillation of tequila needs large amount of steam. In this project, half of steam reduction is estimated.

Location :



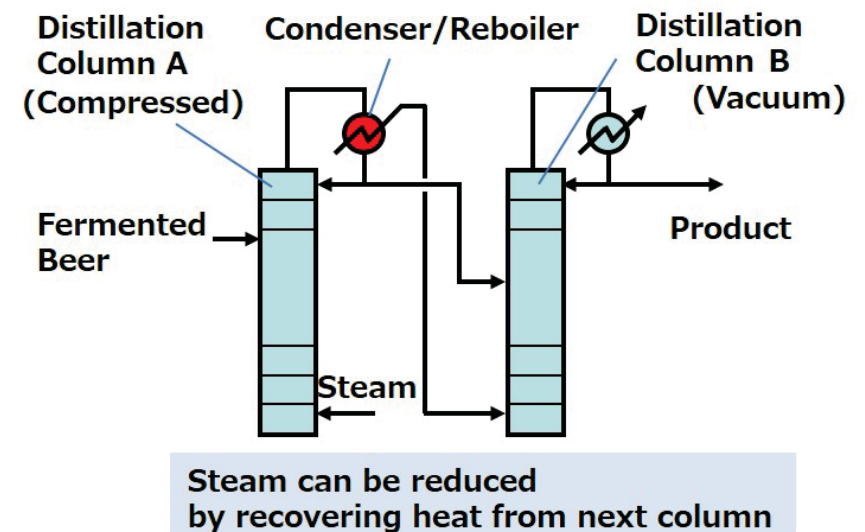
Partner Participant :

Tequila Sauza

Expected GHG Emission Reductions

1,493 tCO2/year

Introduced technology :



2.5 Target of CO2 reduction in Mexico

- In 21/09/2016, Mexico voluntarily pledged to reduce GHG emissions and NDC (nationally determined contribution) was submitted to UNFCCC based on Paris Agreement as follows.
- It is targeted that emissions intensity per unit of GDP will reduce by around 40% from 2013 to 2030 (unconditional reduction)

Target	By 2030	(CO2)	(Black Carbon)
Unconditional reduction	25%	(22%)	(51%)
Conditional reduction with international support	40%	(36%)	(70%)

*reduction target is set based on Business as Usual (BaU) scenario projection from 2013

3 NIPPON KOEI'S EXPERIENCES IN JCM

- Supported the project formation, methodology development and registration of the **1st JCM project in the world** (Energy Saving for Air-conditioning and Process Cooling at Textile Factory, in Indonesia)



Introduced Technologies (examples)



- Chillers (HVAC)
- Boilers
- PV+EMS+Battery
- Biomass power plant, etc.

	Project Study	Project Formulated	Methodology	Project registration
Indonesia	Yes	Yes	Yes	Yes
Vietnam	Yes	Yes		
Bangladesh	Yes	Yes	Yes	Yes
Myanmar	Yes	Yes	On going	On going
Thailand	Yes	Yes	Yes	On going
Philippines		On going		
Chile	Yes	Yes		
Mexico	Yes	Yes	On going	On going
Costa Rica	Yes	On going		
Maldives		Yes	On going	On going
Kenya	Yes			
Ethiopia	Yes			

4 JCM MODEL PROJECT (EXAMPLE: REGENERATIVE BURNER)

Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding Furnace of the Automotive Components Manufacturer (Indonesia)

PP (Japan): Toyotsu Machinery Corporation
Hokuriku Techno Co., Ltd.

PP(Indonesia): PT. TOYOTA TSUSHO INDONESIA

PT. YAMAHA MOTOR PARTS MANUFACTURING INDONESIA

PT. HOKURIKU TECHNO INDONESIA

PT. MATAHARI WASISO TAMA

Outline of GHG Mitigation Activity

Replacing a conventional burner with a **high-efficiency regenerative burner** for an aluminum holding furnace improves energy saving and reduces GHG emissions. YPMI has an aluminum wheel die casting line with 11 crucible type holding furnaces. Local furnace manufacturer PT. Matahari replaces and modifies the furnaces supervised by the branch of Japanese furnace manufacturer Hokuriku Techno. PT. Matahari acquires sophisticated furnace design and manufacturing knowhow of regenerative burner furnaces and their tuning/maintenance techniques.

Expected GHG Emission Reductions

857 tCO₂/year

Sites of JCM Model Project



Kawasan Industri KIIC,
Karawang, West Java, Indonesia



4 JCM MODEL PROJECT (EXAMPLE: HVAC)

Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller (Indonesia)
PP (Japan): NTT FACILITIES, INC. / PP(Indonesia): PT.PAKUWON JATI Tbk

Outline of GHG Mitigation Activity

The project aims to reduce electricity consumption in the shopping mall through introducing advanced & efficient Japanese centrifugal Chiller system.

The project is to replace existing central cooling system with high efficient centrifugal chiller with capacity of 966USRT x 4 sets and 569USRT x 1 set in Pakuwon's shopping mall, Tunjungan Plaza, as well as to replace existing 8 cooling towers with efficient Japanese models.

Expected GHG Emission Reductions

996 tCO₂/year

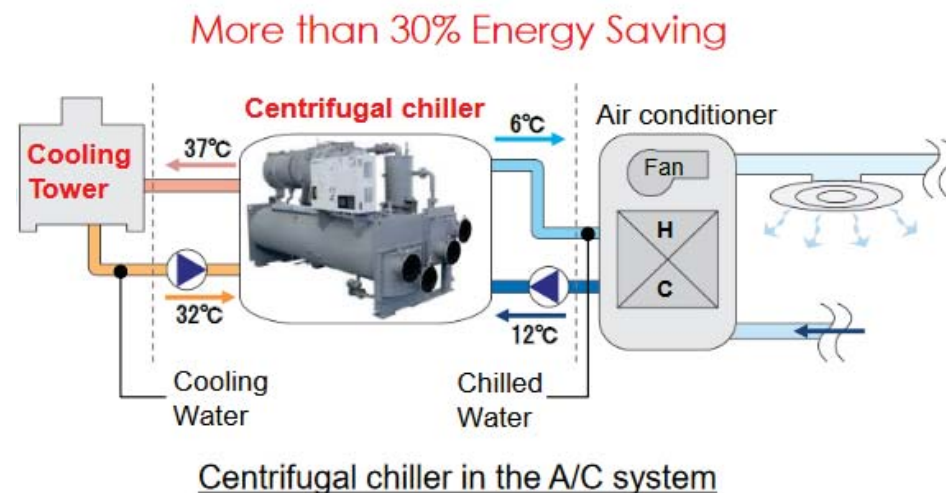
Sites of JCM Model Project



Java Island



Tunjungan Plaza(@Surabaya)



4 JCM MODEL PROJECT (EXAMPLE: WASTE HEAT RECOVERY)

Power Generation by Waste-heat Recovery in Cement Industry (Indonesia)

PP (Japan): JFE Engineering Corporation / PP(Indonesia): PT Semen Indonesia (Persero) Tbk

Outline of GHG Mitigation Activity

The proposed project is planned to introduce a **waste heat recovery (WHR) boiler steam turbine generator system** at an existing cement production plant (PT Semen Indonesia, Tuban Plant) located in Tuban, East Java, Indonesia. The WHR system utilizes waste heat currently emitted from the cement factory without utilization. WHR boilers generate steam using the waste heat exhausted from the cement plant, and the steam is fed to the steam turbine generator to generate electricity.

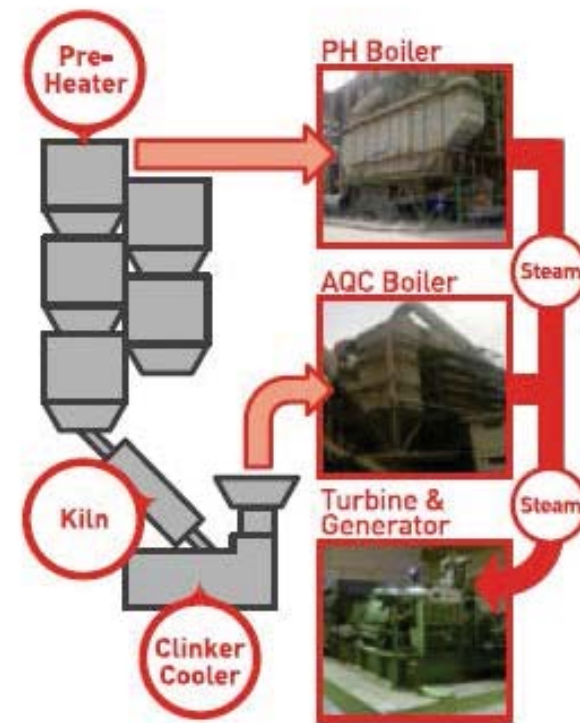
Expected GHG Emission Reductions

149,063 tCO₂/year

Sites of JCM Model Project



Tuban, East Java, Indonesia



5 PROJECT DEVELOPMENT IN MEXICO

To develop feasible JCM projects

1. **GHG reduction:** From fossil fuel combustion needs to be reduced, and more than 1,000 tCO₂/yr reduction (indicatively) is expected

Emission Reduction

=Emission of Reference Scenario – Emission of Project Scenario

Scenario	Energy Efficiency (EE)		Renewable Energy (RE)	
BaU	Existing Equipment		n.a.	
Reference	- New equipment normally in the market - Conservative emission factor of fuel		Energy produced at conservative grid emission factor	
Project	New equipment to be installed with support		Zero emission	
Emission Factor	EE, Other case	EE, Self diesel generation only	RE, Other case	RE, Self Diesel generation only
tCO ₂ /MWh	0.528	0.8	0.434	0.533

5 PROJECT DEVELOPMENT IN MEXICO

To develop feasible JCM projects

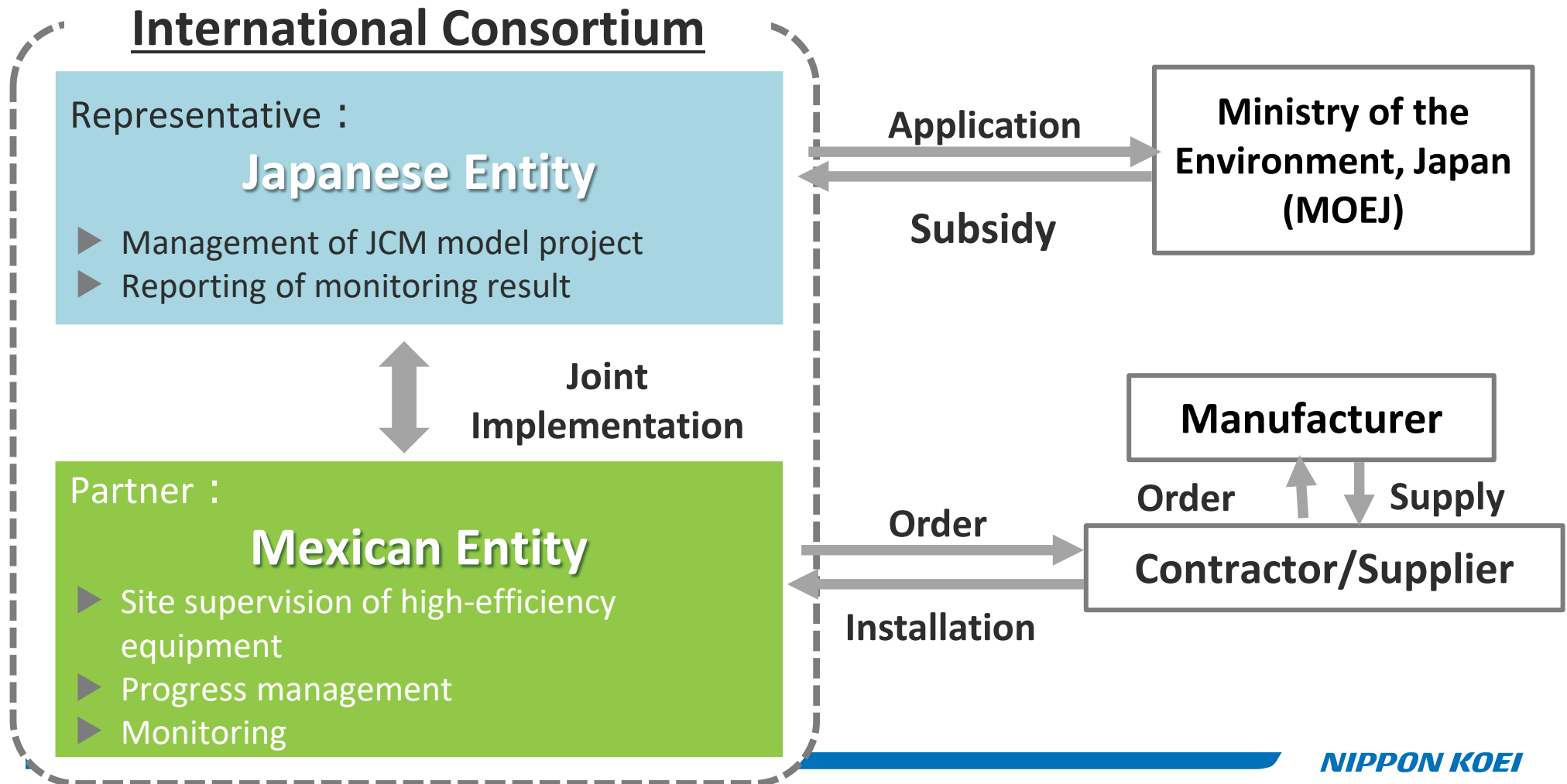
2. Maximum subsidy amount: Smallest among

- ▶ GHG reduction (tCO₂/yr) x Project duration (yr) x 35 USD/tCO₂
- ▶ 50% of the cost of core technology to reduce GHG (it will decrease up to 30% in accordance with the approved projects in each country)
- ▶ 18 million USD
- ▶ Project duration will be set in accordance with Japanese law of Ministry of Finance (ex. 17 yrs for PV, 10 years for food industry)
- ▶ 0.5 million USD of subsidy is minimum preferred project scale
- ▶ With subsidy, pay-back period should be more than 3 years

5 PROJECT DEVELOPMENT IN MEXICO

To develop feasible JCM projects

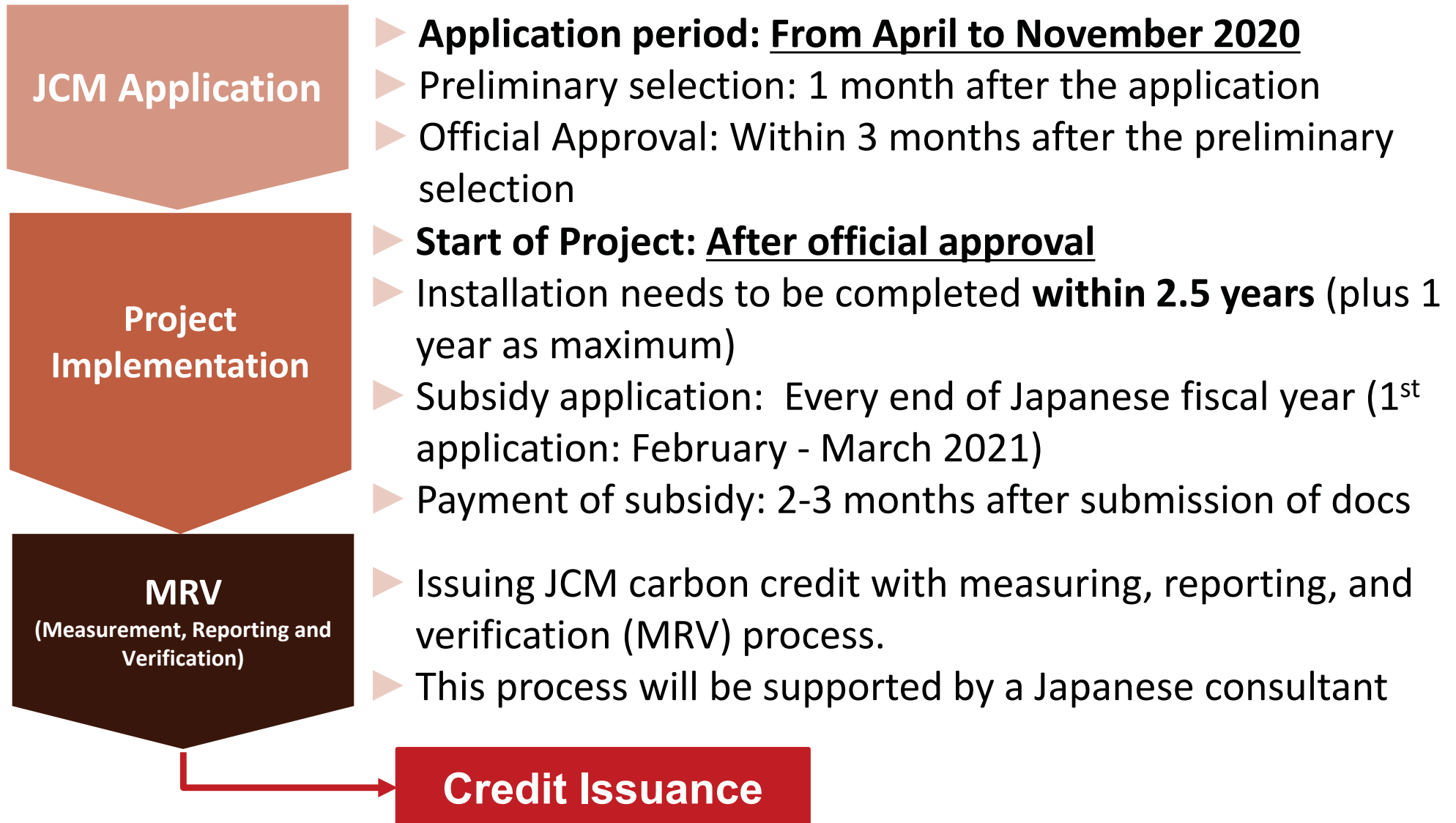
3. Partnering with Japanese company: To apply JCM model project, at least one Japanese and one Mexican entity shall form an international consortium.



5 PROJECT DEVELOPMENT IN MEXICO

To develop feasible JCM projects

4. Schedule



6 CONSULTING SERVICE BY NIPPON KOEI

Please provide following information to consult with us

1. Project information

- ✓ Project duration (yr) will be set by Japanese law based on the project type with applied technology
- ✓ Project cost with economic analysis (pay-back and/or IRR)

2. Type of GHG reduction

- ✓ A) Energy saving: The original power source is from the grid or the power generated by the project owner
- ✓ B) Renewable energy: power is injected to the grid, or is solely used for self consumption

3. Calculation of CO₂(GHG) reduction

- ✓ Annually saved energy (MWh or fossil fuel amount), or
- ✓ Annually generated renewable energy (MWh)

6 CONSULTING SERVICE BY NIPPON KOEI

Please provide following information to consult with us

4. Project process

- ✓ Necessary permissions and the plan to obtain them
- ✓ Progress of internal decision on investment for the project (possibly with the condition of receiving subsidy)

5. Relationship with Japanese companies

- ✓ Potential Japanese partner (Nippon Koei may support)
- ✓ Potential provider for leading low carbon technologies

6. Project schedule

- ✓ Next call for proposal: Apr-Nov 2020 (Tentative)
- ✓ Official selection: Several month after submission (Contract with EPC and purchase order can be made after this timing)
- ✓ The project completion: By the end of Jan 2024 (Max)

6 CONSULTING SERVICE BY NIPPON KOEI

Schedule for 2020

(Tentative, to be officially announced in March 2020)

Call for proposal (tentative): Apr-Nov 2020 until budget ends

Model case:

May: Submission of proposal

July: Initial notification of selection

Sept-Oct: Official contract and start of the model project

*the procurement will be eligible for the subsidy only if the contract or purchase order is made after the official contract signing

6 CONSULTING SERVICE BY NIPPON KOEI

Please feel free to send e-mail to following address

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Muchas gracias!!