

***3E Nexux towards Building Resilience Societies and Implications to Sustainable Development Goals (SDG's) in Asia-Pacific Region***

***Potential of JCM Projects  
for Sustainable Development of Low Carbon Societies***

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- 2 : JCM City-to-city Collaboration Project, case of Yangon**
- 3 : How to develop JCM Project**

# 0 : Introduction



# Introduction, corporate information

**NIPPON KOEI CO., LTD.** (*Establish. June 1946*)

*Number of Employees : 4,336 (consolidated), 1,936 (non-consolidated)*

- 1) Nippon Koei is the oldest independent consulting firm in Japan.*
- 2) Nippon Koei is Japan's No.1 international engineering consultants.*
- 3) Nippon Koei has worked on over 3,000 infrastructure projects in 135 countries all over the world.*

*[ NK's network ]*



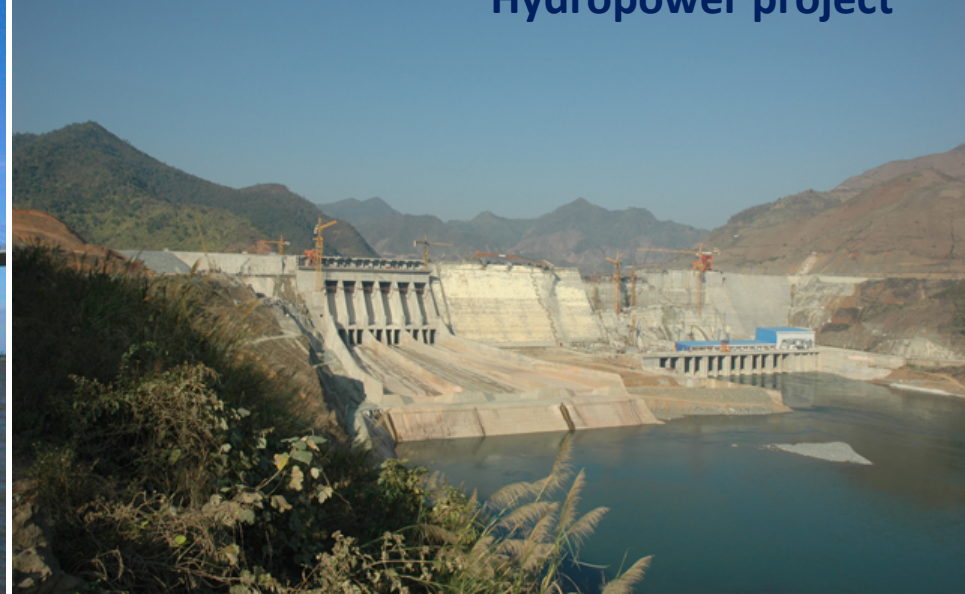


# Introduction, NK's experiences

Bridge project



Hydropower project



Port development



Road construction



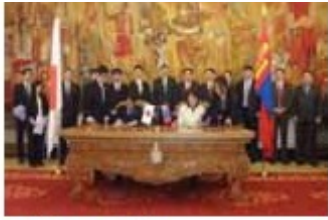


# 1 : What is Joint Crediting Mechanism?



# JCM partner countries

Since 2011, Japan has held consultations for the JCM with developing countries and has established the partnership with Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar, Thailand and Philippines (currently **17** partners).



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)



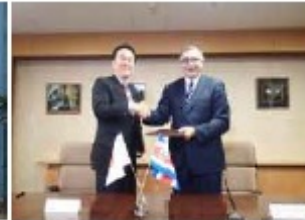
Viet Nam  
Jul. 2, 2013  
(Hanoi)



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)



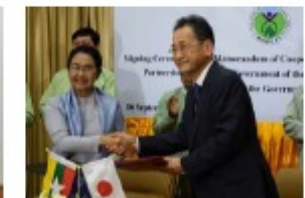
Mexico  
Jul. 25, 2014  
(Mexico City)



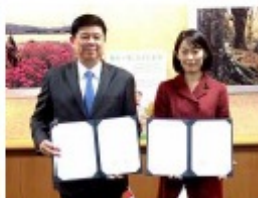
Saudi Arabia  
May 13, 2015



Chile  
May 26, 2015  
(Santiago)



Myanmar  
Sep. 16, 2015  
(Nay Pyi Taw)

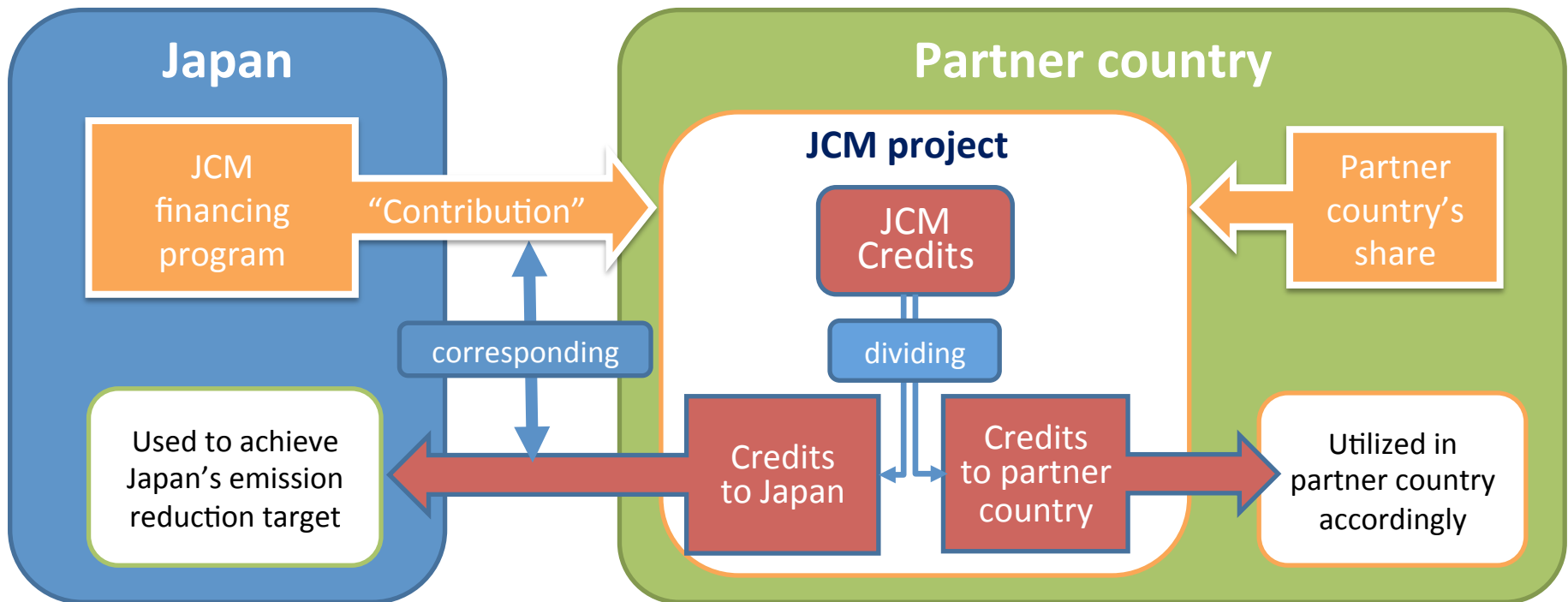


Thailand  
Nov. 19, 2015  
(Tokyo)

**In addition, the Philippines has just joined partner countries on January 12, 2017.**



# JCM scheme



## Joint Crediting Mechanism (JCM) is

- Facilitating diffusion of leading low carbon technologies and contributing to sustainable development of partner countries.
- Appropriately evaluating contributions from Japan to GHG emission reductions and use them to achieve Japan's emission reduction target.
- Support of initial investment cost up to 50% from Government of Japan.

# JCM financing program

The budget for projects starting from FY 2016 is 6.7 million JPY (approx. USD 67 million) in total by FY 2018.

Finance part of an investment cost (less than half)

Government of Japan

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

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 (3) years.



## 2 : JCM City-to-city collaboration project



# Background etc.

## 【Background】

Yangon city is one of the rapid growth cities in the world, however, the city has faced several issues, such as power shortage, heavy traffic jam, water quality and its stable supply etc. Also, the private investment has been facilitated from not only domestic entities but also foreign entities, so the Yangon city has big business opportunity.

## 【Objectives】

- It aims to support establishment of Low Carbon Society in Yangon in order to mitigate GHG emissions and scrutinize mid-and-long term city-to-city collaboration between Yangon and Kawasaki.
- Under the collaboration, both cities cooperate:
  - (1) JCM project formulation with diffusion of advanced low carbon technologies and
  - (2) development of Low Carbon Action Plan which will be incorporated with Yangon's further development plan with share of Kawasaki's knowledge.

## 【Approach】

Advanced low carbon products /technologies  
from Japanese entities



Shared Kawasaki city's experience and knowledge on:

- Overcome of air and water pollution issues
- Preparation of low carbon action plan

Building  
a low carbon society  
in Yangon city  
through  
the settlement of issues



# Outlines

Yangon city



Kawasaki city

## Current issues of major sectors

### [Power]

Unstable power supply, stand-by(back-up) power system in industrial park/commercial facilities etc.

### [Transportation]

Heavy traffic jam, demand of mass rapid transit (MRT) system, insufficient parking lots, lack of consolidated logistics system etc.

### [Water supply & sewerage]

Decrepit water supply/sewerage facilities, expansion of the facilities in the suburb etc.

Support on environmental technology and industrial development collaborate with member of Kawasaki green innovation cluster etc.

## Development of Low Carbon Action Plan

### JCM Project Formulation

#### [Targets]

1) Industrial park

2) Shopping mall, office building etc.

3) Water supply/sewerage facilities

4) Additional power supply

#### [Technologies to be introduced]

a) High efficiency air conditioning facilities, energy saving fluorescent light, etc.

b) High efficiency air conditioning facilities, energy saving fluorescent light, etc.

c) High efficiency pumping system, low carbon technologies in water sector etc.

d) Solar power, biogas, biomass, mini hydropower etc.

JCM prj.  
formulation  
B to B

JCM prj.  
formulation  
B to G

# Development of Low Carbon Action Plan

Yangon's "Low Carbon Action Plan" is prepared in corporation with Kawasaki city in order to support development of JCM model projects.

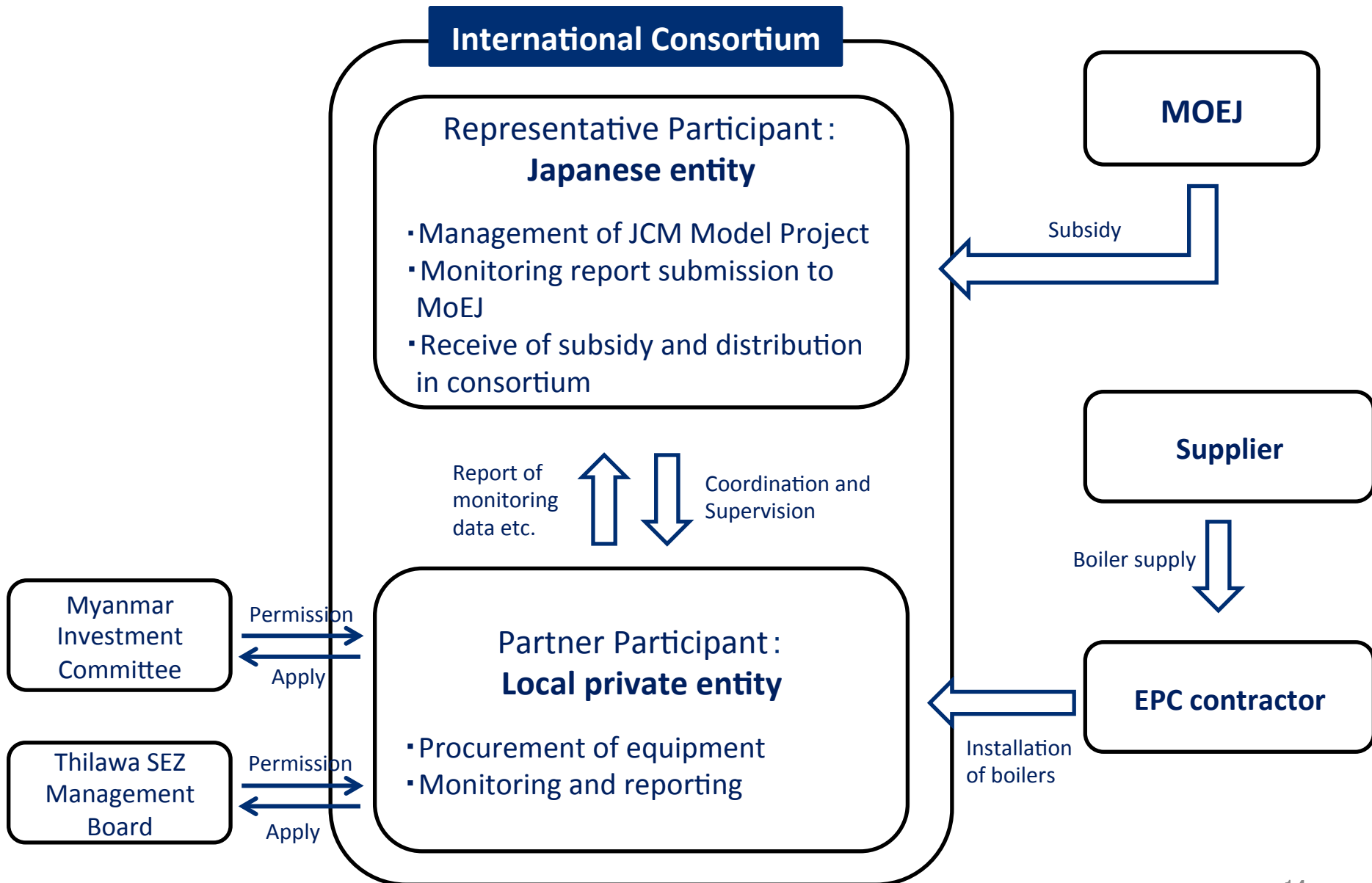




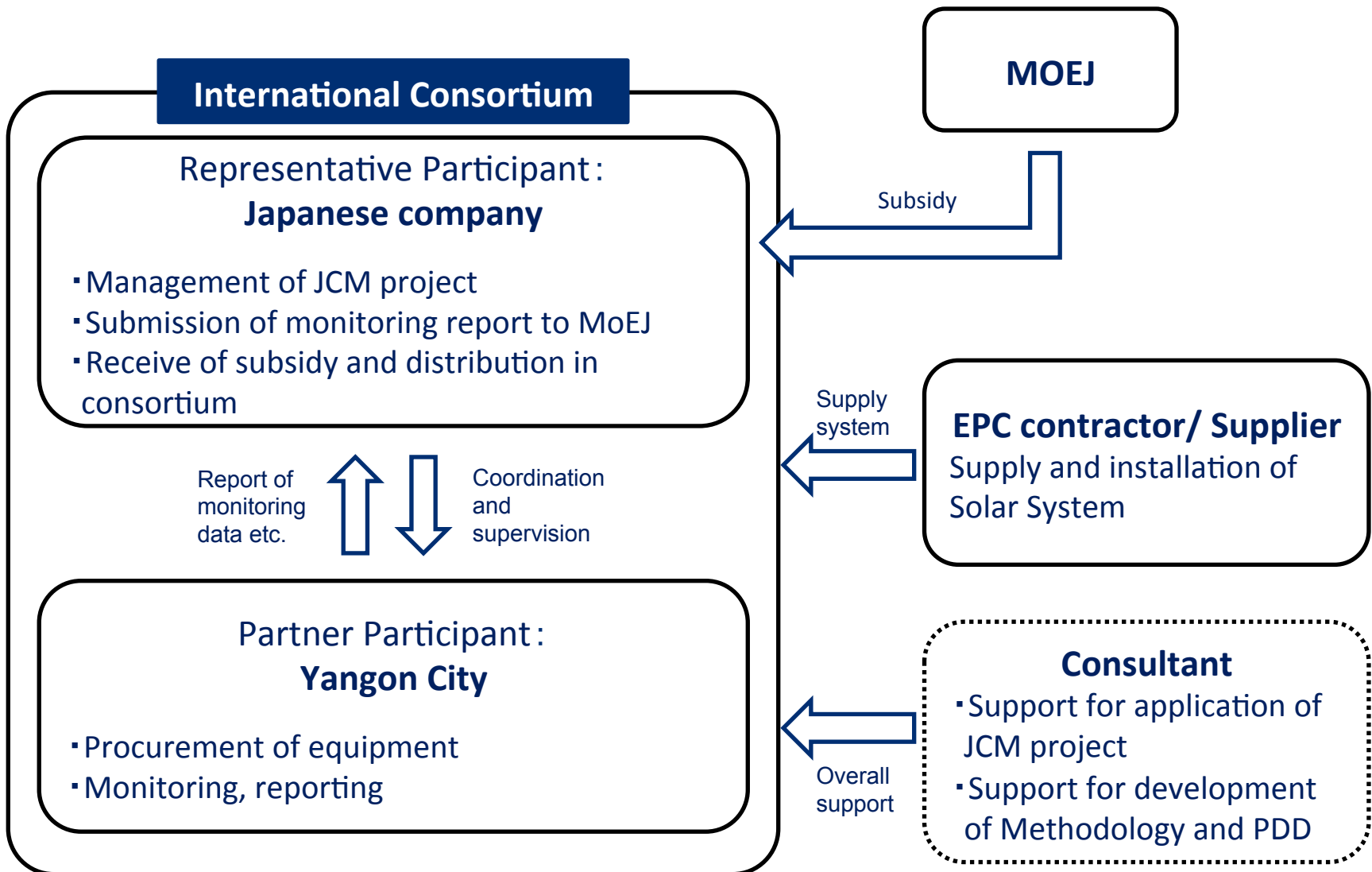
# 3 : How to develop JCM project



# Case 1 : B to B, Introduction of high efficiency Boiler



# Case 2 : B to G, Installation of Solar Generation system (1/2)

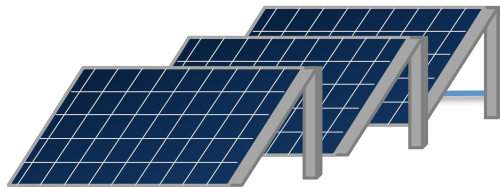




# Case 2 : B to G, Installation of Solar Generation system (2/2)

## Outlines of PV system

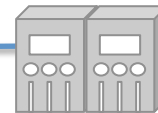
Solar PV generation system reduces electric energy usage in YCDC pumps



2.0 MW PV array in water treatment plant



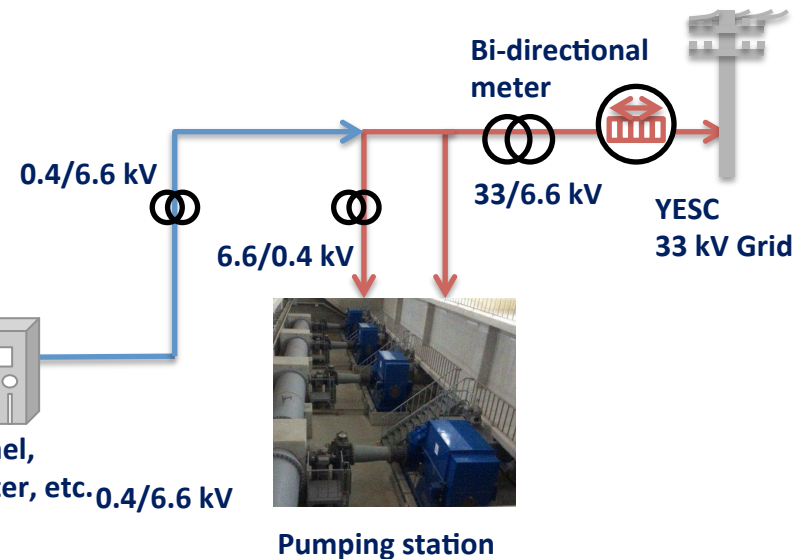
Power conditioners DC -> AC



Control panel, switch, meter, etc. 0.4/6.6 kV



Pumping station



- Solar PV generation system reduces electric energy usage in pumps in water supply facility
- Solar power for internal supply



Solar PV Installation Area



800 kW Booster Pumps

Item	Value
Average tariff	105 MMK/kWh
PV system efficiency	77%
Solar irradiation (Average)	4.69 kWh/m <sup>2</sup> /d
Planned capacity (Tentative)	2,000 kWp
Annual generation energy	2.85 GWh (8-10 % of consumption)
Annual saving	299 mil MMK
GHG emission reduction	1,015 ton/year

# Lesson learned

Through the JCM experience, the following points are necessary to confirm at

## 1) Implementation plan

*JCM financing program is scheduled based on the annual plan. Therefore, flexible implementation plan is preferable to apply to the scheme. See the example below.*

<i>Start of the application : Early April</i>	<i>Deadline of the submission : Around mid May</i>
<i>Selection of the model project : End of June</i>	<i>Notice of contract : Within 90 days after the selection</i>

## 2) Procurement plan

*Procurement plan is preferable not including tendering.*

## 3) Players

*Member of consortium shall be quick respond and cooperative until receiving the notice of contract.*

## 4) Technologies/products to be introduced, including measuring device

*Technologies and/or products to be introduced/renewed in the JCM model project contribute to energy saving/efficiency. Also, measuring device with international standard should be installed.*

## 5) Reference scenario

*To estimate GHG emission reduction, reference scenario (baseline scenario) shall be prepared logically with market share data etc.*

## 6) Cost benefit etc.

*It is necessary to satisfy with cost benefit (4,000[JPY/tCO<sub>2</sub>/year]) and investment recovery year (more than 3 years).*



*Thank you for your kind attention.*

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