JCM THE JOINT CREDITING MECHANISM

Recent Developments of the Joint Crediting Mechanism(JCM)

Seminar on the JCM Implementation in Thailand
19 December 2024

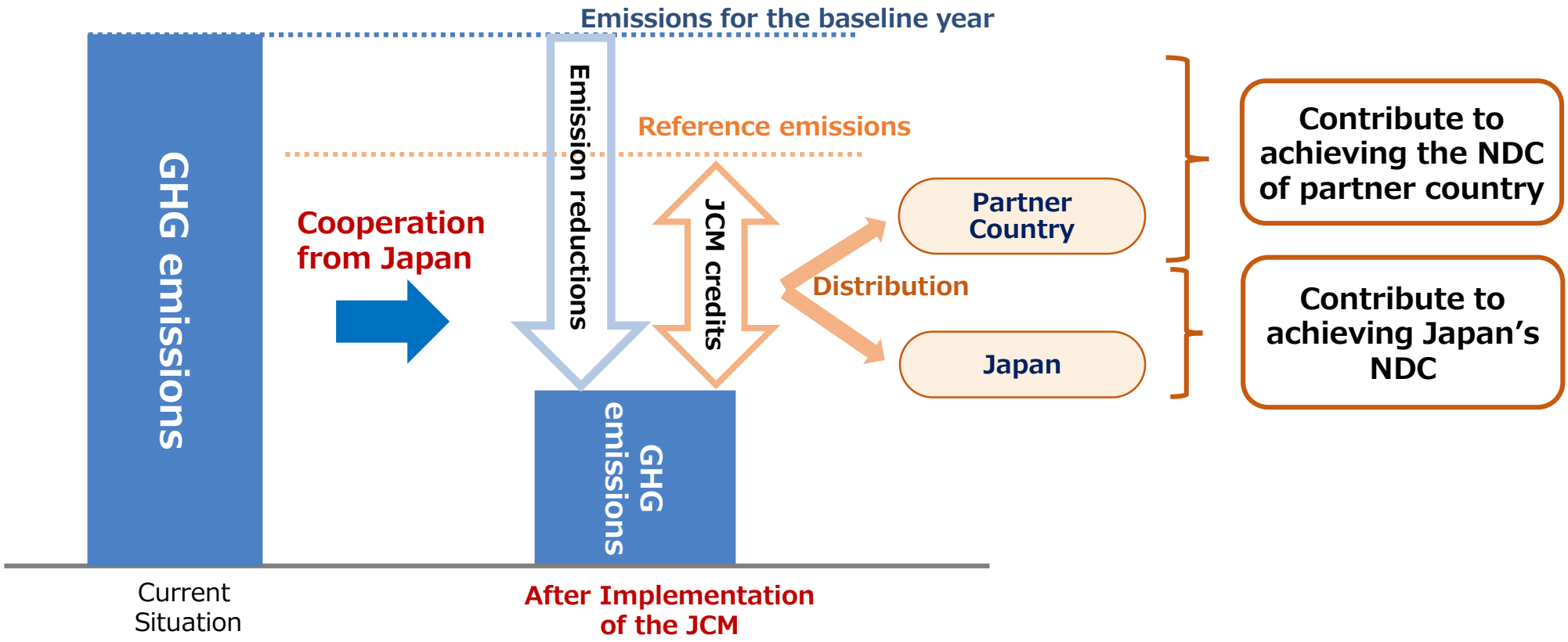
Ministry of the Environment, Japan

Ministry of the Environment

Basic Concept of the JCM

- In partner countries mainly in the Global South, Japanese companies and the Japanese government collaborate on implementing mitigation measures in terms of **technology and financial investment**. **The part of the achieved GHG emission reductions or removals will be shared as JCM credits** between the partner countries and Japan.
- Japan has established the JCM with **29 countries** and over **250 projects** are currently being implemented .(*JCM target: cumulative GHG emission reduction for 100 mil tons of CO2 eq. by 2030.)

Basic Concept



Benefits from the JCM

■ The JCM offers **Social, Economic, Environmental Benefits** to both Japan and partner countries.

Japan

- Exploring **New Business Opportunities**
- Enhancing **Corporate Value**
  → Attracting new investment
- Acquiring **JCM Credits**
  → **Contribute to NDC(Reduction & Absorption Target)**
  → Utilizing them for emission offset
  ※Generating revenue from their sale
- **Enhancing Presence** through contributions to global decarbonization

Partner countries

- Exploring **New Business Opportunities**
- Enhancing **Corporate Value**
  → Attracting new investment
- Diffusion of superior decarbonization technologies and products
- Contribute to NDC (Reduction and absorption target) of partner countries
- **Solving Social, Economic, Environmental issues** such as air pollution and infrastructure development

Variety of JCM project types

- So far, there have been **257 technology adoptions** in 18 countries.
  *Note: The number of adoptions exceeds the number of projects because multiple technologies can be implemented within a single project.
- 56% of these are related to renewable energy, followed by 34% for energy efficiency, making up the majority.

Renewable Energy

Solar power

Solar power, FARMLAND Co., Ltd., Chile

Floating Solar PV,TSB Co., Ltd.,Thailand

Hydro power

Hydro Power Plant, Toyo Energy Farm Co., Ltd., Indonesia

Biogas

Biogas Power Generation, ITOCHU Corporation, Philippines

Geothermal power

Binary Power Generation Project at Geothermal Power Plant, MHI, Ltd., Philippines

Variety of JCM project types

Energy efficiency

Consumer sector

Energy saving at convenience stores, Panasonic, Indonesia

High-efficiency refrigerator, Mayekawa MFG, Indonesia

Introduction of Amorphous High Efficiency Transformers in Power Grid , Yuko Keiso Co., Ltd. , ①Vietnam, ②Lao PDR

Industrial sector

Energy-saving of mobile communications base transceiver stations, KDDI Corp. Indonesia

Optimization in petroleum refining plant, Yokogawa Electric Corp. Indonesia

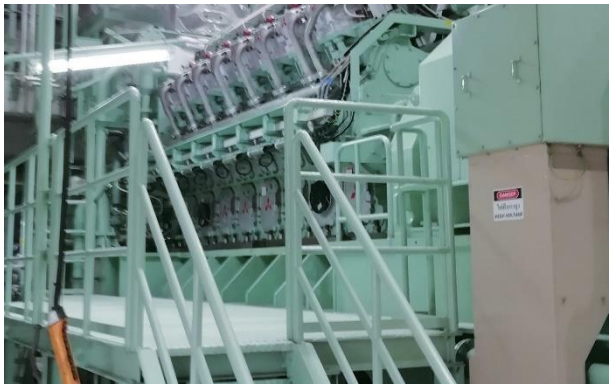
Introduction of High Efficiency Once Through Boiler to Garment Factory, Osaka Gas Co., Ltd., Thailand

Variety of JCM project types

Waste

Waste to Energy Plant,
JFE engineering, Viet Nam

Effective Use of Energy



Gas Co-generation System and Absorption Chiller, Kansai Electric Power, Thailand

F-gas

Development of a Fluorocarbon Collection and Destruction Model Project in Metro Manila, Philippines Utilizing Mixed Combustion Technologies , Marubeni Corporation, Philippines

Transport

CNG-Diesel Hybrid Public Bus,
Hokusan Co., Ltd., Indonesia

REDD+

REDD+ project in Luang Prabang Province through controlling slash-and-burn, Waseda University,

List of JCM partner countries and projects supported by MOEJ (FY2013-2024) as of December 6, 2024

環境省

Total 255 projects (29 partner countries)

(Model Project: 238 projects(including Eco Lease: 7projects), ADB: 8 projects, UNIDO: 1 project, REDD+: 2 projects, F-gas: 4 projects, New Technology : 2project)

Eastern Europe

- 20. Azerbaijan
- 21. Moldova
- 22. Georgia
- 29. Ukraine

Asia Pacific

- 1. Mongolia:11 projects
- 2. Bangladesh: 5 projects
- 5. Maldives: 4 projects
- 6. Viet Nam: 50 projects
- 7. Laos: 6 projects
- 8. Indonesia: 52 projects
- 10. Palau: 7 projects
- 11. Cambodia: 5 projects
- 15. Myanmar: 8 projects
- 16. Thailand: 51 projects
- 17. Philippines: 20 projects
- 23. Sri Lanka: 3 projects
- 24. Uzbekistan
- 25. Papua New Guinea
- 27. Kyrgyz Republic
- 28. Kazakhstan

Latin America

- 9. Costa Rica: 2 projects
- 12. Mexico: 5 projects
- 14. Chile: 16 projects

Africa

- 3. Ethiopia
- 4. Kenya: 5 projects
- 18. Senegal
- 19. Tunisia: 2 projects

Middle East

- 13. Saudi Arabia: 3 projects
- 26. UAE

JCM projects in Thailand

- On November 19th, 2015, Japan and Thailand signed the bilateral document of the JCM.
- 51 projects and 58 technologies have been currently being implemented in Thailand. (Some projects introduce multiple technologies)
- Renewable energy accounts for the majority at 48%, followed by energy efficiency improvement at 40%.

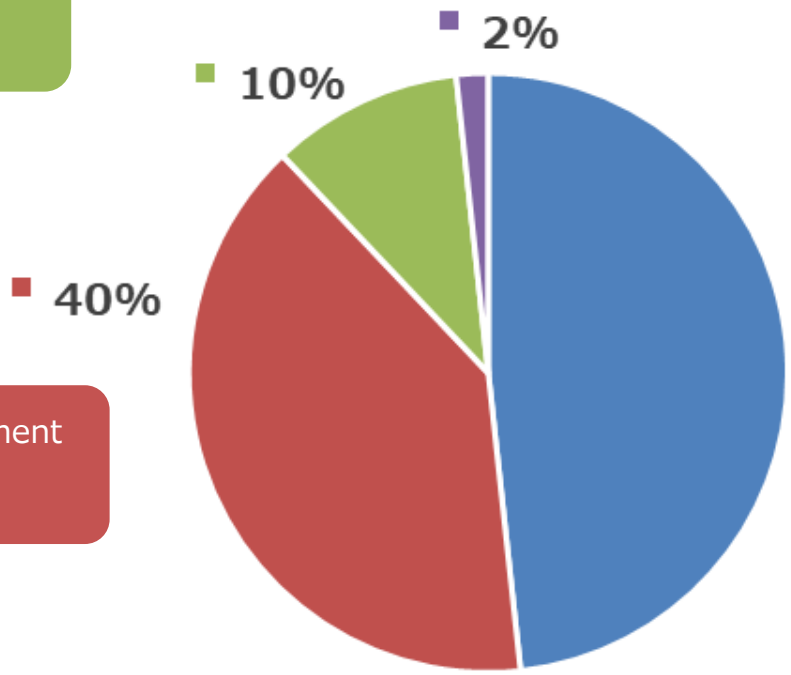
as of December 6, 2024

Effective Use of Energy (6projects) 10%

- Waste to Energy
- Co-generation System

F-gas(1projects) 1%

- F-gas Recovery and Destruction



Energy Efficiency Improvement (23projects) 40%

- Boiler
- Air conditioning
- Chiller
- Others

Renewable Energy(28projects) 48%

- Solar power system
- Biomass Power Generation
- Others

Overview of Japan's support for the JCM partner countries

Ministry of the Environment

Programme	Type of support
Project development/capacity building/MRV support	Technical cooperation
Finance Programme for JCM Model Projects*	Subsidy(Grant)
Finance Programme for F-gas Recovery and Destruction Model Projects*	
Japan Fund for the JCM (JF JCM) - managed by ADB	
JCM support programme by UNIDO*	
Demonstration Programme for Application of New Decarbonizing Technology*	

* These programmes can support projects implemented by government-owned companies but not those implemented by the government itself.

Ministry of Economy, Trade and Industry

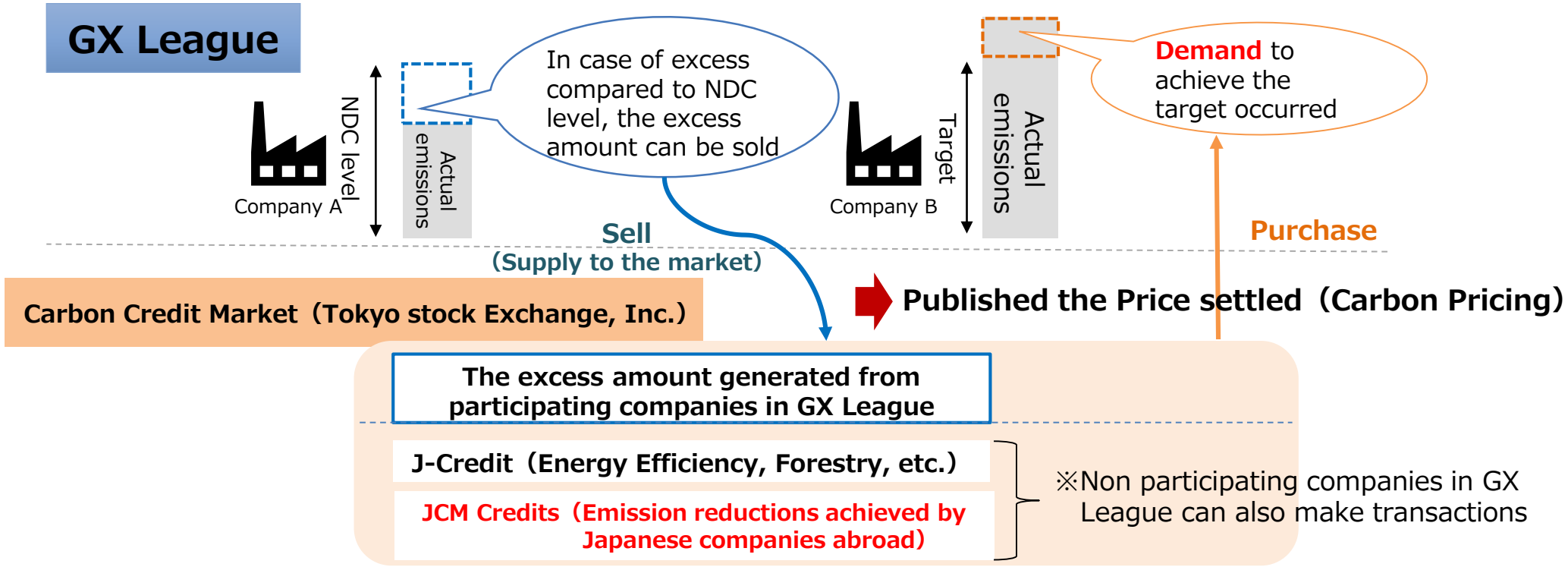
JCM Feasibility Study	Technical cooperation
JCM Demonstration Programme	Government-commissioned project
New JCM methodologies development study/ JCM Crediting support / MRV application study	Technical cooperation

Ministry of Agriculture, Forestry and Fisheries

Development of MRV for JCM projects in Agriculture –implemented by ADB	Technical cooperation
Field studies for JCM REDD+	Government-commissioned project

Potential use of JCM Credits

- JCM credits acquired by companies through private JCM can be utilized for the purpose of carbon offsetting.
  - The domestic calculation, reporting, and publication system (SHK system)
  - Use for the achievement of companies' voluntary targets in the GX League
  - Carbon offsetting
- In the GX League, participating companies are supposed to be engaged in emission trading in the Carbon Credit Market under Tokyo Stock Exchange, Inc in order to achieve their targets. Pricing and monetization of the JCM credits will be expected through trading JCM credits in the Carbon Credit Market.



Scheme of the JCM

Project Participants

- Implementation & monitoring of projects

Submit **PIN/PDD**

Japan

Government
- Issuance of credits by JC decision

Joint Committee (Secretariat)
- Confirmation of no objection to PIN
- Registration of projects
- Decision of issuance of credits

Government
- Issuance of credits by JC decision

Partner Country

Submit PDD /monitoring report

Inform results of validation /verification

Third party entities
- Validation of projects
- Verification of amount of GHG emissions reduction or removal

★To implement projects in Thailand, participants need to follow RoI for the JCM track under Premium T-VER

Flow of the JCM

- Submission of PIN*
- Confirmation of no objection
- Submission of Proposed Methodology
- Approval of Proposed Methodology
- Development of PDD*
- Validation
- Registration
- Monitoring
- Verification
- Issuance of credits

<Terminology>

- **PIN (Project Idea Note)**: A document used to explain the outline of the project to the partner country and confirm whether there is an objection.
- **PDD (Project Design Document)**: A document that includes monitoring methods and estimated emission reductions. Required for project registration.

JCM Website

URL: https://www.jcm.go.jp/

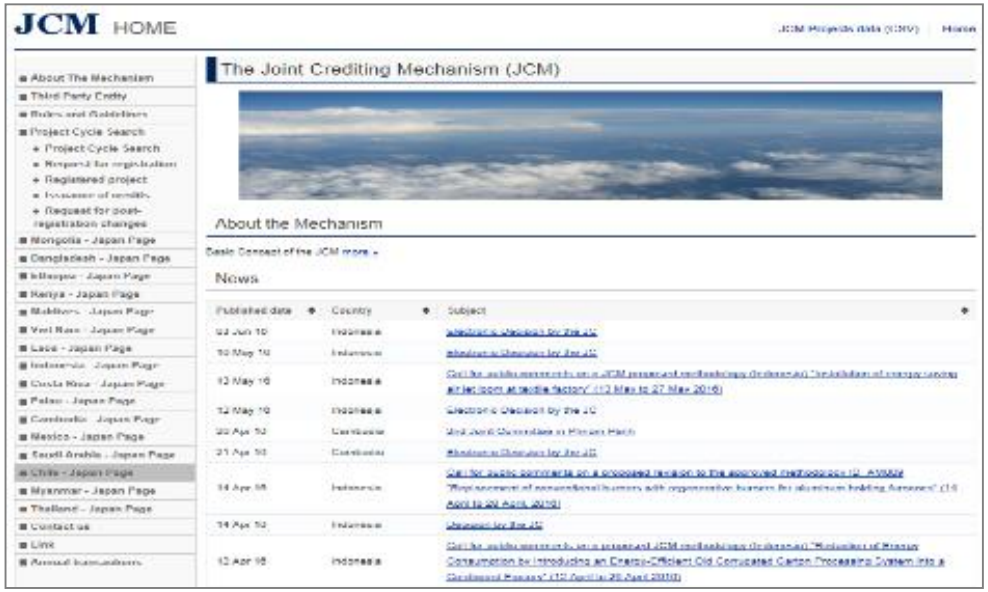
Contents

- General information page
- Individual JCM Partner countries-Japan page

Function

- Information sharing to the public, e.g.,
  - the JC decisions
  - rules and guidelines
  - methodologies and projects
  - issuance of JCM credits
  - call for public inputs/comments
  - status of TPEs, etc.
- Internal information sharing for the JC members, e.g.
  - File sharing for electric decisions by the JC

▼Image of the general information page



▼Image of the individual JCM Partner countries-Japan page

Thank you for your kind attention

JCM THE JOINT CREDITING MECHANISM

Contact: info@jcm.go.jp

Seminar on the Joint Crediting Mechanism (JCM) Implementation in Thailand

– Further Contributions to GHG Emission Reductions in Thailand through the JCM –

Introduction of JCM & Benefit from Development of JCM Project

By Dr. Puttipar Rotkittikhun

Director of Carbon Credit Certification Office

Thailand Greenhouse Gas Management Organization

Thursday, December 19, 2024

09:00-12:00 Thailand Time

Mayfair Ballroom A, The Berkeley Hotel Pratunam, Bangkok

Implementation of JCM in Thailand

MoC Signing Ceremony

19 Nov 2015

Royal Thai Embassy
Tokyo

No. 25801/3078

The Royal Thai Embassy presents its compliments to the Ministry of Foreign Affairs and, with reference to the Ministry's Note No. 4503/ECG-C dated 27 December 2016, accepting the proposal on the modification of paragraph 11 of the Draft Revised Bilateral Cooperation on the Joint Crediting Mechanism for the Low Carbon Growth Partnership, has the honour to inform the latter that Thailand has agreed to extending the said cooperation until 31 December 2030. The final revised Bilateral Cooperation on the Joint Crediting Mechanism for the Low Carbon Growth between the Kingdom of Thailand and Japan is enclosed herewith for the Ministry's kind perusal.

The Royal Thai Embassy avails itself of this opportunity to renew to the Ministry of Foreign Affairs the assurances of its highest consideration.

Climate Change Division,
International Cooperation Bureau,
Ministry of Foreign Affairs,
TOKYO.

Extension of MoC

4 Nov 2016

Adoption of A6.2 Guidance

- **ITMOs**
- **Corresponding adjustment**
- **Reporting to UNFCCC**

13 Nov 2021

(Unofficial Translation)

Carbon Credit Management Guideline and Mechanism

Whereas it is expedient to prescribe the guideline and mechanism regarding carbon credit management for the purpose of supporting achievement of the national greenhouse gas emissions reduction targets under the Paris Agreement and the United Nations Framework Convention on Climate Change in an efficient manner which will promote suitable management to address climate change problems in Thailand in a manner consistent with international commitments;

By virtue of the provisions of clauses 8 (2) (5) and (7) of the Regulations of the Office of the Prime Minister on Implementation on Climate Change, B.E. 2550 (2007), as amended by the Regulations of the Office of the Prime Minister on Implementation on Climate Change (No. 5), B.E. 2561 (2018), the National Committee on Climate Change Policy hereby prescribes the carbon credit management guideline and mechanism, as follows;

"Committee" means the National Committee on Climate Change Policy.

"Chairman" means the chairman of the National Committee on Climate Change Policy.

"Organization's Board" means the board of directors of the Thailand Greenhouse Gas Management Organization.

"Office" means the Office of Natural Resources and Environmental Policy and Planning.

"Organization" means the Thailand Greenhouse Gas Management Organization (Public Organization).

"State agency" means a ministry, a sub-ministry, a department, or a government agency called by any other name and ascribed the status of a department, a provincial administration, a local administration, a state enterprise, a public organization, or any other state agency.

"Person" means a natural or juristic person.

"Convention" means the United Nations Framework Convention on Climate Change, adopted in New York on 9 May 1992.

"Paris Agreement" means the Paris Agreement under the Convention.

"Conference of the Parties" means the Conference of the Parties to the Convention serving as the meeting of the parties to the Paris Agreement.

Translation by **Baker & McKenzie Ltd.** for Thailand Greenhouse Gas Management Organization (Public Organization) , Provisional version – subject to final authorization by Thailand Greenhouse Gas Management Organization (Public Organization)

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Carbon Credit Management Guideline and Mechanism

16 Mar 2022

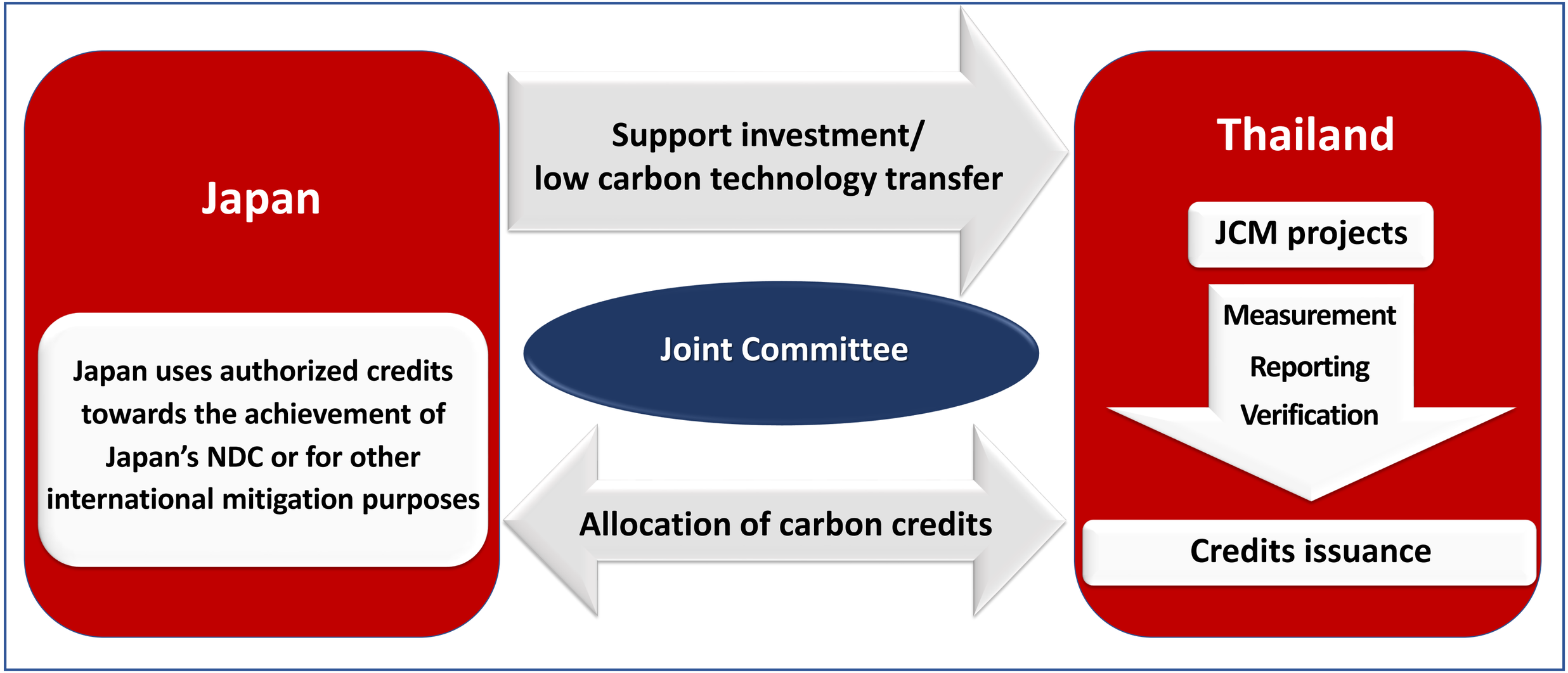
New MoC* Signing Ceremony

8 Jul 2024

MoC: Memorandum of Cooperation on JCM Source: https://ghgreduction.tgo.or.th/th/download-jcm/73-2017-11-28-15-33-05.html?start=12

A6.2: Article 6 paragraph 2 of the Paris Agreement Source: https://unfccc.int/process/the-paris-agreement/cooperative-implementation

Joint Crediting Mechanism: JCM



NDC: Nationally determined contributions (NDCs) Source: https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs

Current Status of JCM in Thailand

JCM Thailand - Japan

Signed on 19 Nov 2023

	JCM Model Project	Registered project	project
Number of Project	48	11	5
GHG reduction	244,978 tCO_2eq/year	58,096 tCO_2eq/year	4,032 tCO_2eq

49) F-gas Recovery and Destruction Project

50) Power Grid Utilizing Online Voltage-var (Q) Optimal Control (OPENVQ) with ICT

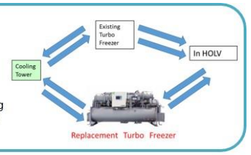
As of November 30, 2024

4

Approved JCM Methodologies

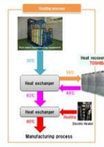
Centrifugal Chiller
MHI ETI-50

- Refrigerant: R-134a
- Cooling capacity: 460 USRt
- To replace one of two existing air conditioning turbo freezers, one will be utilized for backup
- COP will increase from 5.43 to 6.22

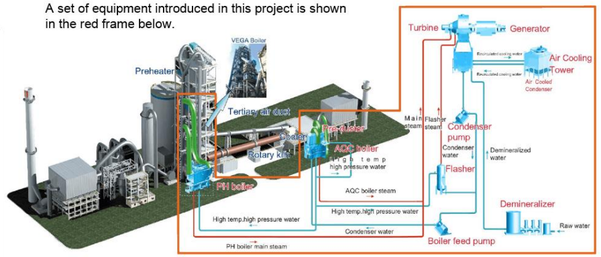


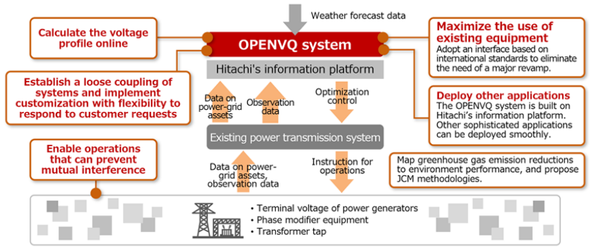
Heat Recovery Heat-pump
TOSHIBA CAONS (HWC-WH6702V)

- Hot water supply (Temperature range: 50-85 degrees Celsius)
- Heat capacity; 60kW, Cool capacity; 42.3kW
- Saving energy by the hot and cold water supply simultaneously, then total COP has been achieved 5.7



A set of equipment introduced in this project is shown in the red frame below.





Energy Industries: 2

1. solar energy
2. natural gas cogeneration

Energy Demand: 13

1. LED
2. electrolyzer
3. fridge
4-6. chiller (centrifugal (2), screw (1))
7. refrigerator
8. evaporator
9. boiler
10. heat pump
11. ventilation
12. loom
13. compressor

Energy Demand and Manufacturing Industries: 1

Power generation by waste heat recovery in cement industry

Energy Distribution: 1

Voltage-var(Q) Optimal Control for power grid

https://www.jcm.go.jp/th-jp/methodologies/approved

Signing Ceremony MoC of the Joint Crediting Mechanism

Signing Ceremony Memorandum of Cooperation on the Joint Crediting Mechanism between the Government of the Kingdom of Thailand and the Government of Japan on July 8, 2024

By Deputy Prime Minister and Minister of Natural Resources and Environment, Pol. Gen. Phatcharavat Wongsuwan and Ambassador Extraordinary and Plenipotentiary of Japan to the Kingdom of Thailand, H.E. Mr. Otaka Masato

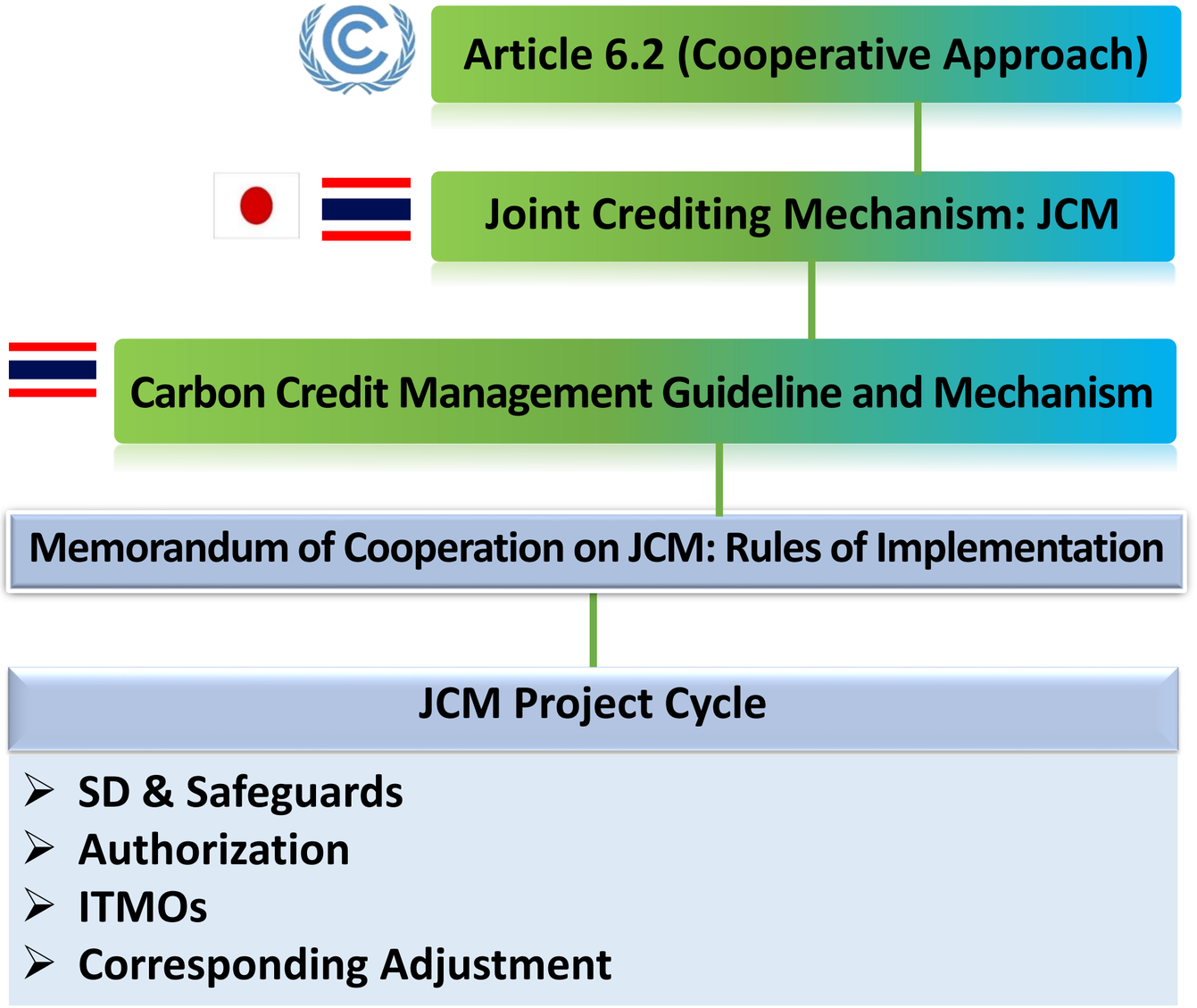
Arrangements for Aligning the JCM Implementation in Thailand with Article 6

Memorandum of Cooperation on the Joint Crediting Mechanism between the Government of the Kingdom of Thailand and the Government of Japan (MoC)

6. Both governments mutually recognize that part of credits issued from emission reductions and removals achieved by a project in line with Attachments 1 and 2, may be used towards the achievement of Japan's nationally determined contribution and the rest of the said credits may contribute to the achievement of the Thailand's nationally determined contribution, while ensuring that double counting is avoided on the basis of corresponding adjustments, consistent with the guidance.

7. Each government authorizes the credits issued in the JCM registry of Japan for use towards the achievement of Japan's nationally determined contribution as internationally transferred mitigation outcomes, consistent with the guidance.

https://www.jcm.go.jp/th-jp/information/516



Project Development Process: JCM Track under Premium T-VER

JCM Planned Project

Japanese ministry/ PPs submit PIN of a planned project to JC

JC approves planned projects

JCM Project Registration

PPs submit documents to Government of Japan and TGO for registration

PPs open an account in the Thai registry

Government of Japan approves registration

PPs submit an authorization request to DCCE/DCCE considers and provides authorization for the credits to be generated from the JCM project

TGO approves and registers the project under Premium T-VER

JCM Credits Issuance

PPs submit documents to Government of Japan and TGO for credit issuance

Government of Japan considers and approves the issuance of the credits

DCCE considers and approves fulfillment of authorization

TGO approves and issues credits in special account and holding account (Thai PP)

International transfer

TGO cancels the credits in the special account for the JCM in the Thai registry and notifies the Government of Japan

Government of Japan issues the corresponding amount of credits in a holding account(s) of the JCM registry of Japan

Government of Japan provides authorization for the credits, completing the first international transfer (ITMOs)

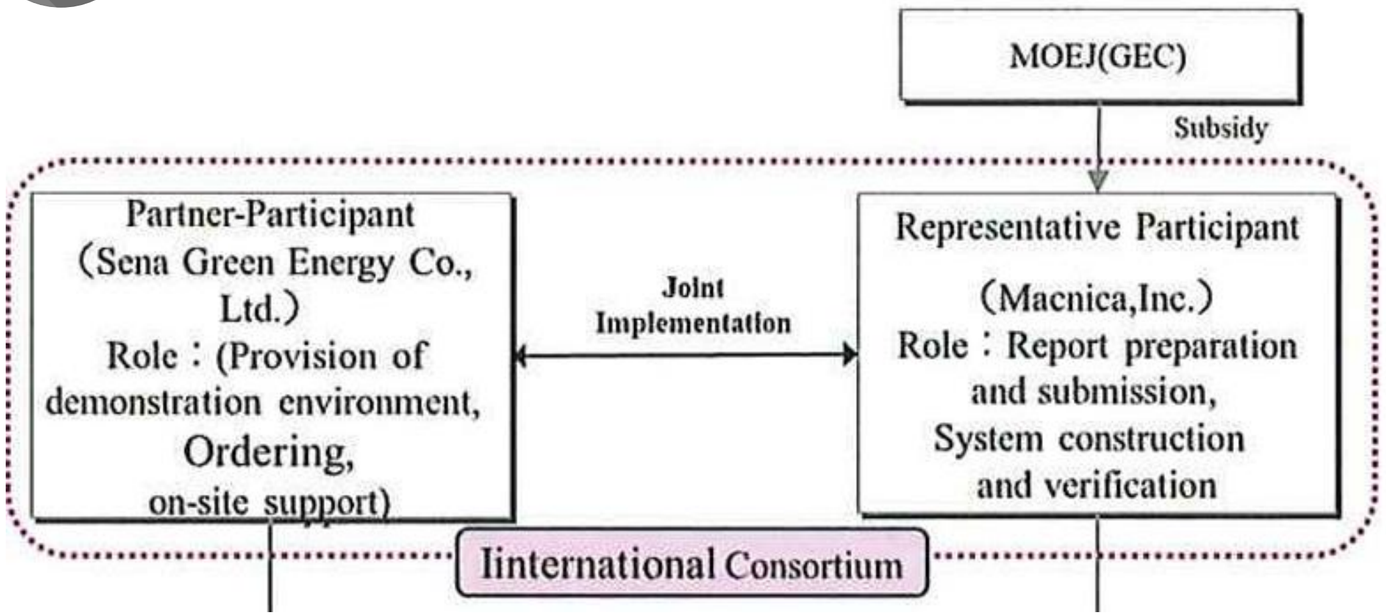
PPs – Project Participants
JC – Joint Committee

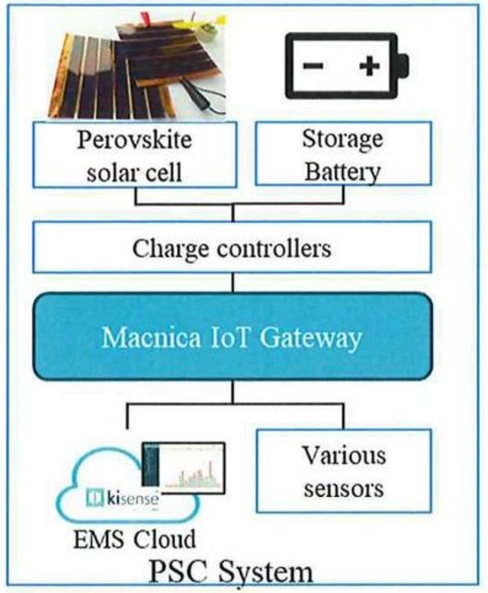
LoA - Letter of Authorization
PIN - Project Idea Note
ITMOs - Internationally Transferred Mitigation Outcomes
DCCE - Department of Climate Change and Environment
TGO - Thailand Greenhouse Gas Management Organization
T-VER – Thailand Voluntary Emission Reduction Program

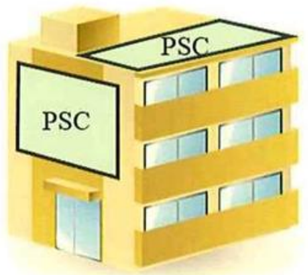
Responsibilities of Project Participants and Benefits from the Development of JCM Project

Thai project participant	Japanese project participant
- Receive subsidy for implementation of the project - Implement the project and measure GHG emission reduction	- Forward subsidy from the Japanese government/entity to Thai project participant or provide funding for the project - Report and Request of credit issuance

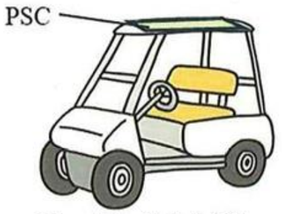
Demonstration Project of Perovskite Solar Cell System with Battery Storage and Energy Management System





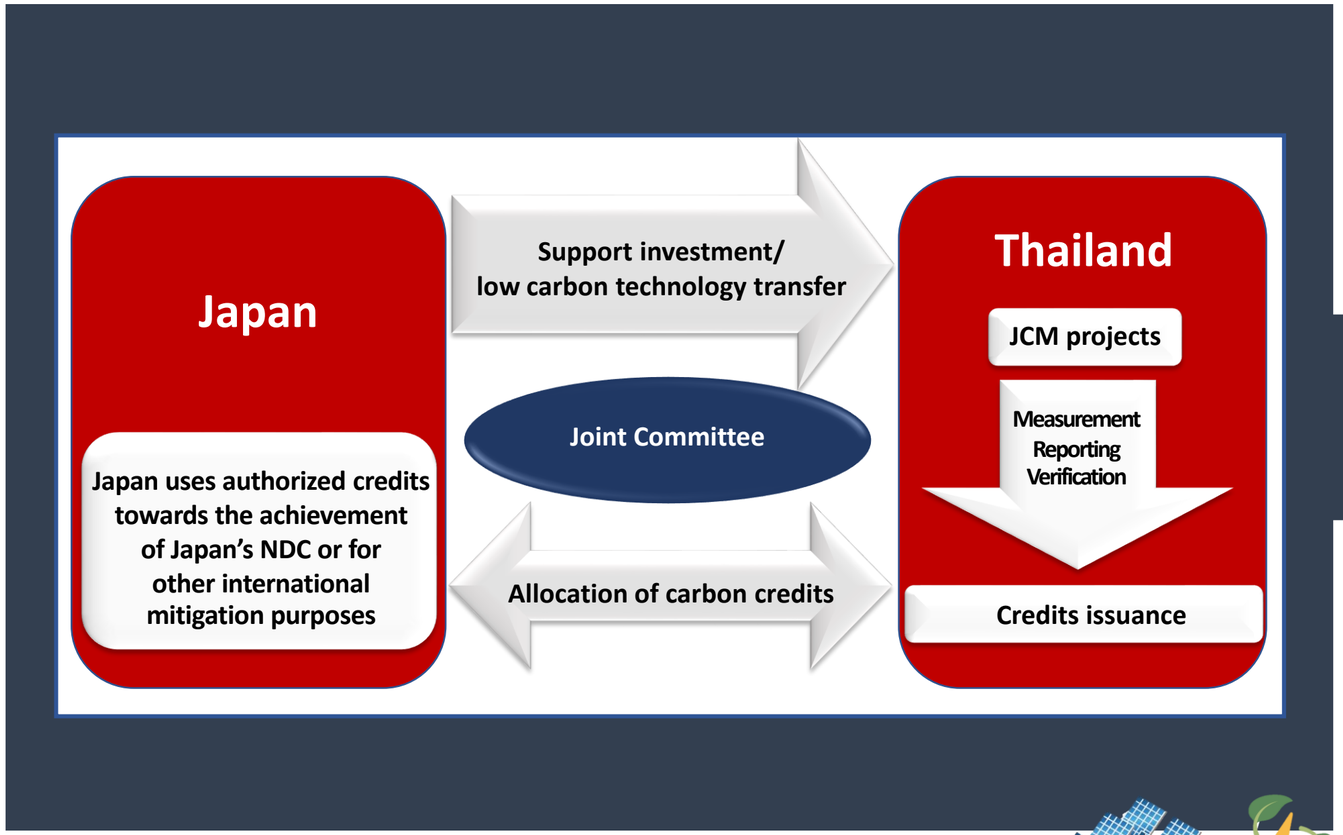


Condominium



Electric Mobility

Additional Benefit for Thai Project Participants from the Development of JCM Projects



Use of carbon credits in Thailand

For offsetting carbon footprint of

- **Organization**
- **Product**
- **Event**
- **individual**

Expected Demand Growth

Climate Action Leading Organization

Disclosure One-Report

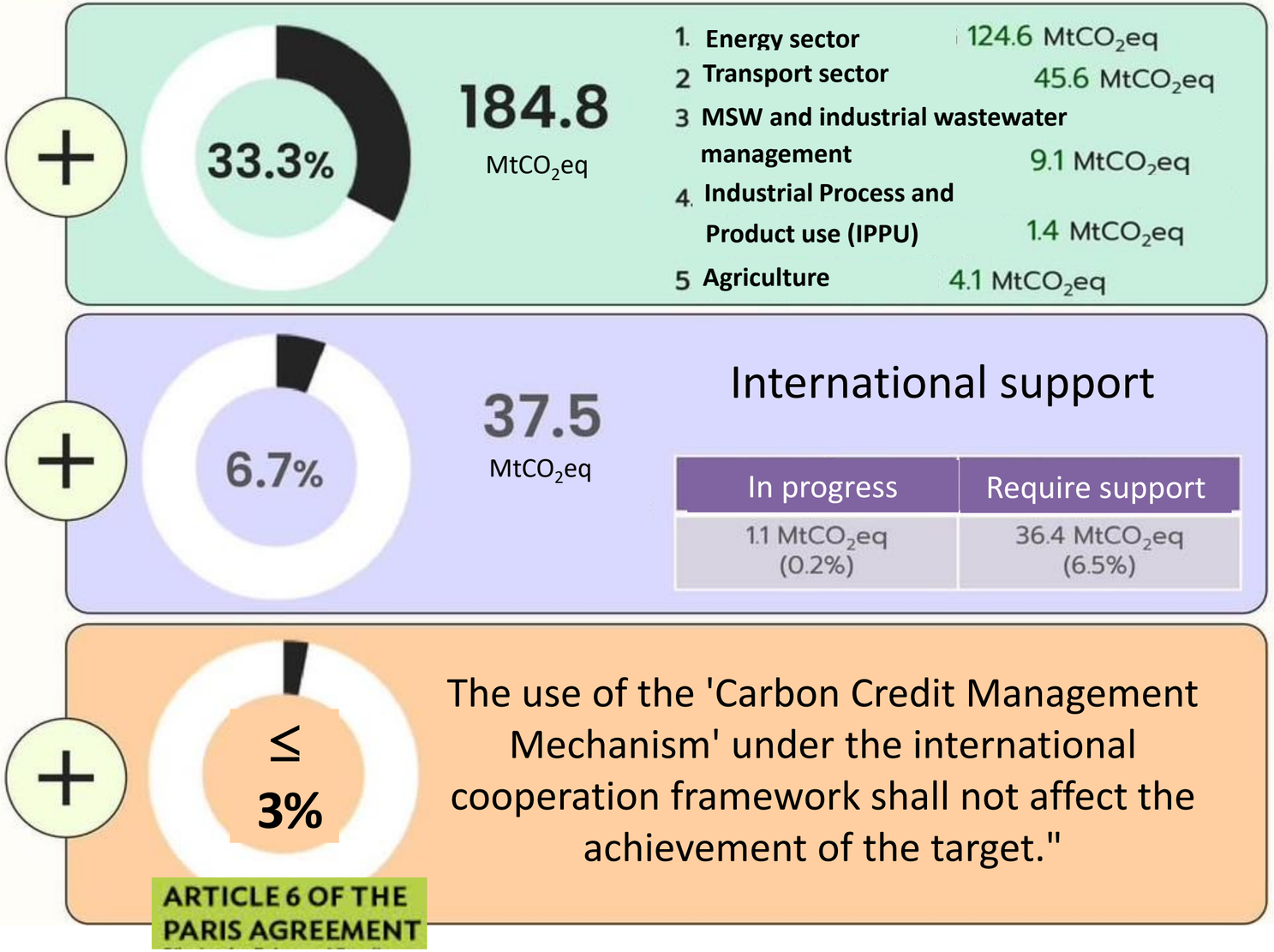
Contribution to the Implementation of Thailand's NDC

The Cabinet approved the National Greenhouse Gas Mitigation Action Plan for 2021–2030
on December 11, 2024

Vision:

Thailand has achieved its greenhouse gas reduction target for 2030 under the Paris Agreement, as communicated to the United Nations Framework Convention on Climate Change (UNFCCC).

Target: Reduce GHG emission 40% from BAU in 2030



Contribution to the Implementation of Thailand’s NDC and LT-LEDS

Supports greenhouse gas reduction in order to achieve the goals of the Nationally Determined Contributions (NDC) and Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS)

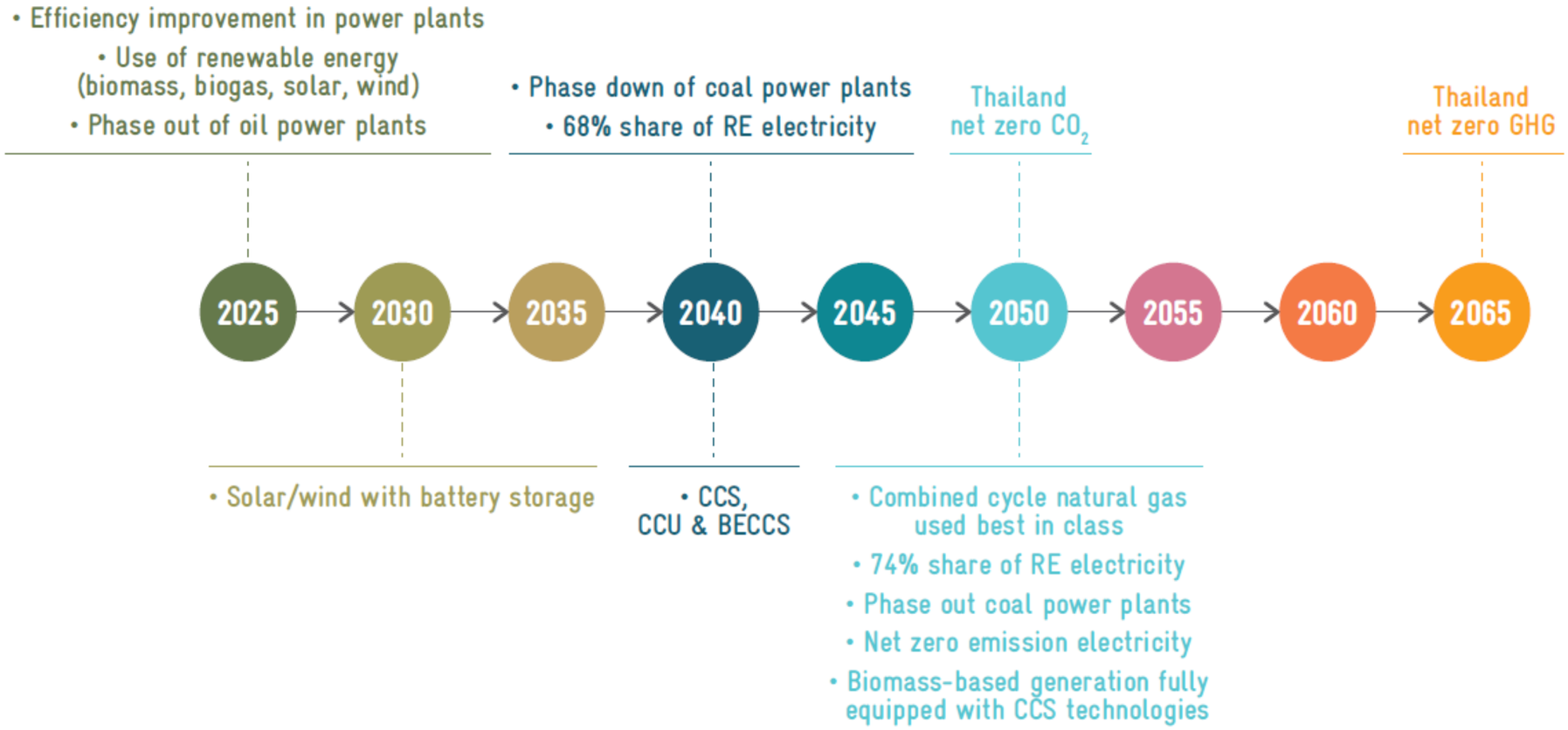


Figure 4-4 Net zero GHG emission timeline for Thailand’s power generation

Contributions to sustainable development goals in Thailand

Demonstration Project of Perovskite Solar Cell System with Battery Storage and Energy Management System

<u>Affordable and Clean Energy</u>:
Enable the adoption of green electricity generation and use, energy storage and energy management system for residential use

<u>Industry, Innovation and Infrastructure</u>:
Promote use of advanced low carbon technologies

<u>Responsible consumption and production</u>:
Facilitate green electricity generation and use in the residential sector

<u>Partnerships for the Goal</u>:
Enhance international partnerships to drive sustainable development efforts

Thank You

Thailand Greenhouse Gas Management Organization (Public Organization)

120 Moo 3, 9th Floor, The Government Complex, Chaengwattana Road, Laksi, Babgkok 10210

Tel : 02-141-9790

www.tgo.or.th

ghgreduction.tgo.or.th

thaicarbonlabel.tgo.or.th

caacademy.tgo.or.th

carbonmarket.tgo.or.th

Facebook TGO

Seminar on the Joint Crediting Mechanism (JCM) Implementation in Thailand
– Further Contributions to GHG Emission Reductions in Thailand through the JCM –

JCM Project Development Cycle and Eligible Project Activities

By Dr. Paweena Panichayapichet

Manager of Carbon Credit Certification Office
Thailand Greenhouse Gas Management Organization

Thursday, December 19, 2024

09:00-12:00 Thailand Time

Mayfair Ballroom A, The Berkeley Hotel Pratunam, Bangkok

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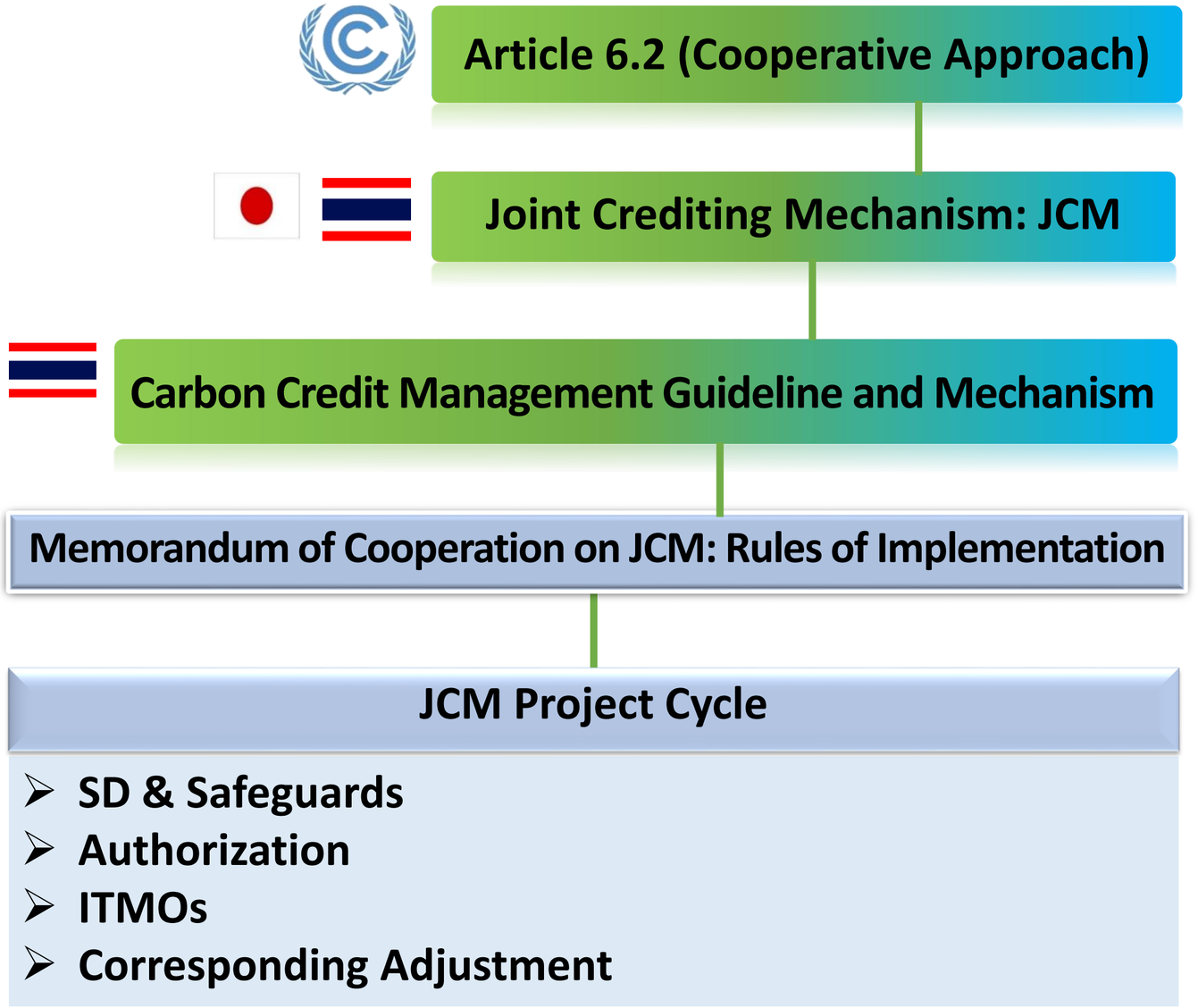
https://www.jcm.go.jp/th-jp/information/516



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DCCE considers and approves fulfillment of authorization

TGO approves and issues credits in special account and holding account (Thai PP)

International transfer

TGO cancels the credits in the special account for the JCM in the Thai registry and notifies the Government of Japan

Government of Japan issues the corresponding amount of credits in a holding account(s) of the JCM registry of Japan

Government of Japan provides authorization for the credits, completing the first international transfer (ITMOs)

PPs – Project Participants
JC – Joint Committee

LoA - Letter of Authorization
PIN - Project Idea Note
ITMOs - Internationally Transferred Mitigation Outcomes
DCCE - Department of Climate Change and Environment
TGO - Thailand Greenhouse Gas Management Organization
T-VER – Thailand Voluntary Emission Reduction Program

Project Development Step 1: Approval of JCM Planned Project

JCM Planned Project

Japanese ministry/PPs submit PIN of a planned project to JC

Secretariat conducts a completeness and forwards the PIN to JC

JC approves planned projects

JCM_TH_F_PIN_ver01.0_draft

Project Idea Note for JCM Project

PIN reference number	*(For the secretariat use only)*

All the information described in this document is at the pre-implementation stage and may change as the project develops.

1. Basic project information	
1.1. Date of Submission	dd/mm/yyyy
1.2. Partner country (*A host county where the planned project is located*)	
1.3. Title of the planned project (*Should be self-explanatory and clearly indicate the activity leading to GHG emissions reductions / removals*)	

The Joint Committee makes the result publicly available, including the PIN reference number, the name of the planned project, the date of submission in the above, and the reason for objection when the Joint Committee objects to the planned project described in the PIN through the JCM website.

Project Idea Note (PIN)

2. Project participants and contact information	
2.1. Representative Japanese participant for the project and its roles in the project *(For identification of the person in charge for the project in terms of communication)*	
Name of the entity (*Company, etc.*):	
Roles of the entity in the project:	
Address of the contact entity:	
Website of the contact entity:	
Name and position of the main contact person in the entity:	**Last name:** **First name:** **Position:**
E-mail of the main contact person:	
Phone number of the main contact person:	
2.2. Japanese participant(s) for the project and their roles in the project except for the entity in 2.1. *(If possible, please indicate the contact person of each entity involved in the project)*	
2.3. Participant(s) of partner country for the project and their roles in the project *(If possible, please indicate the contact person of each entity involved in the project)*	
2.4 Relevant ministry or governmental agency of partner country *(If possible, please indicate the contact person)*	

Project Idea Note (PIN)

3. Project information	
3.1. Summary of the planned project	
Description of the project: (*Project implementation scheme, role of each participant, etc. Insert an image of the implementation structure in section 5*)	
Location of the project	
Technologies, products, systems, services, infrastructure, or implementation of mitigation actions to be adopted for the project, and a brief description of them:	
Status and progress of the project (*Feasibility study, license application status, etc.*):	

Project Idea Note (PIN)

3.2. Expected scale of investment	Total project costs: In project currency: In Japanese Yen: Breakdown (in project currency):
3.3. Applicable JCM methodology(ies)	☐ Existing methodology(ies) (*Please specify below*) ☐ New methodology(ies) needed (*Briefly explain the status below*)
3.4. Expected GHG emission reductions / removals (unit: tCO_2/year)	tCO2/year
3.5. Expected schedule up to the commercial operations date and the project registration under the JCM	

Eligible activities: Carbon Credit Management Guideline and Mechanism

- Being a project that leads to reduction of greenhouse gas emissions from sources or enhancement of greenhouse gas sinks and reservoirs in addition to those prescribed in the national greenhouse gas mitigation plans;
- Being a project that supports greenhouse gas reduction in order to achieve the goals of the Nationally Determined Contributions (NDC) and Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy (Thailand LTS);
- Being a project that sets forth a fair allocation of carbon credits, by considering investment contribution or the international rules or framework of an international agreement, or the applicable rules and regulations;
- Being a project with a crediting period not exceeding the timeframe of the NDC implementation period;
- Being a project that promotes development and transfer of advanced technology or innovation and requires a large amount of investment and promotes access to financial resources to address climate change and reduce greenhouse gas emissions from sources or enhance greenhouse gas sinks and reservoirs;
- The greenhouse gas mitigation outcomes from a project operated in Thailand that are used for an international objective shall be certified in tons of carbon dioxide equivalent (tCO_2eq).

Project Idea Note (PIN)

3.6. Contribution to Partner Country's NDC (Nationally Determined Contributions)	*Please explain how the planed project contributes to the partner country's NDC by selecting all the applicable options below and providing a brief supporting information:* ☐ Regulatory surplus (reduce GHG emissions from sources or enhance GHG sinks and reservoirs in addition to those described in the Thailand national greenhouse gas mitigation plans) *Please specify relevant section(s) and description in the national plans below*: ☐ Additional to the business as usual (BAU) *Please describe the BAU scenario below:* ☐ Development and transfer of advanced technology or innovation *Please briefly describe the contribution below:* ☐ Large investment and promotes access to financial resources to address climate change and reduce GHG emissions from sources *Please briefly describe the contribution below. Details can be explained in Section "4. Financial contribution":* ☐ Other (*Please specify below*)

Project Idea Note (PIN)

3.7. Contribution other than GHG emissions reductions or removals (*Financial contribution should be explained in section 4*)	

3.8. Credit allocation		
Select one of the following: ☐ Credit allocation is still under discussion among project participants. ☐ Project participants propose a preliminary percentage of credit allocation as below, *understanding the condition that numbers will be decided by the Joint Committee at the time of project registration*: **In case the project expects to receive financial support from the Government of Japan, the Government of Japan determines a preliminary percentage of credit allocation.*		
Partner country (Government and project participants)		%
Japan (Government and project participants)		%
The reason for the above credit allocation:	*(The planned project should demonstrate a fair allocation of carbon credits by considering investment contribution, international rules, a framework of an international agreement, or applicable rules and regulations.)*	

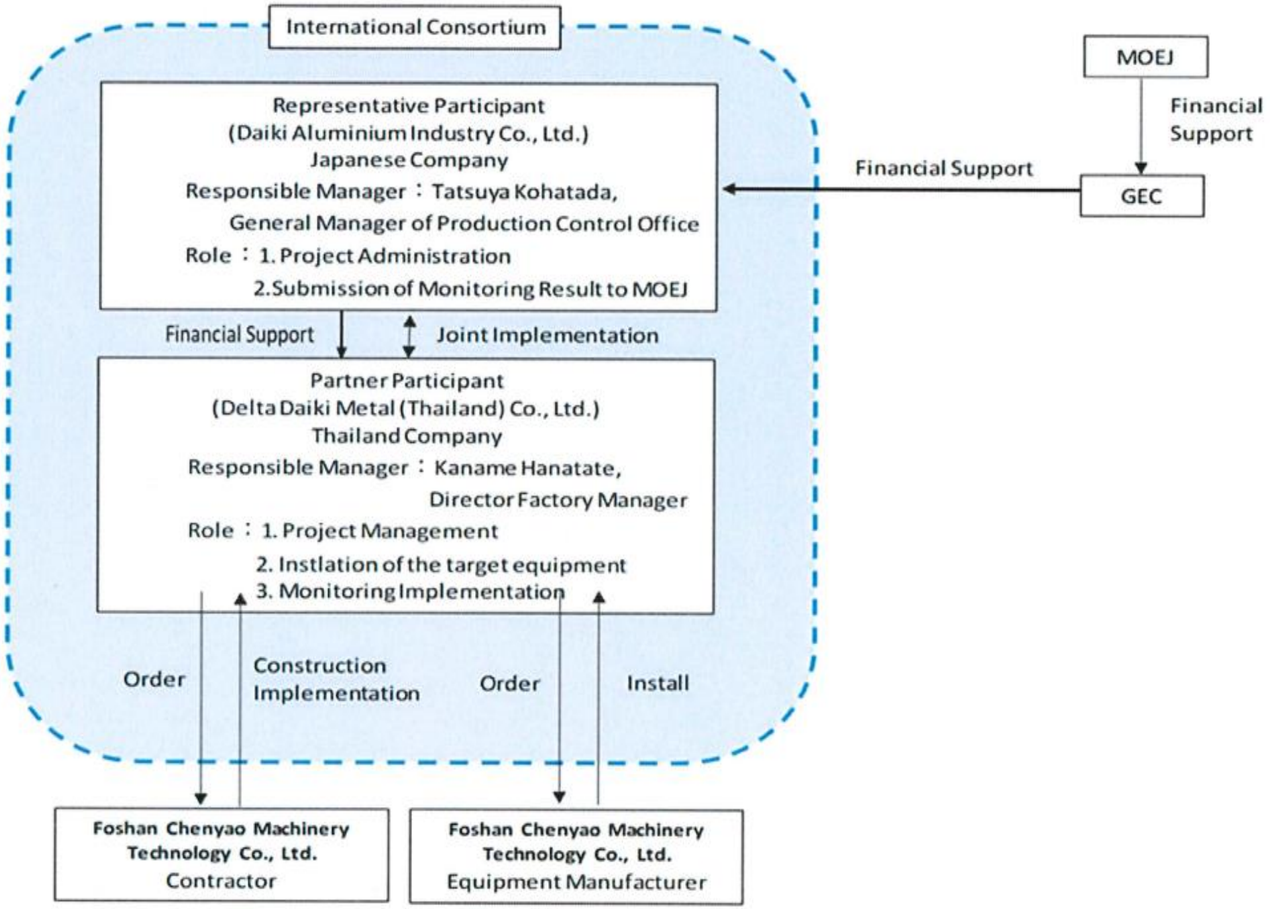
Project Idea Note (PIN)

4. Financial contribution *(Please indicate which government support is expected; otherwise, explain in the "Other" section.)*	
☐ **Financial support from the Government of Japan: Select one of the following**	**Fiscal Year of Japan**
☐ Financing Programme for JCM Model Project by Ministry of the Environment, Japan (MOEJ)	
☐ JCM Support Programme administered by the United Nations Industrial Development Organization (MOEJ)	
☐ F-gas Recovery and Destruction Model Project by MOEJ	
☐ Japan Fund for the JCM administered by the Asian Development Bank (MOEJ)	
☐ JCM Demonstration Project by New Energy and Industrial Technology Development Organization (Ministry of Economy Trade ad Industry, Japan)	
☐ **Other** *(Please explain how the project will be financed and what financial contribution or economic incentive will make the project viable.)*:	

Project Idea Note (PIN)

5. Implementation structure

Please insert an image of the implementation structure including financial flows below:



Project Idea Note (PIN)

6. Declaration of avoidance of double registration

By signing this declaration below, the project participant ensures the planned project with the JCM track under Premium T-VER will not result in double registration in other GHG mitigation crediting mechanisms, which then avoids double counting of GHG emission reductions by the project.

☐ I hereby declare that the planned project is not registered under any other GHG mitigation crediting mechanisms other than the JCM track under Premium T-VER, therefore, the planned project will not result in double counting of GHG emission reductions.

☐ I hereby declare that if the planned project is registered with the JCM track under Premium T-VER, the same project will not be registered under other international climate mitigation mechanisms.

Project Idea Note (PIN)

7. Statement of decision

This statement is effective with all project participants and will be valid until a superseding statement is submitted to the Thailand Greenhouse Gas Management Organization (Public Organization) and the Government of Japan through the Secretariat.

The project participant is solely responsible for honoring such arrangements. By signing below, the project participants confirm that this decision on a voluntary basis.

Project participant

Name of organization:

Name of authorized signatory:

Title:

Specimen Signature: Date (DD-Month-YYYY)

Revision history of PIN

Version	Date	Contents revised
	dd/mm/yyyy	
	dd/mm/yyyy	
	dd/mm/yyyy	

**Project participants fill in this section when they submit a revised PIN to the Joint Committee.*
**Rows may be added, as needed*

Joint Committee of the Thai Side

1. Deputy Permanent Secretary,
Ministry of Natural Resources and Environment

Thai Co-chair

2. Department of Climate Change and Environment, Ministry of Natural Resources and Environment

3. Pollution Control Department (PCD), Ministry of Natural Resources and Environment

4. Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment

5. Department of Industrial Works (DIW), Ministry of Industry

6. Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy

7. Department of East Asian Affairs, Ministry of Foreign Affairs

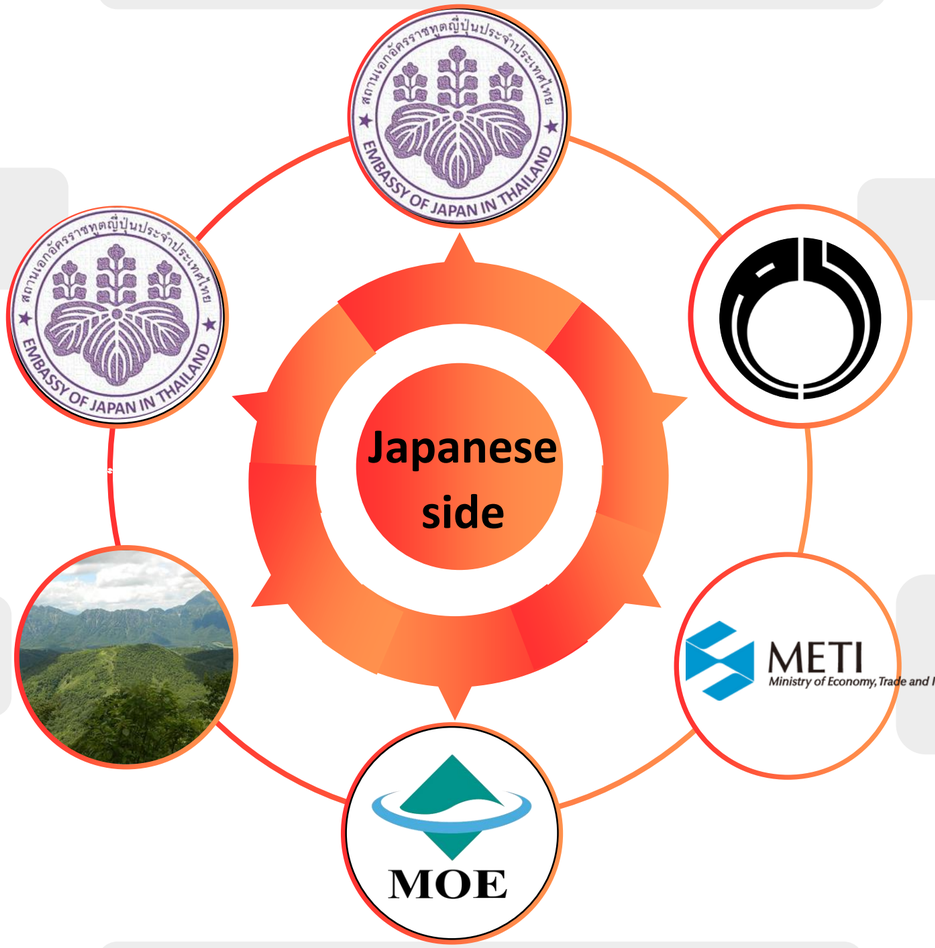
8. The Federation of Thai Industries (FTI)

9. Thailand Greenhouse Gas Management Organization (TGO), Ministry of Natural Resources and Environment

Joint Committee of the Japanese Side

1. Embassy of Japan in Thailand

Japanese Co-chair



2. Ministry of Foreign Affairs

3. Ministry of Economy, Trade and Industry

4.Ministry of the Environment

5. Forestry Agency

6. Embassy of Japan in Thailand

Project Development Step 2: Project Registration

PPs submit

Request for authorization
to the Government of the Kingdom of Thailand, acting through DCCE

The Government of the Kingdom of Thailand, acting through DCCE considers and provides authorization for the credits to be generated from the JCM project

Letter of Authorization

Request for registration
to the Government of the Kingdom of Thailand acting through TGO and the Government of Japan:

1) Project Registration Request Form
2) Validated PDD (by VVB)
3) Validation report
4) Percentage of credit allocation
5) Sustainable Development and Safeguards Assessment Report (SDSAR)

The Government of Japan considers and approves registration

The Government of the Kingdom of Thailand, acting through TGO register the project with the JCM track under Premium T-VER

Request for opening an account in the Thai registry
to TGO (where necessary)

1) Application letter for opening an account
2) Certificate of registration of a juristic person
3) Power of attorney signed by an authorized signatory
4) Any other documents or evidence supporting the application

TGO considers and opens an account

VVB: Validation and Verification Body registered with TGO

Project Development Step 2: Project Registration

Request for registration

Required documents

1) **Project Registration Request Form**
2) Validated PDD
3) Validation report
4) Percentage of credit allocation
5) SD & Safeguards Assessment Report

Source: https://www.jcm.go.jp/th-jp/rules_and_guidelines

JCM Project Registration Request Form

List of documents to be attached to this form *(Please check to confirm)*	PDD (latest version)	☐
	MoC	☐
	Validation report	☐
	SDSAR	☐
	Percentage of Credit Allocation Form	☐
Reference number		
Title of the project		
Focal point entity		
Third-party entity (TPE)		
Applied methodology	No.	
	Version	
	Title	
	Sectoral scope	

Project Development Step 2: Project Registration

Request for registration

Required documents

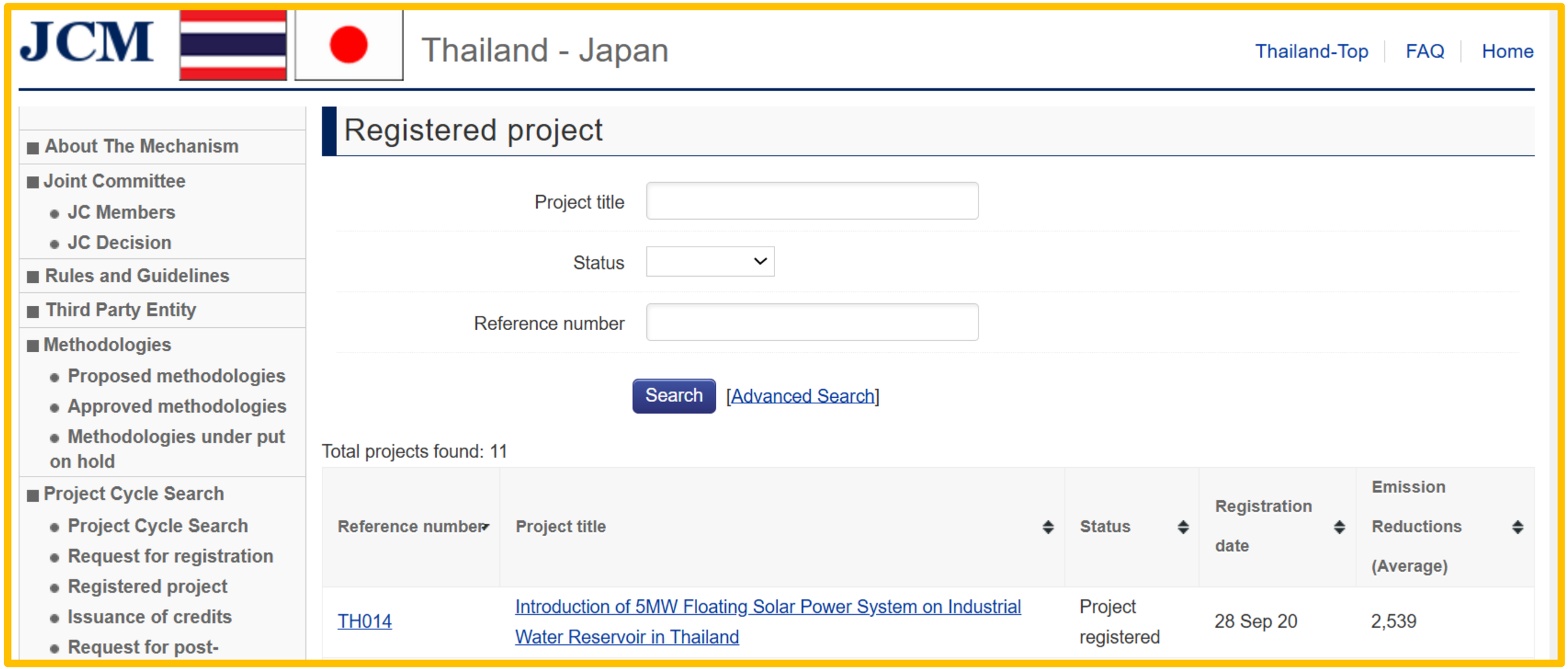
1) Project Registration Request Form
2) **Validated PDD**
3) Validation report
4) Percentage of credit allocation
5) SD & Safeguards Assessment Report

Source: https://www.jcm.go.jp/th-jp/rules_and_guidelines

Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report

CONTENTS

Project Development Step 2: Project Registration



Source: https://www.jcm.go.jp/th-jp/projects/registers

Project Development Step 2: Project Registration

Request for registration

Required documents

1) Project Registration Request Form
2) **Validated PDD**
3) Validation report
4) Percentage of credit allocation
5) SD & Safeguards Assessment Report

Source: https://www.jcm.go.jp/th-jp/projects/78/pdd_file

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Introduction of 5MW Floating Solar Power System on Industrial Water Reservoir in Thailand

A.2. General description of project and applied technologies and/or measures

The project involves installation of 5MW Floating solar farm equipment utilizing industrial Reservoir pond inside of Kabinburi Industrial Zone. The project is implemented by TSB Bangkok Co., Ltd., a company utilizing the crystalline silicon photovoltaic (PV) modules of Econess Energy Co., Ltd. as well as Power Optimizer of GNE New Energy Technology Co., Ltd..

PV system on the water will give higher power generation efficiency compared to the solar system on the ground under high atmosphere temperature due to the lower surface temperature of PV module.

The optimizer has a power shutdown function for each PV module. It can prevent an electric shock for Firefighters in case of fire. And monitoring function of the optimizer can detect leakage accident of PV module. The use of optimizer also minimizes the power generation loss of PV module string by PV module's specification variation.

Project Development Step 2: Project Registration

Request for registration

Required documents

1) Project Registration Request Form
2) Validated PDD
3) **Validation report**
4) Percentage of credit allocation
5) SD & Safeguards Assessment Report

Source: https://www.jcm.go.jp/th-jp/rules_and_guidelines

JCM Validation Report Form

A. Summary of validation	
A.1. General Information	
Title of the project	
Reference number	
Third-party entity (TPE)	
Project participant contracting the TPE	
Date of completion of this report	

A.2 Conclusion of validation

Overall validation opinion	☐ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☐
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☐

Project Development Step 2: Project Registration

Request for registration

Required documents

1) Project Registration Request Form
2) Validated PDD
3) Validation report
4) **Percentage of credit allocation**
5) SD & Safeguards Assessment Report

JCM_TH_F_Pct_Crd_Allc_ver01.0

JCM Percentage of Credit Allocation Form

Title of the project							
Reference number							
Type and duration of crediting period							
Allocation of credits among project participants and/or both governments in percentage							
		Name and account number of project participants				Both governments	
		Name: Account number:	Name: Account number:	Name: Account number:	Name: Account number:	Government of Thailand	Government of Japan
Registry		☐ *Government of Thailand* ☐ *Government of Japan*	☐ *Government of Thailand* ☐ *Government of Japan*	☐ *Government of Thailand* ☐ *Government of Japan*	☐ *Government of Thailand* ☐ *Government of Japan*		
Percentage of credit allocation for a crediting period	Year 1						
	Year 2						
	Year 3						
	Year 4						
	Year 5						
	Year 6						
	Year 7						
	Year 8						
	Year 9						
	Year 10						
	Year 11						
	Year 12						
	Year 13						
	Year 14						
	Year 15						

Note:
- Please select a type and duration of a crediting period from a fixed period of 10 years or a renewable period of five (5) years which may be renewed twice at the maximum.
- The percentage of credit allocation may be filled in for each year of the selected period of 10 years for a fixed crediting period or five (5) years to the maximum of 15 years for a renewable crediting period, whereas credits may be issued for emission reductions or removals achieved until the end of the period referred to in paragraph 7 of the Rules of Implementation of the Joint Crediting Mechanism (JCM) for Existing Projects.
- Account numbers may be filled in if project participants already have one.

Source: Annex 2.4: JCM Percentage of Credit Allocation Form

Project Development Step 2: Project Registration

Request for registration

Required documents

1) Project Registration Request Form
2) Validated PDD
3) Validation report
4) Percentage of credit allocation
5) **SD & Safeguards Assessment Report**

Joint Crediting Mechanism Guidelines for Developing

Sustainable Development and Safeguards Assessment Report and Monitoring Report

CONTENTS

Part	Details
1) General information of the project area before project implementation	Details about Environment and natural resources, society and economic
2) Sustainable Development Goals	Contributions of the proposed project to at least two SDGs, in addition to SDG13: Climate Action with proposed monitoring parameters
3) Do no net harm	Identification any negative environmental and socio-economic impacts and mitigation plan in order to ensure that project activities do no net harm with proposed monitoring parameters

https://ghgreduction.tgo.or.th/th/download-jcm/73-2017-11-28-15-33-05.html

Project Development Step 2: Project Registration

Request for registration

Required documents

1) Project Registration Request Form
2) Validated PDD
3) Validation report
4) Percentage of credit allocation
5) **SD & Safeguards Assessment Report**

https://ghgreduction.tgo.or.th/th/download-jcm/74-2017-11-28-15-33-23.html

JCM	Joint Crediting Mechanism	SDSAR
	Sustainable Development and Safeguards Assessment Report	VERSION 01

Sustainable Development and Safeguards Assessment Report

Project description	
Title	
Project participant (Thai)	
Project participant (Japanese)	
Project location	
Latitude, longitude	
Project status	

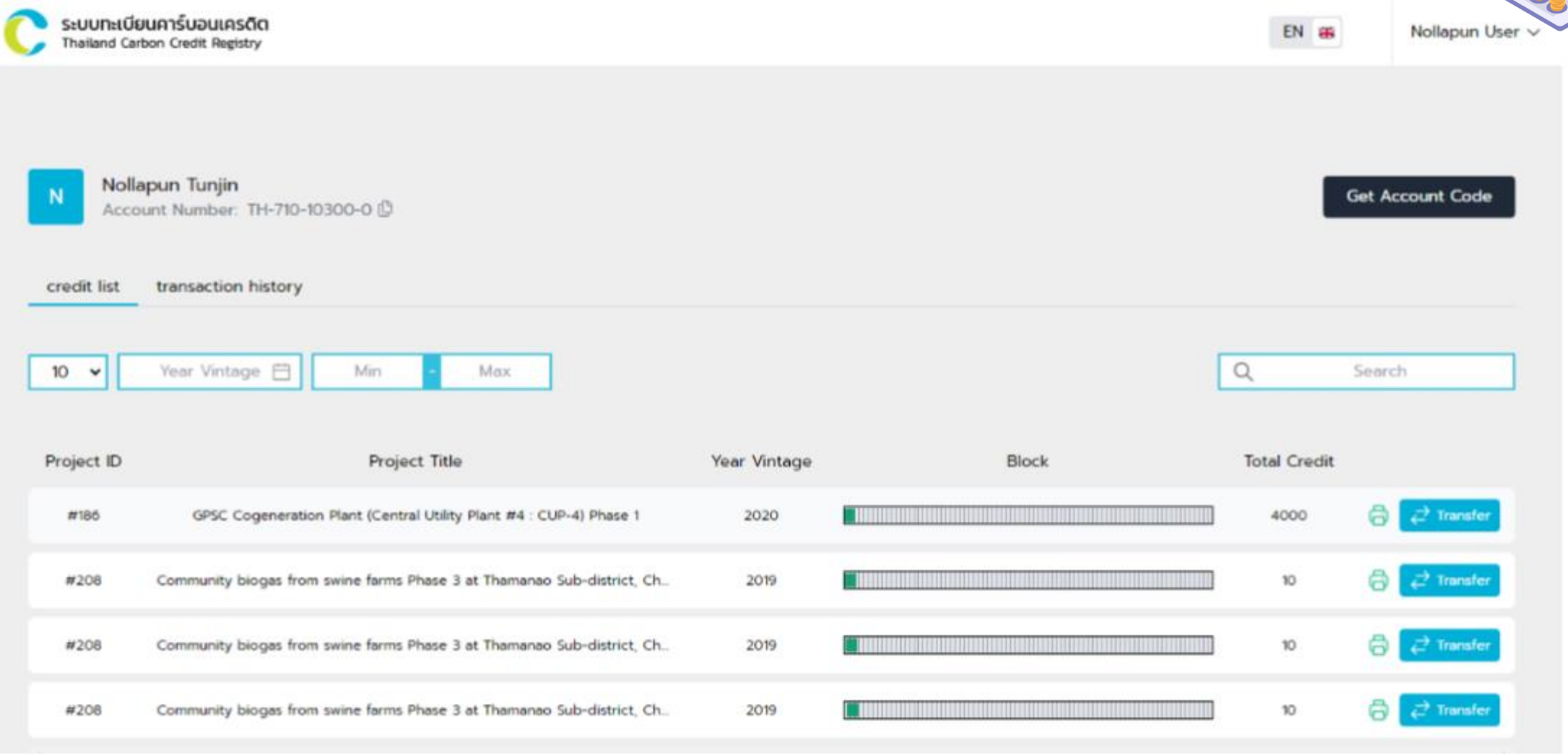
Report description		
Date of report completion		
Version		
Corresponding author	Name	
	Title	
	Organization	
	Telephone	
	E-mail	

Note:

- Related figures, documents, evidence related to the description may be attached as annex.
- In the case where there is any other relevant issue that needs to be considered, it shall be specified in the last row of each area of assessment.

Project Development Step 2: Project Registration

Open an account in the Thailand Carbon Credit Registry



Further information: https://registry.tgo.or.th

Thailand Carbon Credit Registry

ระบบทะเบียนคาร์บอนเครดิต
Thailand Carbon Credit Registry

Documents | Admin System | EN | TT Tgo Test

Carbon Credit Project Inventory

ALL PROJECTS	CERTIFIED	PENDING CERTIFICATION	PROJECTS ENDED
433	181	252	61

Project Information | Cancellation Records | ITMOs Transfer Records

10

Transaction Date	Project ID	Project Title	Project Type	Serial Number	Quantity	Cooperative Appr
13 Dec 2024	#S0334	Bangkok Metropolitan Area E-Bus Zon...	Use of public transportation system	TH1-BCH-S0334-64-2023-20498685-20515528-1-0	16,844	Bilateral Cooperation with
13 Dec 2024	#S0333	Bangkok Metropolitan Area E-Bus Zon...	Use of public transportation system	TH1-BCH-S0333-64-2023-20486307-20498684-1-0	12,378	Bilateral Cooperation with
01 Dec 2023	#S0334	Bangkok Metropolitan Area E-Bus Zon...	Use of public transportation system	TH1-BCH-S0334-57-2022-16829924-16830920-1-0	997	Bilateral Cooperation with
01 Dec 2023	#S0333	Bangkok Metropolitan Area E-Bus Zon...	Use of public transportation system	TH1-BCH-S0333-57-2022-16829005-16829923-1-0	919	Bilateral Cooperation with

Project Development Step 3: Credits Issuance

PPs submit

Request for fulfillment of authorization
to the Government of the Kingdom of Thailand, acting through DCCE

The Government of the Kingdom of Thailand, acting through DCCE considers and approves fulfillment of authorization

Positive Examination

Request for credits issuance
to the Government of the Kingdom of Thailand acting through TGO and the Government of Japan:

1) Credits Issuance Request Form
2) Verified monitoring report
3) Verification report
4) SD & Safeguards Monitoring Report
5) Non-permanence risk report (where applicable)

The Government of Japan considers and approves the issuance of the credits

The Government of the Kingdom of Thailand, acting through TGO issues credits in the special account for the JCM in the Thai registry

Project Development Step 3: Credits Issuance

Request for Credits Issuance

Required documents

1) **Credits Issuance Request Form**
2) Verified monitoring report
3) Verification report
4) SD & Safeguards Monitoring Report
5) Non-permanence risk report (where applicable)

Source: https://www.jcm.go.jp/th-jp/rules_and_guidelines

JCM Credits Issuance Request Form

List of documents to be attached to this form *(Please check to confirm)*	Verification report	☐
	Monitoring report	☐
	SDSMR	☐
A list of documents submitted (in addition to the verification report, the monitoring report and sustainable development and safeguards monitoring report (SDSMR))	Yes / No *(underline as applicable)* *Please ensure that all documents listed are submitted.* ✓ *(please list documents if applicable)*	
Title of the project		
Reference number		
Third-party entity (TPE)		
Period covered by this request	Start: dd/mm/yyyy / End: dd/mm/yyyy	

Name of the focal point entity:	
Authorised signatory:	
Last name:	**First name:**
Title:	
Specimen signature:	**Date:** dd/mm/yyyy

[Signature by the focal point of the project participants as appeared on the MoC]

Project Development Step 3: Credits Issuance

Request for Credits Issuance

Required documents

1) Credits Issuance Request Form
2) **Verified monitoring report**
3) Verification report
4) SD & Safeguards Monitoring Report
5) Non-permanence risk report (where applicable)

	A	B
1		Monitoring Spreadsheet: JCM_TH_AM001_ver01.0
2		Reference Number: TH014
3	**i**	**$EG_{i,p}$**
4	**solar PV system number**	**Quantity of the electricity generated by the project solar PV system *i* during the period *p***
5		**MWh/p**
6	1	8000.75
7	2	
8	3	
9	4	

	A	B	C	D	E	F	G	H	I
1							Monitoring Spreadsheet: JCM_TH_AM001_ver01.0		
2							Reference Number: TH014		
3	**Monitoring Plan Sheet (Calculation Process Sheet) [Attachment to Project Design Document]**								
4									
5	**1. Calculations for emission reductions**					**Fuel type**	**Value**	**Units**	**Parameter**
6		Emission reductions during the period *p*				N/A	2,552.2	tCO_2/p	ER_p
7	**2. Selected default values, etc.**								
8		Reference CO_2 emission factor of grid and/or captive electricity				Electricity	0.319	tCO_2/MWh	EF_{RE}
9	**3. Calculations for reference emissions**								
10		Reference emissions during the period *p*				N/A	2,552.2	tCO_2/p	RE_p
11			Total quantity of the electricity generated in the project during the period *p*			Electricity	8,000.75	MWh/p	$\Sigma EG_{i,p}$
12			Reference CO_2 emission factor of grid and/or captive electricity			Electricity	0.319	tCO_2/MWh	EF_{RE}
13	**4. Calculations of the project emissions**								
14		Project emissions during the period *p*				N/A	0.0	tCO_2/p	PE_p

Source: https://www.jcm.go.jp/th-jp/projects/78

Project Development Step 3: Credits Issuance

Request for Credits Issuance

Required documents

1) Credits Issuance Request Form
2) Verified monitoring report
3) **Verification report**
4) SD & Safeguards Monitoring Report
5) Non-permanence risk report (where applicable)

Source: https://www.jcm.go.jp/th-jp/rules_and_guidelines

JCM Verification Report Form

A. Summary of verification	
A.1. General Information	
Title of the project	
Reference number	
Monitoring period	
Date of completion of the monitoring report	
Third-party entity (TPE)	
Project participant contracting the TPE	
Date of completion of this report	

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☐ Positive ☐ Negative
☐ Unqualified opinion	Based on the process and procedure conducted, *XXX* (TPE's name) provides reasonable assurance that the emission reductions for *YYYY* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents

Project Development Step 3: Credits Issuance

Request for Credits Issuance

Required documents

1) Credits Issuance Request Form
2) Verified monitoring report
3) Verification report
4) **SD & Safeguards Monitoring Report**
5) Non-permanence risk report (where applicable)

JCM	Joint Crediting Mechanism	SDSMR
	Sustainable Development and Safeguards Monitoring Report	VERSION 01

Sustainable Development and Safeguards Monitoring Report

Project description	
Title	

Part1: Monitoring Measures for SDG Contributions

Provide the details on the indicators identified under 2.1 (Tables can be added based on the number of SDGs selected)

SDG Number	
SDG Target	

Part 2: Monitoring negative impact

- Provide the details of the impacts indicated under 3.1

- Specify monitoring measures for the identified action plans to mitigate harmful impacts to monitor and assess the implementation of such action plans.

(Tables can be added based on the number of negative impacts identified)

Category of negative impact	

https://ghgreduction.tgo.or.th/th/download-jcm/74-2017-11-28-15-33-23.html

Arrangements for Aligning the JCM Implementation in Thailand with Article 6

TGO issues credits in special account & holding account of Thai PP → **TGO cancels the credits in the special account and notifies the Government of Japan** → **Government of Japan issues the corresponding amount of credits in a holding account (s) of the JCM registry of Japan** → **Government of Japan provides authorization for the credits, completing the first international transfer**

Carbon Credit Management Guideline and Mechanism

15. A transfer of carbon credits for an international objective shall be executed as follows:

15.1 a project developer files an application to transfer carbon credits for an international objective via the carbon credit registry system in accordance with the law establishing the Thailand Greenhouse Gas Management Organization (Public Organization);

15.2 the Organization records the transfer of carbon credits in accordance with the law establishing the Thailand Greenhouse Gas Management Organization (Public Organization);

15.3 the Organization prepares annual information regarding the transfers of carbon credits for international objectives in the format specified under the Paris Agreement and submits it to the Office by the end of January the following year; and

15.4 the Office applies a corresponding adjustment to avoid double counting of the greenhouse gas mitigation outcomes in accordance with the methods and procedures specified under the Paris Agreement

Regulation of the Board of Directors of Thailand Greenhouse Gas Management Organization re: rules for registration of purchases, sales, and transfers of carbon credits (No 2), B.E. 2567 (2024)

Chapter 3/2

Registration of Carbon Credits Transfer for International Objectives

Clause 21/1 Chapter 3 shall be applicable to the registration of carbon credits transfer for international objectives, *mutatis mutandis*.

Clause 21/2 Carbon credits which an applicant can transfer for international objectives shall be from a greenhouse gas reduction project granted with the relevant Letter of Authorization, and be verified for its operational outcome as per the Letter of Authorization issued by the Department of Climate Change and Environment.

An applicant for carbon credits transfer for international objectives has duty to submit the Letter of Authorization, in paragraph one, to the Organization. Such letter shall at least contain items as follows:

Arrangements for Aligning the JCM Implementation in Thailand with Article 6

TGO issues credits in special account & holding account of Thai PP

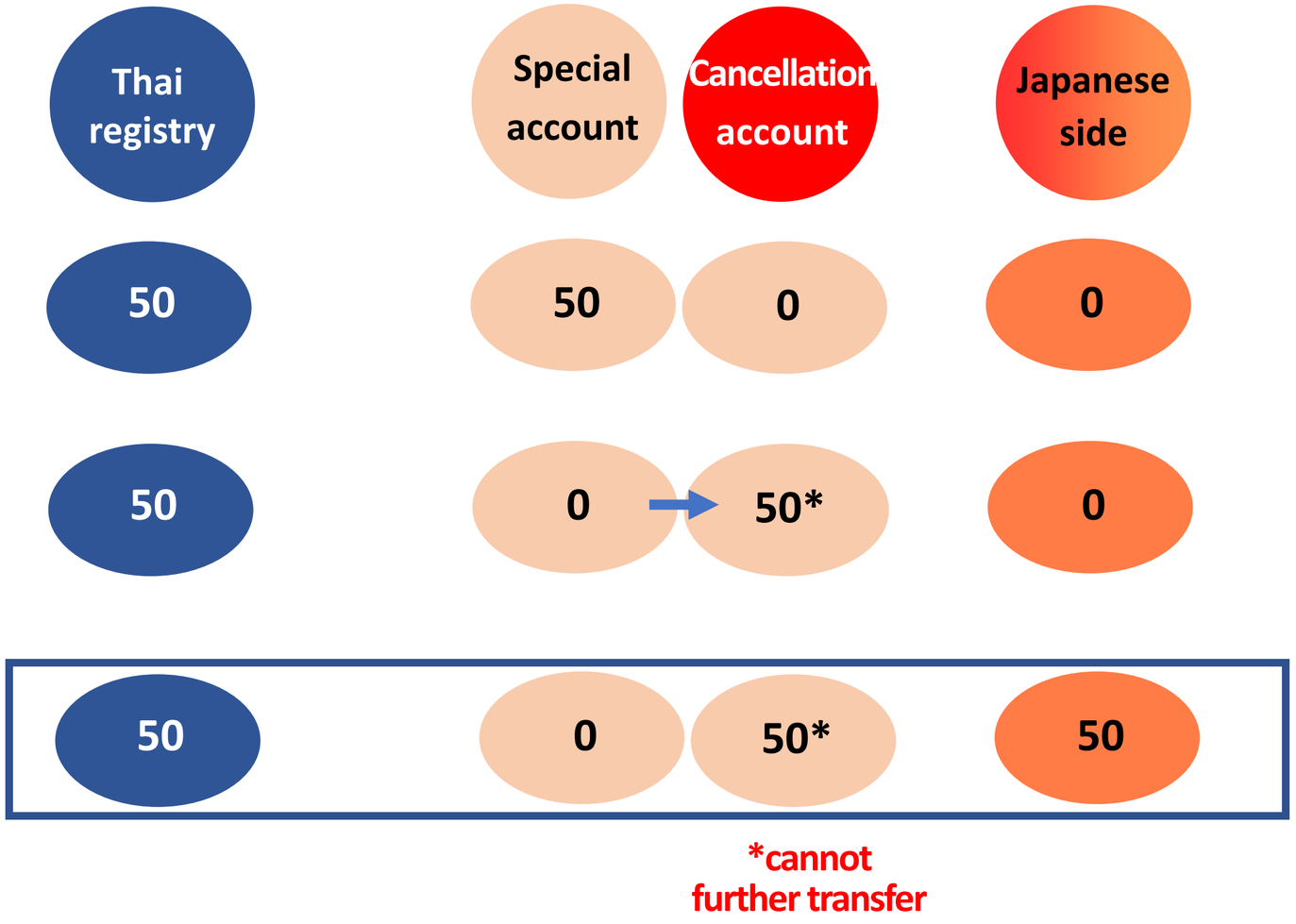
↓

TGO cancels the credits in the special account and notifies the Government of Japan

Government of Japan issues the corresponding amount of credits in a holding account (s) of the JCM registry of Japan

↓

Government of Japan provides authorization for the credits, completing the first international transfer



Thank You

Thailand Greenhouse Gas Management Organization (Public Organization)

120 Moo 3, 9th Floor, The Government Complex, Chaengwattana Road, Laksi, Babgkok 10210

Tel : 02-141-9790

www.tgo.or.th

ghgreduction.tgo.or.th

thaicarbonlabel.tgo.or.th

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Financing Programme for JCM Model Projects and JCM Global Match

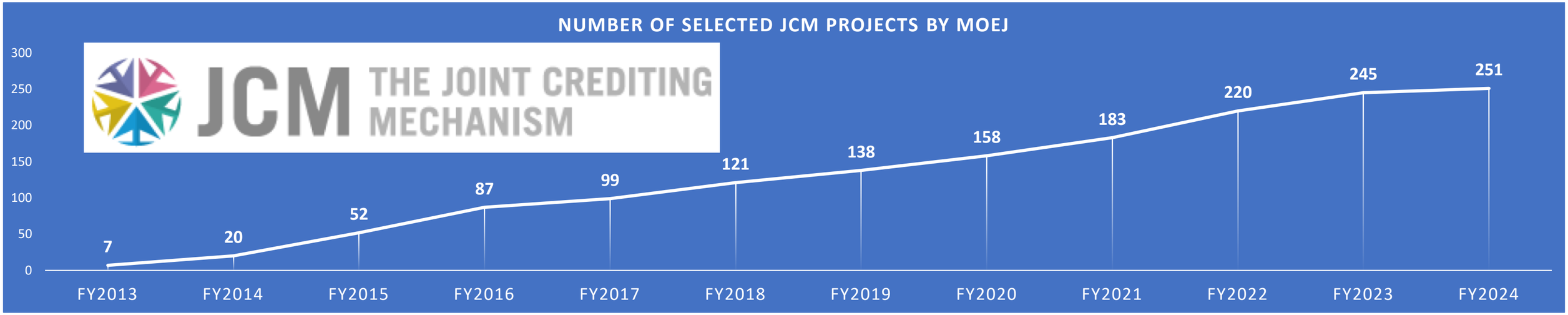
19 December 2024

Global Environment Centre Foundation (GEC)

Agenda

1. JCM Model Projects Overview
2. Project Trend
3. JCM Global Match
4. Conclusion

JCM Partnership



2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024


Mongolia
Jan. 8, 2013 (Ulaanbaatar)


Bangladesh
Mar. 19, 2013 (Dhaka)


Ethiopia
May. 27, 2013 (Addis Ababa)

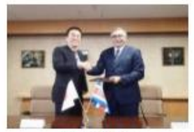

Kenya
Jun. 12, 2013 (Nairobi)


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

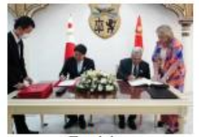

Chile
May. 26, 2015 (Santiago)


Myanmar
Sep. 16, 2015 (Nay Pyi Taw)


Thailand
Nov. 19, 2015 (Tokyo)


Philippines
Jan. 12, 2017 (Manila)


Senegal
Aug. 25, 2022 (Dakar)


Tunisia
Aug. 26, 2022 (Tunis)


Azerbaijan
Sept. 5, 2022 (Baku)


Moldova
Sept. 6, 2022 (Chisinau)


Georgia
Sept. 13, 2022 (Tbilisi)


Sri Lanka
Oct. 10, 2022 (Colombo)


Uzbekistan
Oct. 25, 2022 (Tashkent)


Papua New Guinea
Nov. 18, 2022 (Sharm-el-Sheikh)

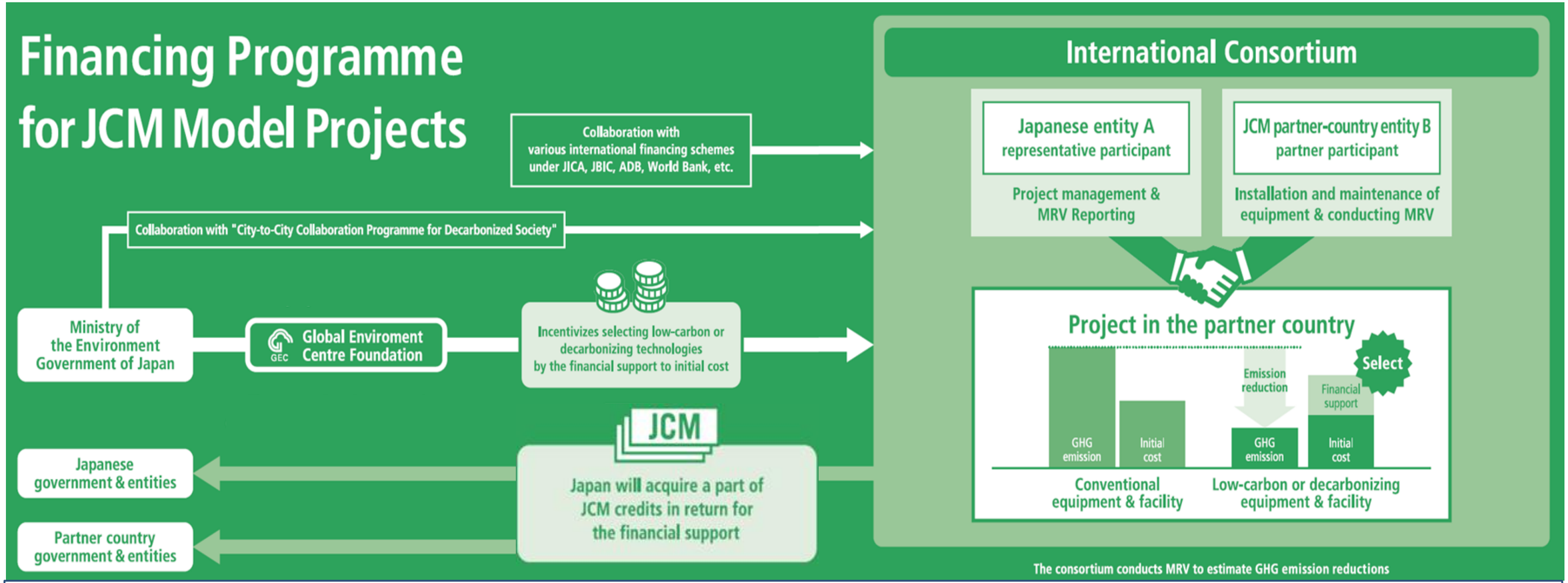

United Arab Emirates
April. 16, 2023 (Sapporo)


Kyrgyz Republic
July. 6, 2023 (Bishkek)


Kazakhstan
Oct. 30, 2023 (Astana)


Ukraine
Feb. 19, 2024 (Tokyo)

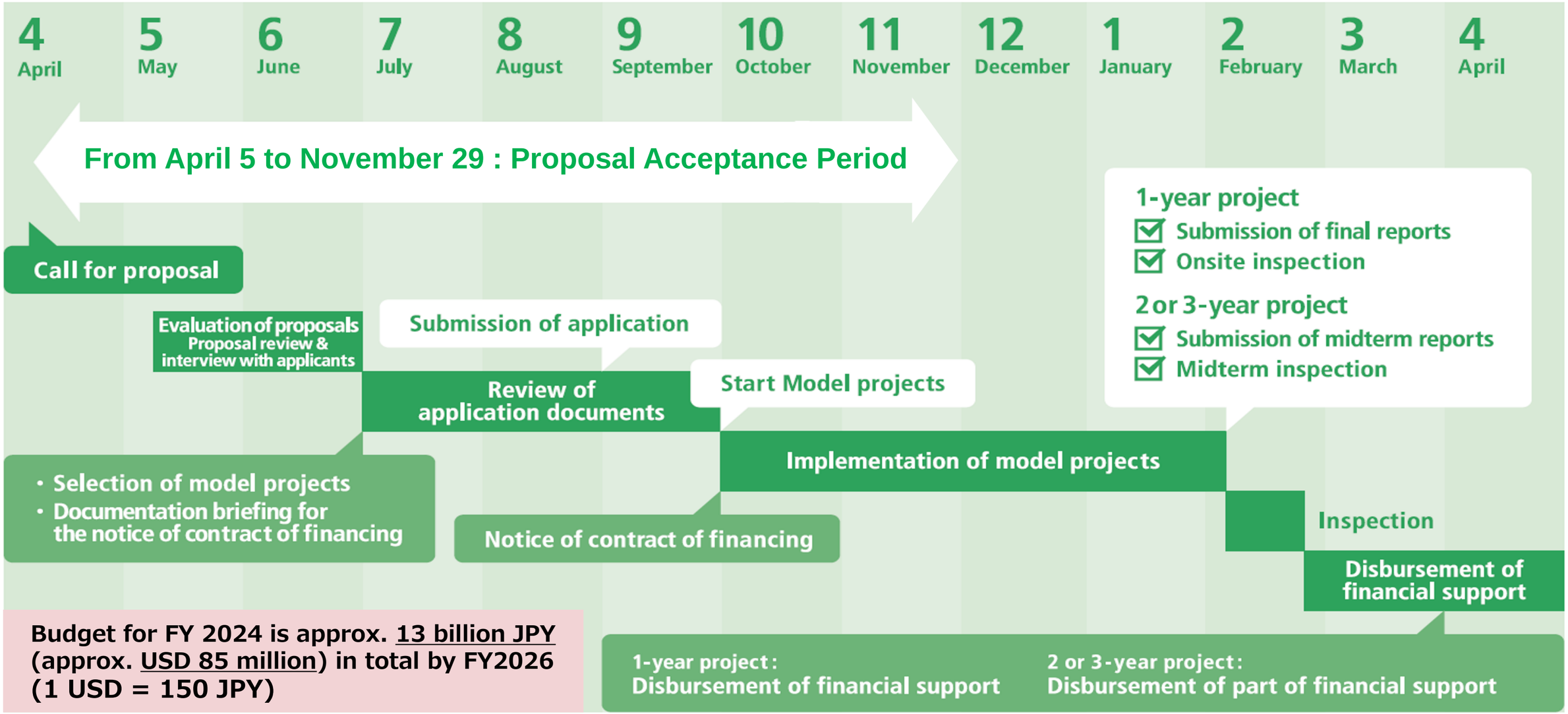
Financing Programme for JCM Model Projects



Basic Concept of the JCM

- Facilitating diffusion of advanced decarbonizing technologies, products, systems, services and infrastructure as well as implementing mitigation actions, and contributing to the sustainable development of developing countries.
- Appropriately evaluating contributions from Japan to GHG emission reductions and removals in a quantitative manner and using them to achieve Japan and partner country's NDC emission reduction targets.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions and removals.

JCM Model Projects Schedule in FY2024



Development of JCM Model Projects

Development Step

Matching with a Japanese Partner

↓

Development of proposal and submission to GEC

↓

Share PIN with Partner country and approve the project

※PIN: Project Idea Note

↓

Announcement of preliminary selection result

↓

Development of application documents for contract of finance and submission to GEC

↓

Conclusion of the contract of finance

↓

Starting the JCM Model Project

Scope of Financing and Eligible Projects

What kind of projects are supported by Financing Programme?

⇒Excerpt form Guidelines for Submitting Proposals

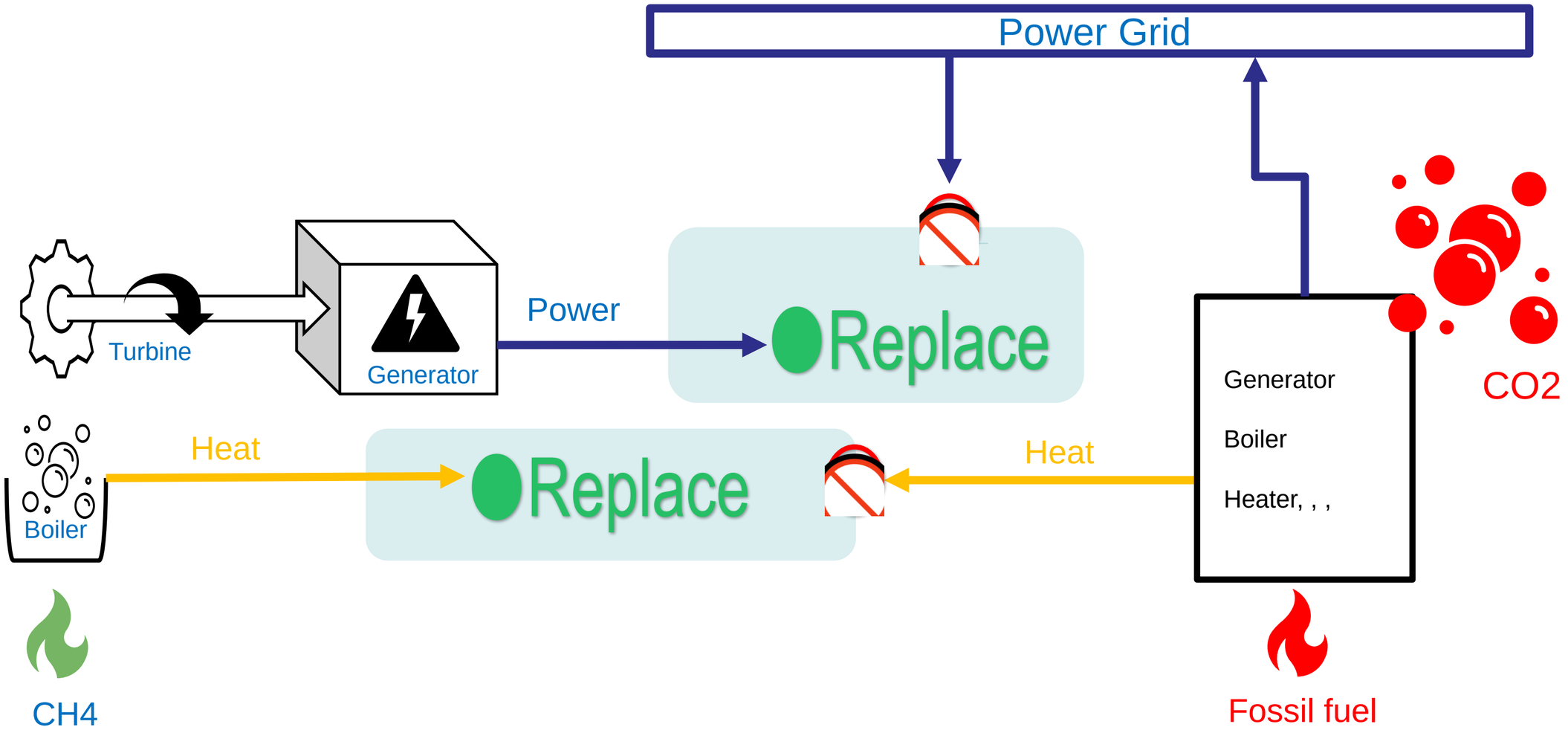
(tentative)2024_Guidelines_for_Submitting_Proposals.pdf (gec.jp)

(a) Projects that reduce energy-related CO2 emissions with leading decarbonizing technologies in the partner countries or developing countries, with which Japan has signed, and that are expected to contribute to achieving Japan's NDC through the JCM;

(b) Projects contribute to realization of SDGs (Sustainable Development Goals). The installation and operation of the facilities/equipment shall comply with the relevant laws and regulations of the partner country and international practices and guidelines regarding the environmental and human rights protection.

(c) Reduction of GHG emissions achieved by the projects can be quantitatively calculated and verified.

Reduce energy-related CO2 emissions



Cost-effectiveness of emission reductions

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 law, and are dependent on the industry classification.

JPY3,000/tCO2equivalent

In case the number of similar technological Projects in each country is 5 to 9.

JPY2,500/tCO2equivalent

Solar power project

JPY500/tCO2equivalent

Hydropower project

JCM for SDGs

Possible Contribution of Renewable Energy Projects to SDGs

GHG emission reduction can be implemented though renewable energy generation by replacing electric power derived from fossil fuel combustion

- Photovoltaic Generation
- Hydraulic Power Generation
- Wind Power Generation
- Geothermal Generation
- Biomass・Biogas Generation

<Graph Legends>

- Goal to which Renewable Energy Project can contribute
- Common Goal to which JCM Projects can contribute

※The listed goals are no more than recommended examples with high potential to contribute through implementing JCM project. These goals are not limited nor mandatory to contribute.

Planning | **Implementation** | **Operation** | **Decommission**

Consider gender equal access to various benefits from the project such as compensation of land acquisition.

- ・Ensure women's participation such as public hearing (5.5)
- ・Equal rights to ownership and compensation of land acquisition (5.a)

- Equal rights to basic services (1.4)
- ・Increase share of renewable energy (7.2)

Reducing consumption of electricity derived from fossil fuel, improve the sustainability of the installed facility such as factory, hotel and hospital.

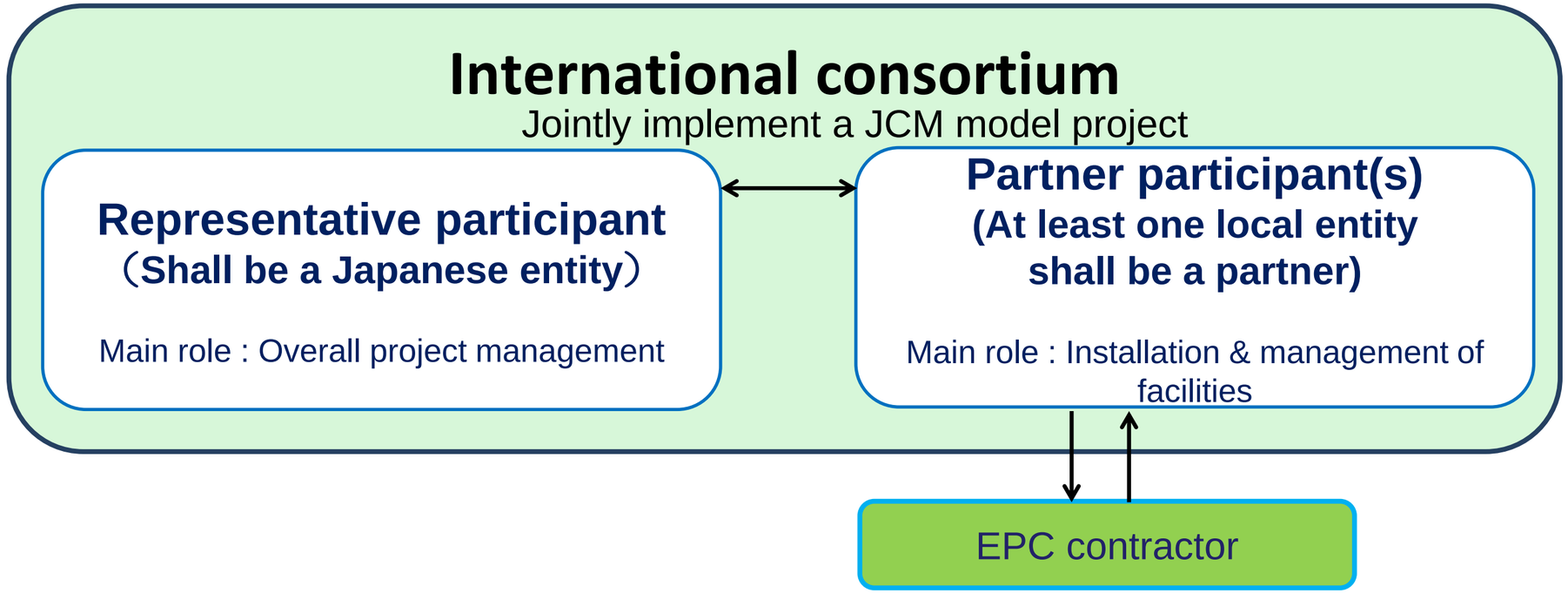
- ・Reduce air pollution(11.6)
- ・Increase resource-use efficiency and greater adoption of clean and environmentally sound technologies (9.4)
- ・Sustainable management and efficient use of natural resources (12.2)
- ・Environmentally sound management of all wastes throughout their life cycle (12.4)
- ・Reduce waste generation through prevention, reduction, recycling and reuse (12.5)

Reduce air and water pollution, noise and vibration by implementing proper disposal and recycling.

Prevent adverse effects on forestation and biodiversity conducting proper environment assessment according to the laws and regulations in the partner country.

- ・Sustainable management of all types of forests (15.2)
- ・Reduce inequality by procurement with fare price (10.3)
- ・Publish sustainability reports (12.6)
- ・Education and training for relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (4.4)
- ・Increase employment of women to managerial and technical positions (5.5) and gender sensitive work environment (Guideline on Gender Equality for JCM)
- ・Full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. (8.5)
- ・Adopt supply chain without child labor, exploitation, conflict and corruption. (5.2、8.8、16.2、16.5)
- ・Take urgent action to combat climate change and its impacts. (13)
- ・Promote the development, transfer, dissemination and diffusion of environmentally sound technologies (17.7)
- ・Enhance the global partnership for sustainable development. (17.16)

International Consortium



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

Categorization by applied technology type and Support

Global Environment Centre Foundation

Maximum Percentage of Financial Support

Number of selected project(s) using a similar technology in each country	Percentage of financial support
0	Up to 50%
1 to 3	Up to 40%
4 to 7	Up to 30%
8 to 9	Up to 20%
More than 10	Not applicable

Please refer to URL below at Page 28 for detail:

(tentative)2024_Guidelines_for_Submitting_Proposals_rev1

Sector	Technology	Mongolia MN	Bangladesh BD	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	Tunisia TN	Sri Lanka LK	
1. Energy Efficiency	Air Conditioning System					4		2								1				7
	Chiller		2			5		5	1		1					5				19
	Refrigerator							1							2	4				7
	Absorption Chiller Using Waste							2								2				4
	Swirling Induction Type Air-															1				1
	Fridge and Freezer Showcase							1								1				2
	Boiler	2				2		4				1			2	3				14
	Heat Medium Boiler							1												1
	Double Bundle-type Heat Pump					1		1								1				3
	Water Heater Using Waste								1											1
	Waste Heat Recovery System														2	1				3
	Heat Exchanger															1				1
	Transformer					4	2													6
	LED Lighting							2								1				3
	LED Lighting with Dimming					2		1			1									4
	Pump					1														1
	Air Compressor					1										1				2
	Aeration System							1												1
	Regenerative Burners							1												1
	Gas Fired Baking Furnace					1														1
	Induction Furnace															1				1
	Gas Fired Melting Furnace							1												1
	Air Conditioning Control					1										1				2
	Freaquency Inverter for Pump					1					1									2
	Loom		1					2								1				4
	Old Corrugated Cartons							1												1
	Battery Case Forming Device					1														1
	Electrolyzer in Chlorine												1			1				2
	Wire Stranding Machines					1														1
	Autoclave							2												2
	Multi-effect Distillation System											1								1
	Injection Modling Machine							1												1
2. Renewable Energy	Solar Power Plant	5	1	4	1	17	3	9	1	5	3	2	2	12	1	24	11	2	1	104
	Solar Power Plant with Battery							1						1						2
	Small Hydropower Plant					1		10									2			13
	Wind Power Plant					1														1
	Geothermal Power (Binary)																3			3
	Geothermal Power (Flush)																1			1
	Biomass Power Plant					3		1						1	1					6
	Biogas Power Plant																1			1
	Biomas boiler					2										1				3
	Biogas boiler														1		1			2
	Biomass Co-generation					1										1				2
3. Effective Use of Energy	Power Generation by Waste							1							1	2	1			5
	Gas Co-generation							2								4				6
	Battery													1						1
4. Waste Handling and Disposal	Waste-to-Energy Plant					1									1					2
	Power Generation by Methane											1								1
5. Transportation	Digital Tachograph System					1														1
	CNG-Diesel Hybrid Bus							1												1
	Reefer Container					1														1
Total	Number of technology： 51	7	4	4	1	53	5	54	3	5	6	5	3	15	11	58	20	2	1	257

MRV Process for the JCM（MRV：Measurement, Reporting and Verification ）

JCM Project Registration and Credit Issuance

Main Actors at each Process	Process	
Project Participant / Each Government Joint Committee	Submission of Proposed Methodology	Methodology Development
Joint Committee	Approval of Proposed Methodology	
Project Participant	Development of PDD※	Project Registration
Third Party Entities	Validation	
Joint Committee	Registration	
Project Participant	Monitoring	Credit Issuance
Third Party Entities	Verification	
Joint Committee decides the amount Each Government issues the credit	Issuance of JCM credits	

※PDD: Project Design Document

MRV Process for the JCM

Measurement, Reporting and Verification of amount of GHG emission reductions for JCM Project

Measurement

Reporting

Verification

JCM Credit

Representative Participant of JCM Projects shall conduct measurement, reporting and verification (MRV) of the GHG emission reductions realized after installation and commissioning of the facilities/equipment for the issuance of JCM credits.

Agenda

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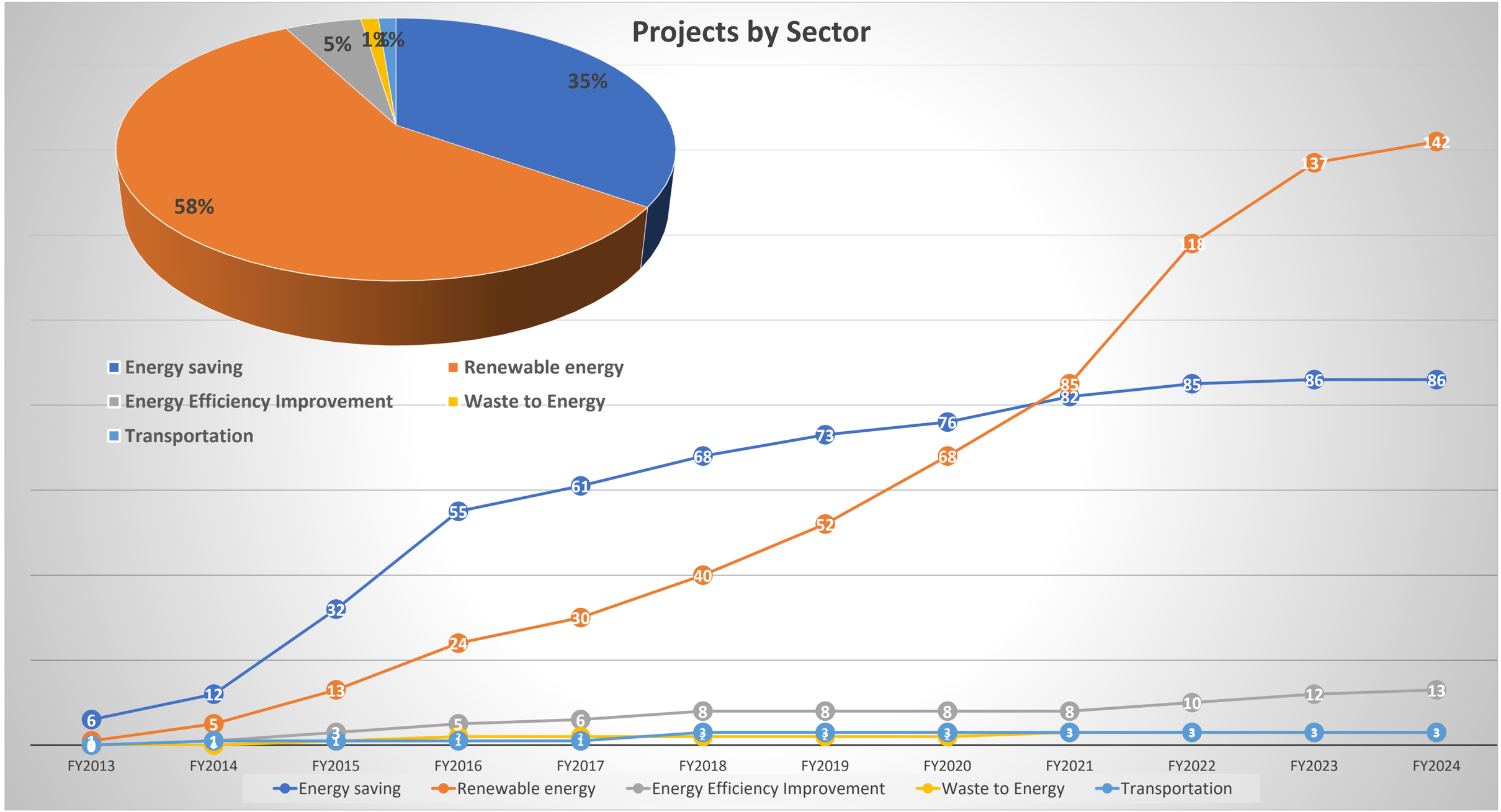
JCM Model Projects Selected in 2024

Partner Country	Type	Representative Participant	Project Name	Sector	Estimated GHG Reduction（tCO2/year）
Chile	JCM Model Project	Farmland Co., Ltd.	12MW Solar Power and 41MWh Storage Battery Project in Rancagua City	Renewable Energy	9,682
Thailand	JCM Model Project	NIPPON STEEL ENGINEERING CO., LTD.	Introduction of Biomass Co-generation System to Chemical Factory	Renewable Energy	48,429
Thailand	JCM Model Project	DAIKI ALUMINIUM INDUSTRY CO., LTD.	Productivity Improvement of Aluminium Ingots Using High Efficiency Furnace System	Energy Efficiency Improvement	4,009
Mongolia	JCM Model Project	Asian Gateway Corporation	15MW Solar Power and 80MWh Storage Battery Project in Erdene, Dornogovi Province	Renewable Energy	16,396
Indonesia	JCM Model Project	The Kansai Electric Power Company, Incorporated	Introduction of 0.8MW Rooftop Solar Power System to Automotive Parts Factory	Renewable Energy	681
Palau	JCM Model Project	SeED Okinawa LLC	Introduction of 0.6MW Solar Power and 0.3MWh Storage Battery to Resort Hotel	Renewable Energy	506

More projects will be selected soon!

Projects by Sector

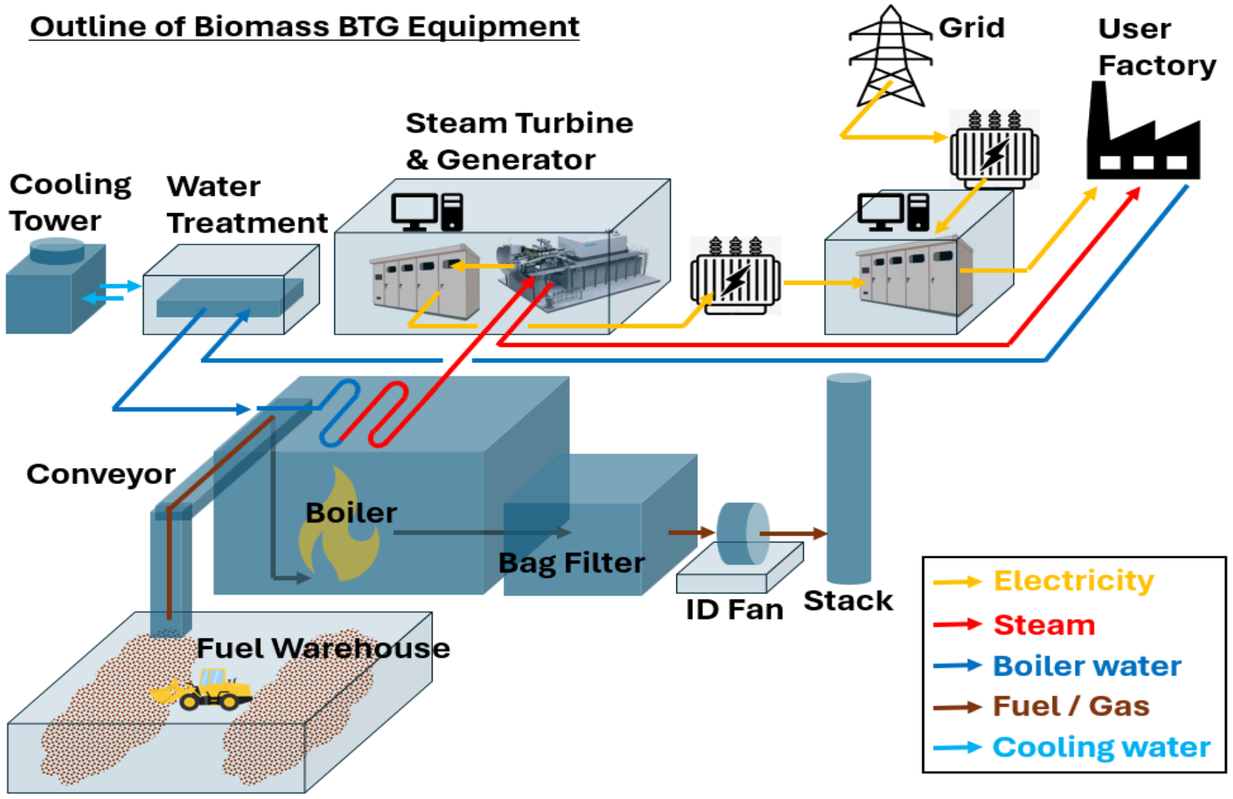


Introduction of Biomass Co-generation System to Chemical Factory
PP (Japan): NIPPON STEEL ENGINEERING CO., LTD.
PP (Thailand): NS-OG ENERGY SOLUTIONS (THAILAND) LTD.
THAI NIPPON STEEL ENGINEERING & CONSTRUCTION CORPORATION, LTD

Outline of GHG Mitigation Activity

This project introduces biomass co-generation system to a chemical factory in Rayong. The generated electricity and steam are supplied to a chemical factory and another in adjacency.

This project reduces greenhouse gas (GHG) emissions by replacing part of the electricity from the fossil fuel-derived grid power and part of the steam from the fossil fuel burning boiler with power and steam from renewable sources.



Productivity Improvement of Aluminium Ingots Using High Efficiency Furnace System
PP (Japan):DAIKI ALUMINIUM INDUSTRY CO., LTD.
PP (Thailand): DELTA DAIKI METAL(THAILAND) CO., LTD.

Outline of GHG Mitigation Activity

This project introduces a high efficiency furnace system to a new aluminum ingots factory in Rayong province.
The system saves energy consumption and reduces greenhouse gas (GHG) emissions by improving both thermal efficiency and productivity.
It adopts closed type furnaces with distributed combustion regeneration burners and enhances thermal efficiency by reusing waste heat. Additionally, permanent magnet stirring enhances the melting speed.
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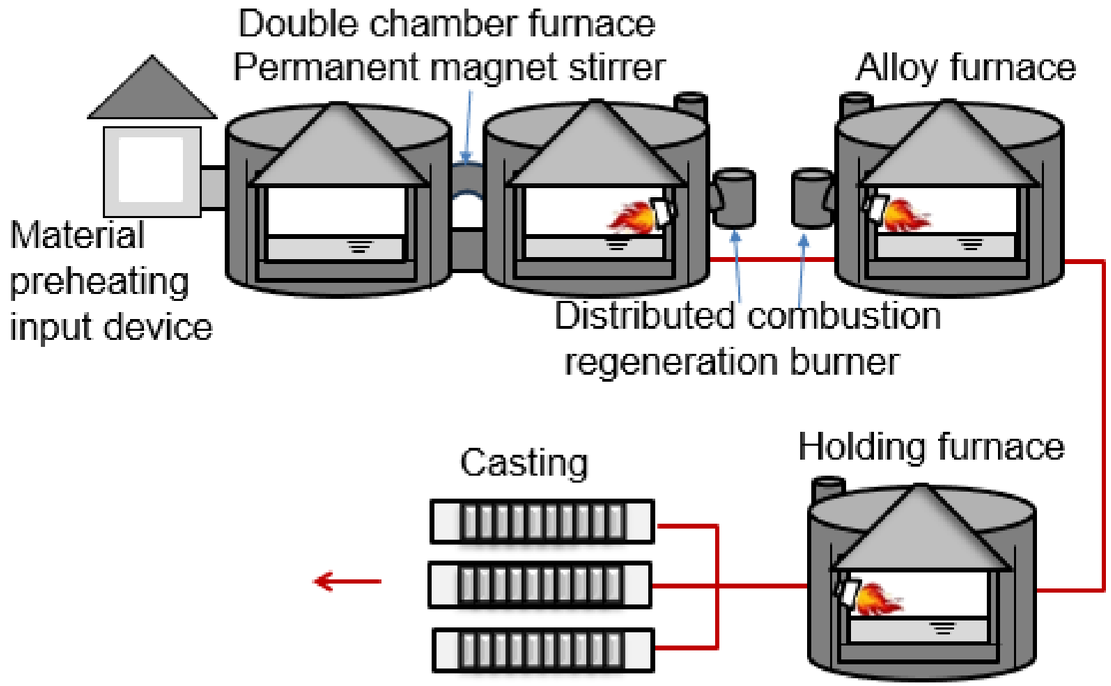
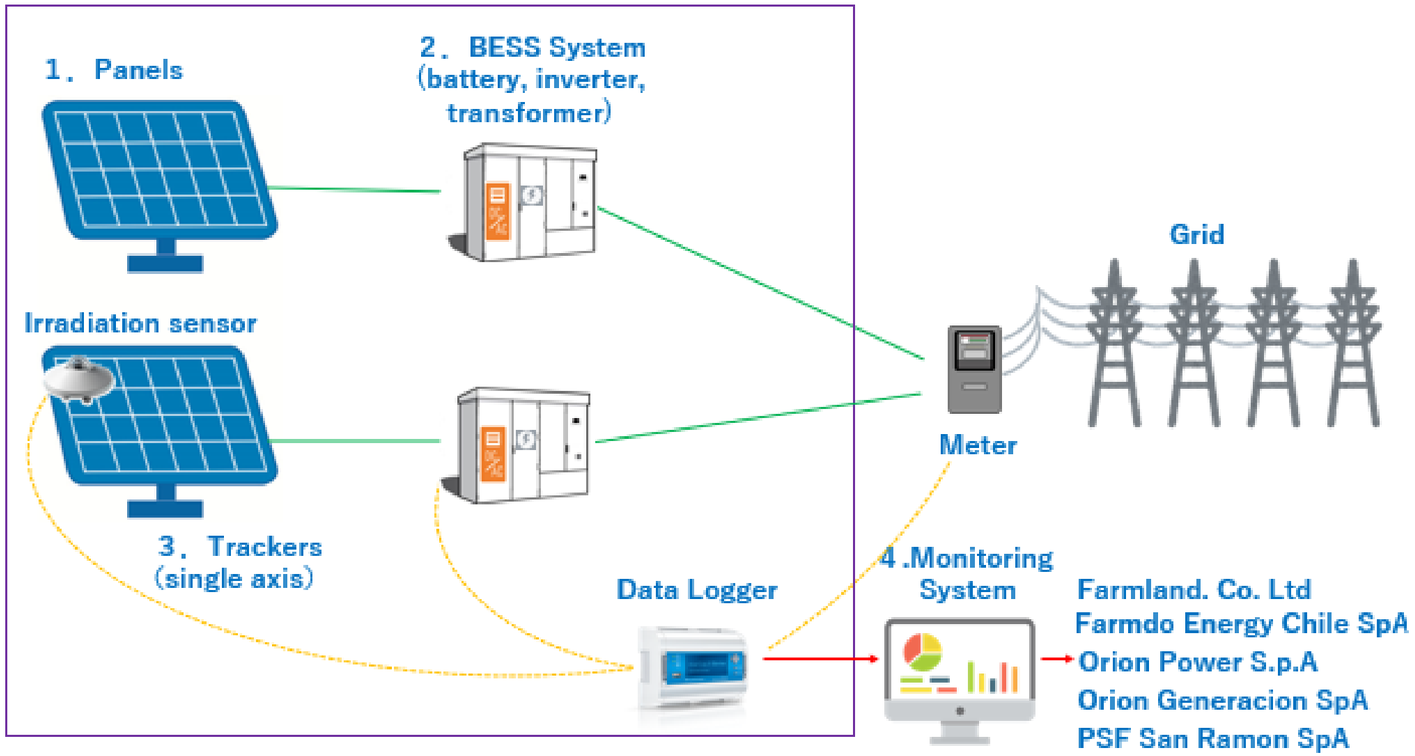


12MW Solar Power and 41MWh Storage Battery Project in Rancagua City
PP (Japan): Farmland Co., Ltd.
PP (Chile):Farmdo Energy Chile SpA, Orion Power S.p.A, Orion Generacion SpA, PSF San Ramon SpA

Outline of GHG Mitigation Activity

This project introduces a 12MW solar power and a 41MWh battery system in Rancagua City, Libertador Bernardo O'Higgins Region and supplies the electricity through a Chilean power distribution company.

This project supplies renewable energy and charges the excess in the battery system during the daytime, and supplies the excess during the nighttime to reduce greenhouse gas (GHG) emissions.



Introduction of 14.5MW Mini Hydro Power Plant Project in Siguil River in Mindanao

PP (Japan): Toyota Tsusho Corporation

PP (Philippines): Alsons Consolidated Resources, Inc.,
Alsons Renewable Energy Corporation
Siguil Hydro Power Corporation

Outline of GHG Mitigation Activity

This project aims to reduce CO2 emissions by constructing a run-of-river mini hydroelectric power plant 14.5MW (14.5 X 1unit) utilizing water resources in the Municipality of Maasim, in the southern part of Mindanao Island. This project contributes to the reduction of greenhouse gas (GHG) emissions by replacing grid electricity with renewable energy and also contribute to the realization of a sustainable society by addressing the growing demand for electricity necessitated by economy growth.

Waste to Energy Project in Bac Ninh Province
PP (Japan): JFE Engineering Corporation
PP (Vietnam): T&J Green Energy Company Limited

Outline of GHG Mitigation Activity

A waste-to-energy plant is introduced in Bac Ninh province. This plant incinerates and generates electricity from 230tons/day of municipal solid waste, which has been disposed of as landfill. The plant also incinerates and generates electricity from 120 tons/day of municipal solid waste and 150tons/day of industrial solid waste, which were previously incinerated.
This scheme enables the proper waste treatment and the supply of electricity without the use of fossil fuels. It also reduces methane emissions from landfill sites and greenhouse gas (GHG) emissions by replacing grid electricity.

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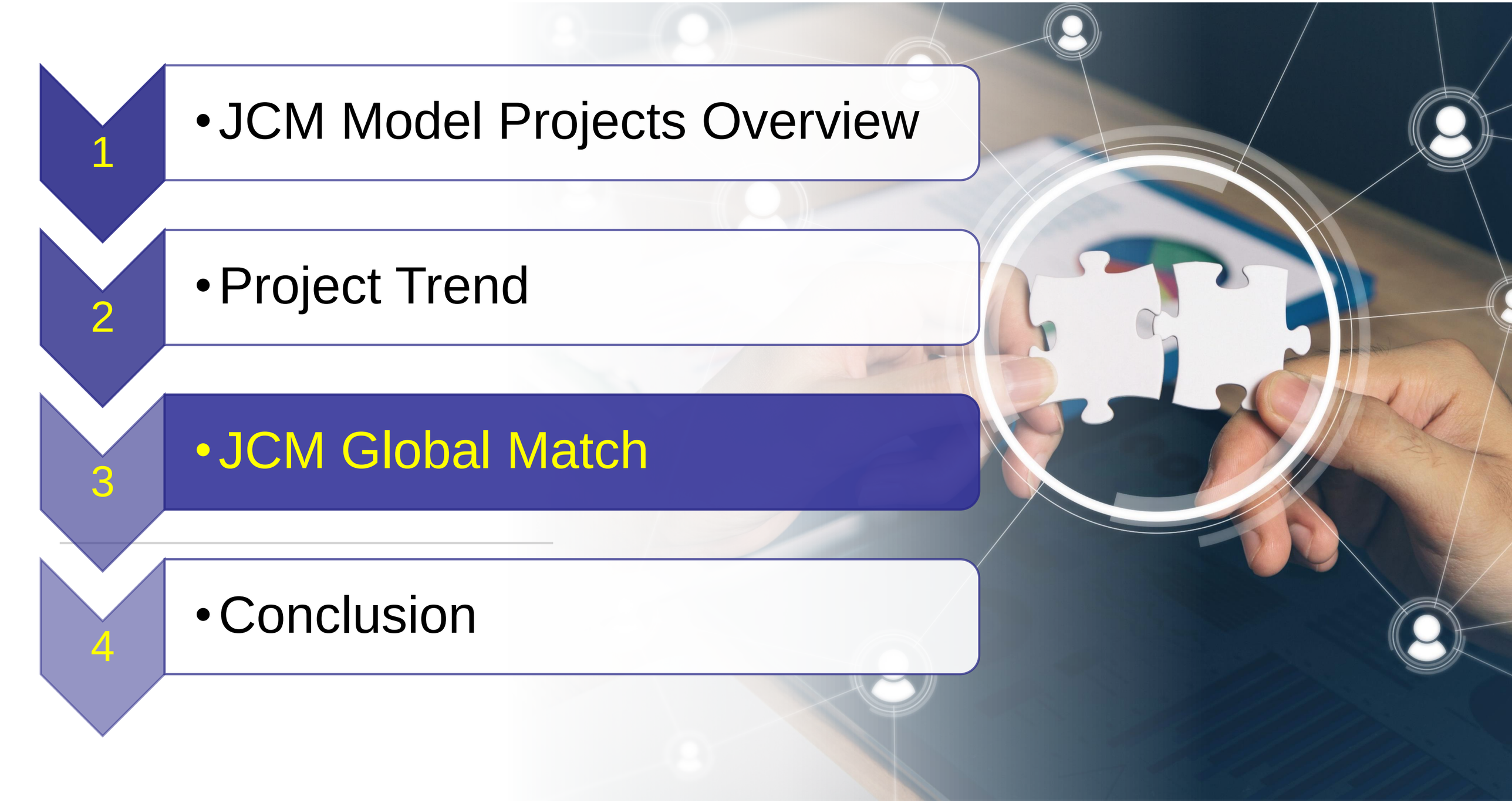


JCM Global Match enhances the efficiency of your project development specializing in the JCM financing programme.

1

FIND

Potential partner

2

ADVERTISE

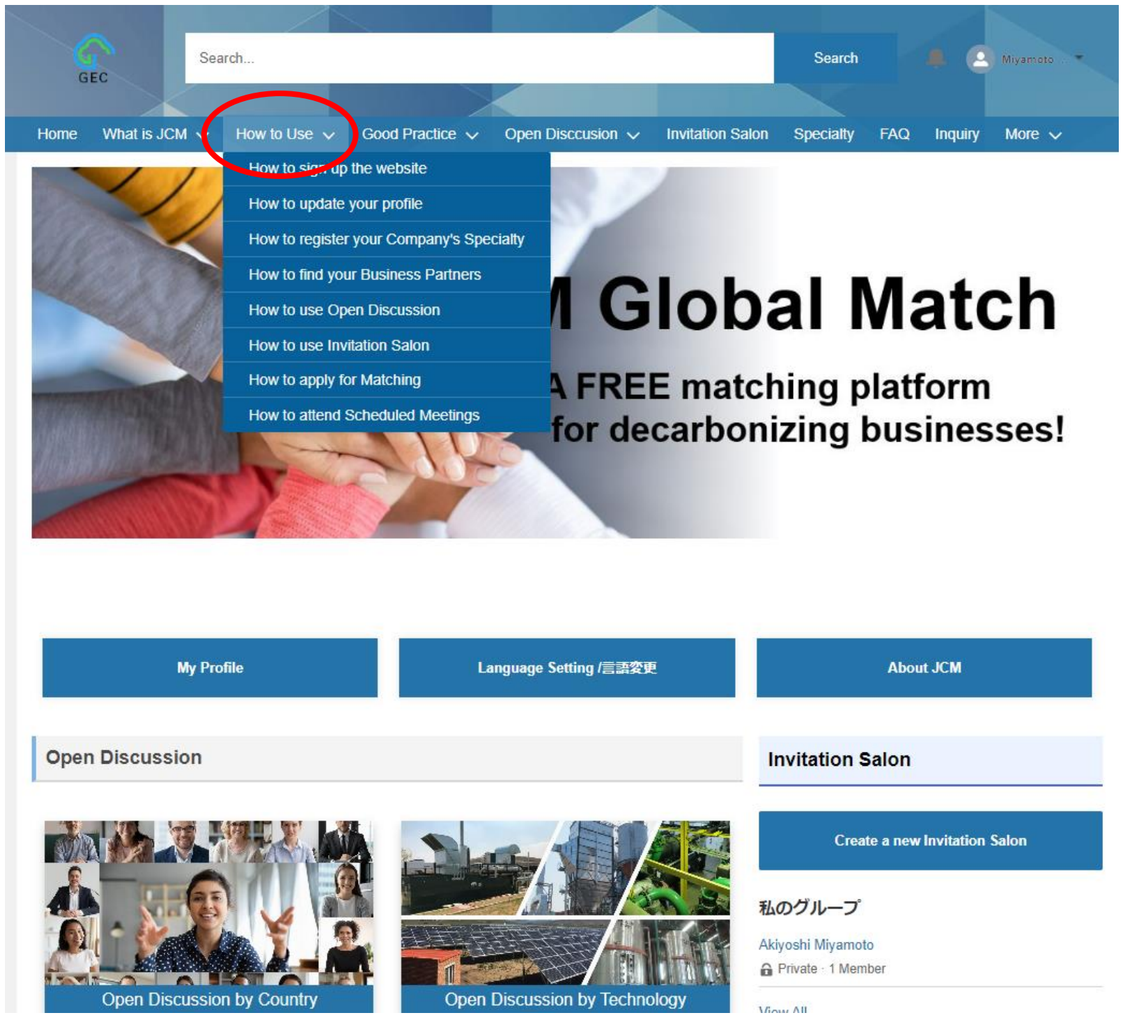
Your company to other users

3

DISCUSS

Your business plan

JCM Global Match
For Further Information



Link to JCM Global Match site

https://gec.force.com/JCMGlobalMatch

< JCM Global Match QR code>

Consultation with GEC

Global Environment Centre Foundation

Please let any enterprize who may plan a JCM Model project in your country know about this information.

Consult GEC anytime during the year (except for evaluation period.)

Please fill out the Consultation Form which URL is shown here "consultation form" as much as possible and send it to jcm-info@gec.jp for free of charge consultation online or offline. Your email title should be "Consultation on application for JCM Model Project (Your company name)."

GEC will support you by answering to your questions and offer practical advices on points like below:

➢Sample points of consultation

- ✓ **Definition of Eligible Project and advanced technologies**
- ✓ **International Consortium**
- ✓ **MRV methodologies to calculate reduction in GHG emission**
- ✓ **Legal durable years, maximum percentage of financial support, and cost effectiveness**
- ✓ **Plan to obtain necessary financing, concession, licenses, etc.**
- ✓ **Reasons financial soppurts are needed, Profitability**

Consultation Form (part)

Global Environment Centre Foundation (GEC)
Consultation Form for JCM Project and Demonstration project for application of new decarbonizing technology【FY2024】
*Please fill out the white space as much as possible.
*Reference material - Guidelines for Submitting Proposals (Tentative translation) for JCM Project
https://gec.jp/jcm/jp/kobo/r06/mp/(tentative)2024_Guidelines_for_Submitting_Proposals.pdf

Information of Consultation	
Select for which project would you like to apply.	☐ JCM Model Project ☐ Demonstration project for application of new decarbonizing technology ☐ Undecided
Entry date	Click here to select a date
Method of meeting	☐ In-person (Location:) ☐ Online
Meeting attendee(s)	*Please list the name(s) and organization(s).*
Past consultation date for the same project	☐ First time ☐ ( ) times : Previous Consultation Date : Click here to select a date
ID No. / Meeting date	*For internal use* / Select a meeting date for internal use
GEC respondents	*For internal use*
Project Information Provided by	
Company name	
Department/division	
Your name	
E-mail address	
Phone No.	*Country code + local number*
JCM Global Match registration	☐ Registered ☐ Not registered yet *Please consider registration with JCM Global Match: https://jcm-gm.my.site.com/JCMGlobalMatch/s/?language=en_US
Project Information	
Would you like explanation of JCM and/or New Technology Introduction Project during the meeting?	JCM Model Project: ☐ Yes ☐ No Demonstration project for application of new decarbonizing technology: ☐ Yes ☐ No
Application target	☐ FY2024 ☐ FY2025 ☐ TBD If other than above, please specify:
Partner country	

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JCM Model Projects by Technology

Energy Efficiency

Boiler & Chiller & Solar Power (Thailand)
The Kansai Electric Power Co., Inc.

Thermal Oil Heater System
(Indonesia） Fumakilla Limited

Chiller & LED Lighting (Vietnam)
Tokyu Corporation

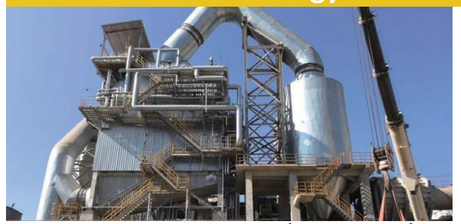
Once-through Boiler
(Indonesia) DIC Corporation

Energy Efficiency

Chiller & Air Conditioner & Solar Power
(Indonesia) Yuko Keiso Co., Ltd.

LED Lighting (Vietnam）
Endo Lighting Corporation

Effective Use of Energy

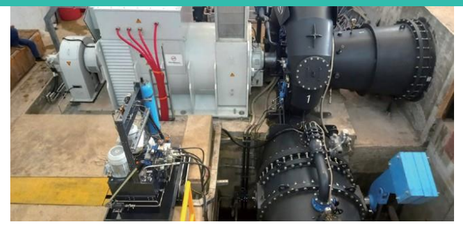


Waste Heat Recovery (Myanmar)
Global Engineering Co., Ltd.

Gas Co-generation System & Chiller (Thailand)
The Kansai Electric Power Co., Inc.

Renewable Energy

Rice Husk Power Generation (Chile)
Asian Gateway Corporation



Mini Hydro Power Plant (Indonesia)
NiX JAPAN Co., Ltd.

Binary Geothermal Power Generation
(Philippines) Mitsubishi Heavy Industries, Ltd.

Solar Power (Thailand) Shizen Energy Inc.

Renewable Energy

Mini Hydro Power Plant (Philippines)
Toyota Tsusho Corporation

Waste Handling and Disposal

Power Generation with Methane Gas Recovery System(Mexico) NTT Data Institute of Management Consulting, Inc.

Waste to Energy Plant (Vietnam)
JFE Engineering Corporation

Transportation

CNG-Diesel Hybrid Public Bus(Indonesia)
Hokusan Co., Ltd.

Thank you for your attention!
ขอบคุณมากสำหรับความสนใจของคุณ

Global Environment Centre Foundation(GEC) Tokyo Office

4th Floor, Hongo Ozeki Bidg 3-19-4, Hongo, Bunkyo-ku,
Tokyo 113-0033, JAPAN
Phone : +81-3-6801-8860 / FAX : +81-3-6801-8861
E-mail :jcm-info@gec.jp
URL : http://gec.jp/

GEC

NSET

Seminar on the Joint Crediting Mechanism (JCM) Implementation in Thailand – Further Contribution to GHG Emission Reductions in Thailand through the JCM –

Session 3. JCM Financing Programme and Case Example of the JCM Implementation: Introduction of Biomass Co-generation System to Chemical Factory (Selected in 2024)

NS-OG ENERGY SOLUTIONS (THAILND) LTD. (NSET)

19th December 2024

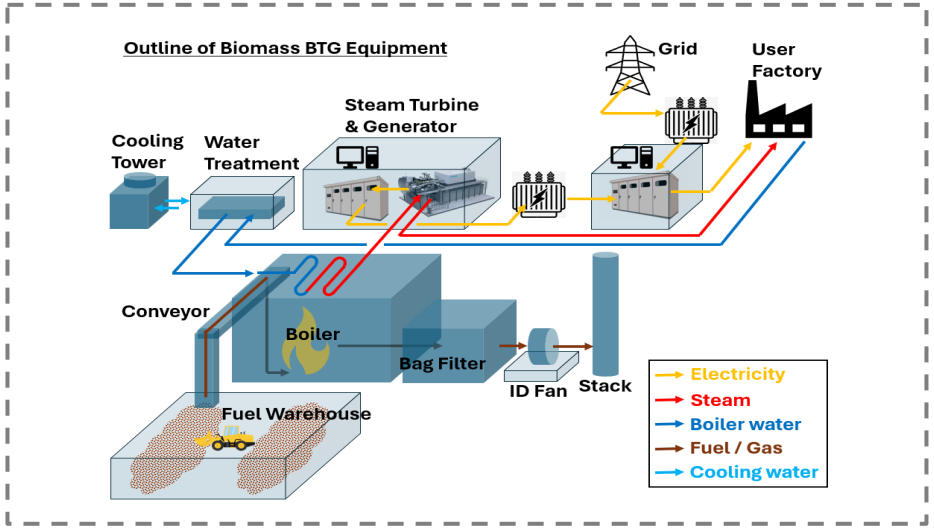
Project Title : Introduction of Biomass Co-generation System to Chemical Factory

PP (Japan):NIPPON STEEL ENGINEERING CO., LTD. PP (Thailand):NS-OG ENERGY SOLUTIONS (THAILAND) LTD. 、
THAI NIPPON STEEL ENGINEERING & CONSTRUCTION CORPORATION, LTD.

Outline of GHG Mitigation Activity

This project introduces biomass co-generation system to a chemical factory in Rayong. The generated electricity and steam are supplied to a chemical factory and another in adjacency.

This project reduces greenhouse gas (GHG) emissions by replacing part of the electricity from the fossil fuel-derived grid power and part of the steam from the fossil fuel burning boiler with power and steam from renewable sources.



Expected GHG Emission Reductions

48,429tCO₂/year

=Reference CO_2 emissions - Project CO_2 emissions

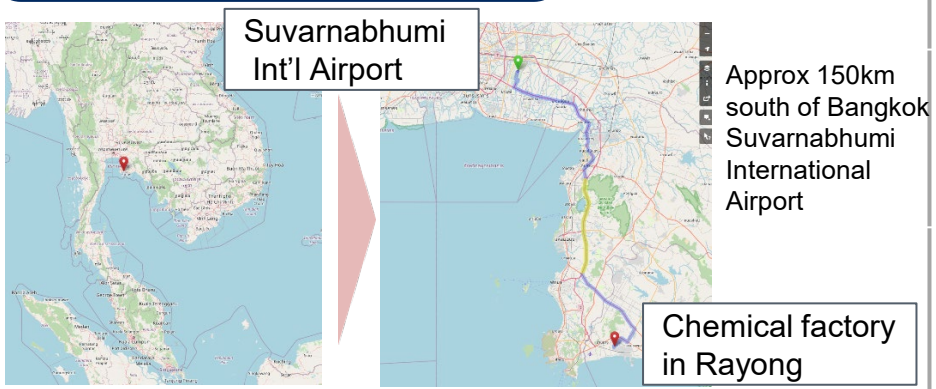
・Reference CO_2 emissions [tCO_2/year]

= (Quantity of the electricity generated by the project) [MWh/year] × Emission factor [tCO_2/MWh]+(Provided steam heat value) [GJ/year] × Emission factor [tCO_2/GJ]

・Project CO_2 emissions [tCO_2 /year]

= (CO_2 emissions by on-site consumption of fossil fuel for operating a biomass power plant)[tCO_2 /year] + (Transportation activity of solid biomass fuels from collecting sites to a biomass power plant) [GJ/year] × Emission factor [tCO_2/GJ]

Sites of Project



Who we are?

"NSET" is a JV company of Nippon Steel Engineering(70%) and Osaka-gas(30%)

Conducting Industrial Solution Businesses(DX, Carbon Neutral(=GX), factory development, energy saving) in Thailand.

Nippon Steel Engineering is a leading company of WtE power plant, Steel Plant and Gas Co-Generation Engineering in Japan.

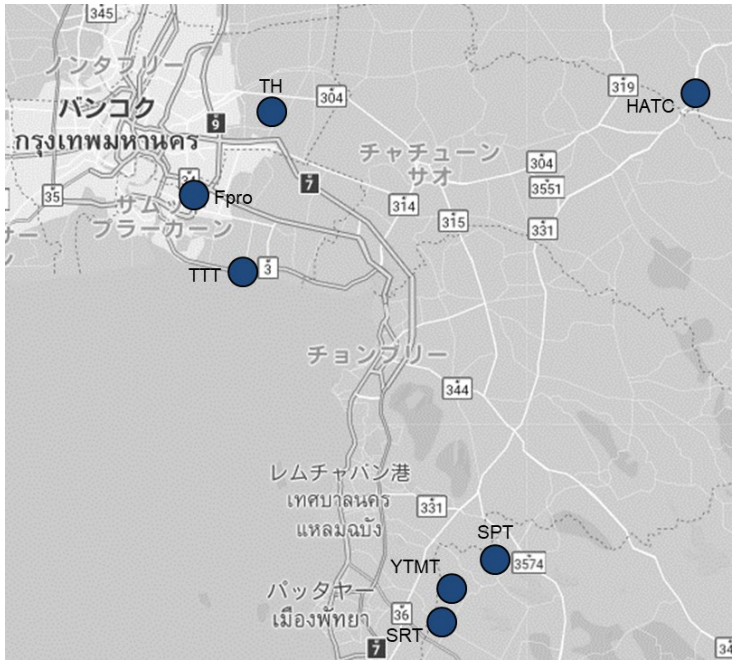
Osaka-gas is a leading company of Energy Supply Business(NG, Power etc) and develop of renewable energy plant such as biomass in Japan.

Who We Are

Who we are? - Company Information -

Company	NS-OG Energy Solutions (Thailand) Ltd. “NSET”
Establishment	June 2012
Revenue	Approx. 1,000 MMTHB
Core business	① Production and supply of heat and power by CHP*1 facility
	② O&M*2 of clients’ utility facility such as boiler, chiller and other utility facilities
	③ Energy visualization of clients’ utility facility
Shareholders	Nippon Steel Engineering (70%)
	Osaka Gas Singapore (30%)

	Customer	Main equipment			Biz model	COD
		Gen	Boiler	Chiller		
HATC	Honda Automobile （Thailand)	-	4 t/h	3,000RT	②	2015
TTT	Toray Textiles (Thailand)	7 MW GT	41 t/h	-	①	2016
YRT	Yokohama Tire Manufacturing (Thailand)	7 MW GT	25 t/h	600RT	①	2017
HATC2	Honda Automobile （Thailand)	7 MW GE	4 t/h	800RT	①	2017
THM	Thai Honda Manufacturing	7 MW GE	4 t/h	1,500RT	①	2018
SPT	Spiber (Thailand)	-	12 t/h	2,000RT	②	2020
SRT	Sumitomo Rubber（Thailand)	-	66t/h	-	③	2023
Fpro*3	District Cooling System	-	-	10,000RT	②	2025



Who we are? – One Stop Service -

NSET offers "One Stop Service" with THAI NIPPON STEEL ENGINEERING & CONSTRUCTION CORPORATION, LTD. (TNS)

Optimal Proposal based on our Technology/ knowledge

Conceptual Design | Basic Design | FEED

High quality Project Management

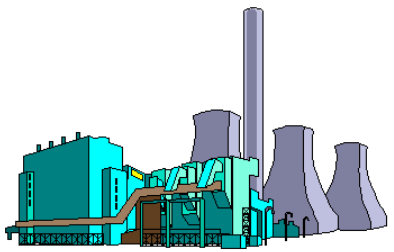
Engineering, Procurement, Construction

Kaizen, Proposal

Visualization / Evaluation of Operation Data

Proposal for Optimization, Energy saving and CO2 reduction

Client Requirements and Specifications



Outsourcing

Off-balancing of investment facilities

Facility Ownership

Funding | Subsidy Acquisition

Stable Operation & Energy Supply

Operation & Maintenance

Energy Supply | Fuel Procurement

➢ TNS : Full Service for EPC(Onshore and Offshore)

EPC

One-stop EPC service provider in Onshore and Offshore.

1987	No.1	900+	30+
Established	Wellhead Platform Share in Thailand Over 200 Nos delivered	Professional staffs	Project Management Professionals

THAI NIPPON STEEL ENGINEERING & CONSTRUCTION CORPORATION LTD.

Nippon Steel Engineering	47%
Nippon Steel Trading	3%
ITD Group	50%

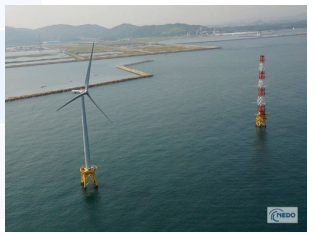
Feasibility Study	Conceptual Design	Front End Engineering Design
Detail Engineering	Procurement & Sourcing	Fabrication & Construction
Transportation & Installation	Hook Up & Commissioning	Advance analysis
As built Survey & 3D Modeling	Operation & Maintenance	
Decommissioning		

Who we are? – NSE`s carbon neutral power related products-

Offshore wind farm

NSE has involved in BOP's EPCI for offshore wind business with 50 years experiences as EPCI contractor for offshore projects of Oil & Gas, marine/port facilities.

Location	Operation start	Foundation	Output / Scope
Fukuoka Pref.	2013	Jacket + gravity	2MW / EPC
Fukushima Pref.	2015	Floating	7MW / Installation of anchor chain
Hokkaido Pref.	2023	Jacket	Total 112MW (8MW*14) / EPCI (Foundation)
Fukuoka Pref.	2026	Jacket	Total 237.5MW(9.6MW*25)/ EPCI (Foundation)



Waste to energy plant

NSE has designed and constructed, and been operating of total of 55 waste to energy plants in Japan.The electricity generated from the waste heat is a " local production for local consumption" power source providing stable and clean energy.

Geothermal steam production facility

NSE has been participating in the construction of geothermal power facilities since the 1980s, aiming for coexistence with nature.
NSE has been responsible for the construction of steam production equipment and pipelines on 10 plants of the 17 large-scale geothermal power plants in Japan.

Biomass power generation

NSE has also actively engaged in the construction and operation of biomass power generation facilities, which have attracted attention as low-carbon power sources in recent years.

Location	Operation start	Foundation	Output / Scope
Fukuoka pref.	2021	EPC	**75MW、Wood pellet, Wood chip, PKS**
Hyogo pref.	2023	EPC,O&M	**75MW、Wood chip, PKS**
Shizuoka pref.	2024	EPC	**75MW、Wood pellet、PKS**
Saga pref.	2024	EPC	**75MW、Wood pellet、PKS**

Who we are? – Osaka Gas`s knowledge of Power Plant Developments and Operations

Osaka Gas（OG） is Gas and Power Supply Company in Japan, and also OG has the wide experience to develop and operate Natural Gas and Biomass Power Plant (Biomass:11 include mixed firing), On-site Business etc in Japan

Osaka-Gas

India

Osaka Gas India

Energy Saving

Thailand

Osaka Gas(Thailand)
OGP Energy Solutions
NS-OG Energy Solutions
OE Solar

Vietnam

Sojitz Osaka Gas
Energy Company

Singapore

Osaka Gas Singapore
City-OG Gas Energy Services
AGP International Holdings

Indonesia

OSAKA GAS INDONESIA

OG has the wide variety of business portfolio abroad especially in Asia.

In Thailand, OG has the JV company with PTT, which is called as OGPS to support factories in the comprehensive utilities business by supplying natural gas pipelines.

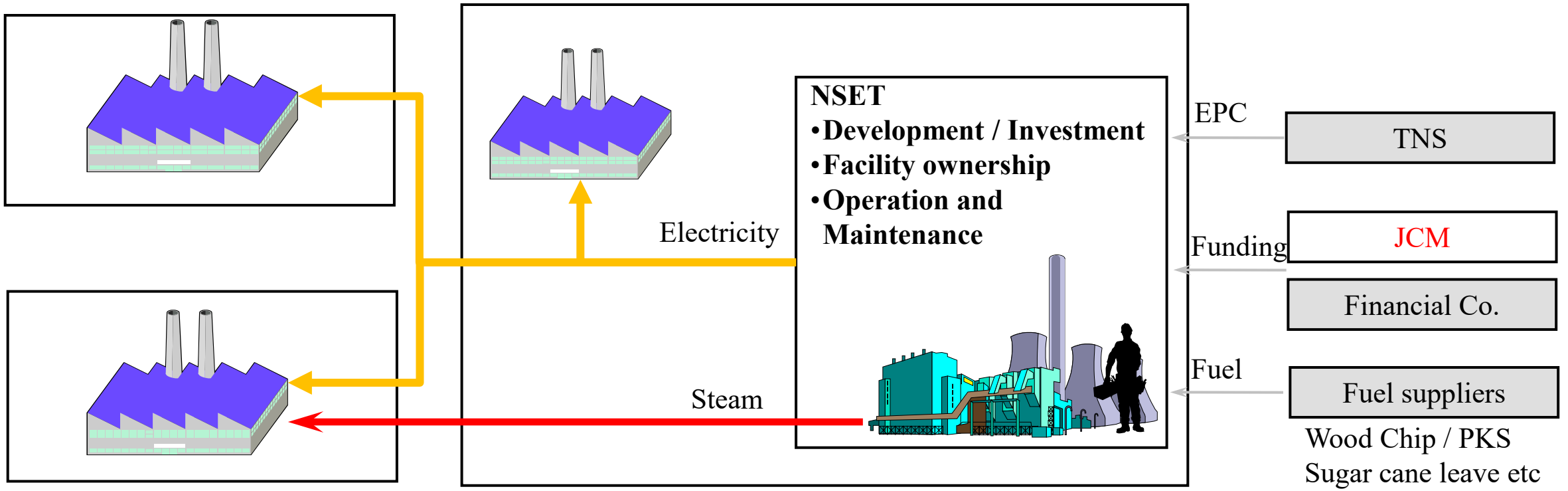
Introduction of Biomass Co-generation System to Chemical Factory (Selected in 2024)

Rough Picture of Biomass Co-generation System Installation Project (Selected JCM in 2024)

Clients outsource Planning, Operation and Maintenance work of Biomass Co-generation system to NSET to achieve GX(Green Transformation). Clients can focus their resources on the core of their production.

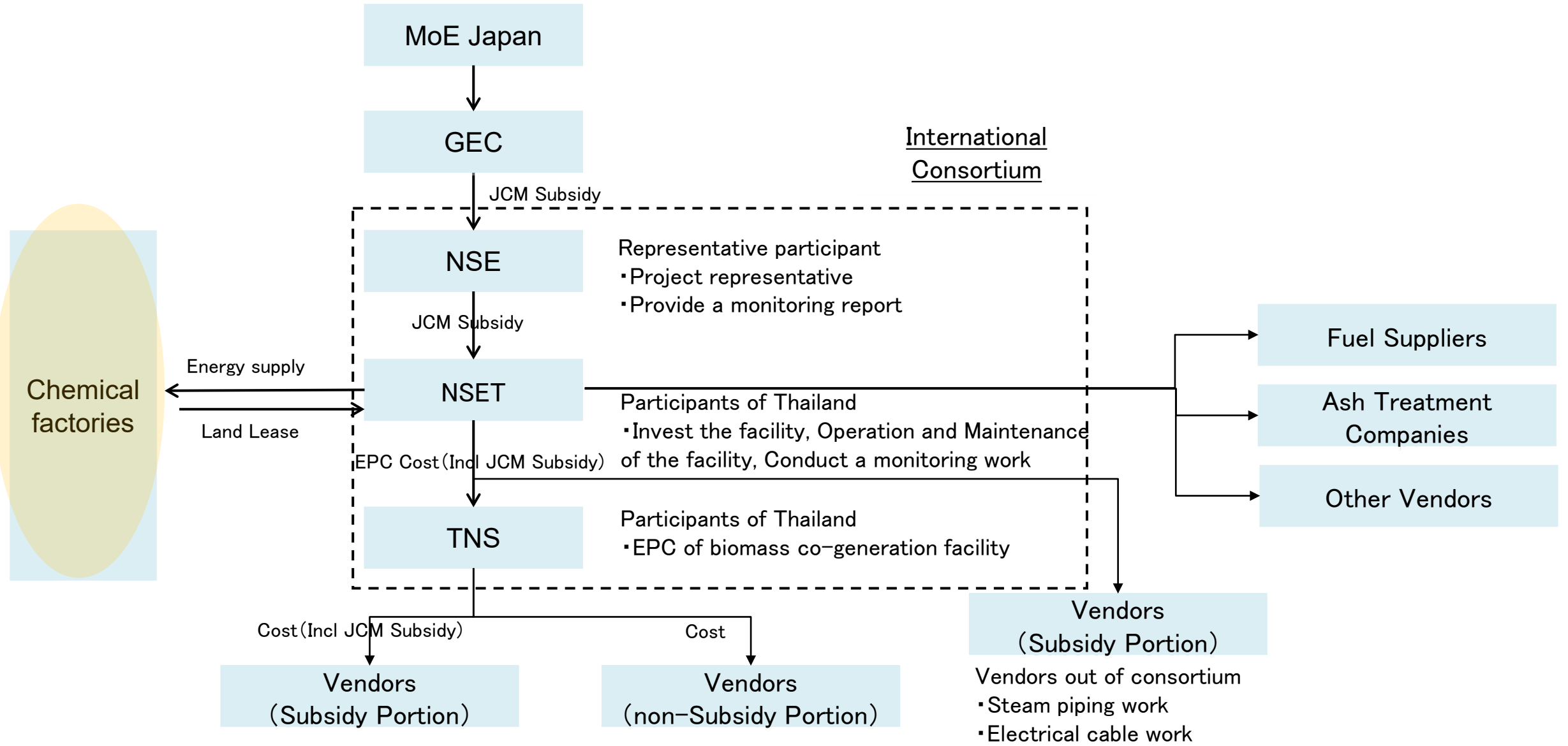
Factory Benefit

- Reduction in utility costs
- Reduction in CO2 emission reduction
- Save Resources(the investment fund and Human resources)



Wood Chip Image

Project Structure



The Important Point for the development and implementation of this project

Development Phase

◆Schedule Arrangement

- JCM schedule has the limit of the project period, and
- The necessary licenses for the Power Plant(Especially Biomass) are various,
- owner shall arrange the schedule considering the license schedule in Thailand and JCM schedule in Japan.(including CoP and IEE report after public hearing)

◆Partnership development especially for fuel procurement

- Regarding to the procurement of Fuel, the partnership with the Thai company is necessary.
- Since the project period is 20yrs, NSET sought the trustworthy and capable company with intimate communication not only negotiation.

Implementation Phase

◆Comply with the Schedule(Project Management)

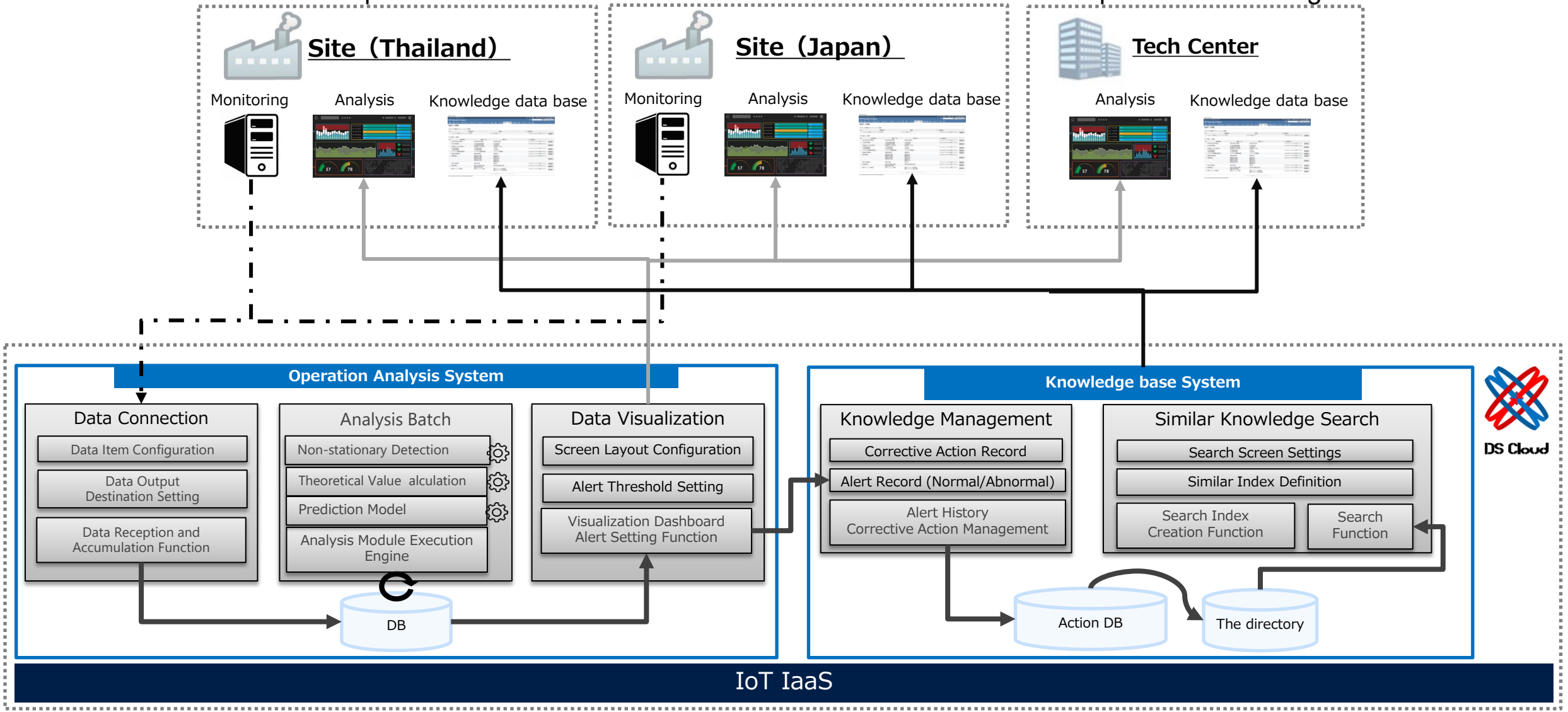
- As the multiple works will progress during the construction period, NSET, Client and EPC contractor should cooperate to comply with the schedule.
- Advanced document preparation and communication with government officers are important.

◆Communication with Partners and Proactive Fuel sourcing(including new fuel test)

- Since the fuel procurement work procedure will be complicated, frequent communication with partner is necessary especially for the delivery.
- Sourcing the new fuel proactively and conduct the test to investigate the effect of the stable operation of the Power Plant, and this can be the knowledge in the future.

The improvement for the operation with the “AI”

NSET will utilize NSE`s latest Operation system for the stable biomass operation and will keep developing our knowledge to make our operation better and contribute to Thailand with this Biomass Operation Knowledge.



Points of NSET`s Biomass Energy Facilities(How NSET contribute to Thailand Biomass)

High Stability

Utilizing the **WtE and Biomass Engineering knowledge for the design of Biomass boiler.** It allows the plant have the wider range of the acceptance of Fuel. It makes the plant stability higher.

Future Improvement

As NSET is not just an investing company but engineering tech company, NSET will keep proposing the improvement solutions not only NSET Biomass Co-Gen but also clients factory energy consumption. (with **carbon capture**, etc)

With Thailand

Working with **Thai facility makers and construction companies.**
Procure Biomass in Thailand especially near the project site.

Reference : Carbon Capture Project in Japan

Client: **AIR WATER CARBONIC INC.**

- Installation Site: Muroran City, Japan
- Installed capacity: **120 ton-CO2/d**
- Feed stock: **Hot Stove Gas**
- Applications of the products:
  - Welding
  - Carbonated beverage
  - Dry ice, etc.
- Beginning of operation: **November 2014**

End Of Presentation