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

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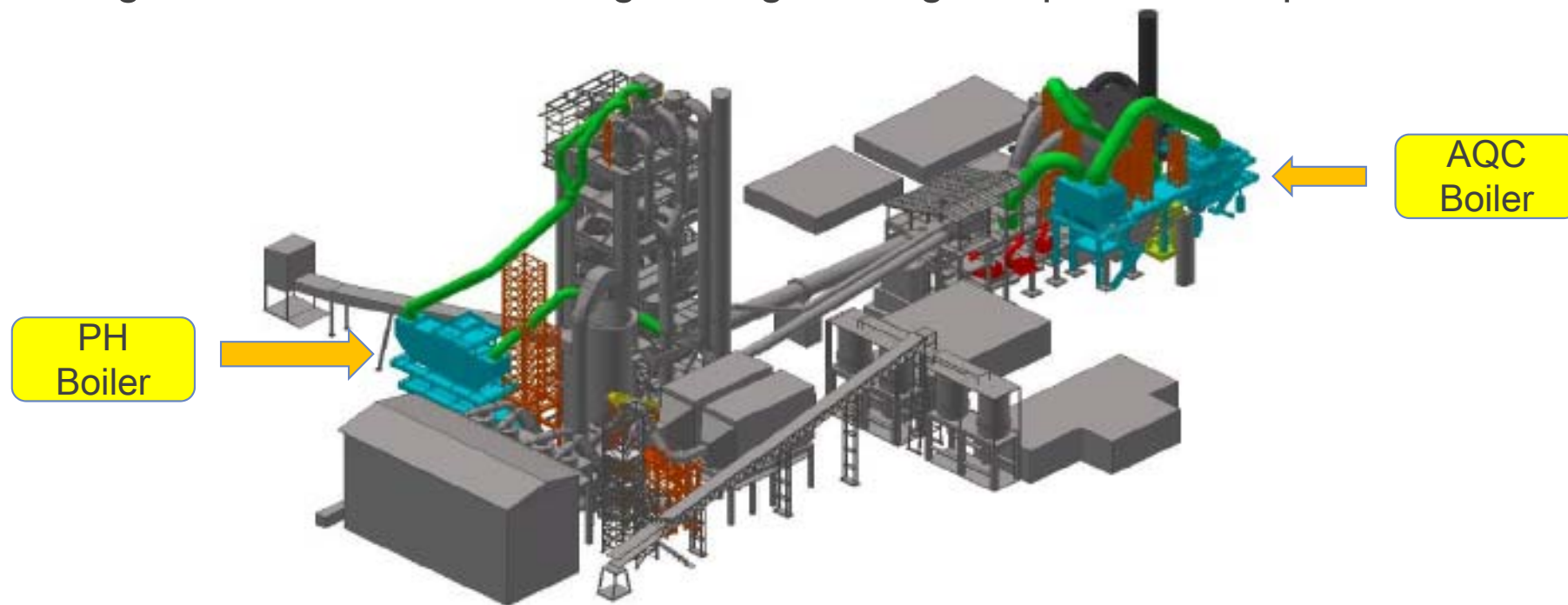「**Introduction of 12MW Power Generation System by Waste Heat Recovery for Cement Plant**」

11-Sep-2018
NTT Data Institute of Management Consulting, Inc.
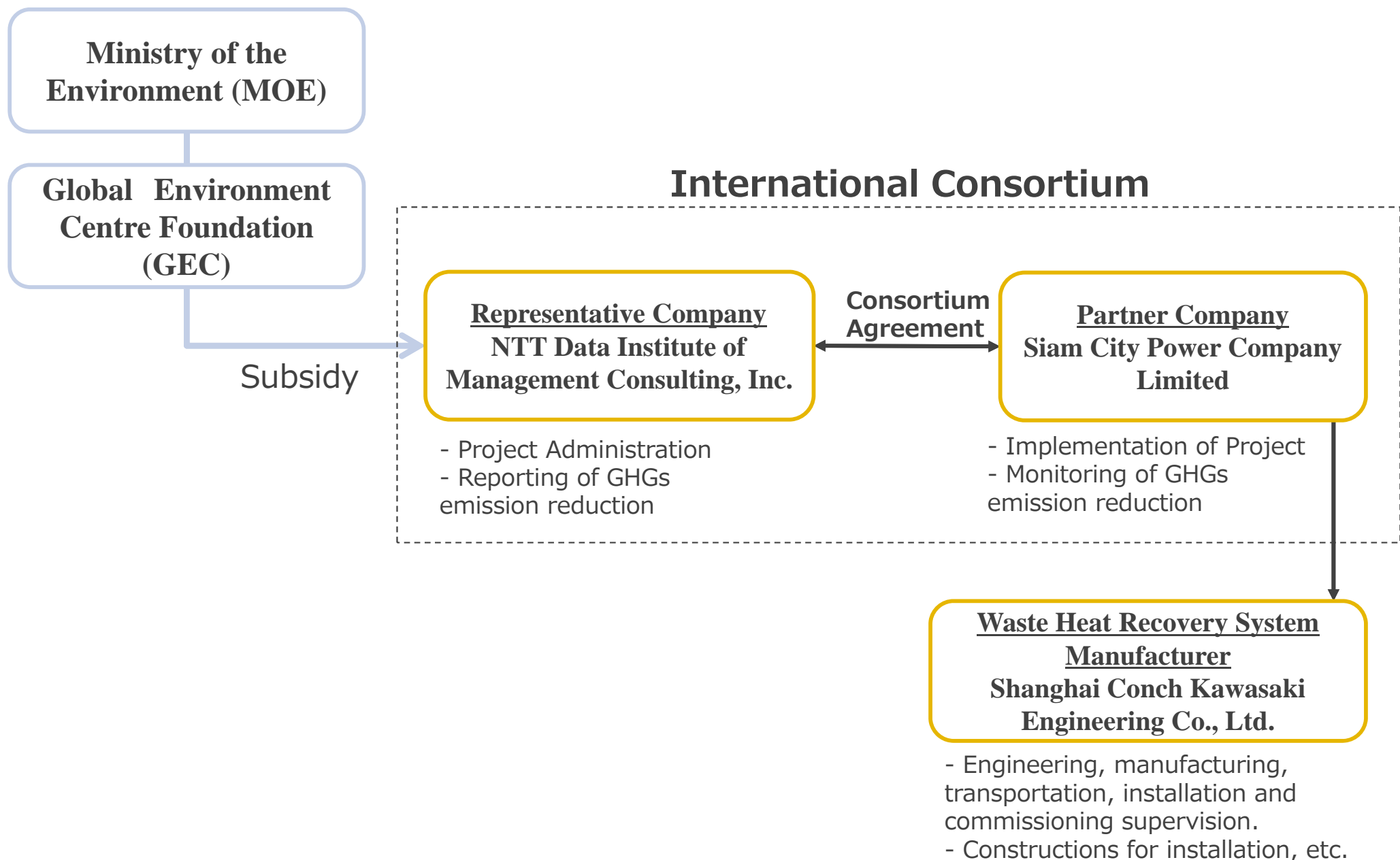**Socio & Eco Strategic Consulting Unit**

1. Project Overview and Organization

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1-1. Outline of the Project

➤ This project aims to improve the energy efficiency of a Cement Plant by introducing 12MW Waste Heat Recovery Power Generation System.

➤ In this project, a waste heat recovery boiler is installed at two places, a preheater section (PH) that heats raw material at the cement plant and a cooling section (AQC) that rapidly cools high-temperature clinker, and steam obtained from both boilers is used to generate electricity through a turbine and a power generator.

➤ The Waste Heat Recovery Power Generation System has been introduced by Shanghai Conch Kawasaki Engineering Co., Ltd., whose technology was provided by Kawasaki Engineering Co., Ltd., one of the largest engineering companies in Japan.

AQC Boiler

PH Boiler

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1-2. Organization of the Project

Ministry of the Environment (MOE)

Global Environment Centre Foundation (GEC)

Subsidy

International Consortium

Representative Company
NTT Data Institute of Management Consulting, Inc.

- Project Administration
- Reporting of GHGs emission reduction

Consortium Agreement

Partner Company
Siam City Power Company Limited

- Implementation of Project
- Monitoring of GHGs emission reduction

Waste Heat Recovery System Manufacturer
Shanghai Conch Kawasaki Engineering Co., Ltd.

- Engineering, manufacturing, transportation, installation and commissioning supervision.
- Constructions for installation, etc.

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NTT EAST NTT WEST — Regional Communication

NTT Communications — Long distance & International Communication, ICT Solutions

dimension data — Managed ICT Service

docomo — Mobile Communication

NTT DaTa — Application Integration

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NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.

Business

1. Investigative research and consulting services related to corporate management and public administration
2. Investigative research and consulting services related to the planning and development of information and communications systems
3. Investigative research and consulting services in the economic, social, industrial, cultural, and other spheres
4. Implementation/operation of education/training programs and seminars, information provision and publication concerning the above activities
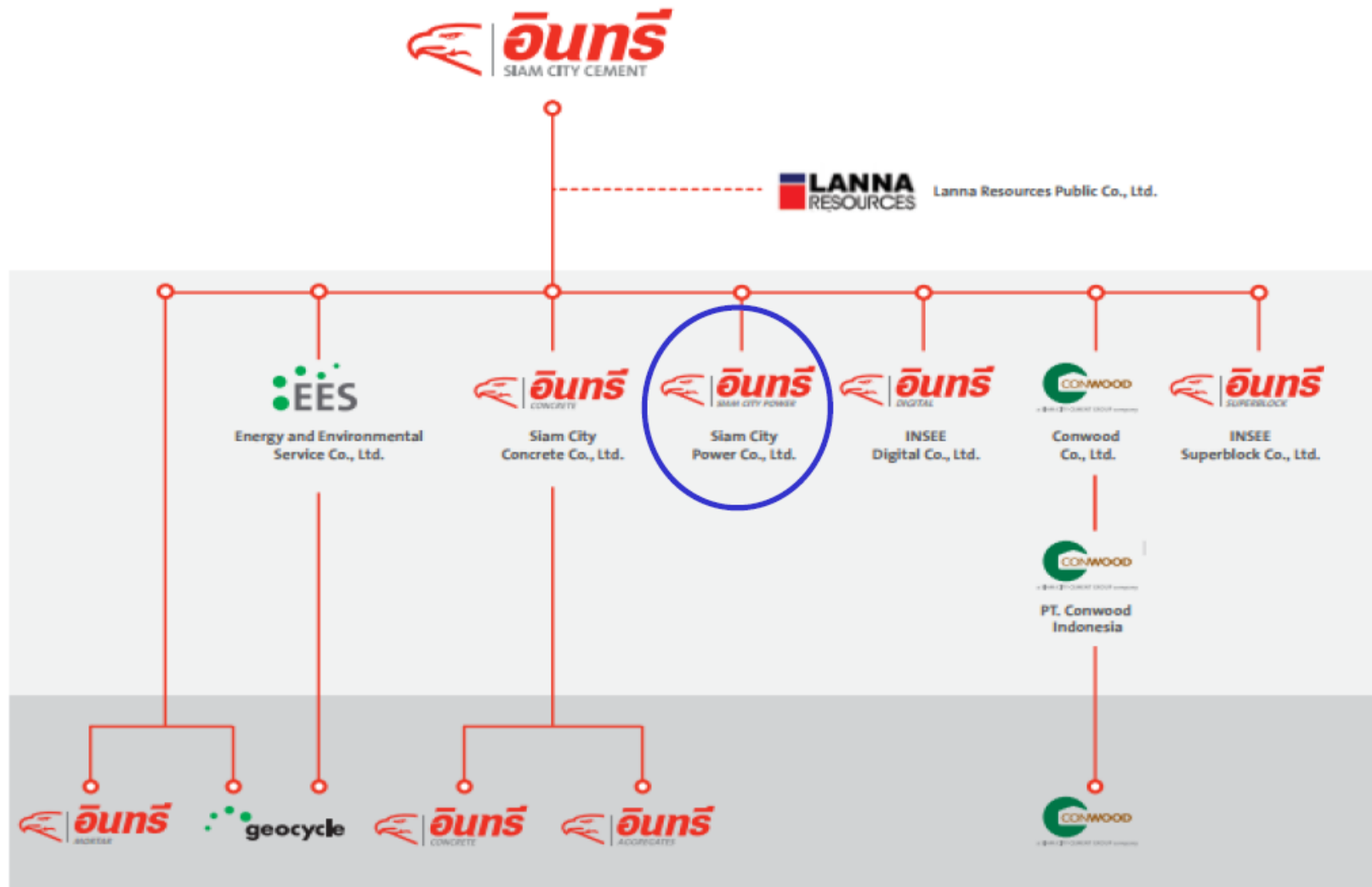5. All incidental services pertaining to the above activities

SCCC and its subsidiary companies

2. Project Implementation

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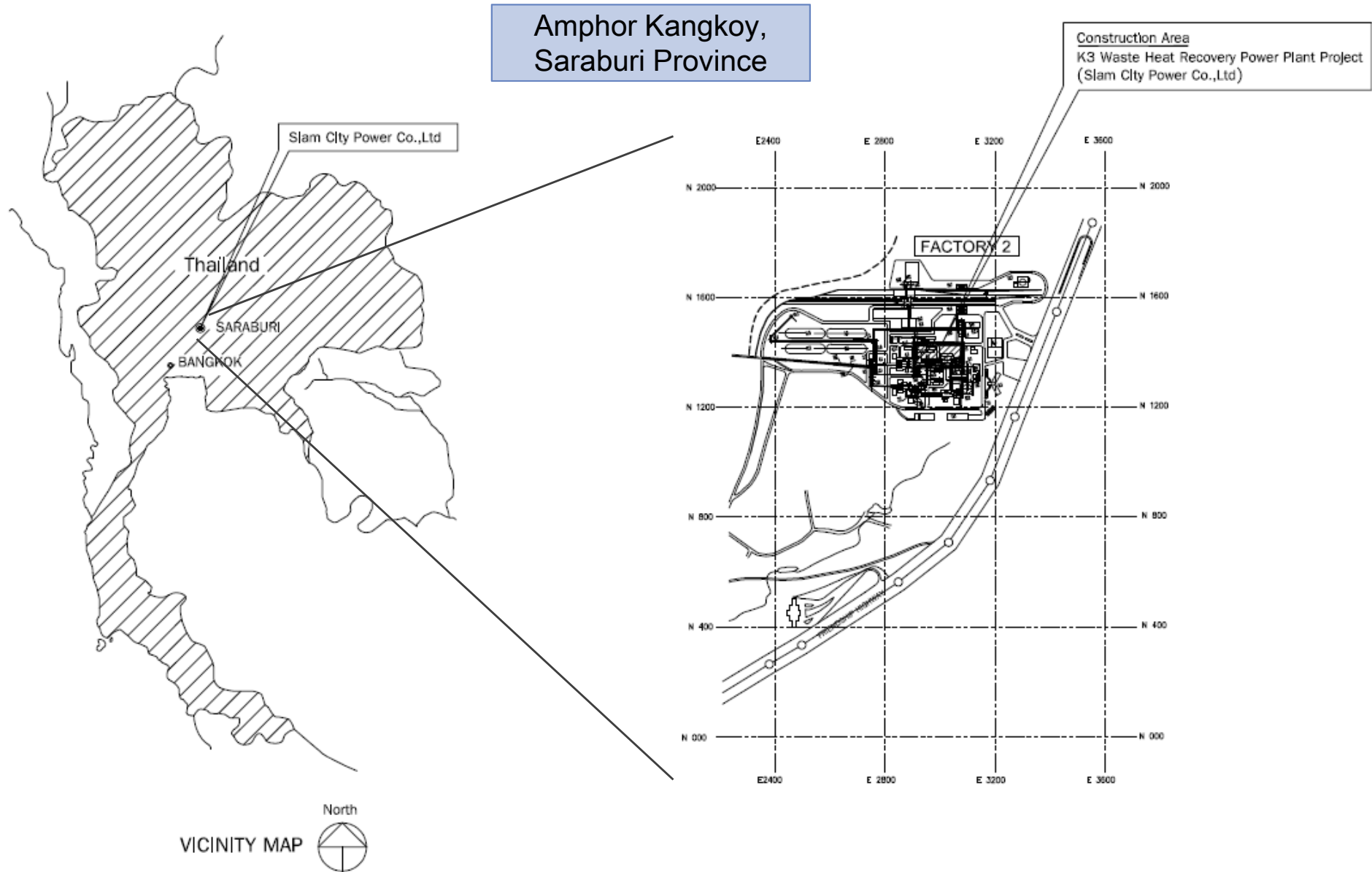
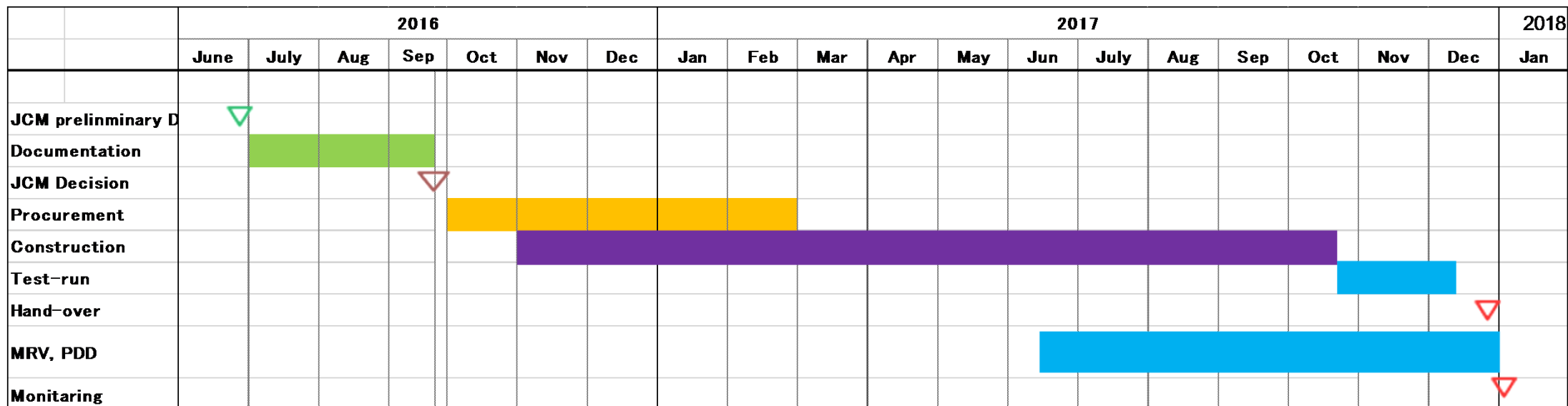# 2-2. Project Schedule

➢ This project is applied for the JCM Financing Programme in FY2016.

➢ Project implementation, commissioning and inspection have been finished and plant operation have been started.

	2016							2017												2018
	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan
JCM prelinminary D	▽																			
Documentation		🟩	🟩	🟩																
JCM Decision				▽																
Procurement					🟧	🟧	🟧	🟧	🟧											
Construction						🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪			
Test-run																	🟦	🟦		
Hand-over																			▽	
MRV, PDD														🟦	🟦	🟦	🟦	🟦	🟦	
Monitaring																				▽

Turbine & Generator

Demineralized water tank

Raw water tank

AQC Boiler

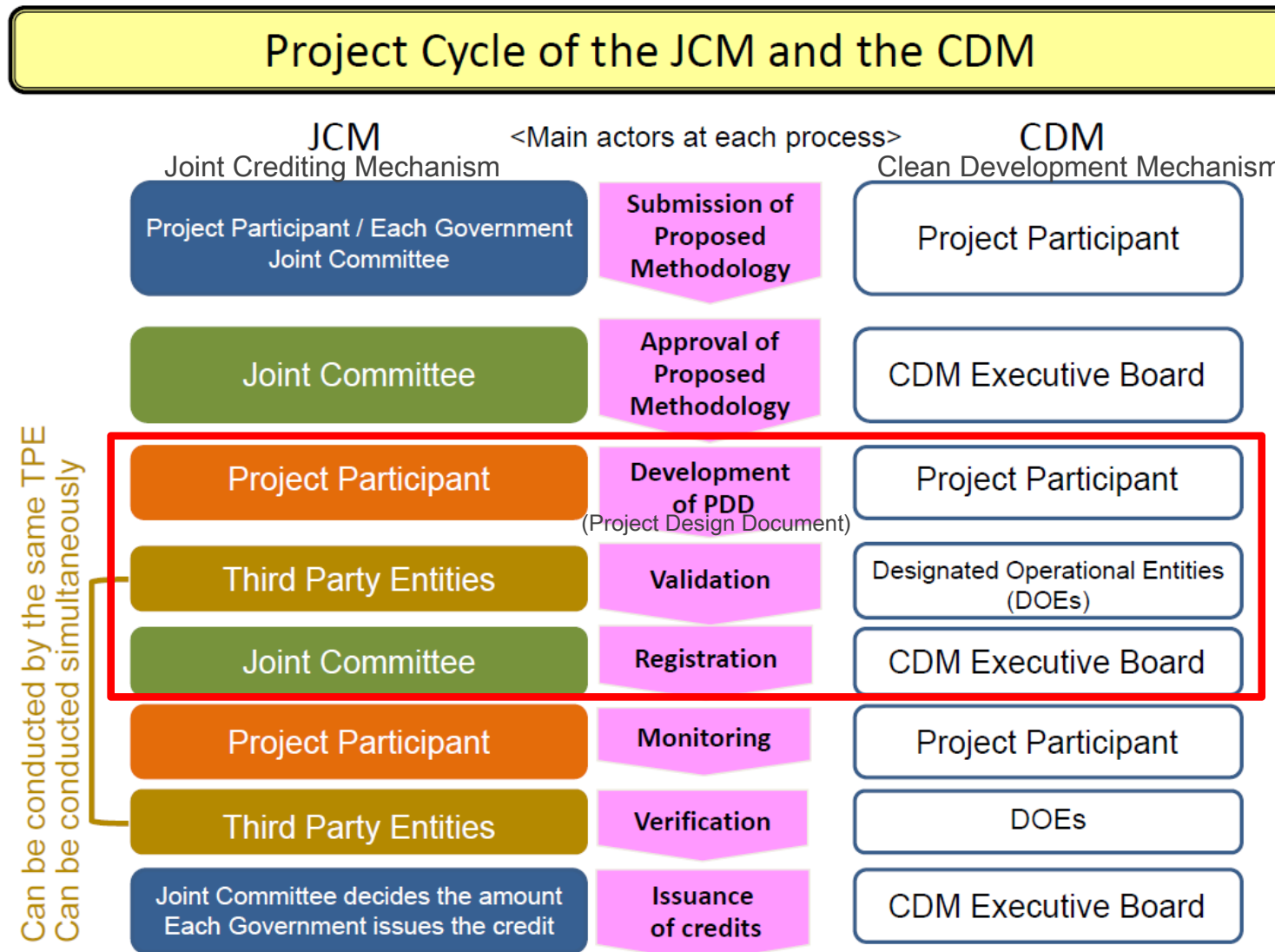PH Boiler

3. GHG Emission Reduction and MRV

➤ Expected GHG emission reduction is 31,180 tCO2/year.

31,180 tCO$_2$/year

➤ CO$_2$ Emission reductions
= Reference CO$_2$ emissions (RE) – Project CO$_2$ emissions (PE)

➤ Exhaust heat recovery system: 31,180 tCO$_2$/year
  ✓ RE: 31,180 tCO$_2$e/year
  ✓ PE: 0 tCO$_2$e/year

➤ Grid CO2 emission factor (0.5113 kgCO2/kWh)

3-2. Current Status of MRV, PDD and Monitoring

➢ MRV Methodology has been approved as TH_AM007 on 20-Apr-2018.
➢ We aim to register the Project in this fiscal year.

Project Cycle of the JCM and the CDM

JCM Joint Crediting Mechanism	<Main actors at each process>	CDM Clean Development Mechanism
Project Participant / Each Government Joint Committee	Submission of Proposed Methodology	Project Participant
Joint Committee	Approval of Proposed Methodology	CDM Executive Board
Project Participant	Development of PDD (Project Design Document)	Project Participant
Third Party Entities	Validation	Designated Operational Entities (DOEs)
Joint Committee	Registration	CDM Executive Board
Project Participant	Monitoring	Project Participant
Third Party Entities	Verification	DOEs
Joint Committee decides the amount Each Government issues the credit	Issuance of credits	CDM Executive Board

Can be conducted by the same TPE
Can be conducted simultaneously

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➢ MRV Methodology has been approved as TH_AM007 on 20-Apr-2018.

A. Title of the methodology

Power Generation by Waste Heat Recovery in Cement Industry, Version 01.0

B. Terms and definitions

Terms	Definitions
Waste heat	Heat generated from cement production facility which would not have been recovered in the absence of the project.
Preheater boiler	Boiler which recovers waste heat from a preheater, which pre-heats raw materials fed into a rotary kiln, to generate steam.
Air Quenching Cooler boiler (AQC boiler)	Boiler which recovers waste heat from an air quenching cooler to generate steam.
Waste Heat Recovery system (WHR system)	Power generation system consisting of a preheater boiler and/or AQC boiler, turbine generator and cooling tower that utilizes waste heat from cement production facility.

D. Eligibility criteria

This methodology is applicable to projects that satisfy all of the following criteria.

Criterion 1	The project installs waste heat recovery (WHR) system in the cement production facility.
Criterion 2	WHR system utilizes only waste heat and does not utilize fossil fuels as a heat source to generate steam for power generation.
Criterion 3	WHR system has not been introduced to a corresponding cement kiln of the project prior to its implementation.

H. Calculation of emissions reductions

Emission reductions are calculated as the difference between the reference emissions and project emissions, as follows:

$$ER_p = RE_p - PE_p$$

➢ PDD (Project Design Document) is drafted and we will conduct Validation in this year

A. Project description

A.1. Title of the JCM project

Power Generation by Waste Heat Recovery in Cement Industry

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

This project aims to improve the energy efficiency of a Cement Plant by introducing 12MW Waste Heat Recovery Power Generation System.

In this project, a waste heat recovery boiler is installed at two places, a preheater section (PH) that heats raw material at the cement plant and a cooling section (AQC) that rapidly cools high-temperature clinker, and steam obtained from both boilers is used to generate electricity through a turbine and a power generator.

The Waste Heat Recovery Power Generation System has been introduced by Shanghai Conchi Kawasaki Engineering Co., Ltd., whose technology was provided by Kawasaki Engineering Co., Ltd., one of the largest engineering companies in Japan.
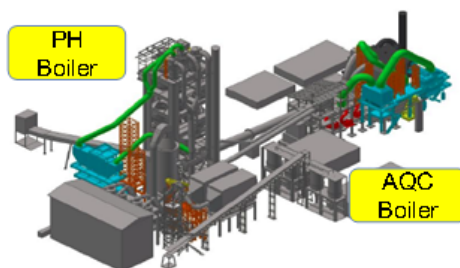

PH Boiler

AQC Boiler

Amphor Kangkoy Saraburi Province

Figure : Location and outline of the Project

Country	The Kingdom of Thailand
Region/State/Province etc.:	Saraburi Province 18260
City/Town/Community etc:	99 Moo 9 and 219 Moo 5, Mittraparb Road Km. 129-131 Tambon Thap Kwang, Amphor Kangkoy, Saraburi Province
Latitude, longitude	N 14°37'24.8" and E 101°05'43.7"

A.4. Name of project participants

The Kingdom of Thailand	Siam City Power Company Limited
Japan	NTT Data Institute of Management Consulting Inc.

A.5. Duration

Starting date of project operation	13/02/2018
Expected operational lifetime of project	15 years

A.6. Contribution from Japan

The proposed project was partially supported by the Ministry of the Environment, Japan (MOEJ) through the Financing Programme for JCM Model projects, which provided financial support of less than half of the initial investment for the projects in order to acquire JCM credits. The technology of waste heat recovery & power generation system is introduced by the project participant. Further, implementation of the proposed project promotes technology transfer of low carbon technologies into Thailand.