



# Progress of The Joint Crediting Mechanism (JCM) In Indonesia

Source :

- MOEJ-GEC JCM booklet “The Joint Crediting Mechanism (JCM) : Progress of Financing Programme and Feasibility Studies for JCM Projects by MOEJ” June 2015 edition
- The JCM Project information provided by the participant companies
- JCM Indonesia Website : <http://jcm.ekon.go.id>
- JCM Japan Website : <http://jcm.go.jp>

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MOEJ : Ministry of Environment of Japan

METI : Ministry of Economy, Trade and Industry of Japan

NEDO : New Energy and Industrial Technology Development Organization

ADB : Asian Development Bank



 Solar PV Project, PT. Indesso Aroma,  
Cileungsi Bogor, West Java Province



# What is the JCM?

The Joint Crediting Mechanism (JCM) encourages cooperation between Japanese and Indonesian institutions to promote implementation of low carbon development activities in Indonesia.

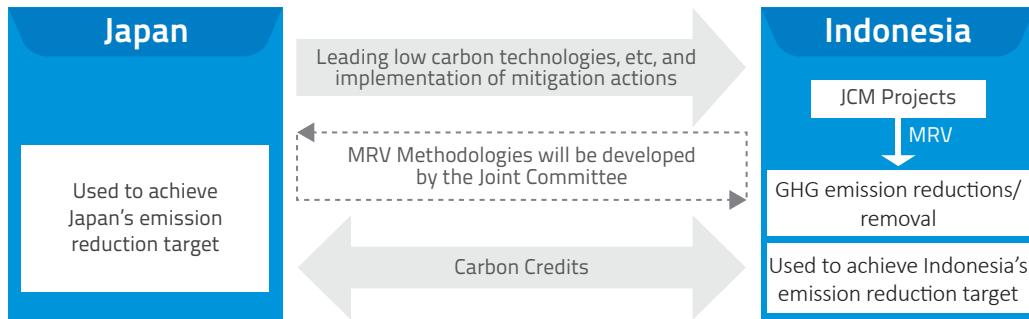
## A History of the JCM in Indonesia

- 2010 : Initial discussions between National Council on Climate Change of Indonesia as JCM focal point and Japanese Government Delegation
- 2011 : Formal meeting on the JCM between National Council on Climate Change of Indonesia and related ministries and Japanese Government Delegation
- 2012 : Establishment of Coordination Team for Inter-State Carbon Trade Negotiation (Tim Koordinasi Perundingan Perdagangan Karbon Antarnegara (TKPPKA))
- 2013 : Signing on JCM Cooperation between the Governments of Indonesia and Japan, and establishment of JCM Joint Committee consisting of members from Indonesia and Japan
- 2014 : Establishment of Indonesia JCM Secretariat
- 2016 : First JCM credit issuance in Indonesia and in the world

**B**

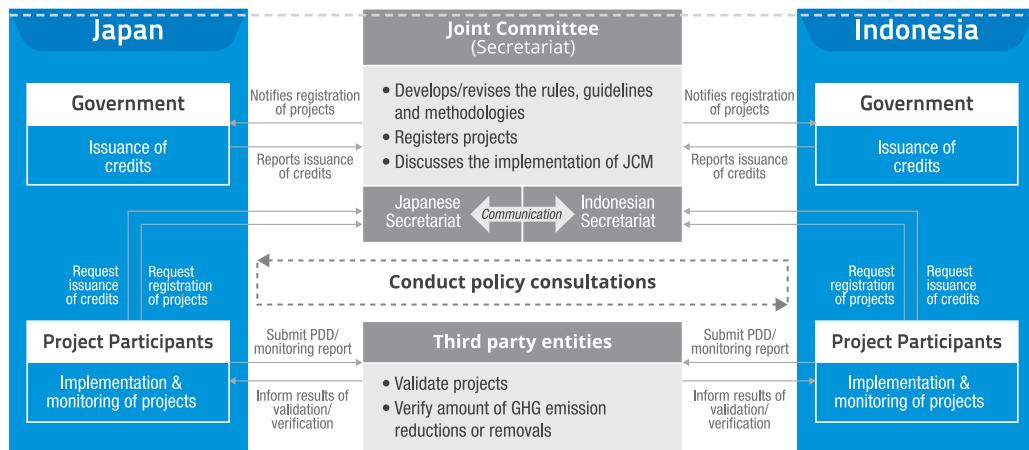
## Basic Concept of the JCM Cooperation between Japan and Indonesia

**Figure 1. The JCM scheme between Japan and Indonesia**



- Facilitating diffusion of leading low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries;
- Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner, by applying measurement, reporting, and verification (MRV) methodologies, and using them to achieve Japan's emission reduction target;
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals.

**Figure 2. The JCM Cooperation Scheme**



**C**

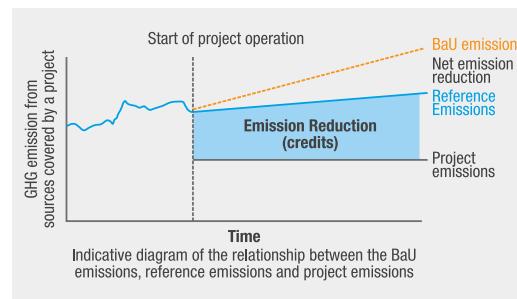
## Monitoring, Reporting, and Verification (MRV) Methodology

The reference emissions are calculated to be below or at least on the same level business-as-usual (BaU) emissions, by conservatively estimating/identifying plausible emission or by other methods determined in the methodologies to be approved by the Joint Committee. Approved JCM MRV methodologies (as of November 2018):

1. Power generation by waste heat recovery in cement industry
2. Energy saving by introduction of high efficiency centrifugal chiller
3. Installation of energy-efficient refrigerators using natural refrigerant at food industry cold storage and frozen food processing plant
4. Installation of inverter-type air-conditioning system for cooling for grocery store
5. Installation of led lighting for grocery store
6. GHG emission reductions through optimization of refinery plant operation in Indonesia
7. GHG emission reductions through optimization of boiler operation in Indonesia
8. Fridge-freezer showcase by using natural refrigerant for grocery store
9. Replacement of conventional burners with regenerative burners for aluminum holding furnaces
10. Introducing double-bundle modular electric heat pumps to a new building
11. Installation of energy saving air jet loom at textile factory
12. Reduction of Energy Consumption by Introducing an Energy-Efficient Old Corrugated Carton Processing System into a Cardboard Factory
13. Installation of Solar PV System
14. Installation of Tribrid Systems to mobile communication's Base Transceiver Stations
15. Energy Saving by introduction of high efficiency once-through boiler
16. Installation of gas engine co-generation system to supply electricity and heat to facility

Methodology update and public comment  are available on <http://jcm.ekon.go.id>

**Figure 3. Basic Concept for Crediting under the JCM**

**D**

## Project Cycle of the JCM

Can be conducted by the same TPE  
Can be conducted simultaneously



The image describes the steps to follow for project participants, third-party entities (TPEs), the Joint Committee, the secretariat, both Government sides, and other stakeholders, for approval of a methodology, registration of JCM project, issuance of credits and related actions.



 Waste Heat Recovery Power Generation,  
PT. Semen Indonesia,  
Tuban, East Java Province

# JCM Promotion Scheme

In order to support the JCM activities, Government of Japan has provided several type of financing scheme which can be utilize by the project participant to support the investment cost such as facilities, equipment, and vehicles. The budget amount for every financing scheme is different based on the annual allocation of the budget sources. Source of budget mainly come from Ministry of Environment Japan and Ministry of Economy, Trade, and Industry.

<b>1</b>	Model Projects	<b>2</b>	Demonstration Projects
<b>3</b>	Japan Fund for Joint Crediting Mechanism	<b>4</b>	JCM REDD+ Model Project
<b>5</b>	JCM Feasibility Study for City to City	<b>6</b>	JCM Feasibility Studies under NEDO

## 1 Financing Programme for JCM Model Projects by MOEJ

Scope of the financing: facilities, equipment, vehicle, etc. which reduce CO<sub>2</sub> from fossil fuel combustion as well as construction cost for installing those facilities, etc.

Figure 4. Financing Programme for JCM Model Projects



## 2

## Promotion Scheme for JCM Demonstration Project by METI/NEDO

- JCM Demonstration Projects are funded by METI Japan and implemented by NEDO (New Energy and Industrial Technology Development Organization), which supports the project costs necessary to verify the amount of GHG emission reduction in line with JCM rules and guidelines.
- Coverage of project cost: Cost of the JCM Demonstration Projects necessary for MRV: e.g. Cost of design, machines, materials, labor, travel, etc.

## 3

## ADB Trust Fund : Japan Fund for Joint Crediting Mechanism (JFJCM)

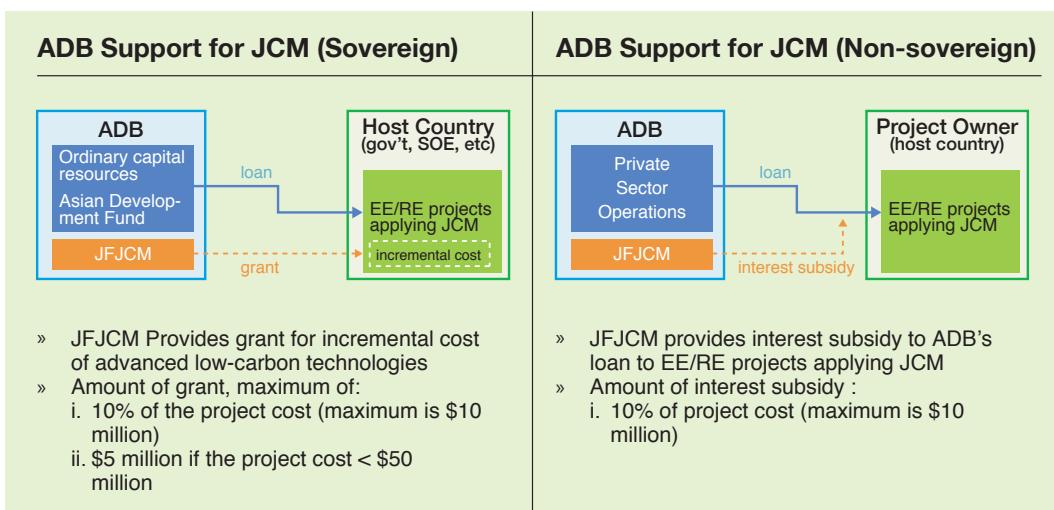
### The Scheme :

The JFJCM seeks to increase the sustainability of ADB-financed and administered projects through the use of advanced low carbon technologies. The use of grants under the JFJCM will demonstrate the effectiveness of the JCM and provide a source of additional funding to eligible ADB developing member countries (DMCs).

### Purpose:

The fund aims to provide financial incentives for the adoption of advanced low carbon technologies in ADB-financed and administered sovereign and non-sovereign projects. The JFJCM will provide grants and technical assistance to ADB projects utilizing the Joint Crediting Mechanism (JCM).

Below is the type of financing scheme under JFJCM.



**Figure 5.**  
**Japan Fund for Joint Crediting Mechanism**

## 4 JCM REDD+ Model Projects by MOEJ

### Background

- Degradation of forests in developing countries

### Expected outcome

- Participatory monitoring of illegal logging, disaster prevention and forest restoration.
- Provision of alternative livelihood.

### Project Outline



- At least half or ratio of financial support to project cost of JCM credits issued are expected to be delivered to the government of Japan except the amount which is allocated to the partner country based on its legislation
- These projects may be carried out with the cooperation of other organization such as like JICA.

## 5 JCM Feasibility Study for City to City by MOEJ

This scheme encourages GHG emissions reduction activities on the city and regional scale and realizes a low carbon society by utilizing inter-city corporation between Japanese and Indonesian local government. Japanese local governments, research institutes, private companies and universities are co-operate and adjust the advanced low carbon technologies and systems to fit the local conditions to establish sustainable operation and maintenance systems in Indonesia.

## 6 JCM Feasibility Study under NEDO

This study aims to promote potential JCM projects, survey their feasibility, check the practicality of the MRV methodology, and elaborating investment plan

# Ongoing JCM Projects in Indonesia

Model/Demonstration Projects are promoted to follow the steps described in the JCM project cycle (see page 5). Official MRV (measurement, reporting, and verification) of emissions reduction starts after a project is registered.



## Sectoral Scope



JCM  
Model Project

JCM REDD+  
Model Project

JCM  
Demonstration  
Project

JCM  
Registered  
Project

JCM's Credit  
Issuance

## A JCM Model Project

Model Project (JFY 2014)

### 500 KW Installation of Solar Power System and Storage Battery to Commercial Facilities



Energy Industries  
(renewable/non-renewable sources)

Estimated Emission Reduction

549 tCO<sub>2</sub>/year



Itochu Co.



PT Aeon Mall Indonesia

The project is an implementation of 500 kW solar rooftop on AEON mall. It is expected that the implementation of the project will reduce the utilization on a fossil fuel electricity generation and increase the proportion of renewable energy.



Model Project (JFY 2014)

### Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding Furnace of the Automotive Components Manufacturer



Energy Demand

Estimated Emission Reduction

91 tCO<sub>2</sub>/year



Toyotsu Machinery Co., Hokuriku Techno Co.



PT Toyota Tsusho Indonesia,  
PT Yamaha Motor Parts Manufacturing  
Indonesia, PT Matahari Wasiso Tama

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





JCM Model Project



JCM REDD+ Model Project



JCM Demonstration Project



JCM Registered Project



JCM Credit Issuance

## Model Project ( JFY 2015)

## Energy Saving for Industrial Park with Smart LED Street Lighting System



Energy Demand

Estimated Emission Reduction

**1,016 tCO<sub>2</sub>/year**

Nippon Telegraph and Telephone Facilities Inc.



PT Maligi Permata Industrial Estate, PT Harapan Anang Bakri &amp; Sons, PT Karawang Tatabina Industrial Estate

The replacement of existing high pressure sodium lighting with the highly efficient street lighting system for Industrial Parks is estimated to reduce the electricity usage of 1,106 MWh annually. This technology has many benefits for cloud based service, remote monitoring, remote controlling and also power line communication technology. The power line communication technology is using global standard ISO/IEC 14908 that controlling the protocol and key signaling of the lamps.



## Model Project ( JFY 2015)

## Introduction of High-efficiency Once-through Boiler System in Film Factory



Energy Demand

Estimated Emission Reduction

**363 tCO<sub>2</sub>/year**

Mitsubishi Plastics Inc.



PT Mitsubishi Chemical PET Film Indonesia

The objective of the project is to save energy by installing once through boiler with replacing the existing water tube boiler in PT Mitsubishi Chemical PET Film Indonesia, Merak factory. The implementation of this project is estimated to increase the efficiency from 87% conventional smoke tube boiler to 96%. It can operate continuous Optimized water level control which prevents the overheating and maintains steam dryness. It also achieves high stability of steam pressure by PI control system.



## Model Project ( JFY 2015)

## Installation of Gas Co-generation System for Automobile Manufacturing Plant



Energy Demand

Estimated Emission Reduction

**20,439 tCO<sub>2</sub>/year**

Toyota Tsusho Co.



PT Toyota Motor Manufacturing Indonesia

The purpose of this project is to reduce energy consumption and CO<sub>2</sub> emission by installing a gas co-generation system. This system adopts a high efficiency gas-engine and heat recovery system to generate steam 7,8 MW and hot water. This project contributes to the reduction of energy consumption at coal fired power generation prevailed in Indonesia, and to the reduction of GHG and air pollutant emissions.



## Model Project ( JFY 2015)

## Introduction of High Efficiency Once-through Boiler and RO Pure Water System in Golf Ball Factory



Energy Demand

Estimated Emission Reduction

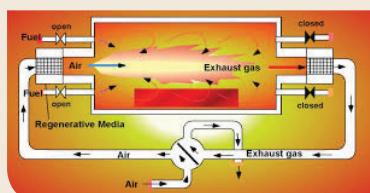
**329 tCO<sub>2</sub>/year**

Sumitomo Rubber Industries, Ltd



PT Sumi Rubber Indonesia

A high efficiency once through boiler is installed at a Golf Ball factory in Cikampek, Karawang, West Java. The boiler reduces fuel consumption by incorporating gas single fuel type. Furthermore, electricity consumption is also reduced by inverter function of feedwater pump and forced draft fan.





JCM Model Project

JCM REDD+  
Model ProjectJCM Demonstration  
ProjectJCM Registered  
ProjectJCM  
Credit Issuance

Model Project ( JFY 2015)

## 1.6 MW Solar PV Power Plant Project in Jakabaring Sport City

Energy Industries  
(renewable/non-  
renewable sources)Estimated Emission  
Reduction**917 tCO<sub>2</sub>  
/year**

Sharp Energy Solutions Co.

Perusahaan Daerah Pertambangan  
dan Energi

This project aims to reduce CO<sub>2</sub> emissions by introducing a 2 MW solar power plant in the Jakabaring Sport City complex of South Sumatra Province. The solar power plant enables to supply electricity to the sport city and surplus power is provided to the grid as renewable energy. The power plant uses polycrystalline PV modules, 315W, module efficiency 15.5%. About 5,243 of these modules and peripheral systems installed on an expansive area of about 2.5 ha.



Model Project ( JFY 2016)

## Introduction of high-efficiency looms in weaving mill



Energy Demand

Estimated Emission  
Reduction**1,317 tCO<sub>2</sub>  
/year**

Nisshinbo Textile Inc.



PT Nikawa Textile Industries

The proposed project aims to reduce electricity consumption and GHG emission by upgrading to air-saving looms at textile factory in Indonesia. This Air Jet Loom JAT810 has original air saving technology to reduce air consumption for weft insertion more 20% than the conventional model. In addition, we will introduce E-shed which is the ultimate shedding device. Fabrics that had been highly challenging to weave can now be woven at high speed.



## Model Project ( JFY 2016)

## Energy Saving for Industrial Wastewater Treatment System for Rubber Industry



Energy Demand

Estimated Emission Reduction

**387 tCO<sub>2</sub>/year**

Suzuki Sangyo Co. Ltd., Mitsubishi UFJ Research and Consulting Co., Ltd., Environmental Management and Technology Center Co.



PT. Aneka Bumi Pratama

This project aims to reduce electricity consumption in blower at industrial wastewater treatment facility in PT. Aneka Bumi Pratama, crumb rubber producer in Palembang city, by replacing existing diffuser to aerator.

Both Diffuser and aerator is an aeration device for wastewater treatment but principle is different. Aerator can reduce BOD more efficiently than diffuser and needs less air pressure from blower. Less air pressure contributes to reduce electricity consumption as well as CO<sub>2</sub> emissions from electricity.



## Model Project ( JFY 2016)

## 10 MW Mini Hydro Power Plant Project in North Sumatera



Energy Industries (renewable/non-renewable sources)

Estimated Emission Reduction

**42,700 tCO<sub>2</sub>/year**

Toyo Energy Farm Co., Ltd.



PT Citra Multi Energi

A mini hydro power plant is to be constructed in Humbang Hasundutan District of North Sumatra with a capacity of 10 MW (5 MW \* 2). The electricity generated by the plant is to be supplied to a power company, resulting in GHG emission reductions by replacing grid electricity. As North Sumatra has been suffering from energy shortages, this project is also expected to contribute to improving energy supply in the region.



## Model Project ( JFY 2016)

**Introduction of LED Lighting to Sales Stores**

Energy Demand

Estimated Emission Reduction

**2,617 tCO<sub>2</sub>/year**

Fast Retailing Co., Ltd.



PT Fast Retailing Indonesia

Lighting equipment is major energy consumption sources at sales store. This project contributes to the reduction of GHG emission at sales stores in Indonesia by installation of high efficiency LED lighting. Those equipment are installed stores centering around Jakarta, Bandung, and Surabaya.



## Model Project ( JFY 2016)

**Roof Top Self Consumption Solar Power Generation Project for Food Ingredients and Aroma Ingredients Factory, Indonesia**

Energy Industries (renewable/non-renewable sources)

Estimated Emission Reduction

**416 tCO<sub>2</sub>/year**

Next Energy Resources Co.



PT Indesso Aroma

The Project aims to contribute to Indonesia's sustainable development through use of renewable energy and GHG emission reduction by introduction of rooftop 577 kW solar photovoltaic facility. The electricity produced by the facility will be fully utilized for its own consumption within the project site. Equipment to be introduced in this project are 1,990 unit Solar Modules and 2 unit Power Conditioner.



## Model Project (JFY 2017)

## Co-generation System and Absorption Chiller to Motor Parts Factory



Energy Demand

Estimated Emission Reduction

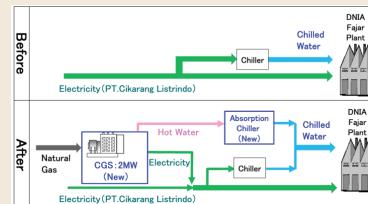
**4,629 tCO<sub>2</sub>/year**

Denso Co.



PT Denso Indonesia

The purpose of this project is to reduce energy consumption, CO<sub>2</sub> emission cost reduction, and can improve reliability for power supply by installing gas co-generation plant. This technology mainly consists of a 2 MW gas engine and high efficiency absorption chiller are installed in a motor parts factory located in Karawang, West Java.



## Model Project (JFY 2017)

## Installation of Absorption Chiller to Chemical Factory



Energy Demand

Estimated Emission Reduction

**1,084 tCO<sub>2</sub>/year**

Tokyo Century Co.



PT Timuraya Tunggal

This project aims to reduce CO<sub>2</sub> emission by replacing turbo chiller to steam driven absorption chiller in factory PT Timuraya Tunggal, Karawang, West Java. The absorption chiller produces chilled water from wasted steam, and reduces the power consumption of electric chiller and GHG emission.



JCM Model  
ProjectJCM REDD+  
Model ProjectJCM Demonstration  
ProjectJCM Registered  
ProjectJCM  
Credit Issuance

## Model Project (JFY 2017)

## 10 MW Mini Hydro Power Plant project in Lae Ordi River in North Sumatera

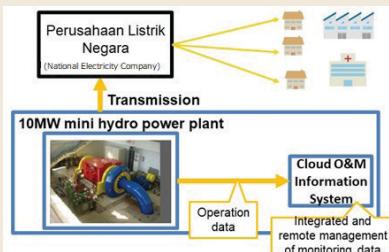
Energy Industries  
(renewable/non-renewable sources)Estimated Emission  
Reduction**46,520 tCO<sub>2</sub>  
/year**

Chodai Co., Ltd.



PT Phakpak Bumi Energi

This project aims to reduce CO<sub>2</sub> emissions by constructing a run-of-river mini hydro power plant 10 MW (5 MW × 2 unit) utilizing water resources in Kabupaten Phakpak Barat of North Sumatra. The electricity generated by the plant is to be supplied to a power company, resulting in CO<sub>2</sub> emission reductions by replacing grid electricity. The stable power supply by the project will also contribute reduce CO<sub>2</sub> emissions by replacing grid electricity with renewable energy and to contribute to realize sustainable society.



## Model Project (JFY 2018)

## Introduction of CNG-Diesel Hybrid Equipment to Public Bus



Transportation

Estimated Emission  
Reduction**1,870 tCO<sub>2</sub>  
/year**

Hokusan Co., Ltd.

Badan Layanan Umum Unit  
Pelaksana Teknis Dinas Trans  
Semarang

Toyama City has concluded a cooperation agreement between Semarang City to realize low carbon society under city to city cooperation. Based on the cooperation agreement, this project aims to reduce GHG emissions through fuel switch from diesel to CNG. In the project, 72 diesel buses owned by Trans Semarang, including 25 large-sized buses and 47 mid-sized buses, are retrofitted from diesel engine to hybrid engine with CNG system available. These buses are considered more cost-effective through fuel switching.





JCM Model Project



JCM REDD+ Model Project



JCM Demonstration Project



JCM JCM Registered Project



JCM Credit Issuance

Model Project (JFY 2018)

## Introduction of High-Efficiency Autoclave to Infusion Manufacturing Factory



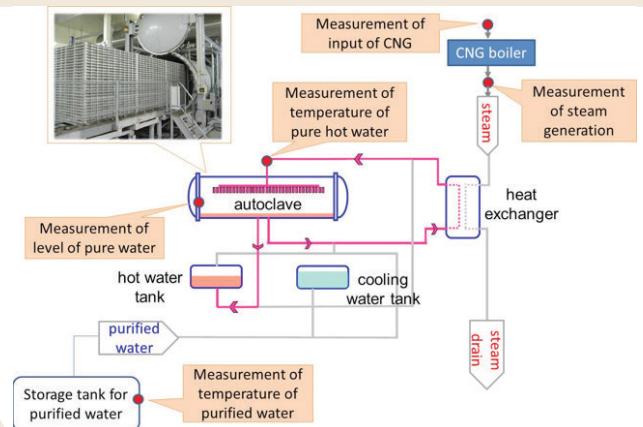
Energy Demand

Estimated Emission Reduction

**1,950 tCO<sub>2</sub>/year**Otsuka Pharmaceutical Factory,  
Inc.

PT Otsuka Indonesia

At an infusion manufacturing factory of PT. Otsuka Indonesia, a new type of high efficiency autoclave, which fulfills the Good Manufacturing Practice (GMP) and realizes energy and resource saving, is introduced to contribute for CO<sub>2</sub> emission as well as to assure safety of pharmaceutical products. Since the hot water to be injected into the autoclave is maintained at a high temperature, both the amount of steam charged in a batch unit and consumption of natural gas (CNG) required for steam generation are reduced. In addition, the amount of pure water used in the sterilization process is also greatly reduced as it is reused without being discharged.



## B JCM REDD+ Model Project

REDD+ Model Project (JFY 2015 & 2016)

### REDD+ Project in Boalemo District



REDD+

Estimated Emission Reductions

**86,520 tCO<sub>2</sub>/year**



Kanematsu Co.



PT Dharma Karyatama Mulia  
(Gobel group DKM)

The REDD+ model project in Boalemo District is the first REDD+ project under JCM scheme. The collaboration project between Kanematsu Corporation and PT. Dharma Karyatama Mulia aims to reduce the slash-and-burn deforestation by improving agricultural production practices especially cacao in Boalemo District, Gorontalo Provinces.



Demonstration Project (JFY 2013)

## Energy Saving by Optimum Operation at Oil Refinery



Energy Demand

Estimated Emission Reduction

**1,275 tCO<sub>2</sub>/year**

Yokogawa Electric Co.

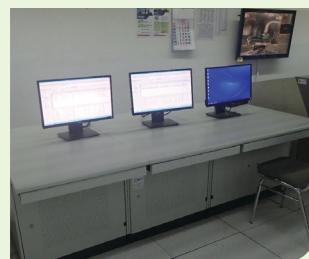


PT Pertamina Refinery Unit V

Reference No.  
**ID014**

Balikpapan, East Kalimantan Province

This project utilizes the Advanced Process Control (APC) system equipped with multivariable model predictive control (MMPC). PT. Pertamina RU V consists of multiple hydrogen production units (HPU) and hydro cracking units (HCU), which are equipped with conventional control systems operated by Distributed Control System (DCS). The APC system that equipped with MMPC connected to the DCS, will achieve higher energy efficiency by minimizing variability in key process variables leading to the optimization of production, resulting in a greater energy saving and sustainable CO<sub>2</sub> emission reduction by fossil fuel reduction.



Demonstration Project (JFY 2013)

## Utility Facility Operation Optimization Technology



Energy Demand

Estimated Emission Reduction

**20,000 tCO<sub>2</sub>/year**

Azbil Co.



PT Pertamina Refinery Unit IV

Reference No.  
**ID012**

Cilacap, Central Java Province

The implementation project applied in utility facility at RU IV consists of 10 boilers, which supply high pressure steam to the steam turbine generators. "RENKEI Control", or the utility facility operation optimization technology through application of software algorithm using linear programming method and advanced process control (APC). A remote monitoring system to monitor the performance of the system is also installed. As a result, a great saving in fuel consumption for the utility facility is achieved.



## Demonstration Project (JFY 2015)

## The low carbonization of mobile communication's Base Transceiver Station (BTS) by the Introduction of "TRIBRID system" in Indonesia



Energy Industries  
(renewable/non-renewable sources)

Estimated Emission Reduction

363 tCO<sub>2</sub>/year



KDDI Co.



PT XL Axiata, Tbk.

Reference No.  
**ID016**



Riau Islands, Sumatra, Java, and Kalimantan

Tribrid System at mobile communication's Base Transceiver Stations (BTS) are installed at 20 location in off-grid and poor-grid area in Republic of Indonesia. Tribrid System is defined as a combined system of solar PV, batteries, and electric power control system. Tribrid System controls charge-discharge of battery, and also improves the operational efficiency of diesel generators with its electric power control system. Therefore, it enables BTS to reduce CO<sub>2</sub> emissions from electricity and fossil fuel



**D**

## JCM Registered Project

JCM Registered Project is a Project which has been approved by the Joint Committee to be acknowledged under the JCM scheme after going through validation process.

Registered Project (JFY 2013)

### Introducing double-bundle modular electric heat pumps at AXIA SOUTH CIKARANG Tower 2



Energy Demand

Estimated Emission Reduction

**175 tCO<sub>2</sub>/year**



Toyota Tsusho Co.



PT Toyota Tsuho Lippo Residences

Reference No.  
**ID008**



Cikarang, West Java Province

In order to reduce natural gas consumption, a double bundle-type heat pumps, generating both heating and cooling energy, is installed into the thermal supply system in residential hotel "Axia South Cikarang Tower 2". The reduction of natural gas consumption and coal-fired electricity consumption through the utilization of the heat pump contributes to GHG emission reductions. The heat pump is capable of high temperature heating (more than 60 °C), and its efficiency combining heating and cooling is expected to be 450 – 500 %



## Registered Project (JFY 2015)

## Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller



Energy Demand

Estimated Emission Reduction

**398 tCO<sub>2</sub>/year**

Nippon Telegraph and Telephone Facilities, Inc.



PT Pakuwon Jati, Tbk.

Reference No.  
**ID009**

Surabaya, East Java Province

The implementation of the project by replacing the existing chillers with one unit high-efficiency centrifugal chiller of 569 USRt and four units high-efficiency centrifugal chiller of 966 USRt. These technology in Tunjungan plaza shopping mall used the new type economizer. Improvement of vapor-liquid separation performance and significant downsizing are realized by use of newly developed economizer. This project is expected to save 1,136 MWh of electricity.



## Registered Project (JFY 2014)

## Power Generation by Waste-heat Recovery in Cement Industry

Energy Industries  
(renewable/non-renewable sources)

Estimated Emission Reduction

**149,063 tCO<sub>2</sub>/year**

JFE Engineering Co.



PT Semen Indonesia, Tbk

Reference No.  
**ID013**

Tuban, East Java Province

The proposed project is planned to introduce a waste heat recovery (WHR) consists of preheater boilers and clinker coolers with a central gas turbine generator. The WHR system utilizes unused waste heat currently emitted from four kiln plant at the cement factory. WHR generate steam using the waste heat exhausted from the cement plant, and the steam is fed to the steam turbine generator to generate electricity.



## Registered Project (JFY 2014)

## Reducing GHG Emission at Textile Factories by Upgrading to Air-saving Loom



Energy Demand

Estimated Emission Reduction

**682 tCO<sub>2</sub>/year**

Toray Industries, Inc.

PT Indonesia Synthetic-Textile Mills,  
PT Easterntex,  
PT Century Textile IndustryReference No.  
**ID015**

DKI Jakarta, Tangerang, Pasuruan

Indonesia is the highest exporter of textile products in South East Asia, therefore the implementation of energy efficiency in this sector will be crucial. This "JAT810" has an air-saving technology to reduce air consumption for weft insertion 20% more than the conventional model. The effect is not only reducing CO<sub>2</sub> emission by saving the power consumption of air-compressors but also reducing the running cost.



## Registered Project (JFY 2014)

## Introduction of High Efficient Old Corrugated Cartons Process at Paper Factory



Manufacturing Industries

Estimated Emission Reduction

**19,011 tCO<sub>2</sub>/year**

Kanematsu Co.



PT Fajar Surya Wisesa, Tbk.

Reference No.  
**ID011**

Bekasi, West Cikarang, West Java Province

This project aims to achieve 10% electricity usage reduction per ton produced by introducing high efficient system for the old corrugated carton (OCC) process, thereby contributing to CO<sub>2</sub> reduction. This OCC process is a process to prepare clean raw materials containing dissolved paper fibers by mixing used corrugated board into water for defiberization and removing foreign substances. Since a large amount of material (water) is used in this process, the electricity is significantly consumed to the power motors.



## E JCM's Credit Issuance

Credit Issuance (JFY 2014)

### Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia



Energy Demand

Estimated Emission Reductions (average)

**140 tCO<sub>2</sub>/year**



Mayekawa Manufacturing Co.,Ltd.



PT Adib Global Food Supplies,  
PT Mayekawa Indonesia

Reference No.  
**ID002**



Bantargebang, Bekasi, West Java Province

The advanced energy efficient cooling system using natural refrigerant (NH<sub>3</sub> and CO<sub>2</sub>) which applied in PT Adib Global Food Supplies is introduced into the food and logistics industry, where energy consumption is very high, demonstrating its high energy saving impact as well as a large amount of GHG emission reductions.



Credit Issuance (JFY 2014)

### Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia



Energy Demand

Estimated Emission Reductions (average)

**25 tCO<sub>2</sub>/year**



Mayekawa Manufacturing Co.,Ltd.



PT Adib Global Food Supplies,  
PT Mayekawa Indonesia

Reference No.  
**ID003**



Cilebar, Karawang, West Java Province

This project is located at PT. Adib Global Food Supplies existing frozen food factory at Karawang, West Java Province. A screw compressor and an interior permanent magnet synchronous (IPM) motor are adopted and operated integrally, to achieve highly efficient operation of the cooling facility. This technology is utilized by PT. Adib not only to reduce the emission reduction but also to improve the efficiency of frozen food processing.



## Credit Issuance (JFY 2014)

## Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller



Energy Demand

Estimated Emission Reductions (average)

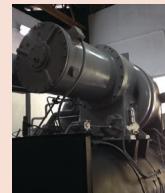
**117 tCO<sub>2</sub>/year**Ebara Refrigeration Equipment & Systems Co. Ltd.  
Nippon Koei Co. Ltd.

PT Primatecindo Indonesia

Reference No.  
**ID001**

Batang, Central Java Province

This project adopted high-efficiency chillers with high-performance economizer cycle and a supercooling refrigerant cycle in order to save energy. The target factory replaces old-fashioned chillers (230 USRt and 250 USRt) with high-efficiency chillers (500 USRt), in order to save energy and mitigate CO<sub>2</sub> emissions. Also, the chillers use low-pressure refrigerant (HFC-245fa) with zero Ozone Depletion Potential (ODP).



## Credit Issuance (JFY 2014)

## Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Karawang West Java



Energy Demand

Estimated Emission Reductions (average)

**205 tCO<sub>2</sub>/year**Nippon Koei Co., Ltd.,  
Ebara Refrigeration Equipment & Systems Co., Ltd.PT Nikawa Textile Industry,  
PT Ebara IndonesiaReference No.  
**ID004**

Karawang, West Java Province

The textile industry is a major industry in Indonesia. To produce high quality products, air-conditioning is of key importance. For reducing GHG for the textile industry, a high-efficiency chiller is one of the best options to choose. The existing 500 USRt chiller is replaced by a high efficiency centrifugal chiller, which consists of a two-stage high efficiency compressor, economizer and sub-cooler system. By applying a purge unit with Activated Carbon, nearly 100% of HFC-245fa refrigerant with 0 ODP is recovered for excellence in GHG reductions



## Credit Issuance (JFY 2013)

## Installation of Inverter-type Air Conditioning System, LED Lighting and Separate Type Fridge Freezer Showcase to Grocery Stores in Republic of Indonesia



Energy Demand

Estimated Emission Reductions (average)

**145 tCO<sub>2</sub>/store/year**

Lawson, Inc.



PT Midi Utama Indonesia Tbk

Reference No.  
**ID006**

Jakarta, Bekasi, Tangerang, Depok

Total electricity consumption of food retail convenience stores is decreased by the installation of the latest high-efficiency facilities and high-efficiency chillers with natural refrigerant (CO<sub>2</sub> refrigerant), inverter-controlled air-conditioners, and LED lighting. As a result, CO<sub>2</sub> emissions due to electricity consumption are reduced. This project involves 12 convenience store of Alfa Midi located in Jakarta, Bekasi, Tangerang, and Depok.



## Credit Issuance (JFY 2013)

## Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Batang, Central Java (Phase 2)



Energy Demand

Estimated Emission Reductions (average)

**152 tCO<sub>2</sub>/year**Ebara Refrigeration Equipment & Systems Co. Ltd.  
Nippon Koei Co. Ltd.

PT Primatecxo Indonesia

Reference No.  
**ID005**

Batang, Central Java Province

In Indonesia, humidity control is indispensable for the textile industry to maintain product quality and massive energy output, which is required for the adjustment of factory air conditioning. The target factory replaces old-fashioned chillers (230 USRt and 250 USRt) with high-efficiency chillers (500USRt), in order to save energy and to reduce CO<sub>2</sub> emissions.



## Issuance of Credits

Below is the information about issuance of credits which have been issued by Joint Committee Members of Indonesia and Japan

Project No	Project Title	Monitoring period	Indonesia Participant	Japanese Participant	Indonesian Government	Japanese Government	Total Credit Issued
ID001	Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller	2014-2015	0	12	49	61	122
ID002	Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia	2015	3	3	3	20	29
ID003	Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia	2015	1	1	2	7	11
ID004	Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Karawang, West Java	2014-2016	12	13	103	128	256
ID005	Energy Saving for Air-Conditioning at Textile Factory by Introducing High-efficiency Centrifugal Chiller in Batang, Central Java (phase 2)	2015-2016	0	13	53	66	132
ID006	Installation of Inverter-type Air Conditioning System, LED Lighting and Separate Type Fridge Freezer Showcase to Grocery Stores in Republic of Indonesia	2014-2016	0	28	69	98	195

Notes : credit is issued in the respective country's registry system

**Notes** \_\_\_\_\_

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Coordinating Ministry for Economic Affairs  
Republic of Indonesia

### For Further Information

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