November
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The Joint Crediting Mechanism (JCM):

Progress of Financing Programme for JCM Model Projects and Feasibility Studies for JCM Projects by MOEJ in 2014

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VEGETABLE OIL INK
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Editor: Global Environment Centre Foundation (GEC)

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Ministry of the Environment

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01 Background

1.1 Japan's Proposal towards Low Carbon Growth

In order to effectively address the issue of climate change, it is necessary to achieve low-carbon growth all around the world by fully mobilising technology, markets, and finance. Recognising this necessity, the government of Japan has proposed the Joint Crediting Mechanism (JCM) as a means to facilitate the diffusion of leading low-carbon technologies, systems, and so forth in developing countries. Japan has held consultations for the JCM with developing countries since 2011 and signed the bilateral documents for the JCM with 12 countries (Figures 1-1 and 1-2 as of November 2014). Japan will continue consultations/briefings with any countries interested in the JCM.

Figure 1-1 ≫
Countries with which Japan has signed the bilateral documents for the JCM (as of November 2014)

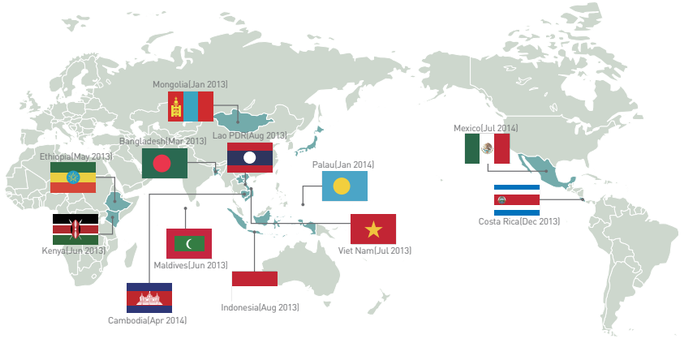
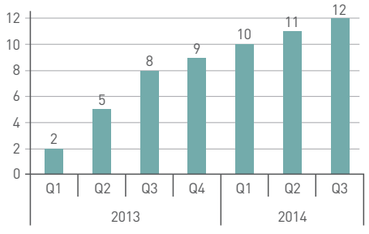


Figure 1-2 ≫
Number of countries that have signed the bilateral documents for the JCM (as of November 2014)



1.2 Basic Concepts of the JCM

The JCM is designed based on the concepts summarised in the following points and Figure 1-3 and 1-4:

- 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, complementing the Clean Development Mechanism (CDM).

Figure 1-3 ≫ **The JCM scheme between Japan and host country**

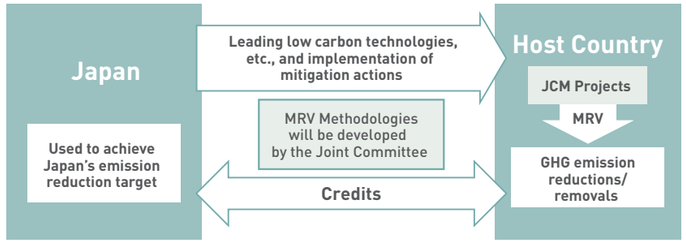
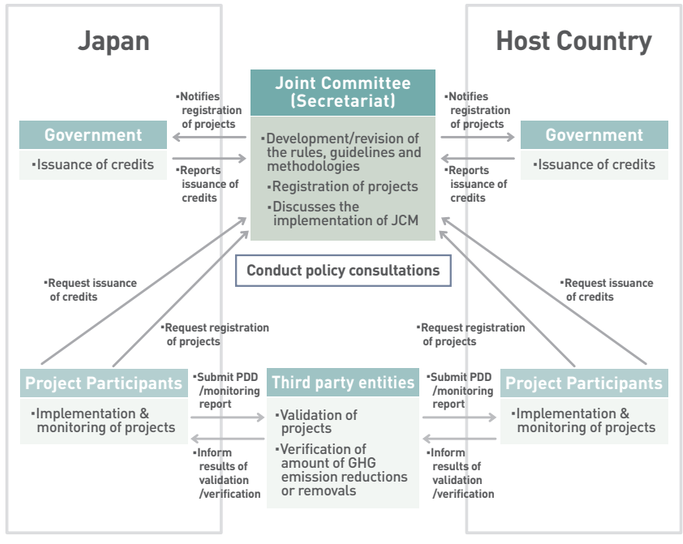


Figure 1-4 ≫ **Scheme of the JCM**



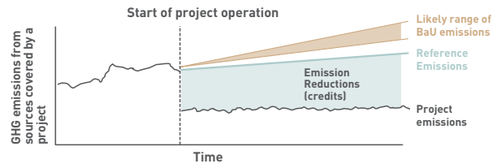
1.3 The JCM as Part of the Framework for Various Approaches under the UNFCCC

The JCM is one of various approaches based on Decision1/CP18, jointly developed and implemented by Japan and partner countries, and Japan intends to contribute to elaborating the framework for such approaches under the UNFCCC. In December 2013, Japan reported the use of the JCM in Japan's First Biennial Reports in line with the Decision 19/CP18. Also, in October 2014, Japan submitted its views on the framework for various approaches (FVA) referred to in paragraphs 6 of FCCC/SBSTA/2014/L.10.

1.4 Basic Concept for Crediting under the JCM

In the JCM, emission reductions to be credited are defined as the difference between "reference emissions" and project emissions as described in Figure 1-5. The reference emissions are calculated below business-as-usual (BaU) emissions that represent plausible emissions in providing the same outputs or service level of the proposed JCM project in the host country. This approach will ensure a net decrease and/or avoidance of GHG emissions.

Figure 1-5 ≫ **Basic Concept for Crediting under the JCM**



1.5 Key Features of the JCM Methodologies

One of the major purposes of Feasibility Studies for JCM Projects, which are discussed in details in the next chapter, is to develop draft JCM methodologies for each project. The key features of the JCM methodologies are summarised in the following points and Table 1-1:

- The JCM methodologies are designed in such a way that project participants can use them easily, and verifiers can verify the data easily;
- In order to reduce the monitoring burden, default values are widely used in a conservative manner;
- Eligibility criteria clearly defined in the methodology can reduce the risks of rejection of the projects proposed by project participants.

Table 1-1 ≫ **Key Features of the JCM Methodology**

Eligibility criteria	A "check list" will allow easy determination of eligibility of a proposed project under the JCM and applicability of JCM methodologies to the project.
Data (parameter)	● A list of parameters will allow project participants to determine what data is necessary to calculate GHG emission reductions/removals with JCM methodologies. ● Default values for specific country and sector are provided beforehand.
Calculation	Premade spreadsheets will help calculate GHG emission reductions/removal automatically by inputting relevant values for parameters, in accordance with methodologies.

*All ideas are subject to further consideration and discussion with host countries

As of November 7, 2014, 5 JCM methodologies are approved and summarized in Table 1-2 below:

Table 1-2 ≫ **Approved JCM Methodologies as of November 2014**

No.	Country	Sectoral Scope	Methodology Title	GHG Emission Reduction Measures
MN_AM001	Mongolia	Energy distribution	Installation of energy-saving transmission lines in the Mongolian Grid	Replacing the existing conductors in transmission lines with Low Electrical Power Loss Aluminum Conductors, Aluminum-Clad Steel Reinforced, which have lower transmission loss compared to the existing conductors.
ID_AM001	Indonesia	Energy industries	Power Generation by Waste Heat Recovery in Cement Industry	Replacing the electricity from the grid with the one to be generated by waste heat recovery system with suspension preheater boiler and air quenching cooler boiler.
ID_AM002	Indonesia	Energy demand	Energy Saving by Introduction of High Efficiency Centrifugal Chiller	Saving energy by introducing high efficiency centrifugal chiller for factories, commerce facilities, etc.
ID_AM003	Indonesia	Energy demand	Installation of Energy-efficient Refrigerators Using Natural Refrigerant at Food Industry Cold Storage and Frozen Food Processing Plant	Saving energy by introducing high efficiency refrigerators to the food industry cold storage and frozen food processing plants.
ID_AM004	Indonesia	Energy demand	Installation of Inverter-Type Air Conditioning System for Cooling for Grocery Store	Saving energy by introducing inverter-type air conditioning system for cooling for grocery stores.

02 JCM Promotion Scheme by the Ministry of the Environment, Japan

2.1 Financing Programme for JCM Model Projects

The MOEJ launched the financing programme for JCM Model Projects in 2013. The scope of the financing includes facilities, equipment, vehicles, etc. which reduce CO_2 from fossil fuel combustion as well as construction cost for installing those facilities and etc. Through the programme, MOEJ financially supports part of the initial cost (up to half), on the premise of seeking to deliver half of the issued JCM credits to the government of Japan (Figure 2-1). The budget for FY2014 is 1.2 billion Japanese yen (Approx. USD 12 million) per year by FY2016 (Total 3.6 billion JPY). The number of JCM Model Projects by sector in FY2014 is summarized in Figure 2-2 below.

Figure 2-1 ≫ **Financing Programme for JCM Model Projects by MOE**

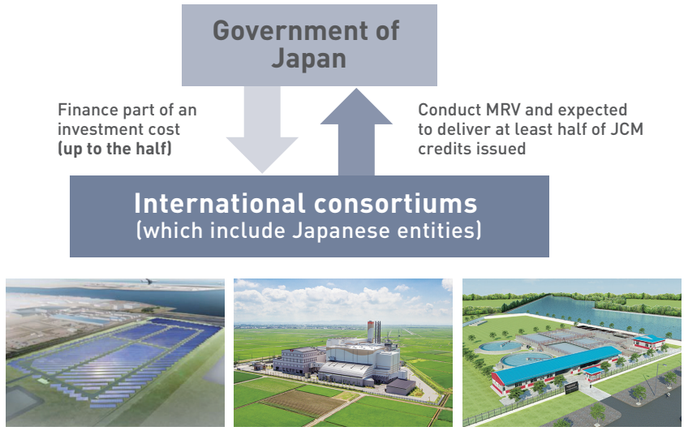
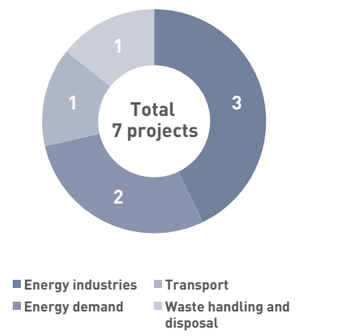


Figure 2-2 ≫

Number of JCM Model Projects by sector in FY2014

The sectors for JCM Model Projects are based on the categories under the sectoral scopes for the JCM



2.2 Feasibility Studies for JCM Projects

There are three categories under the Feasibility Studies: JCM Project Planning Study, JCM Feasibility Study and REDD+ Demonstration Study. The number of projects under the Feasibility Studies by sector in FY2014 is summarized in Figure 2-3.

JCM Project Planning Study

The JCM Project Planning Study (PS) is conducted to make concrete project plans in order to develop a JCM Model Project in the next fiscal year, including financial plans, construction plans, operation plans, implementation schemes, and MRV structures.

JCM Feasibility Study

The purpose of the JCM Feasibility Study (FS) is to seek potential projects/activities that can be part of the JCM, thereby contributing to the development of the JCM, by pursuing the following goals:

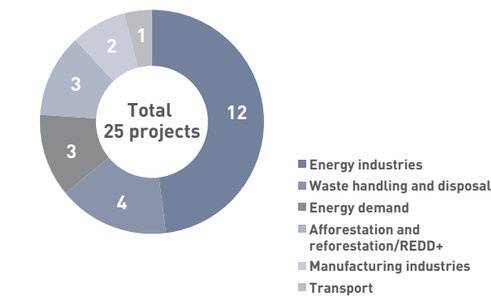
- Developing MRV methodologies applicable to the respective projects/activities;
- Assessing the possibility of each project/activity to be implemented under the JCM;
- Accumulating knowledge and experience acquired through the above-mentioned processes.

REDD+ Demonstration Study

The purpose of the REDD+ Demonstration Study (REDD+) is to seek potential projects/activities that can be part of the JCM, thereby contributing to the development of the JCM, by pursuing the following goals:

- Developing MRV methodologies applicable to the respective projects/activities and testing the MRV methodologies;
- Assessing the possibility of each project/activity to be implemented under the JCM;

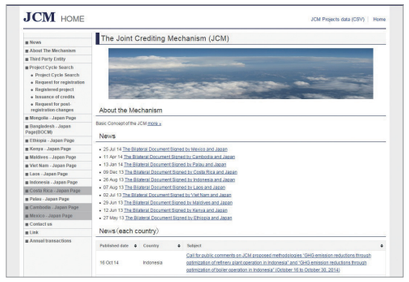
Figure 2-3 ≫ **Number of projects under the Feasibility Studies by sector in FY2014**



2.3 Relevant websites

The Joint Crediting Mechanism

The Joint Crediting Mechanism (JCM) website is an official platform providing essential information and updates for the JCM to the public. It also functions as an internal information sharing center for the JC members.
https://www.jcm.go.jp/

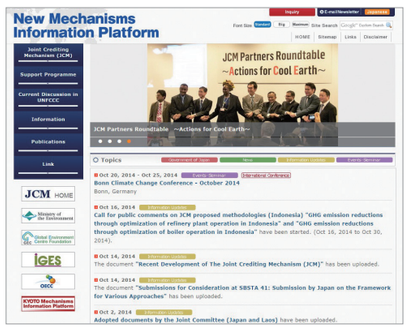


Global Environment Centre Foundation

Global Environment Centre Foundation (GEC) is serving as the commissioned secretariat for the Financing Programme and Feasibility Studies by the MOEJ. GEC provides a database for JCM Feasibility Studies reports and related information.
GEC: **http://gec.jp/**
Database: **http://gec.jp/jcm/**

New Mechanism Information Platform

The New Mechanism Information Platform is a platform providing essential information for the JCM as well as periodical updates of the ongoing development of the JCM projects.
http://www.mmechanisms.org/e/index.html



03 JCM Model Projects in 2013&2014, and Planning/ Feasibility Studies and REDD+ Demonstration Studies in 2014

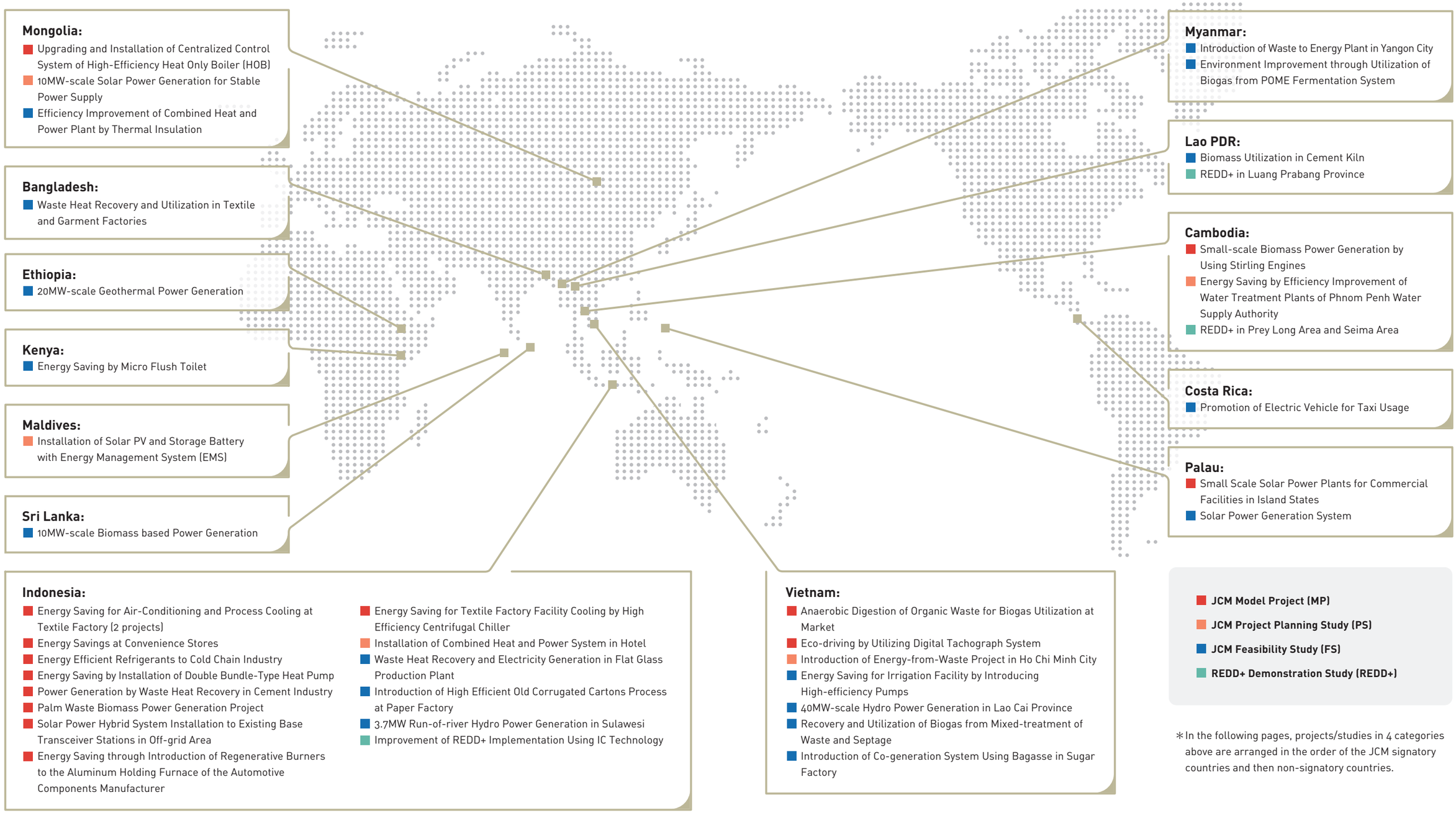
The following pages provide an overview of the JCM Model Projects and Feasibility Studies and summary of each project/study.

＊Please note that provision of overview does not prejudge that these projects are registered as the JCM projects.

Sectoral Scope

- Energy industries (renewable - / non-renewable sources);
- Energy distribution;
- Energy demand;
- Manufacturing industries;
- Chemical industry;
- Construction;
- Transport;
- Mining/ Mineral production;
- Metal production;
- Fugitive emissions from fuels (solid, oil and gas);
- Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride;
- Solvents use;
- Waste handling and disposal;
- Afforestation and reforestation/REDD+;
- Agriculture.

Overview of the JCM Model Projects and Feasibility Studies



＊In the following pages, projects/studies in 4 categories above are arranged in the order of the JCM signatory countries and then non-signatory countries.

JCM Model Projects (MP)

MP2013-1 Upgrading and Installation of Centralized Control System of High-efficiency Heat Only Boiler (HOB) | Mongolia

Expected GHG Emission Reductions

364 tCO_2/year
in Bornuur sum

167 tCO_2/year
in Ulaanbaatar City

Bornuur sum & Ulaanbaatar City, Mongolia

Project Owner
Japan：Suuri-Keikaku
Mongolia：Anu-Service

This JCM model project consists of two model sites: Bornuur sum in a rural area and the 118th School in Ulaanbaatar City.
The Bornuur sum project includes the installation of heat only boilers (HOBs) as well as pipe laying work, electrical construction and boiler building construction. This project alters the current heat supply system in Bornuur sum of individual building-based heating, under which low efficiency HOBs and stoves are used. The centralized control system of high-efficiency HOBs is installed in this project. The improvement of boiler efficiency brings about a reduction of coal consumption to reduce CO_2 emissions and other air pollutants.
The other project is the replacement of low-efficiency, old-type boilers with the latest high-efficiency model boilers at the 118th School in Ulaanbaatar City. This project also leads to the reduction of coal consumption to mitigate CO_2 emissions as well as air pollutants.




MP2013-2&3 Energy Saving for Air-conditioning and Process Cooling at Textile Factory | Indonesia

Expected GHG Emission Reductions

Project 1: **117 tCO_2/year**
Project 2: **117 tCO_2/year**

Batang, Central Java, Indonesia

Project Owner
Japan：Ebara Refrigeration Equipment & Systems and Nippon Koei Co., Ltd.
Indonesia：PT. Primatexco and PT. Ebara Indonesia

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 (230USRt and 250USRt) with high-efficiency chillers (500USRt), in order to save energy and mitigate CO_2 emissions. High-efficiency chillers adopt a high-performance economizer cycle and a super-cooling refrigerant cycle in order to save energy. Also, the chillers use low-pressure refrigerant (HFC-245fa) with zero ODP(Ozone Depletion Potential).


MP2013-4 Energy Savings at Convenience Stores | Indonesia

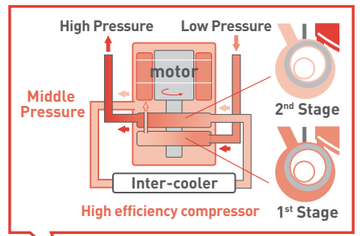
Expected GHG Emission Reductions

33 tCO_2/store/year

in/around Jakarta, Indonesia

Project Owner
Japan：LAWSON, INC.
Indonesia：PT. Midi Utama Indonesia Tbk

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_2 refrigerant), inverter-controlled air-conditioners, and LED lighting. As a result, CO_2 emissions due to electricity consumption are reduced.





MP2013-5 Energy Efficient Refrigerants to Cold Chain Industry | Indonesia

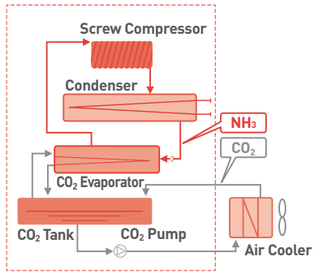
Expected GHG Emission Reductions

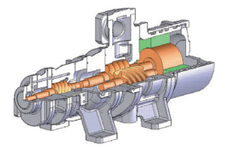
213 tCO_2/year

Bekasi, West Java & Karawang, West Java, Indonesia

Project Owner
Japan：Mayekawa Manufacturing Co., Ltd.
Indonesia：PT. Adib Global Food Supplies, PT. Mayekawa Indonesia

The advanced energy efficient cooling system using natural refrigerant (NH_3 and CO_2) is introduced into the food industry and logistics industry in Indonesia, where energy consumption is very high, demonstrating its high energy saving impact as well as a large amount of GHG emission reductions.
A screw compressor and an IPM (interior permanent magnet synchronous) motor are adopted and operated integrally, to achieve highly efficient operation of the cooling facility.




Screw Compressor


Condensing Unit

MP2013-6 Energy Saving by Installation of Double Bundle-type Heat Pump

Indonesia

Expected GHG Emission Reductions

170 tCO_2/year

Bekasi, West Java, Indonesia

Project Owner

Japan：Toyota Tsusho Corporation
Indonesia：PT.TTL Residences

In order to reduce natural gas consumption, a double bundle-type heat pump, generating both heating and cooling energy, is installed into the thermal supply system in serviced aprtments. The heat pump supplies cooling energy for air conditioning in the hotel to reduce the electricity consumption.

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 degrees C), and its efficiency combining heating and cooling is expected to be 450-500%.

MP2013-7 Small Scale Solar Power Plants for Commercial Facilities in Island States

Palau

Expected GHG Emission Reductions

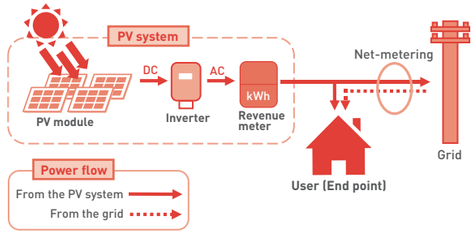
390 tCO_2/year

Koror State, Palau

Project Owner

Japan：Pacific Consultants Co., Ltd., InterAct Inc.
Palau：Western Caroline Trading Company,
Surangel and Sons Company, Melekau Environmental Consulting

A grid-connected photovoltaic (PV) system is installed on the rooftops of commercial facilities (220.5kW on a warehouse in Subproject 1 and 150kW on a supercenter building in Subproject 2). This project uses high quality PV modules of a Japanese manufacturer and general-purpose inverters with easy maintenance suitable for small-scale applications. The power generated by the PV system is normally consumed in-house. When there is a surplus, it is supplied to grid. Taking into account the recent large typhoons, PV modules with strong wind resistance are introduced.



MP2013-8 Small-scale Biomass Power Generation by Using Stirling Engines

Cambodia

Expected GHG Emission Reductions

1,840 tCO_2/year

Kandal Province, Cambodia

Project Owner

Japan：Promaterials
Cambodia：Angkor Bio Cogen

Many rice mills in Cambodia operate their own in-house diesel-based power generation systems. Biomass (rice husk) power generation systems with stirling engines replace the conventional in-house diesel power generation systems, and lead to CO_2 emission reductions. The stirling engine, an external combustion system, can utilise various fuels including biomass for power generation. It is suitable for power generation by fuel with less even quality, such as rice husk. Furthermore, the stirling engine system to be introduced is a multiple combination of 3.5kW units, so customisation is based on the electricity demand and the availability of biomass fuel.

The portable package of a unit makes it possible to install the system to meet the various demands of rice mills.

MP2014-1 Anaerobic Digestion of Organic Waste for Biogas Utilization at Market

Vietnam

Expected GHG Emission Reductions

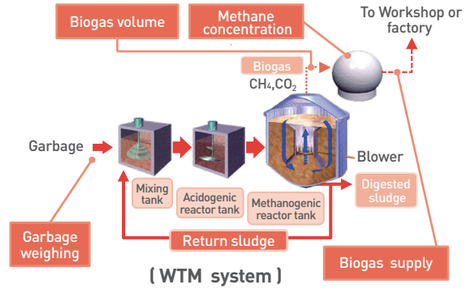
3,355 tCO_2/year

Ho Chi Minh City, Vietnam

Project Owner

Japan：Hitachi Zosen Corporation, K.K. Satisfactory International
Vietnam：Saigon Trading Group

This project separates the organic waste from collected solid waste in the Binh Dien Wholesale market in Ho Chi Minh City, and then feeds it into a methane fermentation system (WTM system), which produces biogas. The biogas is supplied to the workshop/factory within the market to replace fossil fuel. The proposed project avoids GHG emissions from organic waste that would have been sent to decay in a landfill and displacement of fossil fuel consumption.



MP2014-2 Eco-driving by Utilizing Digital Tachograph System

Vietnam

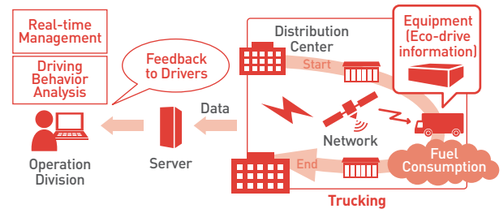
Expected GHG Emission Reductions

310 tCO_2/year

Binh Duong Province & Hanoi City, Vietnam

Project Owner
Japan：NIPPON EXPRESS
Vietnam：NIPPON EXPRESS (VIETNAM)

In this project, 130 trucks in use by NIPPON EXPRESS (VIETNAM) are fitted with an eco-drive improving system using digital tachographs, so that the quantity of fuel consumption, running distance and relevant data on driving behavior of drivers are continuously analyzed with cloud network in Binh Duong and Hanoi city, Vietnam.
The drivers are given advice in order to improve their driving behavior based on the analyzed data, and feedback linked to the training outcome is provided for further improving the driving behavior.
This project contributes to realizing improvement of transportation quality as well as fuel efficiency, which is directly linked with reduction in CO_2 emissions.



MP2014-3 Power Generation by Waste-heat Recovery in Cement Industry

Indonesia

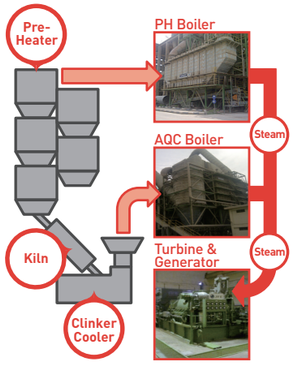
Expected GHG Emission Reductions

122,000 tCO_2/year

Tuban, East Java, Indonesia

Project Owner
Japan：JFE Engineering Corporation
Indonesia：PT Semen Indonesia (Persero) Tbk

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



MP2014-4 Palm Waste Biomass Power Generation Project

Indonesia

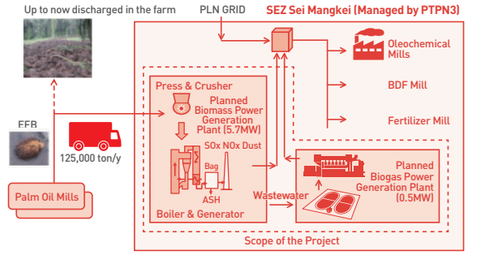
Expected GHG Emission Reductions

28,128 tCO_2/year

North Sumatra, Indonesia

Project Owner
Japan：Shimizu Corporation
Indonesia：PTPN III (Persero)

1. The project is a palm waste biomass power generation plant in Sei Mangkei Special Economic Zone in North Sumatra Province, Indonesia.
2. The project utilizes palm waste (EFB:Empty Fruit Bunch) as the fuel, which is discharged in large amounts and not utilized effectively before, using advanced Japanese boiler technology.
3. Generated power is supplied to companies in the Special Economic Zone.
4. Electric power supply is insufficient in Indonesia and this project meets with its energy policy.



MP2014-5 Solar Power Hybrid System Installation to Existing Base Transceiver Stations in Off-grid Area

Indonesia

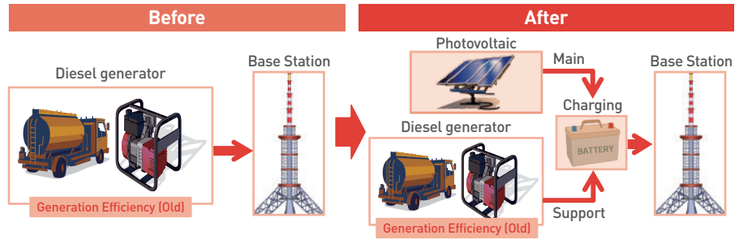
Expected GHG Emission Reductions

4,644 tCO_2/year
(50 sites)

Kalimantan & Slawesi island, Indonesia

Project Owner
Japan：ITOCHU Corporation
Indonesia：PT. Telekomunikasi Selular

There are many islands, off-grid areas, in Indonesia. This project is to install solar power and lithium ion batteries to existing mobile base stations where supply of electricity is by diesel generator.
We are planning to reduce consumption of diesel oil and CO_2 emissions by the above Hybrid Power System and control each base station's data by Cloud service at Telekomunikasi Selular's office. The project contributes to the spread of new technology in Indonesia and enable establishment of a new remote management system through a Cloud system.



MP2014-6 Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding Furnace of the Automotive Components Manufacturer | Indonesia

Expected GHG Emission Reductions

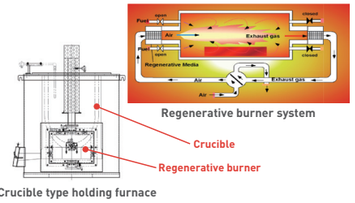
855.6 tCO_2/year

Karawang, West Java, Indonesia

Project Owner

Japan：TOYOTSU MACHINERY CORPORATION, HOKURIKU TECHNO CO., LTD.
Indonesia：PT. TOYOTA TSUSHO INDONESIA,
PT. YAMAHA MOTOR PARTS MANUFACTURING INDONESIA (YPMI),
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. YPMI has an aluminum wheel die casting line with 11 crucible type holding furnaces. Local furnace manufacturer PT. Matahari replaces and modifies the furnaces supervised by the branch of Japanese furnace manufacturer Hokuriku Techno. PT. Matahari acquires sophisticated furnace design and manufacturing knowhow of regenerative burner furnaces and their tuning/maintenance techniques.



Crucible type holding furnace

MP2014-7 Energy Saving for Textile Factory Facility Cooling by High-efficiency Centrifugal Chiller | Indonesia

Expected GHG Emission Reductions

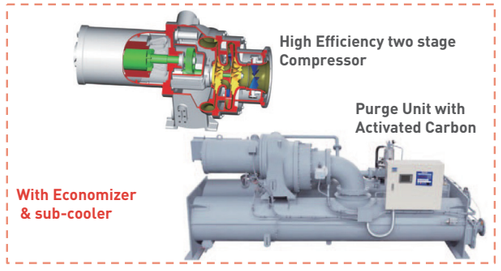
118 tCO_2/year

Karawang, West Java, Indonesia

Project Owner

Japan：Ebara Refrigeration Equipment & Systems Co., Ltd.
Indonesia：PT. Nikawa Textile Industry　PT. Ebara Indonesia

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 500USRt 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 reduction.



JCM Project Planning Studies (PS)

PS2014-1 10MW-scale Solar Power Generation for Stable Power Supply | Mongolia

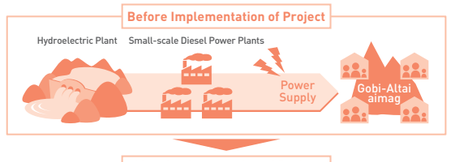
Expected GHG Emission Reductions

7,782 tCO_2/year

Taishir, Gobi-Altai aimag, Mongolia

Implementing Entity：
SAISAN Co.,Ltd.; myclimate Japan Co., Ltd.

The project under consideration aims to construct a 10MW-scale solar power generation system in Taishir, Gobi-Altai aimag, Mongolia, and sell the generated energy to Altai-Uliastai grid. Of all electricity supplied, approximately half is covered by hydroelectric plant, and the rest by small-scale diesel power plants. The implementation of the project reduces GHG emissions by replacing the diesel power plants which have a high emission factor with a solar power generation system, thus resolving the grid's electricity shortage problem due to increasing power demand.



PS2014-2 Installation of Solar PV and Storage Battery with Energy Management System (EMS) | Maldives

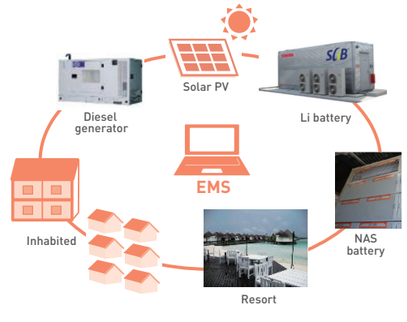
Expected GHG Emission Reductions

4,332 tCO_2/year

Huraa and Kuda Huraa, Kaafu Atoll, Maldives

Implementing Entity：
Pacific Consultants Co., Ltd.
T. T. Network Infrastructure Japan Corporation.

The fuel consumption for power generation is reduced by integrating the power systems of nearby inhabited (Huraa) and resort (Kuda Huraa) islands, which are currently 100% dependent on diesel systems, and introducing a large quantity of renewable energy. Together with solar PVs, advanced Japanese batteries and energy management system (EMS) are introduced to enable a stable power supply with a high level of renewable energy penetration. The project under consideration will aim to reduce GHG emissions by 50%.



PS2014-3 Introduction of Energy-from-Waste Project in Ho Chi Minh City | Vietnam

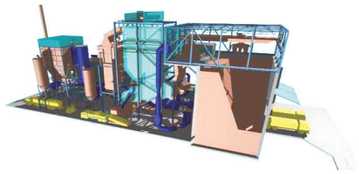
Expected GHG Emission Reductions

42,000 tCO_2/year

Ho Chi Minh City, Vietnam

Implementing Entity：
Hitachi Zosen Corporation,
K.K. Satisfactory International

The study investigates incineration of all wastes from the household, factories, stores and markets, to produce electricity/energy by incineration and fulfill the electricity production guidelines provided by the Vietnamese government. By effectively utilizing Ho Chi Minh City's wastes, not only are fossil fuels replaced by fuel by waste, green house gases are reduced, the amount of wastes needing treatment/sent to landfills is reduced, resources are effectively used, and natural resource usage is reduced.
We will effectively utilize the "Solid waste-to-energy project innovation assistance mechanism for Vietnam proclaimed as the Prime Minister's Decision dated May 2014".



Energy from Waste plant (out side view)

PS2014-4 Installation of Combined Heat and Power System in Hotel | Indonesia

Expected GHG Emission Reductions

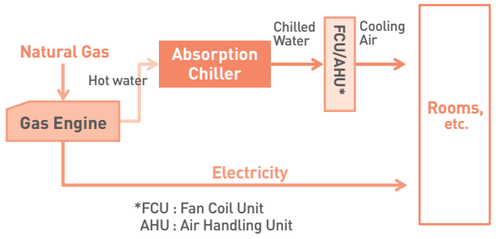
4,166 tCO_2/year

Surabaya, East Java, Indonesia

Implementing Entity：
Fuji Electric Co., Ltd.

Combined Heat and Power (CHP) System which consists of an 1,000kW class gas engine and an absorption chiller will be installed in a hotel located in Surabaya, East Java Province. By supplying both electricity and chilled water, this system replaces a part of electricity supplied by grid and electricity consumption by chillers. High overall efficiency of CHP system enables reduction of both CO_2 emissions and utility cost.

Energy supply scheme of CHP system



PS2014-5 Energy Saving by Efficiency Improvement of Water Treatment Plants of Phnom Penh Water Supply Authority | Cambodia

Expected GHG Emission Reductions

1,120 tCO_2/year

Phnom Penh City, Cambodia

Implementing Entity：
METAWATER Co., Ltd.
MATSUO CONSULTANTS CO., LTD.

Two main water treatment plants owned by Phnom Penh Water Supply Authority, the biggest water utility company in Cambodia, have been operated since the 1990s. Sub-stations, motors and pump equipment were based on the design of the 1990s, and no post installation changes were made. The facilities have deteriorated and are far less energy efficient than those used currently in Japan. This project under consideration is intended to reduce the GHG emissions by introducing Japanese energy-efficient equipment and the Japanese advanced operation and management.

JCM Feasibility Studies (FS)

FS2014-1 Efficiency Improvement of Combined Heat and Power Plant by Thermal Insulation

Mongolia

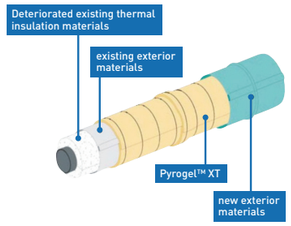
Expected GHG Emission Reductions

3,960 tCO_2/year

Ulaanbaatar City, Mongolia

Implementing Entity：
Kanden-Plant Co.,Inc.

This project under consideration aims to improve plant efficiency by means of thermal insulation installation of "Overwrapping Insulation Method (ECO-AIM)" at coal fired thermal power plants in Mongolia.
The installation method is just to roll the thermal insulation material, "Pyrogel XT", over the deteriorated existing thermal insulation materials on the existing facilities.
This method also provides measures on the occupational safety and health such as avoiding asbestos scattering.



"Eco-AIM Method (increase thermal insulation method of maintenance)"



FS2014-2 Waste Heat Recovery and Utilization in Textile and Garment Factories

Bangladesh

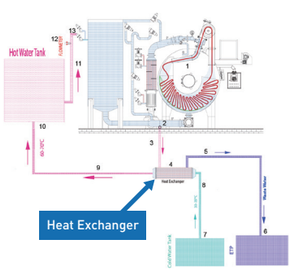
Expected GHG Emission Reductions

2,109 tCO_2/year

Dhaka and Gazipur Districts, Bangladesh

Implementing Entity：
PEAR Carbon Offset Initiative , Ltd.
Kurose Chemical Equipment Co. Ltd.

The project under consideration is to install heat exchangers for recovering waste heat from the textile dyeing process and applying the heat for the textile dyeing process.
The project targets three Bangladesh textile and garment factories. The factories are N.A.Z. Bangladesh Ltd., Giant Textile Ltd. And Landmark Fabrics located in the Gazipur district and Savar Upazilla of Dhaka Division.
The core part of the technology is the heat exchanger and other related equipment provided by the Japanese manufacturer, Kurose Ltd. The project recovers waste heat from waste hot water of the textile dyeing process by using heat exchanger and heating the fresh water which is used for textile dyeing processing.



FS2014-3 20MW-scale Geothermal Power Generation

Ethiopia

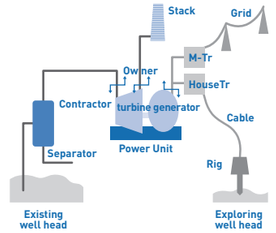
Expected GHG Emission Reductions

99,882 tCO_2/year

African Great Rift Valley, Ethiopia

Implementing Entity：
Mizuho Information & Research Institute, Inc.

Corbetti Power Company, mainly comprised of Reykjavik Geothermal from Iceland, is planning to develop a 500MW geothermal power generation project in Corbetti geothermal field in Ethiopia. The project under consideration aims to supply electricity to the national grid, achieving a GHG emissions reduction as well as contributing to the power diversification of the country, which are important pillars of the national energy policy. The objective of this study is to evaluate the technical and economic feasibility of introduction of a 20MW-scale wellhead geothermal generation unit as the first phase of the project.



General composition of geothermal wellhead generation system



FS2014-4 Energy Saving by Micro Flush Toilet

Kenya

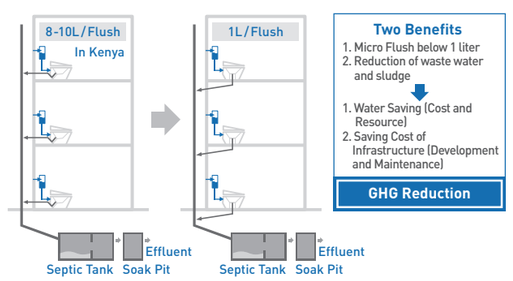
Expected GHG Emission Reductions

33.1 tCO_2/year

Nairobi City, Kenya

Implementing Entity：
LIXIL Corporation

This study is aimed at reducing energy-related treatment water and waste water as well as contributing to water saving and environmental improvement by installing super-water-saving toilets (11,200 toilet units) developed by LIXIL Corporation into the low-cost housing project (5,600 house units) of the National Housing Corporation (NHC) in Kenya.



FS2014-5 Energy Saving for Irrigation Facility by Introducing High-efficiency Pumps | Vietnam

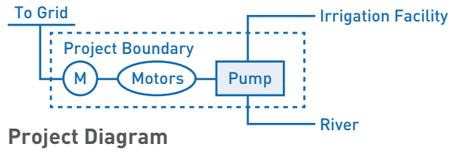
Expected GHG Emission Reductions

162 tCO_2/year

Hanoi City, Vietnam

Implementing Entity：
Nippon Koei Co.,ltd, EBARA Corp.

The study targets an irrigation facility which is managed by the Department of Agriculture and Regional Development in Hanoi City.
By introducing high efficiency pump which is produced by Ebara corporation into irrigation system (total 25 pumps which are 4000m3/h and 75kW each), it is planned to reduce total amount of electricity consumption and GHG emissions. It is expected to save 12,000kWh per year per 1 pump by introducing Japanese high efficiency pump in substation to other countries' pump which have high market share in Vietnam.



Project Diagram



FS2014-6 40MW-scale Hydro Power Generation in Lao Cai Province | Vietnam

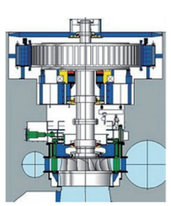
Expected GHG Emission Reductions

98,144 tCO_2/year

Lao Cai Province, Vietnam

Implementing Entity：
Kyushu Electric Power Company, Voith Fuji Hydro K. K

Vietnam's electric power demand is estimated to rise by approximately 13% annually.
The objective of the study is to promote medium-small scale hydropower as an alternative of thermal power plants and to reduce CO_2 emissions.
In the project under consideration, advanced hydropower technologies, which are based on long experience and lead to a long-term stable plant operation, are to be provided from Japan to secure competitiveness against low price and low quality equipment. Furthermore, a financing scheme for establishing a feasible business model is to be investigated.



Section of Vertical Shaft Francis Turbine and Generator

■Soft technology
・Appropriate investigation, design, construction planning considering river flow and characteristics at the site, etc.

■Hard technology
・Hydro turbines and generators are highly efficient and durable, require low maintenance and investment, and give little negative environmental impact.

FS2014-7 Recovery and Utilization of Biogas from Mixed-treatment of Waste and Septage | Vietnam

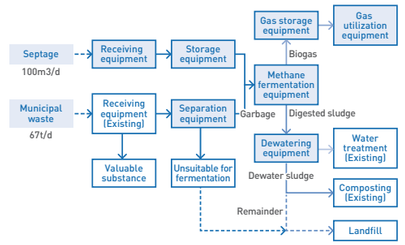
Expected GHG Emission Reductions

21,800 tCO_2/year

Hanoi City, Vietnam

Implementing Entity：
Kubota Corporation, Nikken Sekkei Civil Engineering Ltd., The Japan Research Institute Ltd.

Cau Dien, an intermediate treatment facility, ferments garbage as part of the municipal solid waste collected in Hanoi City, to create compost.
Our new project under consideration introduces a modern methane fermentation system which can treat a mixture of garbage and septage, and we expect it to improve public sanitation in the surrounding areas. Recovered biogas, which can be used as boiler fuel, replaces fossil fuels, generates energy for the treatment facility and improves energy saving. Digested sludge after fermentation can be made into compost for agriculture.




FS2014-8 Introduction of Co-generation System Using Bagasse in Sugar Factory | Vietnam

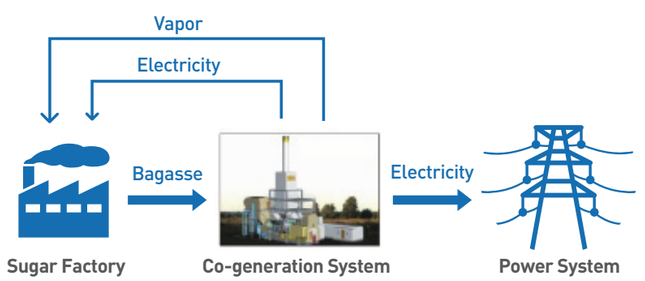
Expected GHG Emission Reductions

92,199 tCO_2/year

Nghe An Province, Vietnam

Implementing Entity：
Japan NUS Co., Ltd

Nghe An Sugar Company (NASU), one of the largest sugar companies in Vietnam, is planning to introduce a 40MW co-generation system that runs with bagasse from the sugar production process. All vapor from the system is consumed in the sugar production process. The 6MW of electricity generated is used for internal processes and the surplus 34MW is sold to EVN (VietNam Electricity). GHG emissions reduction is achieved by substituting grid electricity with electricity from biomass.



FS2014-9 Biomass Utilization in Cement Kiln

Lao PDR

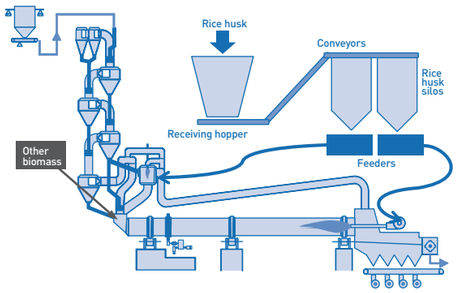
Expected GHG Emission Reductions

21,600 tCO_2/year

Vang Vieng, Vientiane Province, Lao PDR

Implementing Entity：
Taiheiyo Engineering Corporation

By utilizing agricultural biomass in Lao PDR as an alternative fuel to cement manufacturing process, a large CO_2 emission reductions can be achieved, as well as saving coal resources.
The proposed process using Japanese technology is shown below.



FS2014-10 Waste Heat Recovery and Electricity Generation in Flat Glass Production Plant

Indonesia

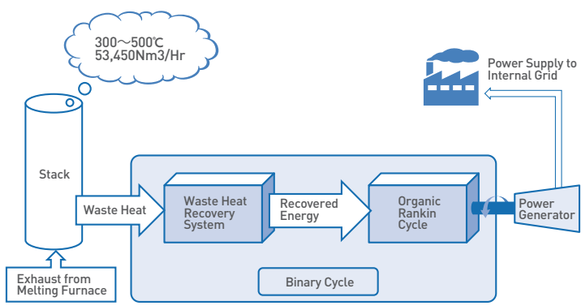
Expected GHG Emission Reductions

2,768 tCO_2/year

Jakarta, Indonesia

Implementing Entity：
Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

The purpose of the Project under consideration is to achieve efficient use of energy in order to respond to scheduled electricity tariff hikes. The Project involves introduction of waste heat recovery and electricity generation system with the generation capacity of 450kW. The Project displaces electricity currently purchased from the grid and contributes to the reduction of use of grid electricity which leads to greenhouse gas emission reductions.



FS2014-11 Introduction of High Efficient Old Corrugated Cartons Process at Paper Factory

Indonesia

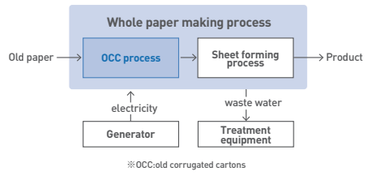
Expected GHG Emission Reductions

8,000 tCO_2/year

Bekasi, West Java, Indonesia

Implementing Entity：
Nomura Research Institute, Ltd. & Aikawa Iron Works Co., Ltd.

The study plans to target reductions of energy use in the corrugated carton production process in Indonesia. A corrugated carton production process consists of two main processes, an old corrugated cartons process and a sheet forming process.
This project aims to reduce power use in the former process.
To realize the reduction of power use (about 10%) per ton produced and contribute to CO_2 reduction by introducing Japanese technology for a high-efficient system and OCC process to a newly built factory in Fajar of Indonesia (holding the second largest manufacturing share).
In the OCC process, the sheet-paper material is made by removing foreign substances using multiple machines from ground and then liquefied old paper with water.
This process is composed of about 30 units of machinery. The high efficiency of the machinery makes the motor power requirement of each unit small, realizing an energy saving of approximately 10%.



※OCC:old corrugated cartons

FS2014-12 3.7MW Run-of-river Hydro Power Generation in Sulawesi

Indonesia

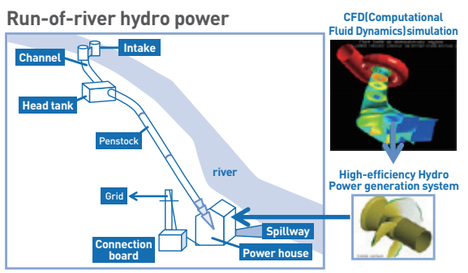
Expected GHG Emission Reductions

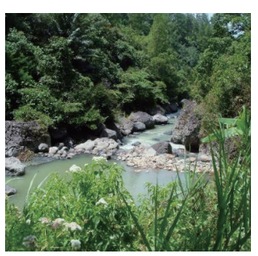
12,661 tCO_2/year

Tana Toraja, South Sulawesi, Indonesia

Implementing Entity：
Japan NUS Co.,Ltd.

South Sulawesi relies heavily on the fossil fuels that lead to carbon dioxide emissions.
Taking advantage of the abundant natural resources such as the rough terrain and abundant water resources, this project under consideration will introduce run-of-river hydroelectric power generation utilizing natural resources. The run-of-river system is environmental load-reducing hydropower.
This project will introduce a high-efficiency water wheel using a flow analysis technique that brings out fully the energy potential of the site.





FS2014-13 Promotion of Electric Vehicle for Taxi Usage

Costa Rica

Expected GHG Emission Reductions

580 tCO_2/year

San Jose and Liberia, Costa Rica

Implementing Entity：
Nissan Motor Co., Ltd.

The government of Costa Rica is targeting to achieve carbon neutral by 2021, and is putting high priority of de-carbonization in the Transport Sector, which occupies 51% of total energy consumption in the nation. This project under consideration aims to reduce GHG emissions by promoting Electric Vehicles (100 units expected) in the taxi fleet together with relevant charging infrastructure.

Normal Charger

Quick Charger

FS2014-14 Solar Power Generation System

Palau

Expected GHG Emission Reductions

144 tCO_2/year

Koror State, Palau

Implementing Entity：
Inter Action Corporation

A 160KW-capacity solar power generating plant which comes with lithium-ion batteries will be installed at the Palau International Coral Reef Center located in the state of Koror, Republic of Palau.
Installation of the solar power system in the areas that are electrified by diesel generators limits the use of electricity generated by combusting fossil fuels and reduce greenhouse gas emissions.

FS2014-15 10MW-scale Biomass based Power Generation

Sri Lanka

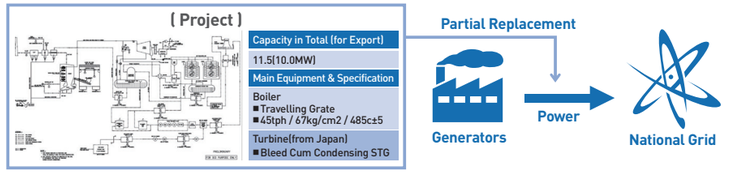
Expected GHG Emission Reductions

43,636 tCO_2/year

Ampara District, Eastern Province, Sri Lanka

Implementing Entity：
Obayashi Corporation &
EX Research Institute Limited

This project under consideration aims to operate a power plant using a sustainable short-rotation crop as the main fuel for its power generation. Electricity to be generated at the power plant is exported to the National Grid. Sri Lanka has set up National Policy to promote electricity supply from renewable energy sources for up to 20% of the total nation's grid electricity supply by 2020.



FS2014-16 Introduction of Waste to Energy Plant in Yangon City

Myanmar

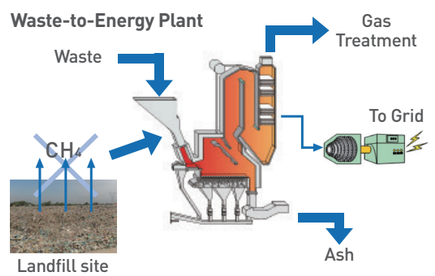
Expected GHG Emission Reductions

1,500 tCO_2/year

Yangon City, Myanmar

Implementing Entity：
JFE Engineering Corporation

By introducing a Waste-to-Energy plant, the reduction of the CH_4 emissions from landfill disposal sites and the substitution of electricity generated with fossil fuel reduce GHG emissions, reduce electricity shortages and achieve efficient waste treatment.



FS2014-17 Environment Improvement through Utilization of Biogas from POME Fermentation system

Myanmar

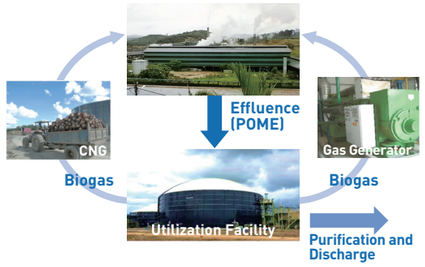
Expected GHG Emission Reductions

44,900 tCO_2/year

Tanintharyi Division, Myanmar

Implementing Entity：
Nikken Sekkei Civil Engineering Ltd.(Main); Japan Research Institute, Limited(Partner); KUBOTA Corporation(Cooperator)

It is planned to study introduction of the methane fermentation facilities and the gas utilization equipment by Kubota Corporation to the wastewater-from-palm-oil mill (POME) located in Tanintharyi Division in southern Myanmar. The fossil fuel used in palm collection trucks and private power generation in the mill can be replaced by biogas. In addition, because the naturally occurring methane in a wastewater pound can be suppressed, further GHG reduction can be expected. Moreover, since POME contains a high concentration of organic matter, this system can improve the water quality of POME, thereby improving the water environment in the area.



REDD+2014-1 REDD+ in Luang Prabang Province

Lao PDR

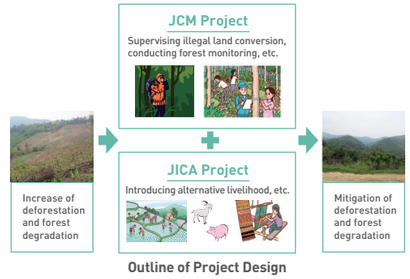
Expected GHG Emission Reductions

70,000 tCO_2/year

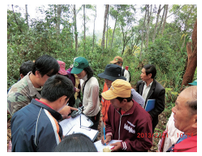
Phonxay District, Luang Prabang Province,Lao PDR

Implementing Entity：
Mitsubishi UFJ Research and Consulting, Japan Forest Technology Association and Marubeni Cooperation

This study aims to monitor the effectiveness of REDD+ activities and quantify the amount of GHG emissions reductions by REDD+ activities in a part of Phonxay District, Luang Prabang Province (30,000ha), a location with severe deforestation and forest degradation mainly due to shifting cultivation.
REDD+ activities will be implemented based on JICA's activities (e.g. introduction of alternative livelihoods) and will be promoted by participatory methods with local people.



Outline of Project Design



REDD+2014-2 Improvement of REDD+ Implementation Using IC Technology

Indonesia

Expected GHG Emission Reductions

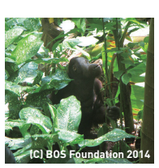
180,000 tCO_2/year

East Kalimantan Province, Indonesia

Implementing Entity：
Mitsubishi Research Institute, Inc.

In Indonesia, deforestation and forest degradation have become main Greenhouse Gas (GHG) emissions sources. By reducing emissions from deforestation and forest degradation, the project under consideration can contribute to realizing sustainable development in the local society.
In the project, high-spec MRV methodologies are considered by making the best use of Information Communication (IC) Technologies. Specifically, MRV methodologies, which enable more accurate land-cover classification by use of high resolution remote sensing imaginary data, are being considered.
Also being considered are management approaches for improving work efficiency of on-site sampling data collection activities with portable IC devices and for increasing operational efficiency with integrated databases.

The GHG reductions would be achieved by conducting the following activities:
- Forest Patrols
- Forest Conservation
- Plantations



REDD+2014-3

REDD+ in Prey Long Area and Seima Area

Cambodia

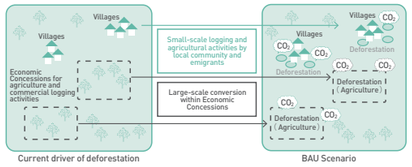
Expected GHG Emission Reductions

545,000 tCO_2/year

Prey Long Area and Seima Area, Cambodia

Implementing Entity：
Conservation International Japan and Asia Air Survey

Small-scale logging and agricultural activities by local communities and large-scale conversion of forest into industrial agricultural land have been major deforestation drivers in the Prey Long Area and Seima Area. The target project aims to reduce deforestation by law enforcement (patrolling the forest against illegal activities), community engagement and livelihood improvement (involvement in the forest patrol and development of alternative means of earning a living).



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