15th IEA-IETA-EPRI Annual Workshop on
Greenhouse Gas Emission Trading

Japan's INDC, the role of domestic and international markets in meeting these contributions

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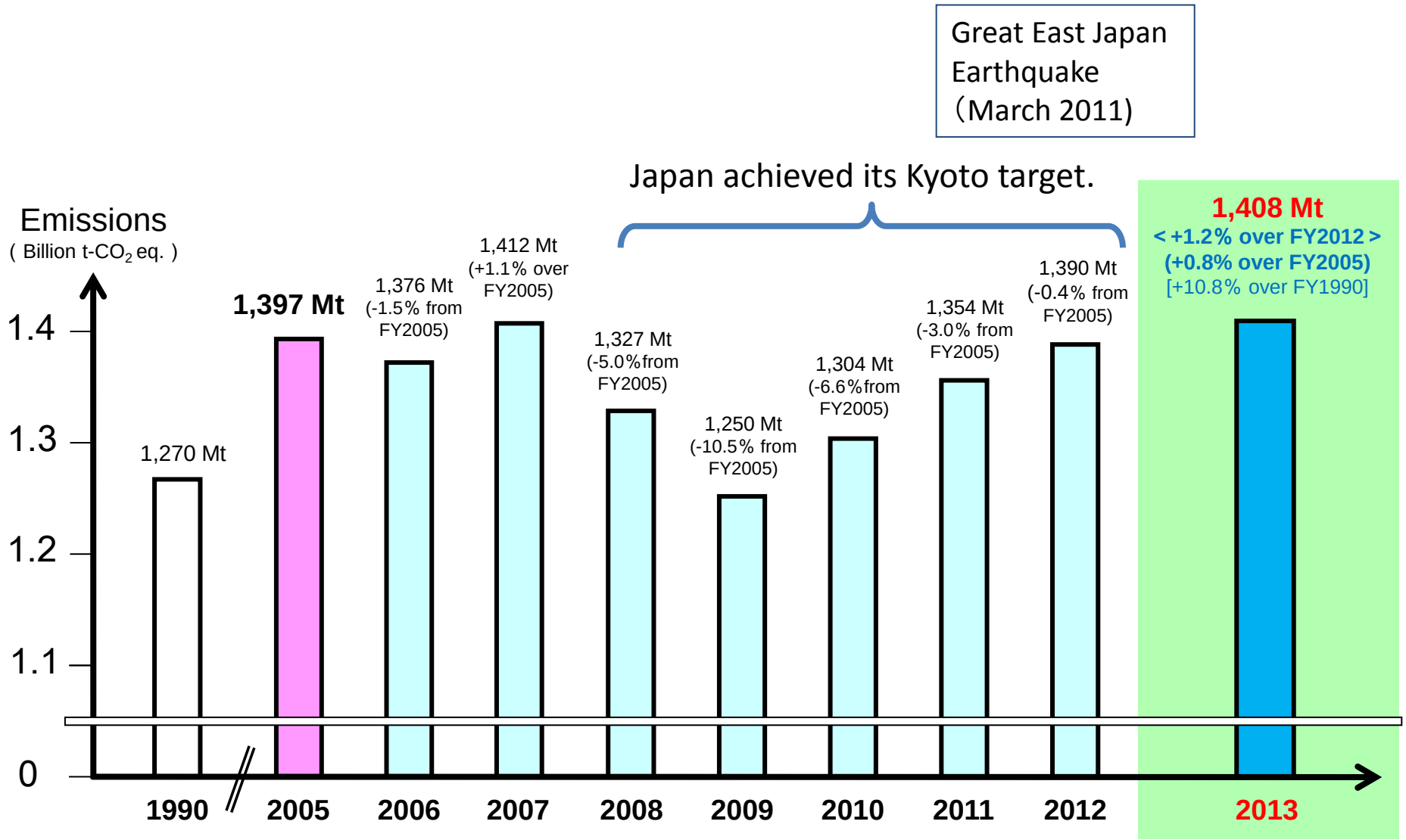
Trend of GHG Emissions in Japan



(Source) Ministry of the Environment, Japan

Japan's Intended Nationally Determined Contribution (INDC) : **GHG emission reduction target by 2030**

Japan's INDC

- Japan's INDC towards post-2020 GHG emission reductions is at the level of a reduction of 26.0% by fiscal year (FY) 2030 compared to FY 2013 (25.4% reduction compared to FY 2005) (approximately 1.042 billion t-CO2eq as 2030 emissions), ensuring consistency with its energy mix, set as a feasible reduction target by bottom-up calculation with concrete policies, measures and individual technologies taking into adequate consideration, *inter alia*, technological and cost constraints, and set based on the amount of domestic emission reductions and removals assumed to be obtained.

Fairness and Ambition,
Contribution towards achieving the objective of the Convention as set out in its Article 2,
Information to facilitate clarity, transparency and understanding etc.

- By 2030, Japan's GHG emissions per GDP are projected to improve by more than 40% and per capita by about 20%, maintaining the status of one of the best performance in the world. This target is ambitious and comparable to other Parties'.
  - Its energy consumption per unit of GDP is even now some 30% lower than the average of the other G7 nations, making it a top performer in the world. Japan will aim for a 35% improvement in energy efficiency by 2030.
  - In the energy mix, the share of renewable energy in total power generation is approx. 22-24% (solar is projected to increase sevenfold from current levels, and wind and geothermal fourfold), while the share of nuclear power is approx. 22-20%.

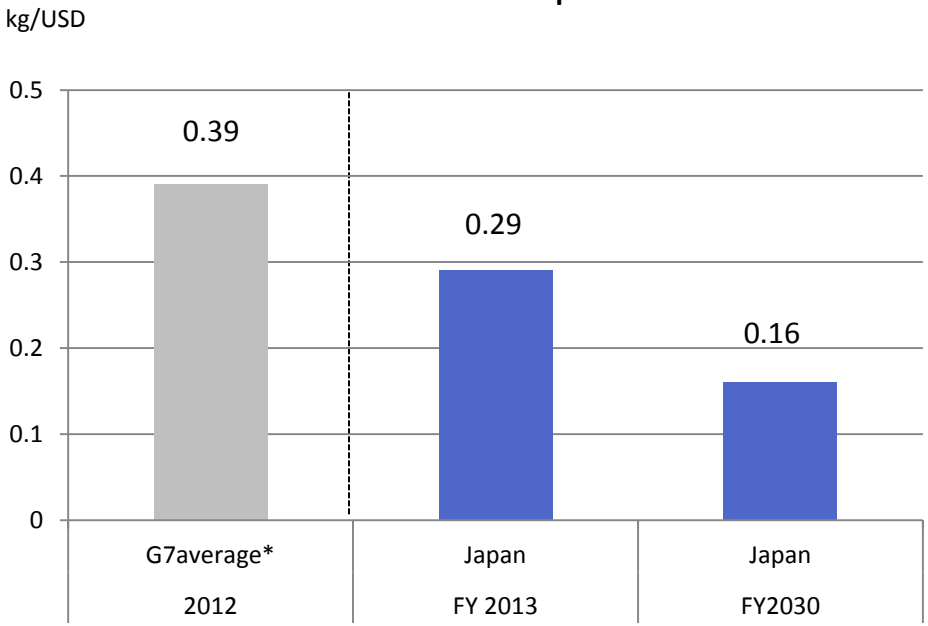
Fairness and Ambition,
Contribution towards achieving the objective of the Convention as set out in its Article 2,
Information to facilitate clarity, transparency and understanding etc.

- Japan's INDC is consistent with the long-term emission pathways up to 2050 to achieve the 2 degrees Celsius goal as presented in the Fifth Assessment Report of the IPCC, and with the goal the country upholds, namely, "the goal of achieving at least a 50% reduction of global GHG emissions by 2050, and as a part of this, the goal of developed countries reducing GHG emissions in aggregate by 80% or more by 2050".
- The Joint Crediting Mechanism (JCM) is not included as a basis of the bottom-up calculation of Japan's emission reduction target, but the amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction.

Trend of GHG emissions per GDP and GHG emissions per capita

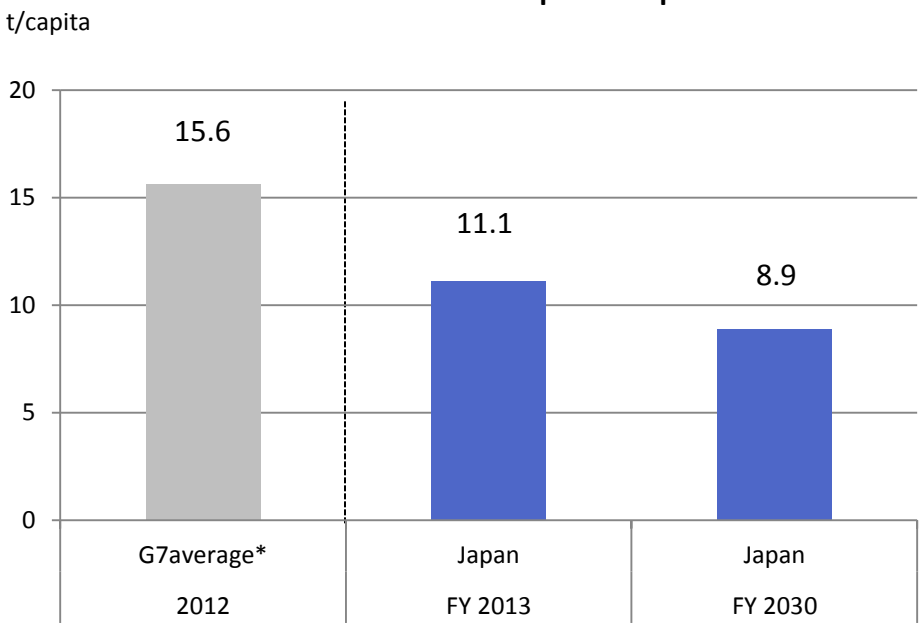
- Japan's GHG emissions per gross domestic product (GDP) are 0.29 kg-CO2eq./U.S. dollar in 2013 and per capita are 11t-CO2eq./person in 2013, all of which are already at the leading level among developed countries.
- The indicators noted above are projected to improve by around 20 to 40% by 2030 with further measures to reduce emissions.

GHG emissions per GDP



* average of the other G7 nations (excluding Japan)

GHG emissions per capita

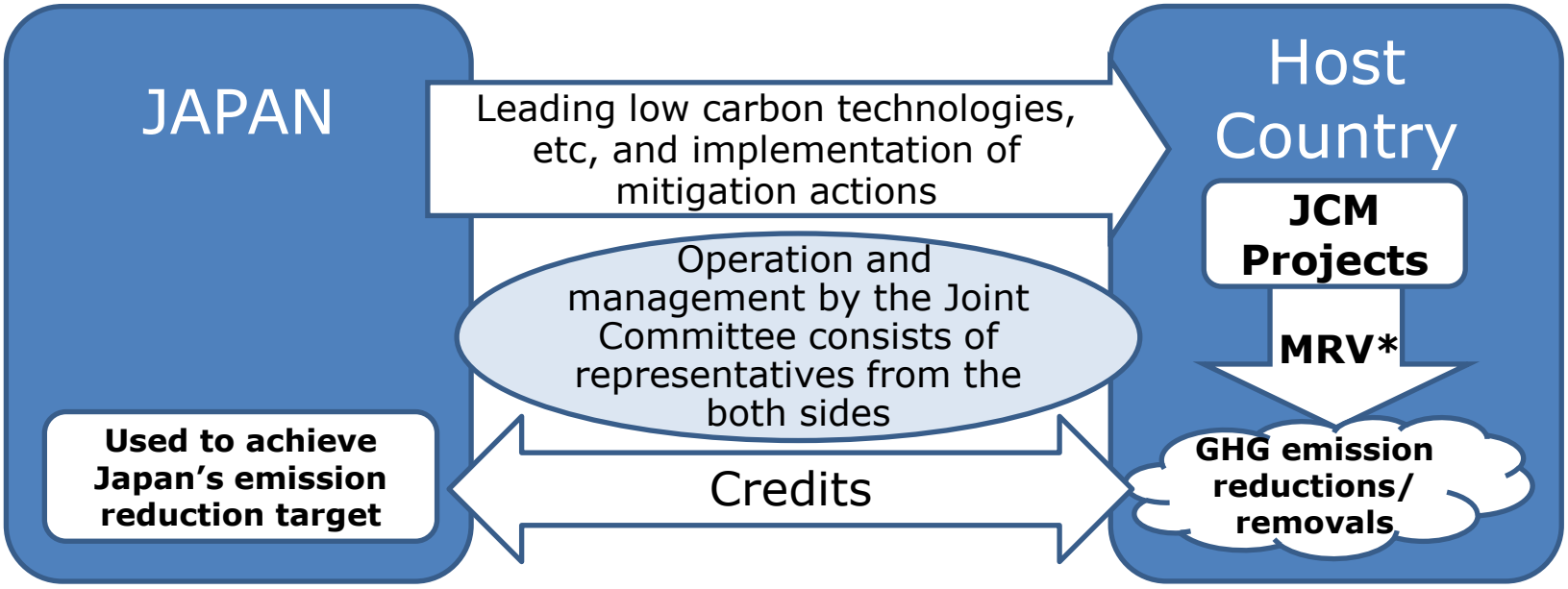


* average of the other G7 nations (excluding Japan)

【Sources】Compiled from Japan' s INDC, "Long-term Energy Supply and Demand Outlook" and related materials, GHG Inventories , IEA estimates and UN" World Population Prospects"

Basic Concept of the JCM

- 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 and use 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.



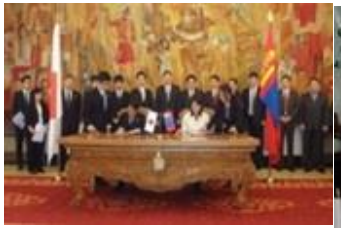
*measurement, reporting and verification

Statement by Prime Minister Shinzo Abe at the Plenary Session of the UN Climate Summit 2014

Innovation is the key to our goal of a 50% reduction of global GHG emissions by 2050. Japan will further promote technological innovation that has brought our country's energy efficiency to the highest level in the world (snip)
In addition, **Japan will contribute to the reduction of global GHG emissions** by establishing an energy efficiency facilitating hub for global action in Tokyo, as well as **by diffusing leading technologies to the international community through steady implementation of the Joint Crediting Mechanism for which 12 countries have already signed bilateral documents.**

JCM Partner Countries

- Japan has held consultations for the JCM with developing countries since 2011 and has established the JCM with Mongolia, Bangladesh, Ethiopia, Kenya, Maldives, Viet Nam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile and Myanmar.



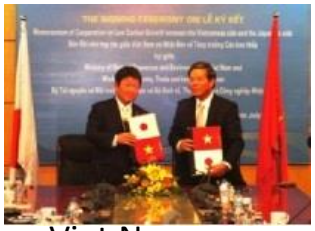
Mongolia
Jan. 8, 2013
（Ulaanbaatar）

Bangladesh
Mar. 19, 2013
(Dhaka)

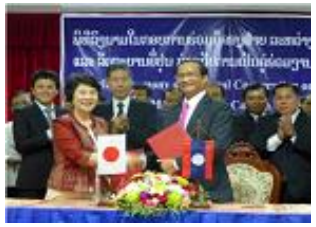
Ethiopia
May 27, 2013
(Addis Ababa)

Kenya
Jun. 12,2013
(Nairobi)

Maldives
Jun. 29, 2013
(Okinawa)

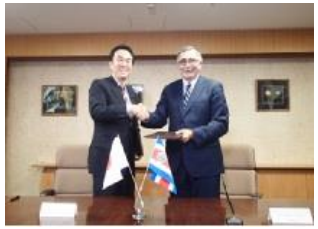


Viet Nam
Jul. 2, 2013
(Hanoi)



Lao PDR
Aug. 7, 2013
(Vientiane)

Indonesia
Aug. 26, 2013
(Jakarta)

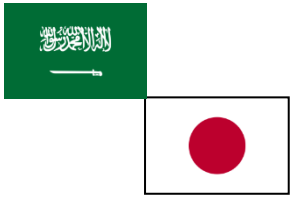


Costa Rica
Dec. 9, 2013
(Tokyo)

Palau
Jan. 13, 2014
(Ngerulmud)

Cambodia
Apr. 11, 2014
(Phnom Penh)

Mexico
Jul. 25, 2014
(Mexico City)



Saudi Arabia
May 13, 2015

Chile
May 26, 2015
(Santiago)

Myanmar
Sep. 16, 2015
(Nay Pyi Taw)

- Three (3) JCM projects between Indonesia and Japan, one (1) JCM project between Palau and Japan, two (2) JCM projects between Mongolia and Japan and one (1) JCM project between Viet Nam and Japan have been registered respectively.

Japan's INDC (Excerpt)

Japan's INDC

○ Japan's INDC towards post-2020 GHG emission reductions is at the level of a reduction of 26.0% by fiscal year (FY) 2030 compared to FY 2013 (25.4% reduction compared to FY 2005) (approximately 1.042 billion t-CO_2eq. as 2030 emissions), ensuring consistency with its energy mix, set as a feasible reduction target by bottom-up calculation with concrete policies, measures and individual technologies taking into adequate consideration, *inter alia*, technological and cost constraints, and set based on the amount of domestic emission reductions and removals assumed to be obtained. .

Information to facilitate clarity, transparency and understanding

○ The JCM is not included as a basis of the bottom-up calculation of Japan's emission reduction target, but the amount of emission reductions and removals acquired by Japan under the JCM will be appropriately counted as Japan's reduction.

Reference information
GHG emissions and removals
JCM and other international contributions

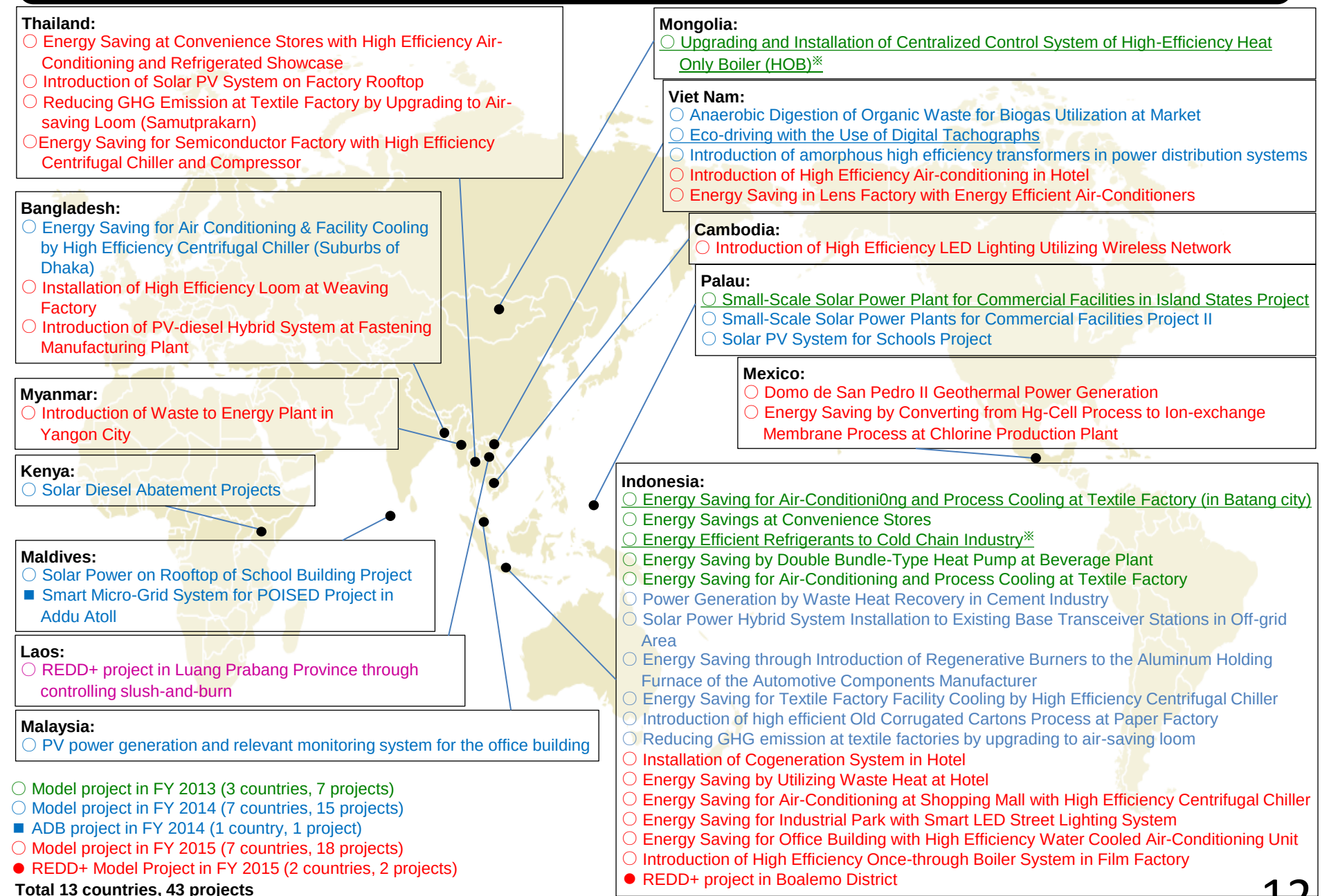
○ Japan establishes and implements the JCM in order both to appropriately evaluate contributions from Japan to GHG emission reductions or removals in a quantitative manner achieved through the diffusion of low carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions in developing countries, and to use them to achieve Japan's emission reduction target.

○ Apart from contributions achieved through private-sector based projects, accumulated emission reductions or removals by FY 2030 through governmental JCM programs to be undertaken within the government's annual budget are estimated to be ranging from 50 to 100 million t-CO_2.

Registered JCM Projects

No.	Country	Project Title	General description of project
ID001	Indonesia	Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller	Improving energy saving for air-conditioning and process cooling by introducing high-efficiency centrifugal chiller equipped with high-performance economizer cycle, and super-cooling refrigerant cycle in a textile factory.
ID002	Indonesia	Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia	Introducing advanced energy efficient cooling system using natural refrigerant in the food industry cold storage.
ID003	Indonesia	Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia	Introducing advanced energy efficient cooling system using natural refrigerant in the frozen food processing plant.
PW001	Palau	Small Scale Solar Power Plants for Commercial Facilities in Island States	Installing high quality solar cell modules with high conversion efficiency with a monitoring system which realizes appropriate operation and management.
MN001	Mongolia	Installation of High-Efficiency Heat Only Boilers in 118th School of Ulaanbaatar City Project	Introducing high-efficiency HOBs to fulfill the demand of new heat facilities for the school buildings. Optimizing boiler operation through the implementation of operation management and technical guidance.
MN002	Mongolia	Centralization of Heat Supply System by Installation of High-Efficiency Heat Only Boilers in Bornuur soum Project	Introducing high-efficiency HOBs to fulfill the demand for heat supply system in the public buildings. Optimizing boiler operation through the implementation of operation management and technical guidance.
VN001	Viet Nam	Eco-Driving by Utilizing Digital Tachograph System	Improving transportation fuel efficiency by installing digital tachographs, in which the quantity of fuel consumption and running distance are continuously analyzed and provide feedbacks and advices to the drivers based on the analyzed data.

JCM Financing programs by MOEJ（FY2013/2014/2015）



Thailand:
- ○ Energy Saving at Convenience Stores with High Efficiency Air-Conditioning and Refrigerated Showcase
- ○ Introduction of Solar PV System on Factory Rooftop
- ○ Reducing GHG Emission at Textile Factory by Upgrading to Air-saving Loom (Samutprakarn)
- ○ Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor

Bangladesh:
- ○ Energy Saving for Air Conditioning & Facility Cooling by High Efficiency Centrifugal Chiller (Suburbs of Dhaka)
- ○ Installation of High Efficiency Loom at Weaving Factory
- ○ Introduction of PV-diesel Hybrid System at Fastening Manufacturing Plant

Myanmar:
- ○ Introduction of Waste to Energy Plant in Yangon City

Kenya:
- ○ Solar Diesel Abatement Projects

Maldives:
- ○ Solar Power on Rooftop of School Building Project
- ■ Smart Micro-Grid System for POISED Project in Addu Atoll

Laos:
- ○ REDD+ project in Luang Prabang Province through controlling slush-and-burn

Malaysia:
- ○ PV power generation and relevant monitoring system for the office building

Mongolia:
- ○ Upgrading and Installation of Centralized Control System of High-Efficiency Heat Only Boiler (HOB)※

Viet Nam:
- ○ Anaerobic Digestion of Organic Waste for Biogas Utilization at Market
- ○ Eco-driving with the Use of Digital Tachographs
- ○ Introduction of amorphous high efficiency transformers in power distribution systems
- ○ Introduction of High Efficiency Air-conditioning in Hotel
- ○ Energy Saving in Lens Factory with Energy Efficient Air-Conditioners

Cambodia:
- ○ Introduction of High Efficiency LED Lighting Utilizing Wireless Network

Palau:
- ○ Small-Scale Solar Power Plant for Commercial Facilities in Island States Project
- ○ Small-Scale Solar Power Plants for Commercial Facilities Project II
- ○ Solar PV System for Schools Project

Mexico:
- ○ Domo de San Pedro II Geothermal Power Generation
- ○ Energy Saving by Converting from Hg-Cell Process to Ion-exchange Membrane Process at Chlorine Production Plant

Indonesia:
- ○ Energy Saving for Air-Conditioni0ng and Process Cooling at Textile Factory (in Batang city)
- ○ Energy Savings at Convenience Stores
- ○ Energy Efficient Refrigerants to Cold Chain Industry※
- ○ Energy Saving by Double Bundle-Type Heat Pump at Beverage Plant
- ○ Energy Saving for Air-Conditioning and Process Cooling at Textile Factory
- ○ Power Generation by Waste Heat Recovery in Cement Industry
- ○ Solar Power Hybrid System Installation to Existing Base Transceiver Stations in Off-grid Area
- ○ Energy Saving through Introduction of Regenerative Burners to the Aluminum Holding Furnace of the Automotive Components Manufacturer
- ○ Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller
- ○ Introduction of high efficient Old Corrugated Cartons Process at Paper Factory
- ○ Reducing GHG emission at textile factories by upgrading to air-saving loom
- ○ Installation of Cogeneration System in Hotel
- ○ Energy Saving by Utilizing Waste Heat at Hotel
- ○ Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller
- ○ Energy Saving for Industrial Park with Smart LED Street Lighting System
- ○ Energy Saving for Office Building with High Efficiency Water Cooled Air-Conditioning Unit
- ○ Introduction of High Efficiency Once-through Boiler System in Film Factory
- ● REDD+ project in Boalemo District

○ Model project in FY 2013 (3 countries, 7 projects)
○ Model project in FY 2014 (7 countries, 15 projects)
■ ADB project in FY 2014 (1 country, 1 project)
○ Model project in FY 2015 (7 countries, 18 projects)
● REDD+ Model Project in FY 2015 (2 countries, 2 projects)

Total 13 countries, 43 projects

- The underlined projects have been registered as the JCM projects (7 projects) ※these projects account for 2 registered JCM projects respectively, as they're operating in different sites