



# Global Shift to Green Life through Japanese Technologies

## The Joint Crediting Mechanism for diffusion of Japanese Energy Efficient and Low Carbon Technologies

Japan has accumulated many remarkable technologies that improve people's lives around the world and prevent global warming at the same time. In this report, we will introduce you to the Joint Crediting Mechanism (JCM), which promotes the worldwide expansion of such technologies.

### Purpose and Outline of the JCM

What comes to your mind when you hear the words "environment-friendly Japanese technologies"? You may think of solar and wind power generation plants, while others may think of energy saving air conditioners and refrigerators. Many Japanese companies have

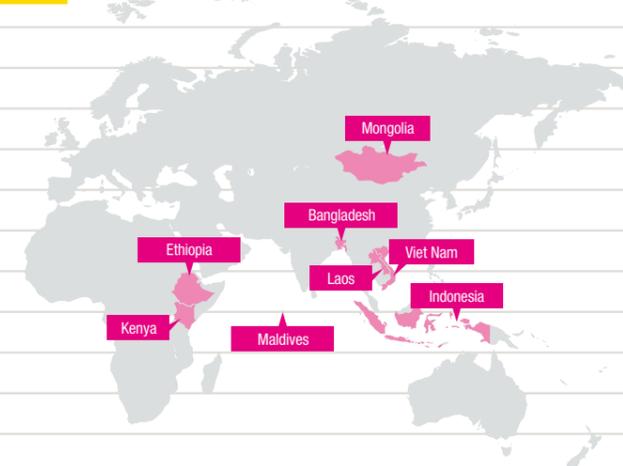
accumulated technologies that contribute to the prevention of global warming by reducing emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases. The Joint Crediting Mechanism (JCM) is aimed at improving peoples' lives and realizing sustainable development as well as contributing to the prevention of global warming by

expanding such environmentally friendly technologies worldwide. The JCM is an initiative launched between Japan and other countries for the first time in 2013. Here, we will briefly explain the JCM with some examples.

First, the governments of Japan and a host country sign bilateral documents for the introduction of the JCM. Then, project participants "visualize" the amount of greenhouse gas emission reductions achieved in the host country through the introduction of superior low-carbon technologies. Finally, credits equivalent to the amount of emission reductions are issued (→ 1). Under the JCM, the "visualization" may be applied to emission reductions achieved by a wide range of technologies, including infrastructure such as highly efficient thermal and wind power plants, energy efficiency improvement systems at factories and energy saving products such as solar lanterns and inverter-equipped air conditioners. Until now, the CDM (Clean Development Mechanism), which is

### 2 Countries that Decided on the Introduction of the JCM with Japan

As of the end of September 2013



### 3 Bilateral document was Signed between Japan and Viet Nam

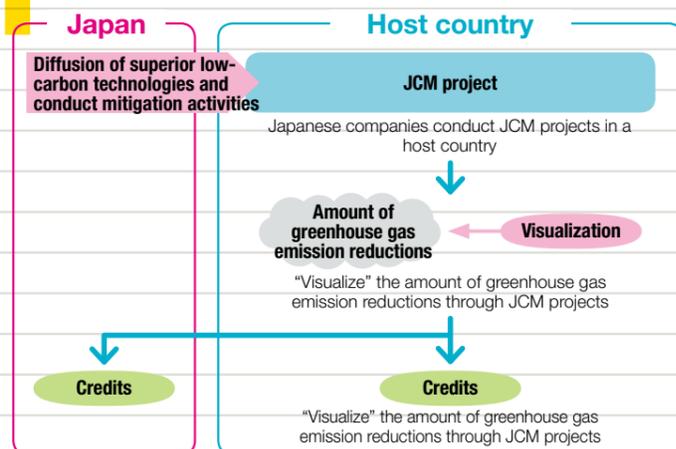


Minister Motegi with Minister Quang (July 2, 2013)

### 4 JCM (Joint Crediting Mechanism)

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### 1 How the JCM Works



based on the Kyoto Protocol, has been implemented as an initiative to prevent global warming. Like the JCM, the CDM issues credits equivalent to the amount of greenhouse gas emission reductions through the introduction of low-carbon technologies and products. However, under the CDM, energy saving technologies in which Japanese companies have an advantage have not been fully utilized because of the complicated application procedure and strict requirements of the mechanism. Complementing this insufficiency of the CDM, the JCM makes it possible to issue credits more quickly through more simplified procedures. The JCM is expected to encourage more Japanese companies, including small and medium-size enterprises, to expand their technologies abroad.

### Efforts Implemented

To implement the JCM, Japan has signed bilateral documents for the introduction of the mechanism with eight countries (as of the end of September 2013) (→ 2).

With regard to Viet Nam in particular, Minister of Economy, Trade and Industry Toshimitsu Motegi visited Hanoi in July and signed a bilateral document with Minister of Natural Resources and Environment Nguyen Minh Quang (→ 3).

In the future, Japan will continue to promote bilateral consultations with other countries. Also, for the operation of the mechanism, the Joint Committee meetings will be held between Japan and the countries that signed bilateral documents to develop rules and guidelines necessary for the projects. Such rules and guidelines adopted by

the Joint Committees will be published on the JCM page of the Ministry of Economy, Trade and Industry's website (→ 4).

### Examples of Projects

In order to formulate projects to introduce advanced Japanese technologies and services into other countries while contributing to emission reductions, the Ministry of Economy, Trade and Industry and NEDO (New Energy and Industrial Technology Development Organization) are conducting feasibility studies and implementing demonstration projects to verify the amount of greenhouse gas emission reductions so as to "visualize" them and ascertain their technological superiority. We will introduce you to the following two projects, which are elaborated through feasibility studies.



## Solar Lantern Project in Kenya

The first is a project to promote the spread of solar lanterns in Kenya (→ 5). Currently, more than 500 million people are said to live without electricity in Africa. In Kenya, located in East Africa, the percentage of overall households with access to electricity is estimated to be approximately 20%. In areas without access to electricity, local residents mainly use kerosene lamps for lighting. However, the use of kerosene lamps has become a major social issue due to the numerous cases of health problems caused by fumes released from the lamps as well as fires. Therefore, there are growing expectations for solar lanterns, which provide lighting using photovoltaic

power. Replacing existing kerosene lamps with solar lanterns will contribute to the prevention of both health problems and fires. Moreover, the use of solar lanterns will enable local residents to increase expenditures on medical care, education and food by saving their fuel costs, thereby making significant contributions to the improvement of their living standards as well.

The spread of solar lanterns will not only contribute to the improvement of the living standards of the Kenyan people but it is also expected to reduce emission of carbon dioxide through the use of environmentally friendly photovoltaic power in place of fossil fuels. In particular, Japanese made solar lanterns are superior in durability (the lanterns can be used for 10 years if

the batteries are replaced every couple of years) and low prices are viable.

## High Efficiency and Low Loss Power Transmission and Distribution System in Mongolia

The second is a project to introduce a high efficiency and low loss power transmission and distribution system (hereafter “the efficient transmission system”) in Mongolia. In this project, NEDO will conduct a demonstration test on the system’s technological superiority, aiming for registration as a JCM project.

As for the aging electricity transmission network in Mongolia introduced in the former Soviet era, for large-scale power development it is necessary to upgrade the existing facilities, introduce new ones and expand the electricity network and grids. In addition, as Mongolia has not conducted a full-fledged analysis of electricity grids (various computer simulations using a power system model), there is the risk of massive power failures occurring at the time of future expansion and connection of the electricity transmission network and grids. Therefore, urgent countermeasures are needed.

Currently Mongolia is looking into introducing the efficient transmission systems manufactured with Japanese companies’ technologies along with implementation of the electrical grid analysis in consideration of the future expansion of the Mongolian

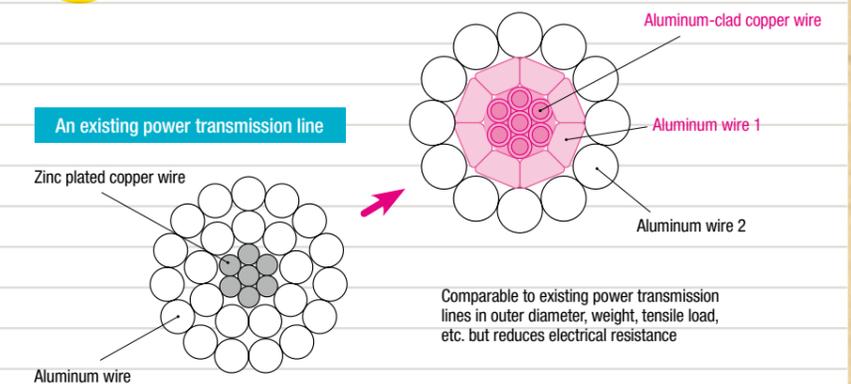
transmission network as well as extending its grid to neighboring countries. The Japanese efficient transmission system can reduce transmission losses by 10%-15% while maintaining performance comparable with the existing system. Once the efficient transmission system is introduced, the generated volume can more than compensate for transmission losses, reducing the volume needed. Reducing the generated volume will lead to greenhouse gas emission reductions from coal-fired thermal power plants, which are the major electricity generation facilities in Mongolia. According to one estimate, if 100 kilometers of high efficiency and low loss electricity transmission lines are introduced, greenhouse gas emissions can be reduced by approximately 14,200 tons annually.

Power transmission lines applied to high efficiency and low loss power transmission and distribution systems are expected last longer than existing systems and can make use of current steel lattice towers; further, Japan has a technological lead in this field (→ 6).

Although the efficient transmission systems are more expensive than existing systems, it is possible to recover the investment quickly. Therefore, the possibility of introducing new, modern systems is likely to be high.

As for the electrical grid analysis, Japanese companies have superior technologies that can also contribute

## 6 Cross section of a power transmission line



to the provision of a stable supply of electricity. Japanese companies can provide a package of high efficiency and low loss electricity transmission lines, transformer substations, voltage regulators and other equipment in which Japanese companies have a technological advantage. With regard to the serious air pollution in Ulan Bator, the capital of Mongolia, a reduction in electricity generation will cut down the volume of air polluting substances, which will contribute to an improvement in the overall environment.

## Conclusion

By “visualizing” the amount of CO<sub>2</sub>

emission reductions through these projects, JCMs are expected to help to diffuse excellent Japanese technologies and promote a global shift to green life. Japan will increase the number of partner countries where JCMs are available, as well as develop rules and guidelines and explain how to use the mechanism to make it easier for companies to use it. We welcome inquiries from those interested in the possibility of using the JCM to expand environmentally friendly technologies.

## 5 Solar lantern



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