



International Center for Environmental Technology Transfer

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# JICA's Partnership Program (Local Government Type) Integrated Program for Environment-friendly Compost Systems in the Republic of Palau (IPECS)

## Outline

In the Republic of Palau it is urgently needed to develop a waste disposal method that is sustainable and minimizes the burden on local residents. To this end, a composting system which converts household kitchen waste into compost needs to be introduced, thereby facilitating the creation of a recycling/reuse-oriented society at a grassroots level. Under the "integrated program for environment-friendly compost systems in the Republic of Palau," the International Center for Environmental Technology Transfer (ICETT) has been engaged in the enhancement of local residents' environmental awareness in a designated model area located in the Koror state, aiming to help improve local waste disposal conditions and establish a kitchen waste composting system that is harmless to both human health and the environment. By encouraging the use of compost made from kitchen waste to grow vegetables and the distribution of such compost to local residents, this program ultimately aims to increase agricultural crops and achieve better lives and livelihoods for the local residents.

## Relations between Mie Prefecture and Palau

The Republic of Palau became an independent country in October 1994. The former president Kuniwo Nakamura, whose father was born in Ise City, made a number of visits to Mie Prefecture. When the Matsuri-Haku (World Festival Exposition) Mie 1994 was held, President Nakamura participated in the event, accompanied by a folk dance group.

A wide range of international exchange programs and regional collaboration initiatives have been conducted between Palau and Mie, such as exchanges between Mie Maritime High School students and students from Palau, the donation of garbage trucks to Palau, and research programs on fisheries products. In light of these close Palau-Mie relations, ICETT proposed the IPECS, making an application to Japan International Cooperation Agency (JICA) Chubu International Center through Mie Prefecture. The program was pre-approved as a JICA partnership program.

The previous issue detailed successful cases and prospects regarding localization (the introduction of Japanese measures, technologies and facilities) identified from field surveys on technology transfer, describing examples of transferred technology having taken root in partner countries and self-help efforts following ICETT's technological cooperation. This issue comprises an interim report about ongoing efforts under the IPECS, which constitutes a JICA partnership program (local government type).



## Background and Objectives

The Republic of Palau has a population of about 20,000 people, of which some 14,000 people reside in Koror state (18 km<sup>2</sup>), the target state of the program. ICETT has conducted a survey on the current situation and enlightenment/educational projects in Koror state. What is urgently needed in Koror state is the establishment of a sustainable waste disposal system that imposes smaller burdens, in cooperation with tourist facilities and local residents, as well as having recycling/reuse and waste composting systems firmly established at

the grassroots level. The ultimate goals of the IPECS is to raise the awareness of waste disposal among residents in the designated model area in Koror state, improve government officials' abilities to enforce waste disposal measures, and facilitate the use of environment- and human health-friendly compost made from kitchen waste to grow vegetables.



[Announcement of the program commencement] With Governor of the State of Koror

## Preliminary Discussion

**Period:** June 12 to 18, 2011

### Outline of Activities

ICETT conferred with representatives of the Palau government and the states of Koror, Airai and Aimeliik to select appropriate program counterparts and sites.



Activity (1): Consultation with Mr.Usui (Branch Manager, JICA) and Mr.Fuji (Advisor)



## Survey on the Current Situation

**Period:** October 24 to November 3, 2011  
January 15 to 21, 2012  
February 13 to 18, 2012

### Outline of Activities

ICETT selected a model area for the program in Koror state and strengthened cooperative relationships between and among the relevant organizations. To help local residents learn about an integrated composting system originating from Mie Prefecture, ICETT also conducted an on-site demonstration of how to compost kitchen waste. At a wrap-up meeting, a local resident representative offered a positive comment, saying “We would like you to proceed with the program as early as possible.”

## Program Outcomes

### (1) Technical Guidance by ICETT Technical Advisors

ICETT received the following comments from technical experts:

\*The success of this program depends on collaboration between local residents, the government of Koror state, the compost center, and Palau Community College.

(Makoto Hoki, professor emeritus of Mie University)

\*The compost center in Koror is well managed; it does not give off bad smells and does not swarm with flies. High quality compost is produced through its standardized and well organized operational structure.

(Rikio Hashimoto, Compost and Soil Cultivation Research Center)



Activity (2): Making compost (demonstration by project staff)

### (2) Publicity/Exchange/Promotion/Enlightenment Activities

Photographic panels titled “Oceanian Countries,” which were exhibited at JICA’s NAGOYA GLOBAL PLAZA from December 7, 2011 to February 26, 2012, included a picture of ICETT’s program in Palau. The program was also introduced on the website of the Multicultural Affairs Division of Mie Prefecture (<http://www.pref.mie.lg.jp/TABUNKA/HP/>). ICETT program and its specific on-site activities were also introduced in the following media:

*Island Times* (October 28)

*Palau Community College Mesekiu’s News* (November 11)

*Tia Belau* (November 14)

### (3) Questionnaire Survey on Promotion/Enlightenment Activities

In reply to a questionnaire survey conducted after a wrap-up meeting, local residents responded that ICETT’s promotion/enlightenment activities were adequate and helpful in deepening understanding of the program.

## Toward Localization

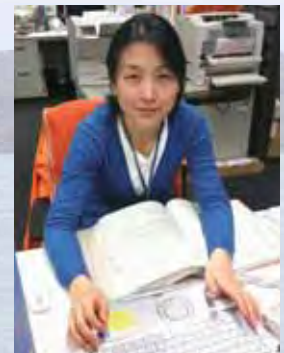
As a first step toward affording the people of Palau a better understanding of the need to introduce environmental measures and technologies from Japan, ICETT must cooperate with the Koror government and its local residents in acquiring information on the effects of the program. Based on the acquired information, ICETT strives to proceed with the program, aiming to contribute to localization in Palau.

(Mashita and Oya, ICETT)

## Comment from JICA Staff

Waste problems in Oceanian countries, which are attributed to geographical conditions specific to island nations and lifestyle modernization, cause many problems in these societies. As a waste treatment support program, JICA has been conducting the Project for Promotion of Regional Initiative on Solid Waste Management (J-PRISM), targeting all Oceanian countries since January 2011. The integrated composting system originating from Mie Prefecture, which is being promoted in Palau under a program approved as a JICA partnership program, is attracting great attention from not only residents of Palau but also those of other Oceanian countries. JICA plans to link the program and J-PRISM in the future to achieve further results.

(Yoko Ikuma, senior coordinator, JICA Chubu)



## Comment from ICETT Technical Specialist/Expert



Koror state, the counterpart of the ICETT program, has been actively involved in waste management improvement. As an administrative effort, an initiative to convert kitchen waste from resort hotels into compost has already initiated at a recycling center under the guidance of Mr. Fuji (advisor). The “IPECS” is a partnership program with JICA, in which kitchen waste that is not currently collected will be subjected to primary treatment (mixing with base-materials to inhibit decomposition and accelerate fermentation) and collected to a recycling center in a hygienic and efficient manner. The participation of more than 80 local households is expected for the duration of the program. We hope to receive the participation of as many local residents as possible, thus allowing continuous implementation of the program.

(Usami, ICETT)

**The Ministry of Economy, Trade and Industry (METI)**

# A Project to Promote Reduction of Greenhouse Gases Emitted by Industries in Developing Countries (India)

**Outline**

As a subsidiary project of the Ministry of Economy, Trade and Industry (METI), ICETT has been conducting a program to help reduce greenhouse gas emissions in developing countries, in collaboration with the Climate Technology Initiative (CTI). A brief report of ICETT's energy efficiency improvement program targeting the rolling mill industry in India is provided below.

## Background and Objectives

India is nine times the size of Japan and has 10 times the population. As the scale of India's economy has been steadily expanding, energy demand driven by economic growth is expected to continue rising, in response to which India is preparing energy conservation action plans.

India's industrial structure is characterized by regional industrial clusters, which mean industrial hubs comprised of small- and medium-sized companies. Because overseas advanced technologies have as yet hardly been introduced in regional clusters and many manufacturing facilities are based on domestic techniques, there is considerable potential for reducing greenhouse gas emissions by applying overseas advanced energy-saving technologies. Therefore, ICETT has been conducting the energy efficiency improvement program, targeting rolling mill clusters in the Bhavnagar and Raipur areas.



## Program Details

In addition to Bhavnagar (Gujarat State), a prosperous industrial area located in western India, this year ICETT selected Raipur (Chhattisgarh State), an inland area with abundant resources and energy, as target rolling mill clusters for the energy efficiency improvement program.



Rolling mill

## Activities in the Bhavnagar Area

In the Bhavnagar area, Gujarat, ICETT has improved the energy efficiency of a furnace in a model factory, conducted a workshop, and provided on-site technical guidance for each individual factory. As a result, four rolling mills have renovated their furnaces so far to improve their energy efficiency. In addition, this year ICETT invited rolling mill managers from the Bhavnagar area to provide lectures by the Japanese experts on furnace and rolling technologies. A group meeting was also conducted, at which the mill managers and technical experts discussed how to promote energy efficiency improvement in the area.

## Activities in the Raipur Area

ICETT conducted a workshop in Raipur to show the outcomes achieved in Bhavnagar and provide lectures by Japanese experts to participants. The experts also visited rolling mills to provide technical guidance. After the workshop, some rolling mills renovated their furnaces based on the technical guidance they had received. As demonstrated by these facts, the program resulted in the widespread improvement of energy efficiency in Raipur.



Workshop



Technical guidance by an expert

## Cooperation with India

Because industrial conditions in India vary by state, ICETT has cooperated with experts and relevant local parties in providing technical guidance tailored to respective regional industrial clusters. Support programs for medium, small and micro enterprises are also increasingly needed in India. To realize India's further development with the cooperation of Japan, I believe our program of conveying Japan's advanced energy-saving technology to India to be of great importance. I hope that our support program for the rolling mill industry will lead to the expansion of independent initiatives to improve energy efficiency in India.

(Tabata)



**The Ministry of Economy, Trade and Industry (METI)**

# A Project to Promote Reduction of Greenhouse Gases Emitted by Industries in Developing Countries (the Philippines)

## Energy Efficiency Improvement Program in the Philippines

### Outline

As a subsidiary project of the Ministry of Economy, Trade and Industry (METI), ICETT has been conducting a project to help reduce greenhouse gas emissions in the Philippines since 2007 in collaboration with government institutions of the Philippines. In FY2010, ICETT particularly concentrated on disseminating and expanding the outcomes of energy efficiency improvement efforts that ICETT had conducted targeting small and ultra-small food companies in the Philippines. At the same time, ICETT expanded the target to relatively large-scale companies and implemented a feasibility study (F/S) of an energy efficiency improvement program, exploring the possibility of emissions credits.

### Background

In the Philippines, the Biofuels Act was enacted in 2007 and the Renewable Energy Act was enacted in 2008. In response to the legislation, the Department of Energy has identified resource/energy-saving initiatives, energy self-sufficiency improvement, expansion of the use of clean energy (renewable energy), and measures to solve chronic power shortage problems as priority issues in its Energy Plan. Thus, the government policy has been accelerating efforts to lower dependence on oil and facilitate the use of renewable energy. The fact that the Philippines lacks energy resources such as oil and that the country is, because of being composed of numerous islands, faced with chronic power shortages (the nation's unit electricity charge is almost the same as that of Japan) raises concern for the future economic development of the country.

Against this backdrop, ICETT has conducted a program to help reduce greenhouse gas emissions in the Philippines in collaboration with the Department of Environment and Natural Resources and the Department of Science and Technology. To be specific, ICETT has provided seminars and technical guidance by Japanese experts, focusing on the "development of officials' instruction abilities" and "technical guidance at a model company." From among small and ultra-small companies, which account for 90% of all companies in the Philippines, those located in the following five regions were selected as target companies for the program: the Manila National Capital Region (NCR), Region IV (Southern Tagalog District), Region V (Visayas Province), Region VI (Negros Occidental Province) and Region X (Mindanao District). These five regions were selected from the total of 17 administrative regions (see map on right). By conducting these activities, ICETT has been able to concentrate on improving energy efficiency and facilitating energy conservation efforts in the target companies/regions.



scale company, an oil/fat processing factory (NCR), a beer factory (Region IV), a sugar-producing factory, and an alcohol production factory (Region VI). The F/S results indicated that some 170,000 tons of CO<sub>2</sub> (a combined total from the four target factories) could be annually reduced and that a considerable reduction in greenhouse emissions could be achieved if the improvement tasks proposed by the Japanese experts were accomplished.



For the sugar-producing factory, the Japanese experts advised improving energy efficiency in its production process and introducing biomass power generation based on bagasse (fiber residual from sugar cane). A high-pressure boiler and a highly-efficient steam turbine are used in bagasse-based biomass power generation. If these initiatives were introduced into all 12 sugar-producing factories on Negros Island, the generation of 600 MW of electricity would be possible. Horizontal deployment of these initiatives in sugar-producing factories shows promise for the stabilization of the electricity supply in the Philippines. Regarding the



Harvesting of sugar cane

oil/fat processing factory, based on analysis results and technical guidance by the expert, they are now considering the possibility of developing efforts into a Clean Development Mechanism (CDM) project.

(Tamura and Matsuoka)

### Negros Island

Negros is an island located in the middle of the Philippine archipelago (among the Visayan Islands), lying to the west side of Cebu Island, which is popular with Japanese people. Negros Island is renowned as the largest sugar-producing area in the country, with sugar cane fields stretching extensively along both sides of the island's roads. Sugar cane harvested by hand is laden onto a buffalo to be carried to a truck waiting on the road.



### Program Details and Outcomes

To achieve further improvement of energy efficiency and greenhouse gas emission reduction, in FY2010 ICETT followed up the activities that had been conducted in FY2009. For example, ICETT provided on-the-job training by Japanese experts to improve energy efficiency in model companies. Feasibility studies (F/S) of energy efficiency were also conducted, targeting a relatively large-

# Technology Exchange Program between Henan Province (China) and Japan and Research on Environmental & Energy-saving Technology Needs in Vietnam

## Outline

On April 1, 2009, ICETT launched a project commissioned by Mie Prefecture to encourage Mie-based companies to transfer their environmental & energy-saving technologies to Asian countries. In FY2011, the project focused on China and Vietnam. Based on technology needs in Henan Province that had been identified by the previous year's research, ICETT held a technology exchange program in Japan for technology specialists from both Japanese and Chinese companies, contributing to finding solutions to environmental problems and accelerating energy conservation initiatives in Henan Province. Furthermore, ICETT carried out research on the environmental technology needs of Vietnam. Vietnam was selected as the target of the research; companies in Mie Prefecture showed considerable interest in Vietnam in the previous year's questionnaire survey. The collected information on the country's technology needs was shared with Japanese companies via ICETT's website.

## Background and Objectives

This year marks the 25th anniversary of the friendship agreement between Henan Province and Mie Prefecture. Given the long-established friendly relations, it is deemed meaningful to expand the friendship and cooperation activities into business-creating activities at a local company level. Transfer of Japan's long accumulated environmental & energy-saving technologies to Henan thereby is expected to help it solve environmental problems and improve the environment in Henan. Accelerated exchanges among companies of Japan and Henan will also result in the creation of new business opportunities. Besides China, companies in Mie Prefecture are also showing considerable interest in Vietnam. By conducting surveys on the needs of environmental technologies in Vietnam and disseminating obtained information, ICETT helped increase Japanese companies' interest in technology transfer to overseas countries.

## Program and Objectives

The technology exchange program had participants of two groups; one is companies in Henan Province wishing to introduce advanced Japanese technologies to find solutions to environmental problems, take energy efficiency improvement measures, and produce equipment & devices using advanced Japanese technologies; and the other is Japanese companies (mainly in Mie Prefecture) possessing

the requisite technologies and advanced equipment that have high potential to solve environmental problems in Henan. In addition to technical discussions, participants also visited facilities located in Mie Prefecture for better understanding and ensuring improvement effects of the advanced equipment introduced. Participants from Henan also gave a presentation at the 2011 Leading Industries in Mie Exhibition, with the aim of informing companies in Mie of the environmental technology needs of Henan. As a result of the technology exchange program, some Japanese companies have started discussions to specify the details of technology transfers project with companies in Henan, anticipating future business possibilities. In the technology needs research in Vietnam, ICETT conducted interviews with government institutions, industrial organizations and Vietnamese companies faced with various technological problems, aiming to understand the local needs for environmental & energy-saving technologies and the local site conditions to be considered in transferring technology. As a result, it was found that Vietnam was in need of wastewater treatment technology suited to the local environment conditions, highly efficient incinerators at waste disposal sites, waste collection systems, and energy-saving management systems for high-rise & high-class buildings. Information obtained from the interview survey was posted on the ICETT website to facilitate future business opportunities.

(Toyonaga)



Exchange of views among participants



Facility Visit



2011 Leading Industries in Mie Exhibition



Technology Needs Research in Vietnam





# Personnel Training Course for Officials of the City of Tianjin

## Outline

Since the establishment of a friendship-city agreement in 1980, Yokkaichi and Tianjin Cities have actively facilitated various exchange programs in a wide variety of fields. As part of such efforts, ICETT was commissioned by Yokkaichi City in 1993 to provide training courses on environmental conservation to participants from Tianjin. So far, 101 participants from Tianjin have received such training courses in Japan (the number of participants who have taken part in a series of environmental conservation seminars in Tianjin totals 520). In FY 2011, under the theme of “the realization of a low carbon society,” ICETT conducted a seminar in Tianjin and a training course in Yokkaichi.

## Background

China has set the realization of a resource-saving and environment-conscious society as a goal of its environmental measures under its 12th five-year plan, aiming to evolve into a low carbon society to accelerate sustainable development. In line with such intention of the government, the City of Tianjin, which is a direct-controlled municipality and a designated environmental model city of China, is also required to take effective measures to fulfill the goal.

## Seminar Held in Tianjin

Prior to the training course in Japan, ICETT held a seminar in Tianjin under the theme of “planning and construction technology to create a low carbon society/city” at the request of Tianjin City for three days from August 30 to September 1, 2011. Topics discussed at the seminar included: how to prepare greenhouse gas inventories; methods to monitor emissions; city planning and construction technologies toward a low carbon society; and industrial examples and advanced technologies regarding the development of a low carbon economy.

## Details & Results of the Training Course

This year, four officials including representatives of Tianjin Environmental Protection Bureau and the Tianjin Academy of Environmental Sciences were selected from among the seminar participants to join a training course provided by ICETT. Under the theme of a “low carbon society,” the training course was conducted for 14 days from November 6 to 19, 2011, aimed at training personnel capable of contributing to the creation of a low carbon society in Tianjin.



Environmental conservation seminar in Tianjin

In Japan, rules & regulations for achieving a low carbon society have been increasingly implemented. Both the public and private sectors have intensified the development of advanced technologies and various other efforts. Aiming to help participants increase their understanding of Japanese



Site visit

laws & regulations as well as administrative and private bodies' initiatives and technological developments, the training course was conducted in collaboration with the following three sectors: governments including Mie Prefecture, Yokkaichi City, and the Tokyo Metropolis which has newly established mandatory emissions reductions and Tokyo-ETS; private companies including electric power company, steel company, oil refinery company, and chemical company; and a research institute which is engaged in studies to establish low-carbon technologies for the construction industry. One of the participants commented, “I was impressed by the fact that Japanese companies have taken a wide variety of measures to save energy, while at the same time actively conducting enlightenment & educational programs to reduce global warming issues and facilitate environmental conservation efforts toward a low carbon society. I learned how to collect CO<sub>2</sub> emission baseline data and received valuable advice, which should prove useful in preparing a greenhouse gas inventory in Tianjin. Upon returning to Tianjin, I would like to build on what I have learned in Japan and contribute to the realization of a low carbon society.” ICETT greatly appreciates those who cooperated in conducting the training course. (Fukushima)



Training participants and staff

# CTI Activities at COP17

December 2011 Durban, South Africa

## Outline

The 17th United Nations Climate Change Conference was held in Durban, South Africa, with an extended period from November 28 to December 11, 2011. At the Conference, the 17th Conference of the Parties (COP17), the 7th Session of the Conference of the Parties serving as a meeting of the Parties to the Kyoto Protocol (CMP7), as well as a meeting of four subsidiary bodies were also held. As an important outcome, the Ad Hoc Working Group on the Durban Platform for Enhanced Action was established to provide a process for developing a protocol, another instrument or an agreed outcome with legal force under the Convention, which are applicable to all Parties. In addition, the second commitment period of the Kyoto Protocol was agreed in Durban. A basic scheme of the Green Climate Fund was also agreed upon, aimed at implementation of the Cancun Agreements. ICETT participated in the Conference as the CTI Secretariat, holding side events and setting up an information booth to facilitate better understanding of its activities.

International efforts to combat global climate change began in 1992 with the adoption of the United Nations Framework Convention on Climate Change (UNFCCC). This Convention provides an action framework for stabilizing atmospheric concentrations of greenhouse gases, aiming to avoid “dangerous anthropogenic interference with the climate system.” The UNFCCC went into effect on March 21, 1994 and has been ratified by 194 countries to date.

The Climate Technology Initiative (CTI), which was established by the International Energy Agency (IEA)/OECD member countries and the European Commission at the 1st Conference of the Parties (COP1) to UNFCCC in 1995, is a multilateral initiative based on international cooperation. Its mission is to establish an international cooperation framework to promote the broad diffusion of climate-friendly, environmentally sound technologies and technical know-how throughout the world. In 2003, the CTI was reformed as an Implementing Agreement of the IEA, and it established an international secretariat at ICETT, further expanding the scope of its activities.

At the UNFCCC discussions, financing has been one of the main issues in the area of technology transfer. To contribute to the achievement of UNFCCC’s technology transfer objectives, the CTI launched the CTI Private Financing Advisory Network (CTI PFAN) program in collaboration with the UNFCCC secretariat, in an effort to secure financing access indispensable for projects addressing climate change issues in developing countries. Through public-private partnerships, the CTI PFAN program has expanded financing opportunities for project developers and entrepreneurs involved in clean energy, renewable energy and energy efficiency improvement projects, thereby facilitating technology transfer to developing countries and countries with economies in transition.

The CTI has regarded the PFAN program as the core of its initiative to lead discussion at the UNFCCC. At the two side events of the 17th UNFCCC, the CTI reported the results, progress and future prospects of the CTI PFAN program. Because the CTI PFAN program is highly effective in efficiently utilizing the limited amount of public resources available and in encouraging private financing and direct investment, the CTI intends to deploy the PFAN program in line with a post-2012 framework, thereby contributing to the achievement of goals set by the UNFCCC.

(Taiki Kuroda)



CTI side event

