Global Environment Centre Foundation

Annual Report 2012

All years listed in this Annual Report are expressed according to the Japanese fiscal year from 1 April to 31 March.
Terms marked with an asterisk (*) are defined in the margin.

Foreword

Considering the recent abnormal heat wave and localised heavy rainfalls, we have not been short of subjects to talk about related to the weather. Quite a few years have passed since global warming has been identified as one of the causes for these abnormal weather conditions. Globally, a new post-2020 framework to address this issue has been agreed upon at COP18 and is about to come into effect. Furthermore, although the Japanese government has expressed a wish for non-participation in the second phase of the Kyoto Protocol, they made it clear that they would contribute to countermeasures against global warming by establishing the Joint Crediting Mechanism (JCM) in order to reduce greenhouse gas emissions in developing countries.

In order to support the establishment of the JCM by the Japanese government, the Global Environment Centre Foundation (GEC) has been taking on various projects such as subsidy schemes, feasibility studies and the promotion of low carbon cities in Asia, with a view to expanding Japan's environmental technologies to overseas countries on a fully-fledged scale.

On the other hand, with regards to the situation revolving around the GEC, we are experiencing a time of great change as we become independent starting in the fiscal year 2014, when we will leave our position as an extra-governmental organisation for the city of Osaka. As we look forward, GEC has formulated a business improvement plan based on short and long term viewpoints, in order to provide smooth and appropriate support to international environmental cooperation (such as supporting the UNEP International Environmental Technology Centre). Starting at the beginning of the fiscal year 2013, we began operating the organisation based on that business improvement plan.

20 years have passed since the establishment of the GEC. If the organisation were to be compared to a person, it has reached the age for making international contributions as a mature adult. GEC staff members have a strong sense of unity in fulfilling our mission, which is to preserve the global environment and the regional environments in developing countries, as well as to expand the excellent environmental technologies, owned by companies in Osaka and the Kansai region, to overseas countries. We will strive to realise the smooth operation of the organisation without forgetting its fundamental spirit of innovation and improvement.

In any case, a great number of issues lie ahead of us, that we will need to deal with as soon as possible. All of the GEC staff members intend to overcome these difficulties by recognising our individual responsibilities and making our utmost efforts to resolve them. Your continued understanding and cooperation will be much appreciated.

September 2013

MIYAHARA, Hideo
President
Global Environment Centre Foundation

Supporting IETC's Activities of Information Dissemination and Technology Transfer on ESTs*

ESTs
Environmentally Sound Technologies, as defined in Agenda 21, should protect the environment, are less contaminative, use various resources in a more sustainable manner, recycle more of their wastes and products and handle residual waste in a more acceptable manner than the technologies for which they were substitutes.

Our Support and Participation in the Workshop Led by IETC on Waste Management

- **Asia Pacific Workshop on Global Partnership on Waste Management and Integrated Solid Waste Management**

With regard to the two workshops that IETC held in Osaka from 16 to 20 April 2012, we provided support and assistance in holding the workshops, and also gave presentations on how GEC is sharing information about Japan's technologies for waste management, as well as demonstrating how waste recycling is being promoted in eco-towns within Japan. Furthermore, in cooperation with the city of Osaka, we conducted a guided tour of the Maishima waste treatment centre and the Hokko solid waste disposal site in Osaka.

Workshop Overview

16–18 April	Workshop on global partnership in waste management.
19–20 April	Workshop on integrated waste management.
20 April, Afternoon	Guided tour of the waste treatment centre and the landfill site of the city of Osaka.

The workshops were attended by 79 people in total, from government bodies and from international organisations and companies related to waste management. Participants came from 12 countries, namely Bangladesh, Cambodia, India, Laos, Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam, as well as Japan including the Ministry of the Environment, the Ministry of Foreign Affairs of Japan, the Ministry of Economy, Trade and Industry, the National Institute for Environmental Studies, the Japan International Cooperation Agency (JICA), the Institute for Global Environmental Strategies (IGES), Osaka University, Osaka City, Kawasaki City, and the National Institute of Advanced Industrial Science and Technology. Also present were international cooperative organisations and 9 private companies.

Presentations were given about the current situation of each developing country who attended the workshop, including the activities and pilot projects carried out by various organisations, projects initiated by private companies in Japan, and activities organised by IETC and other international organisations. The workshops provided a useful opportunity to find out first-hand information about the situations and needs in each country, as well as to explore technological options and provide an opportunity for networking among the participants.

Participants who attended the guided tour commented that the tour gave them a good opportunity to learn more about Japan's technologies for waste treatment and the landfill process, and its high standard of operations, as well as its efforts to help local residents accept the facilities.

- **Support for the holding of the Multi-Stakeholder Policy Dialogue Addressing E-waste Challenges and Opportunities through Public-private Sector Cooperation**

The GEC offered support for the holding of the above conference, which was held in Osaka by IETC from 18 to 20 July 2012. With support from the Panasonic Corporation, we organised a tour, mainly for participants from overseas countries, at a designated collection facility for electrical and electronic equipment waste and a home appliance recycling plant.

71 people in total attended the dialogue. This included participants from government agencies, private companies, international organisations and research institutions based in 19 countries, namely Argentina, China, Egypt, India, Indonesia, Kenya, Malaysia, Nigeria, Pakistan, Russia, Singapore, Sweden, Switzerland, Thailand, Trinidad and Tobago, the United

Kingdom, the United States, Vietnam and Zambia, as well as Japan including the Ministry of the Environment, the Ministry of Foreign Affairs of Japan, the Ministry of Economy, Trade and Industry, Osaka City, the National Institute for Environmental Studies, the National Institute of Advanced Industrial Science and Technology, and the Institute for Global Environmental Strategies (IGES). Also present were 13 private companies and organisations, including electronics suppliers and recycling companies.

At the conference, a panel discussion was held to discuss what is needed in each sector, and the role that each sector is expected to play. This was followed by group discussions based on this topic. The conference concluded with a wrap-up consisting of presentations on the 'Call for Action', which summarised the results of the conference.

• Support for the Global Partnership on Waste Management Biennium Conference

The GEC offered support for the above conference that the IETC held in Osaka from 5 to 6 November 2012.

Conference Overview

5 November	Waste and climate change, marine litter, agricultural biomass waste, reduction and minimisation of waste, E-waste, integrated waste management.
6 November	Waste management as an excellent business opportunity, studies and research on waste and technology needs, disaster waste, waste management and eco-towns.

The conference was attended by 184 people in total, from government agencies, international organisations, private companies, research institutions, universities and NGOs. Participants came from 40 countries, namely Australia, Austria, Argentina, Bangladesh, Belgium, Brazil, Cambodia, Chile, Costa Rica, Ecuador, Egypt, El Salvador, France, Greece, Guatemala, India, Indonesia, Jamaica, Kenya, Korea, Laos, Malaysia, Myanmar, Nepal, Nigeria, Peru, the Philippines, Russia, Senegal, Singapore, South Africa, Sri Lanka, Switzerland, Thailand, Trinidad and Tobago, the United Kingdom, the United States, Uruguay, Yemen and Zambia, as well as Japan including the Ministry of the Environment, the Ministry of Foreign Affairs of Japan, the Ministry of Economy, Trade and Industry, international cooperative organisations, research institutes, universities, and 26 private companies.

At the conference, presentations were given on the topic of waste management which has been an issue at the forefront in developing countries, as well as presentations on other important fields for the future. The conference offered the opportunity for participants to exchange their views. Participants from Japan, including business enterprises, commented that the conference enabled them to gain greater knowledge of waste issues from different views and broader perspectives, beyond that of mere technology and business.

• Co-hosting the Review and Planning Workshop on Eco-town

The GEC and the IETC co-organized the above workshop in Penang, Malaysia from 11 to 13 December 2012. The workshop was attended by 140 participants in total, from the local government, private companies, citizens' groups, NGOs, schools and universities in Malaysia, as well as 16 participants from Cambodia, Indonesia, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam.

Presentations were given on the following subjects: waste management and the development of eco-towns in Asia; the current situation regarding recycling activities; an introduction to environmental technologies in developed by companies in Japan; an introduction to GEC's environmental technology database; and the IETC's Strategy Paper on

eco-towns and its plan for the eco-town project Phase 2.

On the second day, participants visited current activities for garbage separation, composting and e-waste recycling as well as the programme developed with new environmental technology to convert food waste into fertiliser. Participants learned that the local government of Penang is actively carrying out environmental events and projects in which local citizens can participate, and is offering incentives to citizens who have contributed to recycling activities which have helped to keep those activities going. Local companies are also participating in these activities, as well as providing funding as part of their CSR activities. Through the site visit, the actual situation where the local government, citizens and companies are playing respective roles and effectively working together, was introduced for the development of the eco-town.

- **Participation in The 9th Asia-Pacific Eco-Business Forum co-hosted by Kawasaki City and IETC**

The GEC attended the above forum co-hosted by Kawasaki City and the IETC which was held in Kawasaki from 30 to 31 January 2013. We gave presentations on our support activities for the IETC's waste management project and the results of the eco-town workshop co-hosted by the GEC and the IETC in Penang, Malaysia from 11 to 13 December 2012. We also attended a session on the UNEP project as a panel member, where we offered various opinions and had a discussion with participants from Penang about future cooperation.

Prior to the above forum, we attended a forum for the overseas development of a major Japanese waste management business and also attended the 5th 3R Conference for Asian Local Governments, which were held on the 28 and 29 January 2012. We were able to gather information about the current situation of waste management in Asian countries and international cooperation in the field of waste in other cities in Japan. We also expanded our awareness of these issues through interactions with participants from overseas countries, and participants from Japan that included companies, local governments and research institutions.

Taking on Assessment Study on Waste Management from the IETC

- **Supporting the IETC in its Climate and Clean Air Coalition (CCAC) to Reduce Short-Lived Climate Pollutants (SLCPs) - Municipal Solid Waste Initiative**

As part of the activities for the above coalition, which was attended by UNEP and 25 or more countries, we offered our support for the activities regarding municipal solid waste in which the IETC is taking part by carrying out a general assesment of the current situation for waste management in Dacca (Bangladesh), Ho Chi Minh City (Vietnam) and Penang (Malaysia). We also attended a networking event held in Vancouver, Canada from 11 to 12 March 2013.

JICA Grassroots Project for Environmental Protection in Ha Long Bay Area, Vietnam

Ha Long Bay is located in the northwest part of the Gulf of Tonkin, in the north of Vietnam. The bay is one of the most picturesque places in the world, and it was registered as a world natural heritage site by UNESCO in 1994. However, environmental pollution is increasing in the area and measures need to be taken against this pollution.

Ha Long Bay

In collaboration with Osaka Prefecture University, the above project was carried out in Ha Long Bay over 3 years between October 2009 and September 2012 as the JICA Grassroots Project on support for building a community-based recycle-oriented system in Ha Long Bay area, with a view to reducing the discharge into the bay from people who live on the water and from tourist boats.

In the fiscal year 2012, which was the final year of the project, we carried out the following activities centring around mangrove planting and measures for garbage management in floating villages. On 29 August, we concluded all project activities with a final evaluation workshop, which was attended by the all stakeholders involved. At the workshop, people involved in the project expressed their appreciation for the project and their intention to continue to carry out local activities, even after the project ended. The People's Committee of Quang Ninh Province presented a certificate of appreciation to the GEC and to Osaka Prefecture University.

The final workshop in August, and other project activities in floating villages, were reported on nationwide TV stations and in newspapers. Mangrove planting was also reported by local TV stations and newspapers.

May (on-site activities)	• Held a seminar on compost in one village located on the water. Residents began the activities. • Provided the education department of Quang Ninh Province with booklets on mangrove planting to be distributed to primary schools. • Held meetings on mangrove planting and the distribution of waste separation boxes.
July (on-site activities)	• Checked the situation of composting in one village located on the water and established follow-up measures. • Held a meeting with residents about the contract to make and distribute waste separation boxes. • Held a meeting and a briefing session on mangrove planting. • Held a meeting on the workshop for the final evaluation of the project.
August – First Half (on-site activities)	• Checked how the mangroves planted in the fiscal year 2009 and 2010 were growing. • Had a briefing session on the objectives and the methods of mangrove planting. • 3,000 mangroves were planted (*1) by 63 Vietnamese and 14 Japanese people. • Checked the situation of composting in one floating village and initiated follow-up measures. • Held a meeting with residents in one village located on the water to explain waste separation boxes (*2) and distributed the boxes.
August – Second Half (on-site activities)	• Held a workshop for the final evaluation of the project. • Checked the situation of composting in one floating village and initiated follow-up measures. • Made a visit to a classroom where environmental subjects are taught in one primary school in a floating village.
September (on-site activities)	• Closed the on-site office. Checked that equipment was transferred to the relevant local people.

Mangrove planting

Waste separation boxes

Final evaluation workshop

Ha Long Bay Location

A floating community in Ha Long Bay

*1
Donated funds from the home appliance eco-point system were used for mangrove planting and the creation of booklets on mangrove planting.

*2
Waste separation boxes were made by using the surplus amount from the donation of the committee for the Osaka Pavilion at Expo 2010 in Shanghai, China.

Support Activities for Integrated Waste Management and 3R Strategies in Ho Chi Minh City, Vietnam

In July 2011, the Ho Chi Minh City People's Committee of Vietnam and Osaka City of Japan signed a memorandum to promote bilateral cooperation in some major fields. The GEC provided support for the establishment of a cooperative relationship between the two cities in the field of waste management and 3R strategies, while liaising with related counterpart organisations such as the Osaka City Environment Bureau and the Ho Chi Minh City Department of Natural Resources and the Environment (DONRE), as well as the designers of environmental plants in the Kansai region.

We carried out various activities in the fiscal year 2012, particularly in the following three fields aimed at strengthening cooperation. These fields were presented at the seminar for integrated waste management in Ho Chi Minh City, held in the city in February 2012: 1) Providing support in formulating measures for waste management and 3R in Ho Chi Minh City; 2) Fostering capable staff for managing waste and 3R in Ho Chi Minh City; and 3) Sending a basic investigative team to explore waste management and 3R technologies. Specifically, GEC took on and executed the tasks detailed below for the Ministry of the Environment, in cooperation with related operators. In the fiscal year 2013, we will continue to carry out similar activities in the above-mentioned three fields of cooperation.

Study Regarding the Integrated Solid Waste Management System (including energy recovery) in Ho Chi Minh City, Socialist Republic of Vietnam

Operators	Hitachi Zosen Corporation, Osaka City Environment Bureau, EX Research Institute Ltd., and GEC.
GEC's role	• Investigated activities involving waste management and 3R strategies in Ho Chi Minh City. • Held a workshop in the city (twice).
Content of activities	• The 1st field investigation (18–22 June 2012) We gave an outline of the activities to be carried out to the local people involved. This included DONRE, the HCMC Waste Recycling Fund (REFU) and the Ho Chi Minh City Environmental Company (CITENCO). We also checked their current waste management situation by visiting the landfill site, composting facilities and the waste treatment centre in the city. • The 1st workshop in the city (27 August 2012) The 1st workshop was held with a view to deepening the understanding of both parties on operations, and to establish the direction of those operations. It was attended by 60 people in total (30 people from Japan and 30 people from Vietnam). • The 2nd workshop in the city (1 March 2013) The 2nd workshop was held in order to report the results of the operations in the fiscal year 2012, and to discuss the activity plan for the next fiscal year. Based on the results from this fiscal year, we had a lively exchange of views with Ho Chi Minh City and discussed the plan for next year's operations. 100 people in total (30 people from Japan and 70 people from Vietnam) attended the workshop.

The 1st workshop in the city

The 2nd workshop in the city

Development of 3R Programme in Vietnam FY2012

Operators	Institute for Global Environmental Strategies, Yachiyo Engineering Co. Ltd., and GEC.
GEC's role	Suggested elements for an action plan on waste management and a 3R programme in Ho Chi Minh City, as a model for cooperation between cities in the national strategy of Vietnam.
Content of activities	We offered support for the formulation of a specific action plan to execute a 3R and garbage separation programme, where waste occurs as shown in the master plan of Ho Chi Minh City. Elements for the action plan were suggested based on the needs of the city, after correctly understanding those needs through a bibliographic survey of various nations' regulations and master plans related to waste management and 3R, in addition to hearings within the city.

Contribution to Climate Change Mitigation

In order to deal with the issue of global warming, the United Nations Framework Convention on Climate Change (UNFCCC)* was established in 1992. The protocol which sets out the commitments to tackle global warming was adopted at the COP3 to the UNFCCC held in Kyoto in 1997, and came into force in 2005. The Kyoto Protocol also defines flexibility measures called Kyoto Mechanisms. These mechanisms are: the Clean Development Mechanism (CDM)* which is carried out through cooperation between developed countries and developing countries; the Joint Implementation (JI)* strategy which is carried out through cooperation among developed countries; and an International Emissions Trading where emission quotas and carbon credits are traded among developed countries.

After the Kyoto Protocol's first commitment period (i.e. after 2013), it was decided at COP17/CMP7* in 2011, and at COP18/CMP8 in 2012, that the second commitment period would apply to emissions between 2013 and 2020. International negotiation for a new legal framework to be effective in 2020 has also started, to be adopted at COP by 2015.

As Japan does not join the second commitment period, no reduction target has been set for the second commitment period in Annex B of the Kyoto Protocol, and Japan does not have any international obligations to reduce greenhouse gas (GHG) emissions. Nevertheless, taking into consideration Japan's participation in the new framework agreement from 2020 onwards, it is thought to be important to proceed with activities from now based on a comprehensive perspective of contributing to measures against climate change.

From that viewpoint, and with the institutional issues of the existing Kyoto Mechanisms (especially the CDM), it is now required for Japan to promote its contributions to the world by spreading Japan's advanced technologies, and through the improvement of the CDM and a new mechanism. It has been suggested that this new mechanism, the Joint Crediting Mechanism (JCM), be established and promoted in order to contribute more to the sustainable development of developing countries, with lower GHG emissions and in a more environmentally friendly way. Under the JCM, the advanced environmentally sound technologies are promoted to be introduced in developing countries, by reflecting the national circumstances of each developing country. The bilateral document to implement the JCM was signed by Japan and Mongolia in January 2013, Bangladesh in March, and Ethiopia, Kenya, the Maldives, Vietnam, Laos, Indonesia, Costa Rica, and Palau after that. We are now moving to the stage of the implementation of real JCM projects.

Since FY 1999, GEC has been commissioned by the Ministry of the Environment, Japan (MOEJ) to conduct the CDM/JI Feasibility Study Programme. As the secretariat for the programme, GEC has endeavoured to encourage more business operators in Japan to join the market mechanism for global warming countermeasures, by disseminating information that contributes to the promising CDM/JI project development.

Since almost all the large scale CDM/JI projects (those which can significantly reduce GHG emissions) were exhausted at the early stages, the current situation is often occurring where small scale projects cannot achieve profitability through private investments. Moreover, particularly in the case of the CDM, projects are implemented in developing countries that do not have any targets for reducing GHG emissions, and the difference between the amount which would have been emitted without the project (the baseline) and the amount of actual emissions after the project can be used as carbon credits to achieve the reduction targets of developed countries. Therefore, it is required to prove that the project would not have been carried out without the CDM (i.e. without additional earnings from trading in the Certified Emission Reduction (CER)). This approach is based on the concept of 'additionality' in which credits are only given for GHG reductions that are 'additional' to those that would have been achieved in the absence of the CDM. The CDM project participants are required to demonstrate this additionality and the system incorporates a process that involves multiple checks of the appropriateness thereof, which is an obstacle to the CDM implementation. Furthermore, since

United Nations Framework Convention on Climate Change (UNFCCC)
Also called the Climate Change Framework Convention. The ultimate objective of this Convention is to achieve the stabilisation of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It imposes various obligations on the contracting parties, such as the compilation of GHG emission and absorption inventories and the formulation and implementation of national plans for global warming countermeasures.

CDM (Clean Development Mechanism)
When a developed country (investor country) provides funds and technical assistance for the implementation of a project which leads to a reduction in greenhouse gas (GHG) emissions in a developing country (host country), credits (CER) are issued for the amount of reduced emissions. A developed country can then use these credits to achieve its own emission reduction target.

JI (Joint Implementation)
Joint Implementation is a Joint Implementation is a system whereby developed nations cooperate to implement projects to reduce GHGs, with one developed nation (the host nation) issuing credits called Emission Reduction Units (ERUs) after converting a corresponding amount of Assigned Amount Units (AAUs), and the other developed nation (investor nation) able to use those ERUs to achieve their own emission reduction targets.

CMP (Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol)
The supreme decision-making body of the Kyoto Protocol. Held annually.

COP (Conference of the Parties to the UNFCCC)
The supreme decision-making body of the UNFCCC. Held annually.

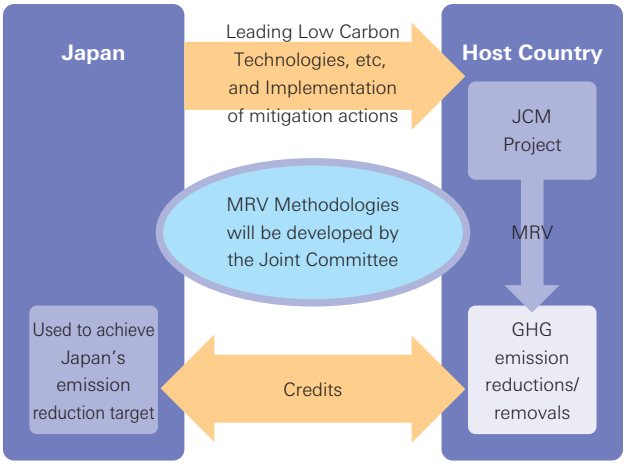
the projects are driven by the private sector, the project owners in the host countries (which are developing countries) often ask for a reduction in the initial investment, which makes it harder to adopt Japan's expensive yet high quality equipment.

Although Japan is contributing to the global reduction of GHG emissions using advanced technologies, such expensive technologies cannot be adopted by many CDM projects. Then, Japan has proposed the establishment of a new mechanism which will correctly evaluate Japan's contribution to global climate change mitigation. This new mechanism was officially proposed to UNFCCC as the Joint Crediting Mechanism (JCM) and has been accepted by COP as one of the activities to be carried out jointly by parties, as stated in the COPs objective for 'Various approaches, including opportunities for using markets, to enhance the cost-effectiveness'.

Given the above situation, the number of feasibility studies for the new mechanism was increased from 3 in the fiscal year 2010, to 29 in the fiscal year 2011. In the fiscal year 2012, specific JCM projects became the target of feasibility studies and 25 studies were carried out to develop a methodology to quantify the reduction of GHG emissions. By developing this methodology, GEC contributed to the establishment of a foundation for JCM projects, which are to be officially carried out from now.

Basic concepts of the Joint Crediting Mechanism (JCM)

- Facilitating the diffusion of leading low carbon technologies, products, systems, services and infrastructures as well as the implementation of mitigation actions, and contributing to the sustainable development of developing countries.
- Appropriately evaluating Japan's contributions to greenhouse gas emission reductions or removals in a quantitative manner, by applying measurements, reports and verification (MRV) methodologies, and using these to achieve Japan's emission reduction target.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for greenhouse gas emission reductions or removals, complementing the CDM.



Source: 'Recent Development of The Joint Crediting Mechanism (JCM)' (published by the Government of Japan, on 22 January 2014)

Studies on the JCM

The Bilateral Offset Credit Mechanism (BOCM)
This was called the Bilateral Offset Credit Mechanism in the fiscal year 2012, but the title was simplified in the fiscal year 2013 and is now called the Joint Crediting Mechanism (JCM).

In the fiscal year 2012, in order to develop methodologies required to measure, report and verify (MRV) GHG emissions to correctly see the effects of a project, we advertised for ideas. We selected two types of studies (the MRV Demonstration Studies (DS) of the JCM projects and the Feasibility Studies (FS) of the JCM projects), managed the progress of those studies, and make the study reports publicly available.

MRV Demonstration Studies are studies designed to develop methodologies to quantitatively determine the amount of GHG emissions that have been reduced by JCM projects. This involves taking actual measurements from some existing projects which are similar to the types of projects expected to be carried out for the JCM.

JCM Feasibility Studies are studies designed to evaluate the feasibility of projects at the planning stage, and to develop methodologies to quantify the amount of GHG emissions expected to be reduced when a project is implemented.

The primary objective of both the MRV Demonstration Studies and the JCM FS is to develop

suitable JCM methodologies applicable to JCM projects in the near future. Another objective is to help Japanese entities find and develop the cases to mitigate GHG emissions across the globe, through projects which utilise Japan's advanced low-carbon technologies.

GEC started to advertise to private entities in Japan for ideas regarding the above studies on 12 April 2012, and qualified and adopted 25 project studies in total (13 for the MRV DS and 12 for the JCM FS).

MRV Demonstration Studies (DS) Using Model Projects

Host Country	Project Category	Title of Feasibility Studies
Cambodia	Waste Management	Methane Recovery and Utilisation from Livestock Manure by using Bio-digesters
India	Biomass Utilisation	Bagasse-based Power Generation including Waste Heat Utilisation
Lao PDR	Transport	Transportation Improvement through introduction of Efficient Buses and Provision of Good Services
Mexico	Renewable Energy	Small-scale Wind Power Generation with Remote Monitoring System
Moldova	Biomass Utilisation	Biomass Boiler Heating using Agricultural Waste as Fuel
Mongolia	Renewable Energy	Replacement of Coal-Fired Boiler by Geo-Thermal Heat Pump for Heating
Mongolia	Energy Efficiency Improvement	Upgrading and Installation of High-Efficiency Heat Only Boilers (HOBs)
Sri Lanka	Biomass Utilisation	Biomass-based Thermal Energy Generation to Displace Fossil Fuels
Thailand	Biomass Utilisation	Bagasse-based Cogeneration at Sugar Mill
Thailand	Transport	Transport Modal Shift through Construction of Mass Rapid Transit (MRT) System
Thailand	Energy Efficiency Improvement	Energy Savings through Building Energy Management System (BEMS)
Thailand	Others (Waste Heat Utilisation)	Waste Heat Recovery System with Cogeneration
Viet Nam	Energy Efficiency	Integrated Energy Efficiency Improvement at Beer Factory

JCM Feasibility Studies

Host Country	Project Category	Title of Feasibility Studies
Cambodia	Biomass Utilisation	Small-scale Biomass Power Generation with Stirling Engine
Cambodia	Land Use Management	REDD+ in Tropical Lowland Forest
Colombia	Renewable Energy	Geothermal Power Generation in a Country with Suppressed Demand
Indonesia	Renewable Energy	Solar-Diesel Hybrid Power Generation to Stabilise Photovoltaic Power Generation
Indonesia	Land Use Management, and Biomass Utilisation	Prevention of Peat Degradation through Groundwater Management, and Rice Husk-based Power Generation
Indonesia	Land Use Management, and Biomass Utilisation	REDD+ for Conservation of Peat Swamp Forest, and Biomass-based Power Generation using Timber Mill Waste to Process Indigenous Trees derived from Conserved Forest
Lao PDR	Waste Management	Introduction of Mechanical Biological Treatment (MBT) of Municipal Solid Waste, and Landfill Gas (LFG) Capture, Flaring and Utilisation
Thailand	Transport	Introduction of Electronic Gate to International Trade Port to Improve Port-related Traffic Jam
Viet Nam	Waste Management	Biogas-based Cogeneration with Digestion of Methane from Food/ Beverage Factory Wastewater
Viet Nam	Transport	Improvement of Vehicle Fuel Efficiency through Introduction of Eco-Drive Management System
Viet Nam	Land Use Management, and Biomass Utilisation	REDD+ through Forest Management Scheme, and Biomass-based Power Generation using Timber Industry Waste
Viet Nam, and Indonesia	Transport	Promotion of Modal Shift from Road-based Transport to Mass Rapid Transit (MRT) System

New buses for public transport in Laos

Wastewater treatment facility in Vietnam

The targets of the studies to develop JCM methodologies were as follows:

- to establish the criteria to judge if a project is eligible for the JCM;
- to prepare scenarios to be referenced for the situation regarding GHG emissions when a project has not been executed, and a calculation formula for estimating GHG emissions in those cases;

- to develop a calculation formula for determining GHG emissions in cases when a project has been executed;
- to set a value for the parameters required to calculate GHG emissions in each case,
- to devise appropriate monitoring techniques; and
- to quantify the amount of the reduction in GHG emissions, which is calculated as the difference between the reference emissions and the project emissions.

Taking into consideration the difficulties faced to in the CDM scheme that the monitoring activities required to quantify GHG emissions were placing an excessive burden on the project participants, under the JCM default values applied to certain parameters should be set to avoid actual monitoring activities by project participants. In addition, to promote the increase of reductions in GHG emissions by using advanced low-carbon technologies, we considered measures to better promote the introduction of advanced technologies, and aimed to set a standard for objectively evaluating the superiority of Japan's technologies. However, in cases where a project uses advanced low-carbon technologies, we need to avoid the situation where that project is valued higher than the actual amount of the reduction in GHG emissions. Therefore, we devised a conservative method to quantify the amount of GHG emission reductions by adopting a simple monitoring method, which should prevent overvaluations. With these activities, we contributed to the establishment of a scheme for the global net reduction of GHG emissions, while contributing to the further promotion of sustainable development in developing countries, and contributed to the promotion of measures against environmental pollution by expanding the use of Japan's advanced technologies.

The 1st Host Country Committee Meeting with Cambodia (Phnom Penh)

The 1st Host Country Committee Meeting with Laos (Vientiane)

Since the success of the JCM greatly depends on the progress of bilateral discussions between Japan and its host countries, we held committee meetings with 5 host countries, namely Mongolia, Vietnam, Laos, Cambodia and Indonesia, with a view to helping them deepen their understanding of the JCM and of sharing information about the specific content of the projects expected to be carried out with the JCM. The FS entities also attended the committee meetings where they gave presentations on the content of the studies, their progress and their results. This served to deepen mutual understanding and promoted the establishment of cooperative relationships between the governments of the host countries and the FS entities (i.e. future project proponents).

CDM Feasibility Studies

One of the projects adopted for the CDM FS aims to contribute to the rectification of a geographical imbalance. The project was carried out with a view to resolving the issue of a gap where CDM projects account for 75% of the total number of projects registered in China, India and Brazil, yet the number of registered projects in other developing countries is 10 or less. This is especially true for the least developed countries (LDCs) and developing countries on small islands. An increase in the number of CDM projects in LDCs and in African countries has been discussed as a challenge for the CDM since CMP2 was held in Nairobi, Kenya, but no noteworthy improvement has yet been made. All of the projects adopted for CDM FS in the fiscal year 2012 were studies on projects in LDCs in Asia such as Bangladesh, Bhutan,

Myanmar and Nepal. It is said that LDCs have a higher barrier in realising projects as they tend to have high national risks. However, by providing support through feasibility studies, it should become possible to raise awareness of the need for a reduction in GHG emissions in these host countries, while still promoting their sustainable development.

List of 2012 CDM Feasibility Studies

Host Country	Project Category	Title of Feasibility Studies
Bangladesh	Energy Efficiency Improvement	Programme for Integrated Energy Efficiency Improvement of Dyeing Process
Bhutan	Renewable Energy	Rural Electrification through Expansion of Electric Grid mainly composed of Hydropower
Myanmar	Waste Management	Landfill Gas (LFG) Recovery and Utilisation for Electric Power Generation
Nepal	Energy Efficiency Improvement	Programme to Reduce Non-Renewable Biomass Consumptions through Introduction of High-Efficiency Cook Stoves

Dissemination of Information on the Climate Change Countermeasures

GEC transmitted information through our websites, and at side events at international conferences as well as holding symposiums in Japan. Our aim was to widely disseminate information on measures being taken against climate change, and to take part in discussions at international conferences on climate change including sharing the content and the results of studies on the JCM and CDM projects.

• Hosting of the Global Warming Countermeasures Symposium 2013: 'Towards the Establishment of a MRV Methodology for the Bilateral Offset Credit Mechanism'

In cooperation with the Ministry of the Environment, Japan, GEC widely distributed the latest information on the negotiations and decisions about the new mechanism established at COP18. Furthermore, in order to report the result of the studies carried out in the fiscal year 2012, we held a symposium 2013 on the measures being taken against global warming. The symposium was held in Tokyo on 26 February 2013, and was attended by about 200 people. In order to promote activities to improve the quality and quantity of feasibility studies from the next fiscal year onwards, and to realise specific JCM projects, at the symposium we introduced the latest trends and the results of international negotiations on the new mechanism and the CDM. Furthermore, we made suggestions for improvements to the FS programme, based on the lessons learned from the secretariat task of the programme.

• Information Dissemination at UNFCCC Sessions

The side event at SB36 (Bonn, Germany)

In cooperation with the Ministry of the Environment, Japan, the Overseas Environmental Cooperation Centre, Japan (OECC) and the Institute for Global Environmental Strategies (IGES), GEC held an official side event 'Toward the Establishment the JCM—Utilisation to Support the NAMA Implementation' at UNFCCC SB36. At the event, we introduced the outline of our studies to develop JCM methodologies and gave an explanation of how JCM methodologies will maintain environmental integrity while adopting simplified monitoring techniques. Further lectures were given by the Ministry of Nature, Environment and Tourism

(MNET) from Mongolia and the Ministry of Natural Resources and Environment (MoNRE) from Laos. Together with presentations given by our co-organisers the OECC and the IGES, we were able to call attention to JCM activities and the progress of our international discussions.

GEC held another side event on the occasion of COP18 in cooperation with the Government of Vietnam, the Ministry of the Environment, Japan, the OECC, and the JICA. This side event was attended by about 100 people including government officials and various experts, giving them an opportunity for lively discussions. GEC gave the outline of the studies on the JCM (MRV DS and JCM FS), and the JCM methodologies. GEC also ran an official booth, where endeavoured to transmit our information widely and internationally by introducing the MRV DS and JCM FS from the fiscal year 2012 through posters and by distributing the booklets which summarise the result of those studies. Moreover, we expressed our belief that the heart of the JCM lies in our contribution to the prevention of global warming through transferring Japan's advanced technologies to other countries by distributing at the booth the catalogue on the technologies of Japanese companies in the Kansai region, which was created by the Kansai Economic Federation.

• Other Activities for the Dissemination of Information

On 16 June 2012, the United Nations Conference on Sustainable Development (UNCSD)—better known as Rio+20—held in Rio de Janeiro in Brazil. In partnership with the Ministry of the Environment, Japan, the OECC and the IGES, GEC held a side event titled, 'For Achieving a Low Carbon Society supported by New Market Mechanisms' at the Japan Pavilion, which was adjacent to the venue of Rio+20. At the event, GEC gave an outline of the MRV DS from the fiscal year 2012, and a presentation on the JCM methodologies.

The side event at Rio+20 (Rio de Janeiro, Brazil)

Osaka CDM Network

GEC has of the responsibility for running the secretariat of the Osaka CDM Network (O-CDM) which is supported by a membership of private companies, and has launched activities to promote carbon offsets titled, 'the Osaka Carbon Offset Concierge (OCONOMI)'. In the fiscal year 2012, as part of its activities, the O-CDM published a book as a tool to help find demands for these offsets. The book tells of actual cases of carbon offsets carried out in various regions in Japan, and can be used in creating opportunities to apply carbon offsets within other local communities.


Osaka Carbon Conference 2012

Human Resource Development in Developing Countries

Japan International Cooperation Agency (JICA) Group Training Project

As commissioned by JICA, we carried out 7 training courses for engineers and administrative officers in developing countries. In response to the requests for training in waste management, which have been increasing in recent years, we agreed to hold a training course on urban solid waste management by local governments twice a year. We also held a preliminary session (to understand the needs) and a training course for the JICA's new project 'Wastewater Control for the Industrial Parks in Vietnam', which has been newly set up to support private companies in expanding their work in Vietnam.

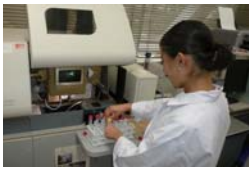
At the start of each training course, a 'Country Report*' was given to share the issues faced by each country. At the end of the course, an 'Action Plan*' was given to clarify the specific activities to be carried out after the participants go back to their home countries. Some courses in high demand from developing countries will continue to be carried out, in close contact with the related organisations, in order to respond to changes in needs. We will strengthen our collaboration with research institutions and related organisations, in order to meet the demands of the new training courses which we expect to expand from now on.

Training period	Nationality of participants	Main course contents
Japan-Mexico Training Programme for the Strategic Global Partnership: Total Environmental Contamination Control*		
7 May–16 November 2012	1 participant from Mexico	Purpose To develop the participants' capacity in the field of comprehensive environmental contamination control by providing a broad range of relevant expertise and experience through participation in multiple JICA group training Cooperating bodies • Osaka City University • Osaka City Institute of Public Health and Environmental Sciences • Japan BioPlastics Association, etc. Lectures • Environmental policy frameworks • Urban solid waste management • Countermeasure against automobile pollution • Bio-plastic technology, etc. Facility tours • Seashore sanitary landfill site • Water quality analysis at a public research institute, etc.
Mega-City Environmental Policy & Environmental Management System*		
25 May–12 July 2012	4 participants from Indonesia (2), Mexico (2)	Purpose To master pragmatic and practical methodologies, such as the framing of environmental policies, techniques of the environmental assessment, guiding corporation policies, Environmental Management Systems and methods of enlightening citizens. Cooperating bodies • Osaka City Environment Bureau • Kyoto City • United Nations Centre for Regional Development (UNCRD) • United Nations University • Osaka City Meiji Elementary School • Sunny Metal Corporation, etc. Lectures • Environmental administration in Osaka, Japan • Environmental Management System • Environmental impact assessment • Environmental policy and socioeconomic systems • Countermeasures against climate change, etc. Facility tours • Incineration plant • Recycling and sorting centre • Sewage treatment plant • Biodiesel fuel plant from waste edible oil • Environmental education activities at a primary school, etc.

Country Report
A report prepared by each participant describing the environmental administration system, environmental situation and other related issues in his/her country. These Country Reports are presented at the start of the training course to minimize the gap in issue awareness between participants and instructors.

Action Plan
A plan prepared by each of the participants to improve the environment in their own country based on knowledge acquired during the training. Participants present their Action Plan and receive advice from audience (mainly from course instructors and advisers) on how to improve its feasibility.

Japan-Mexico Training Programme for the Strategic Global Partnership: Total Environmental Contamination Control



Practical exercise at a public research institute

Mega-City Environmental Policy & Environmental Management System

Visit to a continuous ambient air monitoring station

Urban Solid Waste Management by Local Government (A, B)

Participating in a town beautification activity (in course A)

Practical exercise for constructing the sanitary landfill (in course B)

NAMA/MRV Capacity Building Course (B)

Field trip to a Mega-solar power plant

Wastewater Control for the Industrial Parks in Vietnam (preliminary session and training course)

Field trip to a sewage plant

Training period	Nationality of participants	Main course contents
Urban Solid Waste Management by Local Government (A, B)*		
(A) 26 July–21 September 2012 12 participants from Albania (1), Cote d'Ivoire (1), Djibouti (1), Lao P.D.R. (2), Mongolia (2), Myanmar (1), Nepal (2), Sudan (1),Viet Nam (1) (B) 12 October–7 December 2012 13 participants from Argentina (2), Cuba (1), Former Yugoslav Republic of Macedonia (1), Honduras (1), Malawi (1), Mozambique (1), Serbia (1), South Sudan (1), Tanzania (2), Zimbabwe (2),		Purpose To develop leaders and core people who can play a major role in making solid waste treatment plans and in implementing treatment businesses in their countries. Cooperating bodies • Osaka City Environment Bureau • Suita City • Kobe City • Fukuoka City • Toyo University • Jpec Co. Ltd. • Kawase Co. Ltd. • Plantec Inc. • Kokusai Kogyo Co., Ltd. • EX Research Institute Ltd., etc. Lectures • Outline of waste treatment • Sanitary landfill technology • Industrial waste treatment planning etc. Facility tours / Practices • Sanitary landfill • Waste incineration plant • Onsite composting (TAKAKURA Method) • Industrial waste treatment facility • Participation in volunteer beautification activities, etc.
NAMA/MRV Capacity Building Course (B)*		
23 August–7 September 2012	8 participants from Benin (2), Cameroon (1), Guinea (1), Kenya (1), Mozambique (1), Tanzania (2)	Purpose To improve the capacity of the governmental officers in charge of measures against climate change in the target country by setting 'Nationally Appropriate Mitigation Actions (NAMA)'. Cooperating bodies • Osaka Prefecture • Osaka City • Overseas Environmental Cooperation Center, Japan (OECC) • The Kansai Electric Power Co. Inc., etc. Lectures • International Regime to Combat Climate Change: its History and Points • Case Study of NAMAs (Energy-saving appliances, proper waste management, urban traffic control), etc. Facility tours • Mega-solar power plant, etc.
Wastewater Control for the Industrial Parks in Vietnam (preliminary session and training course)*		
(Preliminary session) 29 August–1 September 2012 3 participants from Viet Nam (Training course) 26 November–8 December 2012 11 participants from Viet Nam		Purpose With regard to the measures being taken to address the sharp increase in polluted water from industrial parks in Vietnam, the participants will learn: 1) The necessity of appropriate management procedures and technologies; 2) The roles and the duties of the people concerned in industrial parks for water discharge management; 3) Appropriate skills for water discharge management in industrial parks. Cooperating bodies • Shiga Prefecture • Kobe City • Ikaruga Milk Co. Ltd. • OM Industry Co. Ltd. • Sanicon Co. Ltd. • Toyo Screen Kogyo Co., Ltd. • Fujiwara Industry Co. Ltd. • Kobelco Eco-Solutions Co. Ltd. • Takahashi Metal Industries Co. Ltd. • Hanshin Engineering Co. Ltd, etc. Lectures • Wastewater treatment technologies in Japan • Water pollution control laws and ordinances • Regulations and instructions to the factory Facility tours • Hazardous substances treatment system by electrolytic removal agent • Solid-liquid separation system by wire screen • Wastewater treatment by porous iron hydroxide adsorbent • Wastewater treatment by aeration stirring device

Training period	Nationality of participants	Main course contents
Countermeasure against Automobile Pollution in Urban Area*		
28 September–14 November 2012	8 participants from Botswana (1), Ghana (2), Kosovo (2), Mongolia (2), Philippines (1)	Purpose To formulate & implement automobile pollution prevention plans etc. in target countries to resolve air pollution problems caused by city-based vehicles from the dual perspectives of environmental countermeasure technologies & urban transport policies. Cooperating bodies • Osaka City University • Osaka City • Ministry of Land, Infrastructure, Transport and Tourism • Hyogo Prefectural Police • Japan Automobile Federation (JAF) • Japan Vehicle Inspection Association (VIA) • Hanshin Expressway Co. Ltd. • Mitsubishi Fuso Truck and Bus Corporation • Osaka Toyota Motor Corporation • Kimoto Electric Co. Ltd. • Suuri-Keikaku Co., Ltd. etc. • Osaka Environmental Technology and Research Co. Ltd. Lectures / Practices • Countermeasures against automobile pollution • Physico-chemical characteristics of particulate matter (PM2.5 etc.) • Urban transport & the environment • Traffic noise measurement and analysis • Simplified passive sampling measurement • Atmospheric dispersion simulation • Drivers' education (practical exercise in eco-driving), etc. Facility tours • Atmospheric continuous monitoring station • Automobile inspection centre • Chassis dynamometer • Traffic control centre • Case study of a traffic demand management (TDM), etc.
Waste Effluent Pollution Control Caused by Mining and Manufacturing Industries for Central and South America*		
15 November–14 December 2012	16 participants, from Argentina (3), Columbia (3), Cuba (3), Peru (3), Venezuela (4)	Purpose To draw up effective solutions and policies to mitigate environmental destruction and pollution in relevant countries, caused by hazardous substances contained in effluent from mining and manufacturing industries. Cooperating bodies • Osaka City Environment Bureau • Osaka City Public Works Bureau • National Institute for Minamata Disease • Japan Oil, Gas and Metals National Corporation (JOGMEC) • International Institute for Mining Technology (MINETEC) • Kwansei Gakuin University • Taiyo Manufacturing Co. Ltd. • Kosaka Smelting and Refining Co. Ltd. • Mitsubishi Materials Techno Co. Ltd. • Sumitomo Metal Mining Co., Ltd. • Mitsui Kushikino Kozan Co. Ltd. • Kanden Geo-Re Inc, etc. Lectures • Pollution control for hazardous materials • Soil contamination control measures • Industrial wastewater control • Mine safety laws, etc. Facility tours • Former Matsuo Mine effluent neutralizing plant • Wastewater treatment in the metal plating factory • Sewage treatment plant • Contaminated soil purification and regeneration plant • Hishikari mine, Kushikino mine, etc.

Countermeasure against Automobile Pollution in Urban Area

Study tour of a traffic control centre

Waste Effluent Pollution Control Caused by Mining and Manufacturing Industries for Central and South America

Field trip to Kushikino Mine

Follow-up Seminar
Held in countries where Network membership is high, the theme of each seminar is intended to reflect the specific needs of that country. These seminars were previously known as 'One Day Seminars' until 2008.

- Thailand & Philippines (March 1999)
- Malaysia & Viet Nam (January 2000)
- Indonesia (February 2001)
- Egypt (March 2002)
- Thailand (March 2005)
- Cuba (March 2007)
- Philippines (March 2008)
- Indonesia (March 2009)
- Peru (February 2010)
- Viet Nam (March 2011)
- Mongolia (March 2012)
- Mexico (March 2013)

GEC Networking Project for Former Training Course Participants

Since 1998, GEC has established GEC network of overseas trainees to follow up on JICA training and to accurately understand the needs of developing countries. We have strengthened this network by exchanging information through an email newsletter 'Connect the World' for our members (individuals who have completed our training) as well as by holding follow-up seminars*.

Follow-up Seminar in Mexico City

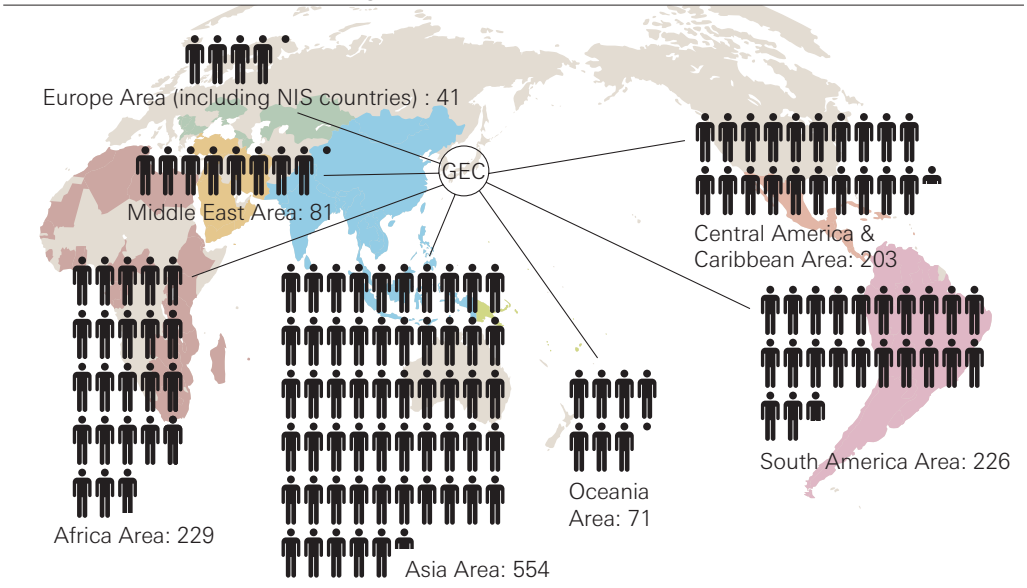
With regard to the fiscal year 2012, we held a follow-up seminar in Mexico in March 2013 with support from JICA. Centring on the activities of former participants who returned to Mexico after receiving the Japan-Mexico Training Programme for the Strategic Global Partnership, the seminar focussed on the overall measures against environmental pollution which have been carried out in the three years since 2010.

Official Presentation of Puebla City Climate Action Plan

The seminar, held in Mexico City on 6 March, was attended by 34 people from Mexico. At the seminar, the former participants gave reports on their activities and members from Japan provided topics related to the recycling system of automobiles which is emerging as a new challenge in waste management. We also had an opportunity to visit Puebla and Querétaro, as well as Mexico City. In Puebla, we visited a sanitary landfill site where the most advanced technologies across Mexico are applied. Thanks to arrangements made by our former participants, we were also able to attend an official press conference (as an investigation team from Japan) on the action plan for measures against climate change in the city of Puebla. We confirmed that our former participants are playing an important role as the city's officials in charge of environment. In Querétaro, we learned that a programme to change over automobile fuel, by using natural gas resources, is expected to be utilised from now on in Mexico. Also, the project to collect methane gas by using organic waste was proceeding well. In the city, we were given the opportunity to meet the president of JICA Alumni Association in Mexico, who suggested that Mexico has great expectations from its joint work with Japan.

GEC will continue to support the sustainable development of developing countries through the above type of follow-up activities.

Network Member Distribution Diagram (As of March 2013)



PR Activities

In the fiscal year 2012, with help from the IETC and concerned people from Osaka City, we carried out PR activities to let citizens in Osaka know of the existence of the GEC and the IETC, and the content of our work.

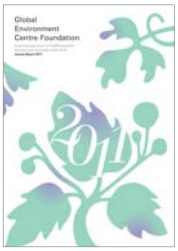
Date	Event	Content	Notes
2–3 June 2012	**Eco Festival Day 2012** Venue: Tsurumi Park (Osaka)	Introduced activities by the GEC and the IETC, collected and posted up environmental messages.	Joint Exhibition
2 July 2012	**JICA overseas trainees and primary school pupils jointly carried out a water quality analysis.** Venue: Meiji Primary School (Osaka)	An exchange between the primary school pupils and JICA overseas trainees through the water quality analysis. Introduction to environmental water issues faced in overseas countries.	Environmental Education
1 August 2012	**Sumiyoshi Eco Festival** Venue: Sumiyoshi Ward Community Centre (Osaka)	Introduced activities by the GEC and the IETC, collected and posted up environmental messages.	Joint Exhibition
9 September 2012	**Tsurumi Ward Festival** Venue: Tsurumi Park (Osaka)	Introduced activities by the GEC and the IETC, collected and posted up environmental messages.	Joint Exhibition
13 October 2012	**ECO Festival 'Garage Sale in OSAKA TOWN'** Venue: Osaka Castle Park	Introduced activities by the GEC and the IETC	Joint Exhibition
2–3 February 2013	**One World Festival** Venue: International House Osaka	Introduced activities by the GEC and the IETC	Joint Exhibition

*'Joint' in the notes means our joint activities with the IETC.

Publications List

Publication Name	Content	Format	Size/pages/ date of publication
Findings of New Mechanisms Feasibility Studies 2011—based on MOEJ/GEC BOCM FS Programme	The outline of the results of the feasibility studies on the new mechanism from the FY2011.	Booklet PDF	A4/62 pages May 2012
MOEJ/GEC MRV Demonstration Study & Feasibility Study Programme on GHG Mitigation Projects in 2012 —for CDM and New Mechanism	The outline of the studies on the JCM and feasibility studies on the CDM, from the FY2012.	Booklet PDF	A4/25 pages November 2012
GEC Annual Report 2011	Report on project of GEC for fiscal year 2011	Booklet PDF	A4/28 pages March 2013

*Publications in PDF format are available on the GEC's website.



GEC Annual Report 2011

Background of the Establishment

Establishment of the UNEP/DTIE/International Environmental Technology Centre

Beginning in the 1960s, Osaka City experienced a series of acute socio-environmental issues on the back of rapid industrialization, such as air, noise and water pollution and land subsidence. The city succeeded in substantially mitigating these problems, however, through the combined efforts of government and industry. Seeking to leverage these experiences for the benefit of others, the Osaka City Government actively cooperated with developing nations to help resolve their environmental problems, such as the formulation of a master plan to address air pollution in Shanghai, China.

In 1990, the International Garden and Greenery Exposition was held in Osaka based on the theme of 'harmonious coexistence between nature and mankind'. In anticipation of this event, Osaka City announced its intention in August of 1989 to invite an international environmental organization to the city as a way of carrying on the spirit of the exposition and taking advantage of Osaka's experience in environmental conservation. The announcement was followed by moves to attract relevant organizations, including an official invitation from Osaka Mayor Masaya Nishio handed to the Executive Director of the United Nations Environment Programme (UNEP) Dr. Mostafa K. Tolba during his visit to Japan.

These efforts culminated in July 1990 with a proposal by Japan's then Prime Minister Toshiki Kaifu at the G7 Summit in Houston to establish a UNEP facility in Japan. In August of the same year, Japan's Ambassador to Kenya Mr. Naohiro Kumagai made a proposal to the 2nd Special Session of the UNEP Governing Council to set up the International Environmental Technology Centre (IETC). In May of the following year, a resolution to establish IETC with the mandate of promoting the adoption, application and operation of Environmentally Sound Technologies (ESTs) in developing countries and countries with economies in transition was unanimously approved at the 16th Session of the UNEP Governing Council. In October 1992, UNEP Executive Director Tolba and Parliamentary Vice-Minister for Foreign Affairs Mr. Koji Kakizawa signed an agreement in Osaka on the founding of IETC in Osaka, which officially commenced operations in April 1994. Since April 2011, IETC operates in Osaka after its two offices were merged into one office.

Note: official positions listed above were current at the dates listed.

Establishment of the Global Environment Centre Foundation

Following the UNEP Governing Council's official decision to establish IETC in Japan, the Osaka City Government set up the UNEP/IETC Osaka Planning Office on 3 July 1991 to investigate IETC's operations and to facilitate the establishment of a support foundation to be launched at the start of 1992.

Following initial preparations by the Planning Office, the Global Environment Centre Foundation (GEC) was launched as a UNEP support entity on 28 January 1992 with a capital endowment from the Osaka prefectural and city governments.

In 2008, GEC subsequently filed an application for change of legal entity from an incorporated foundation to a public interest incorporated foundation on 27 October 2009 in response to the 2008 enforcement of the three laws relating to reform of the public interest corporation system. After receiving the approval of the Prime Minister, GEC made a new start as a public interest incorporated foundation on 1 April 2010.

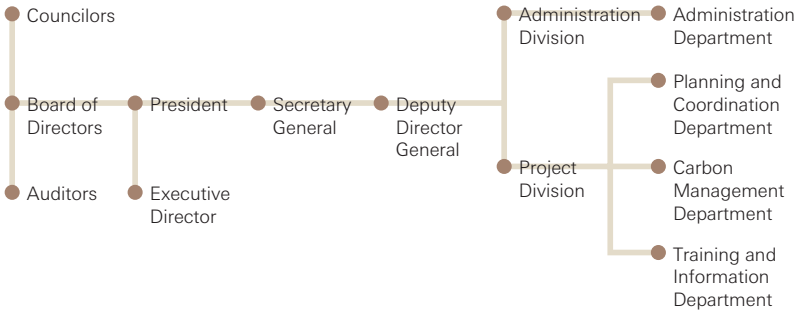
GEC was founded with the aim of contributing to the conservation of the environment in developing nations and around the world by leveraging Japan's wealth of conservation knowledge and experience in support of UNEP's urban environment conservation activities in developing nations, and undertaking activities to promote international cooperation to protect the global environment.

GEC's Activities

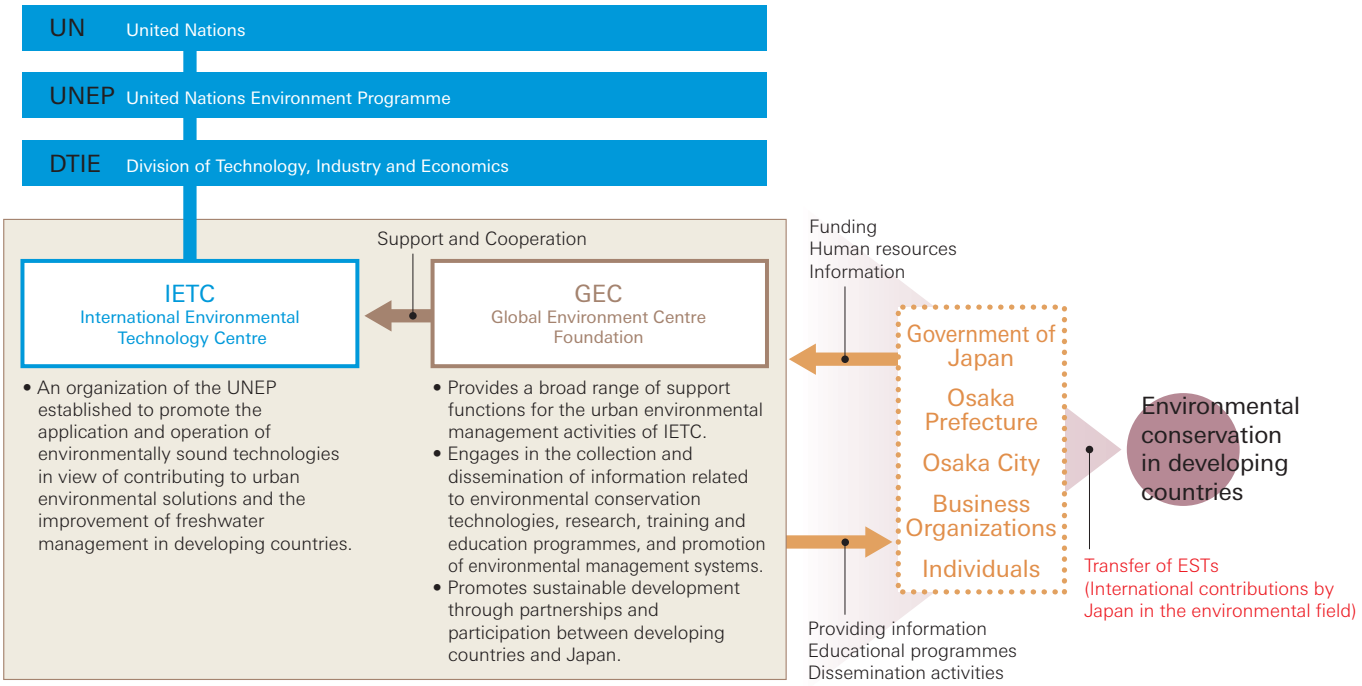
In addition to providing various types of support to IETC such as facility sharing and project collaboration, GEC also acts as an intermediary between IETC and its affiliated institutions in Japan to help ensure that its activities proceed smoothly and efficiently. Through activities to protect the global environment including surveys & research, collection & dissemination of information, and hosting of training & seminars, GEC contributes to Japan's international efforts on the environment.

Name	Global Environment Centre Foundation (GEC)
Date of Establishment	28 January 1992
Supervisory Authorities	Cabinet Office, Government of Japan
Office Location	2-110 Ryokuchi-koen, Tsurumi-ku, Osaka 538-0036 Japan Telephone: +81-6-6915-4121 Facsimile: +81-6-6915-0181
Endowments	1,754,160,000 yen
Activities	(1) Projects in support of UNEP/DTIE/IETC stated aims of technical transfers and spreading information on environmentally sound technologies (ESTs) to promote environmental conservation in major urban areas of developing nations. (2) Collection, dissemination, surveying & research of information on environmental conservation in developing nations & the world as well as global warming countermeasures to promote technical cooperation and foster human resources in developing nations. (3) Other projects required to achieve GEC's stated aims.
Number of Staff	36

Organization Chart



(as of 1 August 2013 / GEC's board of directors is listed on page 20.)



Board Members of the Global Environment Centre Foundation

Councilors	INOUE, Yuichi	Corporate Auditor, The Kansai Electric Power Co., Inc.
	KADO, Yoshihiro	Senior Executive Director - Environmental Management, Department of Environment, Agriculture, Forestry and Fisheries, Osaka Prefectural Government
	KANEKO, Kumao	Chairperson, Japan Council on Energy & Security
	KATAOKA, Shigehiro	Attorney
	KATAYAMA, Toru	Executive Managing Director, Overseas Environmental Cooperation Center
	KUWAHARA,Chika	General Manager, CSR and Environment Department, Osaka Gas Co., Ltd.
	MIZUNO, Minoru	Professor Emeritus, Osaka University
	MORIOKA, Toru	Professor, Faculty of Environmental and Urban Engineering, Kansai University (Professor Emeritus, Osaka University)
	SUZUKI, Yutaka	Director, Institute for Global Environmental Strategies, Kansai Research Centre (Professor Emeritus, Osaka University)
	TSUNO, Motonori	Director General, Kansai International Centre of the Japan International Cooperation Agency
	YAMAMOTO, Hitoshi	Director General, Environment Bureau, Osaka City Government
President	MIYAHARA, Hideo	Professor Emeritus, Osaka University
Executive Director	TAKATA, Hiromu	Former General Manager, Technical Development Department, Osaka Centre, Mitsui & Co., Ltd.
Directors	FUJIWARA, Yukinori	General Manager, Economic Research Department, Kansai Economic Federation
	HARADA, Tomoyo	Lecturer, Kyoto Seika University
	NAKAGAWA, Masataka	Director, Economy and Industry Division, The Osaka Chamber of Commerce and Industry
	OTSUKI, Yoshinobu	Senior Reseracher, Research Institute of Innovative Technology for the Earth
	SOURI, Norio	Professor Emeritus, Osaka City University
Auditors	IWAMOTO, Kenichi	Certified Tax Accountant
	IWATANI, Motoi	Attorney

(as of 1 August 2013, honorific omitted; name in alphabetical order <Surname>)

Overview of the UNEP/DTIE/IETC

Name	United Nations Environment Programme (UNEP) Division of Technology, Industry and Economics (DTIE) International Environmental Technology Centre (IETC)
Agreement	The agreement between Japanese Government and UNEP was signed on 30 October 1992.
Mandate	Promoting the application of environmentally sound technologies (ESTs) in developing countries and countries in transition. Currently IETC focuses on waste management issues.
Contacts	Osaka Office: 2-110 Ryokuchi-koen, Tsurumi-ku, Osaka 538-0036 Japan tel: +81-6-6915-4581 fax: +81-6-6915-0304 e-mail: ietc@unep.org IETC homepage: http://www.unep.org/ietc
Staff (As of 31 March 2013)	Matthew Gubb, Director Surya Prakash Chandak, Senior Programme Officer Mushtaq Ahmed Memon, Programme Officer Ryuichi Fukuhara, Programme Officer Ainhoa Carpintero, Associate Programme Officer John Peter Oosterhoff, Administrative/Fund Management Officer

Activity Report of the UNEP/DTIE/IETC (January–December 2012)

Introduction

In a year of change for IETC, 2011 saw the consolidation of operations in a single office in Osaka, the arrival of a new Director and the refocusing of our work to concentrate on waste management issues. In 2012, IETC forged ahead in its 20th anniversary year with a revitalized programme that builds on its established strengths and anticipates new activities to reflect its leading role within UNEP on waste management. In February 2012, a review of IETC was concluded following extensive consultation with stakeholders, including Japanese Ministries. The resulting 'road map for the future' recommends a range of new activities and measures to improve the effectiveness of IETC, which are now being implemented. A reconstituted IETC International Advisory Board met in Osaka on 7 November for the first time since 2006. The Board provides strategic advice to IETC on its programme and comprises a geographically balanced group of senior policy and technical experts, including ex officio representatives of the host Government.

The report is structured thematically and covers the following activity areas:

Integrated Solid Waste Management

In 2012, IETC has organized an Asia-Pacific regional workshop on ISWM, held in Osaka from 19 to 20 April, and undertaken capacity-building in Cambodia and Vietnam.

The ISWM workshop, and a preceding workshop on the Global Partnership on Waste Management, were attended by around 80 representatives from governments, intergovernmental organizations, research institutes, academia, non-governmental organizations, and the private sector. A number of high-level Japanese experts attended representing the following organizations: Ministry of the Environment, Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry, JICA, Kawasaki City Government, Osaka City Government, Osaka and Kwansei Gakuin Universities, National Institute of Advanced Industrial Science & Technology (AIST), IGES, a-Socca Inc. Japan, Environmental Strategies Inc., National Institute for Environmental Studies (NIES), Global Environment Centre Foundation (GEC), EX Research Institute Ltd, MITSUI & CO. (Thailand) Ltd, ORIX Environmental Resources Management Corporation, Panasonic Corporation, Plantec Inc., Hitachi Zosen Corporation, BGCT Co., Ltd., and Rematec Corporation.

IETC's capacity-building work with Cambodia and Vietnam was funded by the Korea International Cooperation Agency (KOICA) and has assisted the cities of Kampot, Cambodia and Danang, Vietnam, with ISWM planning. Local project teams were trained in tasks relating to waste data, assessment of current waste management systems and gaps, target setting and identification of stakeholders' concerns. IETC's partners for the project were the Cambodian Ministry of Environment and Vietnam Environmental Agency. The final national and dissemination workshops were held on 14 and 16 August 2012 in Phnom Penh and Hanoi respectively.

IETC participated in an ISWM workshop in Ho Chi Minh City, Vietnam, on 16 and 17 February, organized by the City of Osaka. The workshop was attended by major private sector companies from Japan and senior level officials and other stakeholders from Ho Chi Minh City. IETC also provided a resource person to assist with two workshops organized by the United Nations Training and Research Institute (UNITAR) under its local development programme at the 'CIFAL' centre in Jeju, Korea. The first workshop, held from 2 to 4 May addressed 'green growth for local governments' and the second, held from 27 to 29 September IETC will continue to cooperate with UNITAR's CIFAL centre on ISWM trainings and e-learning for eco towns in 2013.

Eco-towns

Closely related to IETC's core work on ISWM, are activities to promote the concept of 'eco-towns' in the Asia-Pacific region, which IETC has undertaken in collaboration with the City of Kawasaki and the Global Environment Centre (Osaka). To date, the focus of IETC's contributions has been in relation to the cities of Bandung, Indonesia, and Penang, Malaysia. IETC co-organized the annual Eco-Business Forum with Kawasaki City, the Japanese Ministry of the Environment and the National Institute for Environmental Sciences in Kawasaki on 8 and 9 February. A workshop to review IETC's eco-town activities to date and prepare a strategy for the next phase was held from 11 to 13 December in Penang, with participation by Japanese partners.

Waste Agricultural Biomass

The conversion of waste agricultural biomass to energy is another priority topic for IETC, established by Governments via UNEP Governing Council decision 26/3. In 2012, IETC initiated a new project in this field in Cambodia and India, which are funded by the Japanese Ministry of Foreign Affairs. The main components of the projects include assessment of waste agricultural biomass in the country and detailed

assessment in selected local areas, identification and assessment of appropriate technologies to convert waste agricultural biomass into energy, implementation of pilot demonstration projects, and sub-regional dissemination of results and experience gained. The project started in mid-2012 and will be completed by March 2013.

Initial capacity building workshops were held in Cambodia and India, from 2 to 4 October and 1 to 3 December, respectively. Over 30 participants in each workshop were trained in applying technologies for converting waste agricultural biomass into energy and in methodologies to assess the sustainability of technologies. The workshop in Cambodia was co-organized by the local project partners, the United National Industrial Development Organization and the Cambodian National Cleaner Production Centre, the Ministry of Industry and Mines, and the Ministry of Environment. The training in India was organized in cooperation with the Birla Institute of Management Technology, the Ministry of Renewable Energy, and the Ministry of Environment. Representatives of industry and academic institutions attended both workshops.

In addition, a regional workshop on the use of waste agricultural biomass took place from 11 to 13 December in Costa Rica. This event was organized by IETC in collaboration with the UNEP Regional Office for Latin America and the Caribbean, with the support of the Ministry of Agriculture and Livestock of Costa Rica, and the Inter-American Institute for Cooperation on Agriculture (IICA). The aim of this workshop was to exchange information and case studies at regional level on potential use of waste agricultural biomass, and to identify common priorities for the region and future actions. IETC guidelines on this topic were translated to Spanish and presented during the event. Another outcome of this workshop was a proposal to undertake a new demonstration project in Costa Rica, which will be initiated in 2013.

In September 2012, IETC published a study on the use of waste palm oil trees in Malaysia, which is composed of a baseline study on the quantity, characteristics and current uses of waste palm trees (WPT) in Malaysia and a techno-economic feasibility study for converting WPT into an energy resource. The results of the study were presented at the International Conference on Biomass for Biofuels and Value-Added Products in Kuala Lumpur, which took place on 23 and 24 October 2012.

Electronic Waste

The major IETC activity on electronic or 'e-waste' in 2012 has been an international multi-stakeholder policy dialogue in Osaka from 18 to 20 July. The focus was public-private sector collaboration to ensure effective management of rapidly growing quantities of e-waste in order to protect the environment and human health and to recover valuable resources. The meeting agreed on a 'call for action' outcome document that was later presented to the African Ministerial Conference on the Environment. There was strong participation from the Japanese private sector, including from Dell Japan Incorporated, DOWA Eco-System Company Limited, EX Research Institute Limited, Hewlett-Packard Japan Limited, Kokusai Kogyo Company Limited, Mitsui and Company (Thailand) Limited, ORIX Eco Services Corporation, ORIX Environmental Resources Management Corporation, Panasonic Corporation, Sharp Corporation, Sustainable System Design Institute, Takase Corporation. In addition, the dialogue was attended by Japanese Government Ministries and by organizations including the National Institute of Advanced Industrial Science and Technology, the Institute for Global Environmental Strategies, the Japan Environmental Sanitation Centre, Kyoto University/United Nations University (StEP Initiative), the National Institute for Environmental Studies and Osaka Sangyo University.

Global Partnership on Waste Management

The activities related to Global Partnership on Waste Management (GPWM) continued in 2012. IETC in March 2012 initiated a new GPWM website and newsletter, two major outreach products that will enhance the visibility of the GPWM and help in broadening its participants' base. The GPWM webpage can be accessed at: http://www.unep.org/gpwm/ and the newsletter. The fourth edition of the newsletter was issued in December. During 2012, the secretariat continued to develop a web-based information platform to support the GPWM and to map international activities and developing country needs on waste management. From 16 to 18 April, IETC organized an Asia-Pacific regional workshop on the GPWM in Osaka in conjunction with the above mentioned ISWM regional workshop.

Two years after the launch of the GPWM, the GPWM held its first biennium conference on 5 and 6 November, in Osaka, Japan. The conference convened around 180 participants from over 40 countries, providing a platform for a growing network in waste management, encouraging exchange of experience and synergies, and creating new momentum to address waste management issues around the world.

Plastics Waste

Implementation of the final activities for the Japanese Ministry of Foreign Affairs-funded project 'Converting Waste Plastics into Fuel' was completed in June. Under the project three technologies for refuse derived fuel, plastic pelletizing and liquid fuel have been implemented and are being monitored in Cebu, Philippines, and in Nakhon Ratchasima and Phitsanulok, Thailand. On 19 April, a dissemination session and panel discussion on the project outcomes was held during the above mentioned Asia-Pacific regional workshop on ISWM.

A proposal for a substantial project supporting the recovery and recycling of packaging waste in Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, and Serbia was prepared in late 2012 and is currently under consultation with potential donors.

Disaster Debris

At the request of and under the sponsorship of the Japanese Ministry of Foreign Affairs, IETC and its colleagues in the UNEP Post-Conflict and Disaster Management Branch, organized an international experience sharing mission to the Tohuku region of Japan from 27 February to 6 March. The mission focused on Japan's management of debris management following the 2011 tsunami and shared experience between local and international experts. The UNEP team comprised nine experts from eight countries including one Japanese expert, with experience spanning the 2004 Southeast Asian tsunami, earthquakes in China and Haiti, Hurricanes Katrina and Rita in the United States, Cyclone Nargis in Myanmar, and the recent Gulf of Mexico oil spill. The mission visited five cities (Miyako, Ofunato, Ishinomaki, Sendai and Soma) and was presented to Foreign Minister Gemba in Fukushima. The mission also visited a Tokyo waste processing facility that is accepting materials from the Tohuku region and met with the Tokyo Metropolitan Government and held a press briefing in Tokyo and a seminar in Osaka. The visit was fully documented in a professional video and still photographs. A report on the mission was presented at the 'Rio+20' conference in Rio de Janeiro, Brazil, on 20 June.

At the request of the Government of Thailand, IETC and the UNEP Regional Office for Asia and the Pacific assisted the Thai Pollution Control Department to develop guidelines for disaster waste management focusing on flooding. IETC worked with local experts in May to develop a draft of the guidelines and provided on-site technical inputs at a landfill demonstration site in Pathum Thani province. IETC assisted Thailand to organize a national workshop in Bangkok on 30 May and 1 June, based on the draft guidelines (now finalized). The second phase of this project will focus on demonstration of the guidelines, training and development of manuals for pilot cities. This UNEP work with Thailand on disaster management has been funded by KOICA.

Technology Compendiums

IETC's technology compendium series was supplemented in September by publications on the recycling and destruction of waste oils and on destruction of healthcare waste. The waste oils publication was reviewed by experts in a workshop in New Delhi at the end of 2011. The healthcare waste technology compendium was the subject of an international experts' workshop in Osaka on 19 and 20 July where it was peer reviewed prior to publication and launched in Seoul on 6 September at the 2012 Global Forum of the International Partnership for Expanding Waste Management Services of Local Authorities (IPLA). Associated products such as technology assessment software and possible follow-up activities are also under development.

In addition, a guidance manual on the application of the sustainability assessment of technologies methodology (SAT) was published in November 2012.

National Waste Management Strategies

IETC, in collaboration with UNITAR, is working on a new initiative to develop guidelines for national waste management strategies. It responds to UNEP Governing Council decisions 25/8 and 26/3 calling on UNEP to support national implementation of integrated waste management and to the Rio+20 call for development of comprehensive national waste management strategies (paragraph 218 of the outcome document, 'The Future We Want'). The guidelines are intended to foster a holistic and overarching approach to national waste management planning. They build upon and cross reference the many valuable materials that have previously been developed to provide technical support for management of individual waste streams or parts of the waste life-cycle, and to support planning in related fields such as chemicals management. The strategy guidelines also take account of recent policy emphases relating, for example, to 'green economy' objectives, linkages between waste management and climate change, and the

potential for greater resource recovery from waste.

Private Sector Participation in Waste Management

There is increasing policy support for waste prevention and resource recovery options that protect the environment and human health while generating green business opportunities and green jobs. Recognizing the importance of private sector involvement in promoting this approach, IETC has initiated the development of guidelines for private sector participation in waste management through a multi-stakeholder process.

Global Waste Management Outlook

IETC, in collaboration with ISWA, is currently developing a project proposal for a 'Global Waste Management Outlook'. This publication would complement and add value to previous publications by establishing standardized policy indicators and benchmarks to allow better comparative analyses of the state of waste management around the world, particularly in relation to policy and resource gaps; engaging a full range of stakeholders using the convening strengths of the United Nations; covering a broader range of waste streams; and presenting data, analyses and recommendations in a form readily accessible for decision makers.

Water and Sanitation

Drawing on its previous water and sanitation programme, IETC will continue activities in this area in connection with the waste management agenda. IETC contributed to a Philippines national workshop on water accounting and efficiency measures in Manila on 27 January. The workshop was organized as part of a project on water management and resource efficiency for green growth in East Asia funded by KOICA and followed up on IETC's 2010 report, 'Water footprint assessment, policy and practical measures in a specific geographical setting.' The workshop was attended by 30 senior officials from key water institutions in the Philippines, including the National Water Resources Board, Manila Water, and the Maynilad Water Academy.

Other Activities

- IETC co-organized the annual Kawasaki Eco-Business Forum and participated in the opening of Kawasaki's eco-tech fair on 10 February.
- IETC participated in the public segment of a trilateral European Union-Japan-United States conference on critical materials, such as rare earths, organized by the Ministry of Economy, Trade and Industry in Tokyo on 28 March.
- IETC participated in a conference on 'fuelling the future with energy efficiency' organized by the International Energy Agency and the Japanese Ministry of Economy, Trade and Industry in Tokyo on 10 May. The conference was organized to assist in preparation of the annual World Energy Outlook report.
- The Japanese Ministry of Foreign Affairs invited IETC to organize a waste management side event on 14 June in the Japan Pavilion at the 'Rio+20' conference in Rio de Janeiro and also, as noted above, to present on 20 June the outcomes of the UNEP international experts' mission to Tohuku. The waste management side event focused on the potential of waste as a resource and the greater engagement of the private sector in waste management in developing countries.
- IETC participated in the 2012 Congress of the International Solid Waste Association in Florence, Italy, from 17 to 19 September. It moderated a session on developing country issues, presented its work on national waste management strategies and private sector engagement and served on the president's panel to conclude the conference.
- On 27 September, IETC presented its work to the eighth meeting of the Basel Convention Open-ended Working Group in Geneva, Switzerland. The aim was to raise the awareness of Basel Parties to the contribution made by IETC to implementation of the Convention.
- UNITAR invited IETC to assist in a training for diplomats in Tokyo on 9 November. IETC presented on the outcomes of Rio+20 from a UNEP perspective.
- From 20 to 23 November, IETC was invited to attend and make a presentation during a workshop of the Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Waste and during the first workshop of the Regional Network for Chemicals and Waste (Project REN). IETC presented its work on e-waste and its support for the training resource package on hazardous waste.
- In June 2012 a general budget committee examined the Japanese Ministry of Environment's support to UNEP As a result, a new committee was formed to review the Ministry's contributions, particularly to

IETC. It met for the first time on 29 October in Tokyo. The UNEP Executive Director and IETC presented its work programme and answered the committee's questions. The second meeting of the review committee was held in Osaka on 17 December. A further four meetings will be held in 2013, concluding in May.

Information and Outreach

Public Outreach

IETC continued to collaborate with its partners, in particular with Osaka City and its supporting foundation, the Global Environment Centre Foundation (GEC). To increase its visibility in Japan, IETC was represented at a series of events in 2012, which are highlighted below.

- IETC participated in the One World Festival in Osaka on 4 and 5 February 2012.
- During the Environment Month in Osaka in June 2012, IETC exhibited panels on its activities at the Eco-Museum Osaka.
- IETC participated in the Eco-Festival Osaka at the Eco-Museum Osaka on 2 and 3 June.
- IETC attended the NTV's eco2012 event from 8 to 10 June 2012.
- IETC attended Osaka Sumiyoshi ward's Eco Festa on 1 August 2012 to introduce IETC's activities.
- IETC attended the Osaka Tsurumi ward's 38th Tsurumi Kumin Festival on 9 September 2012.
- IETC supported an event organized by UNIC for the first-ever International Day of the Girl Child in Tokyo on 8 October.
- IETC participated in the Eco-Festival on 13 October 2012 that was organized by Osaka city at the Osaka Castle.
- IETC attended the UN Day 2012 Public Forum on the topic of 'Post Rio+20—Achieving the future we want', which took place in Tokyo on 24 October 2012.
- Under a new collaboration with Nikon Tokyo in 2012, IETC promoted the UNEP international children's painting competition on the environment.

Information Materials

- The first issue of IETC's new electronic newsletter was published in May 2012 at http://www.unep.org/ietc/IETCNewsletterFebruary2012Short/tabid/79381/Default.aspx
- Policy briefs on IETC's main activity areas are available on the new website at http://www.unep.org/ietc/OurWork/Policybriefs/tabid/104251/Default.aspx on ISWN, Waste Agricultural Biomass, E-waste, Healthcare waste, Waste Oils, Waste Plastic, and GPWM.
- As noted above, a website and newsletter for the GPWM were launched in March, including through a direct e-mailing to over 1,900 recipients. To view these products, please visit http://www.unep.org/gpwm.
- IETC information materials available in Japanese include:
  東北の地震と津波による瓦礫の処理に関する知見共有のための国際専門家ミッション (International Experience Sharing 'Management of Debris Created by the Tohoku Tsunami')
  http://www.unep.or.jp/japanese/spc/news-Mar12.asp
- ワン・ワールド・フェスティバル2012への参加：(One world festival in Osaka) 2012年2月4・5日(土・日)：大阪国際交流センター http://www.unep.or.jp/japanese/ws/news-Feb04-2012-rpt.asp

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