

Global Environment Centre Foundation

Annual Report 2015



1 Foreword

International Cooperation: Technical Support for Developing Countries

- 2 Support for the Activities of the UNEP International Environmental Technology Centre to Promote Environmentally-appropriate Technologies
- Support for Organising the IETC International Workshop on Waste Management
 - Information Dissemination on UNEP IETC’s Activities
- 3 Projects Commissioned by UNEP IETC
Projects Commissioned by UNEP DELC
Projects Commissioned by Chemicals and Waste Branch of UNEP DTIE
Support Project for Expanding Business Areas (Promotion Project for Encouraging Local Innovation)
- 4 Project to Introduce/Transfer Environmentally-sound Technology to Penang, Malaysia
- Support for the JICA Project: Promotion of Adequate Treatment Technology of Mercury Contained Waste in Penang, Malaysia
- 5 JICA Partnership Programme
- A Pilot Project for the Waste Separate Collection in Vientiane, Laos:
‘Project for Assistance to Develop an Effective Waste Utilization System with Citizen Cooperation in Vientiane Capital, Lao PDR’

Studies and Other Related Activities for Global Environmental Issues

- 6 – Joint Crediting Mechanism (JCM)
Support Programme Enabling “Leapfrog” Development in FY2015
- Financing Programme for JCM Model Projects
 - Collaborative Financing Programme with JICA and Other Concerned Organisations
- 8 Operation of the Financing Programme for JCM Model Projects in FY2014
- 9 Project Planning Studies (PS) for JCM Projects
- 11 Programme to Promote Participation in Projects with JCM Financial Support
- 12 Dissemination of Information on Climate Change Countermeasures
- 13 Feasibility Studies for JCM Projects
- Feasibility Studies on Supporting the Development of a Low-Carbon City through Cooperation between Ho Chi Minh City and Osaka City
 - Feasibility Study for Developing a Low-Carbon Historic City Based on City-to-City Cooperation between Vientiane Capital and Kyoto
- 18 Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries
- 19 Osaka JCM Network Project

Training in Environmental Technology

- 20 Human Resource Developments in Developing Countries
- Japan International Cooperation Agency (JICA) Group Training Project
 - GEC Networking Project for Former Training Course Participants

Overview of the Global Environment Centre Foundation

- 22 Background of the Establishment
- 23 Outline

References

- 24 Board Members of the GEC
Overview of the UNEP IETC

Foreword

The 21st Session of the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) was held in Paris, France, between the end of November and the beginning of December 2015. During the conference, all of the participating countries and regions agreed to adopt the Paris Agreement, a new framework on the global warming initiatives for the years following 2020. This agreement signifies the unanimous recognition, among the developed and developing countries alike, that working on the issues related to global warming is one of the most urgent challenges for humanity in the 21st century.

The Government of Japan has submitted its target for 2020 and the years thereafter to the Secretariat of UNFCCC, in which it has pledged to achieve by FY2030 a reduction of greenhouse gas (GHG) emissions by 26% over those in FY2013. This target, together with the measures necessary to achieve it, has been established in the Plan for Global Warming Countermeasures, and the country is gearing toward implementing a concerted effort to accomplish this goal. Meanwhile, the Paris Agreement has included the use of market mechanisms, such as the Joint Crediting Mechanism (JCM), which the Government of Japan is pursuing. Thus, the JCM has been incorporated into The Plan for Global Warming Countermeasures in order to serve as a means for Japan to achieve its target.

As the JCM is developed and implemented to make a significant contribution to the mitigation of global warming through the introduction of advanced low-carbon technologies in developing countries, we, the Global Environment Centre Foundation (GEC), should strengthen our efforts in this area.

GEC is supporting companies' efforts to promote global warming countermeasures in developing countries through its endeavours in operating and managing diverse programmes sponsored by the Ministry of the Environment of Japan (MOEJ). Our supports that come under these programmes include Financing Programme for JCM Model Projects for supporting projects in developing countries to promote the registration of projects under JCM, JCM Financing Programme for REDD+ Model Projects for pursuing GHG emission reductions through forest protection activities, and Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries for modifying Japanese low-carbon technologies in order for them to be adopted in developing countries. Elsewhere, working with municipalities of Osaka and Kyoto as well as with other local authorities and businesses, GEC has been pursuing studies on the exportation of Japanese low-carbon technologies through inter-city collaborations with Ho Chi Ming City in Vietnam and the Laotian capital of Vientiane City.

GEC is also proactively engaged in other projects, such as: planning and organising international workshops on waste management for the 'Support Projects to the United Nations Environment Programme (UNEP) International Environmental Technology Centre (IETC)'; providing training for the 'Capacity Building Projects in Developing Countries' concerning waste and effluent management; and organising networking and coordination for businesses in the 'Promotion projects for 'Encouraging Local Innovation' commissioned by Osaka City Government, JICA, and the Kansai Bureau of Economy, Trade and Industry, respectively. One of GEC's major objectives is to earn and nurture long-lasting trust of local communities through these support activities for developing countries.

GEC will continue its efforts for international environmental cooperation with developing countries, and strives to be an indispensable player in the Kansai region. By broadening our perspectives both within Japan and worldwide, we aim to make worthwhile global warming countermeasures, drawing on our specialist knowledge and expertise as well as our national/international networks.

Your continued understanding and support of GEC activities is much appreciated.



August 2016

SUZUKI, Naoshi
President
Global Environment Centre Foundation

Support for the Activities of the UNEP International Environmental Technology Centre to Promote Environmentally-appropriate Technologies

GEC was commissioned by the Osaka City Government to conduct the FY2015 Supporting Project for United Nations Environment Programme (UNEP) International Environmental Technology Centre (IETC). GEC conducted the planning and implementation of international workshops in Osaka City, and supported the planning/operation of cooperation projects including public relation's activities between the Osaka City Government and UNEP IETC.

Furthermore, in FY2015, GEC accepted commissions from other UNEP bodies, such as the Division of Environmental Law and Conventions (DELCO) and the Division of Technology, Industry and Economics (DTIE) Chemicals and Waste Branch, and thereby undertook a total of seven waste-management projects. As these projects are relevant to IETC's key initiative – the Integrated Waste Management Programme – GEC was particularly proactive in pursuing them as part of its support of IETC projects.

Support for Organising the IETC International Workshop on Waste Management

• “International Conference on Waste Management 2015 in Osaka”

GEC participated in organising and supporting the UNEP IETC's International Conference on Waste Management, which was held in Osaka between 16 and 18 December 2015. The conference had approximately 80 participants, including government officials and representatives of international institutions, non-governmental organisations and academic bodies from over 27 countries in Asia, Africa, Latin America and the Caribbean Region. Along with the event programmes, various IETC workshops and committee meetings were held, as detailed below. During the meetings, the participants engaged in sharing information, and held discussions on various waste-management initiatives conducted by UNEP IETC and by each country and municipality.

- Second Workshop for the Preparation of Guidelines for Developing Framework Legislation on Integrated Waste Management (16–18 December)
- International Advisory Board (IAB) for IETC (17 December)

In tandem with the main programme, a technology exhibition was organized by seven corporations and organisations based in Osaka to showcase their environmental technologies and initiatives.

The three-day international conference on integrated waste management provided the companies in Osaka and the Kansai region with a good opportunity to expand their business operations in Asia and to develop new networks with the international participants.

Information Dissemination on UNEP IETC's Activities

GEC engaged in the following Public Relations (PR) activities for IETC:

- Preparing the Japanese version of UNEP IETC monthly reports (from the April 2015 issue to the February 2016 issue)
- PR activities through participation in the “Eco-Ennichi 2015” event (held in Osaka on 22 September 2015)
- PR activities at the One World Festival (held in Osaka on 6–7 February 2016)

GEC's PR activities included the publication of IETC's monthly report in the Japanese language. As well as leveraging their content, we also engaged in the promotion of GEC activities at environment-related events and international conferences.



Second Workshop for the Preparation of Guidelines for Developing Framework Legislation on Integrated Waste Management



PR activity at “Eco-Ennichi 2015”

Projects Commissioned by UNEP IETC

GEC pursued the organisation of the following workshops and meetings as a commission by UNEP IETC (the meetings were held as part of the aforementioned International Conference on Waste Management 2015 in Osaka, commissioned by the Osaka City Government):

- Regional Workshop on Environmentally Sound Management (ESM) of Mercury Waste (16–17 December 2015)
- Regional Workshop on Minamata Initial Assessment (MIA) (16–18 December 2015)
- GPWM Steering Committee meeting for the Global Partnership on Waste Management (GPWM) (16 December 2015)



Regional Workshop on Environmentally Sound Management (ESM) of Mercury Waste

Projects Commissioned by UNEP DELC

GEC pursued the following meetings commissioned by the UNEP DELC:

- Montevideo Programme Environmental Law Seminar: Law to regulate air pollution and protect Earth's atmosphere (held in Osaka on 23–24 June 2015)
- Workshop for developing guidelines for Framework Law on Waste (held in Osaka on 25–27 August 2015)



Montevideo Programme Environmental Law Seminar

Projects Commissioned by Chemicals and Waste Branch of UNEP DTIE

GEC supported organising the following meetings, and provided logistic assistance, as a commission by the Chemicals and Waste Branch of the UNEP DTIE:

- Organisation of Workshop on Sound Management of Used Lead Acid Batteries (held in Osaka on 26–27 November 2015)
- Workshop and High Level Meeting on Sound Management of Used Lead Acid Batteries (held in Guatemala on 24–25 February 2016)



Workshop on Sound Management of Used Lead Acid Batteries

Support Project for Expanding Business Areas (Promotion Project for Encouraging Local Innovation)

Since May 2013, GEC and the Kansai Bureau of Economy, Trade and Industry, Japan (METI KANSAI) have jointly acted as the secretariat of the Kansai-Asia Environmental and Energy Saving Business Promotion Forum (Team E-Kansai).

In FY2015, GEC solely took charge of the secretariat of Team E-Kansai, and, as a government-commissioned project, based on the outcomes accumulated by the activities of Team E-Kansai, supported Japanese enterprises who possessed excellent environmental and energy-saving technologies to create pioneering projects in Asia and tackled enhancing of international networks to transplant environmental technologies to developing countries.

(1) Activities in key areas

For this project, we designated China (Guangdong and Liaoning Provinces), Vietnam, Thailand and Indonesia as key areas, and developed frameworks for cooperation with their local governments and business associations. By strengthening the bilateral public-private partnerships, GEC also pursued business matching, coordinator-driven follow-ups and other support initiatives for individual businesses.



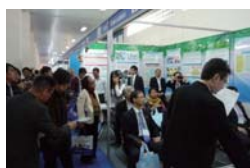
Seminar at the Biwako Environmental Business Exhibition 2015 (in Shiga Prefecture)



The Liaoning Environmental Protection Industry Association and Team E-Kansai signing the MOU (in Tokyo)



The Nanhai Environmental Protection Industry Association and Team E-Kansai signing the MOU (in Guangdong Province, China)



Business presentation in the joint booth at VIETWATER 2015 (in Hanoi)



The environmental technology presentation event (in Jakarta)

| | |
|-----------|--|
| Japan | <ul style="list-style-type: none"> • Held the 'Environmental Business Exchange with the Liaoning Environmental Protection Industry Association' (25 May 2015, Osaka) • Held the Networking Café for Indonesia (16 July 2015, Osaka) • Held the 'Environmental Business Exchange with the delegation from Guangdong Province' (24 August 2015, Osaka) • Held the 'Environmental and Energy-Saving Business Promotion Seminar for Cambodia' (29 September 2015, Osaka) • Held individual consultations with the coordinators for Thailand and Vietnam (30 September 2015, Osaka) • Organised a seminar at the Biwako Environmental Business Exhibition 2015 (23 October 2015, Shiga Prefecture) • Held individual consultations with the coordinators for Guangdong Province, China (12 November 2015, Osaka) • Participated in the 9th Japan–China Energy Conservation and Environment Forum (28–29 November 2015, Tokyo) • Held the '1st Workshop on Domestic Wastewater Treatment in Viet Nam' (9 February 2016, Osaka) • Held individual consultations with the coordinators for Thailand and Vietnam (18 February 2016, Osaka) • Held individual consultations with the coordinators for Indonesia (1 March 2016, Osaka) |
| China | <ul style="list-style-type: none"> • Held the Networking Café for Liaoning Province, China together with the Japan–China Environmental Business Talk (13–14 October 2015, Shenyang) • Supported to the 'Osaka-Shanghai Environment and Energy-saving Technology Forum' (4 November 2015, Shanghai) • Held the 'Environment and Energy-saving Workshop' for Guangdong Province (16 March 2016, Guangzhou) |
| Vietnam | <ul style="list-style-type: none"> • Provided an exhibition at VIETWATER 2015 (25–27 November 2015, Hanoi) • Held a Networking Café in Hanoi (26 November 2015) |
| Thailand | <ul style="list-style-type: none"> • Held the First Networking Café in Bangkok (3 June 2015, Bangkok) • Held the Second Networking Café in Bangkok (22 October 2015, Bangkok) |
| Indonesia | <ul style="list-style-type: none"> • Indonesia kickoff event • Held a Networking Café in Jakarta (2 September 2015, Jakarta) • Organised an environmental technology presentation event in Indonesia (3 September 2015, Jakarta) |
| Malaysia | <ul style="list-style-type: none"> • Held a round-table meeting with Penang State government officials, with attendance of the Penang State Minister for the Environment (15 October 2015, Penang State) |
| Cambodia | <ul style="list-style-type: none"> • Implemented a local investigative expedition in Cambodia (5–11 July 2015, Phnom Penh and Siem Reap) • Conducted a follow-up of the above expedition (7–9 February 2016, Phnom Penh) |

(2) Information dissemination through Team E-Kansai platform

Utilizing public information tools of Team E-Kansai, GEC published various kinds of information to the public through e-mail magazines and web sites, including notices about dispatch of business missions, hosting seminar, workshops and other events, as well as notices of activities organised by affiliate institutions, survey reports and needs information on environmental and energy-saving issues and public calls for support projects provided by public institutions.

Project to Introduce/Transfer Environmentally-sound Technology to Penang, Malaysia

Support for the JICA Project: Promotion of Adequate Treatment Technology of Mercury Contained Waste in Penang, Malaysia

As part of its long-term partnership with Penang State Government of Malaysia, GEC played a significant role in coordinating between local bodies and Japanese counterpart (Implementer: Nomura Kohsan Co. Ltd.), and also took part in a local expedition. Furthermore, GEC provided support on training programmes planned to be held in Osaka, Japan in 2016.



Kick-off meeting

**A Pilot Project for the Waste Separate Collection in Vientiane, Laos:
'Project for Assistance to Develop an Effective Waste Utilization System with
Citizen Cooperation in Vientiane Capital, Lao PDR'**

In Vientiane, the capital of Lao PDR, a recent survey estimates that 350 to 650 tonnes of waste is generated daily. However, only about 30% of this waste is appropriately collected and disposed of, giving rise to the dire need for an effective waste collection/transportation system. Meanwhile, Vientiane Capital has only one final disposal site for waste. Thus, efforts are being made to promote the awareness of the 3Rs (reduce, reuse and recycle) among citizens. In the city centre, where the waste collection works better than elsewhere, recycling through the separate collection is being encouraged.

The project aims to promote the appropriate knowledge about waste treatment among the citizens in the urbanized area of Vientiane Capital, and to develop a waste management system that allows for the effective use of resources through citizen participation. In collaboration with Kyoto City, the project was adopted in June 2015 as a "JICA Partnership Programme", and was scheduled to be implemented between November 2015 and March 2018.

The main programmes include field survey, technical assistance, and training in Japan for the following purposes: 1) the development of a waste separation/transportation system, in collaboration with the citizens and business sector; 2) the development of an effective waste utilization system for separated waste; and 3) public participation to promote waste reduction and at-source separation sustainably by citizens.

The project also encompasses the continuation and expansion of studies on the effective use of waste, which form part of the Feasibility Studies for a Large JCM Project in Vientiane, and have been jointly conducted by GEC and Kyoto City since FY2014. GEC will continue to pursue this project, as we develop good collaborative relationships with our local counterparts.

In August of 2015, we embarked upon a preparatory survey for the commencement of the project. On 4 September, a memorandum of understanding (MOU) concerning the project operations was signed in Lao PDR, and the project was fully started on 3 November. To commemorate this occasion, a signing ceremony of the MOU on the city-to-city environmental cooperation between Kyoto City and Vientiane Capital took place on the same day at the Kyoto City Zoo, with the participation of the mayors of both cities. In the following December, GEC held a kickoff seminar and workshop in Vientiane, and then conducted a field survey in the ancient capital Luang Prabang from January to February 2016, to study some advanced cases in the completed waste management projects there. In Vientiane, then pilot areas in the city for the waste separate collection initiative were selected. In March, four representatives of our local counterparts were invited to Japan, where they learned about Kyoto City's waste management policies and administration, examples of waste treatment, and citizen-led promotion activities.

As the project is scheduled to be completed in March 2018, the GEC's objective is to start a trial waste separate collection programme during the remaining period.



'Waste pickers' who collect PET bottles and other resources in the final disposal sites



MOU signing between Vientiane Capital and Kyoto City to mark the commencement of the project

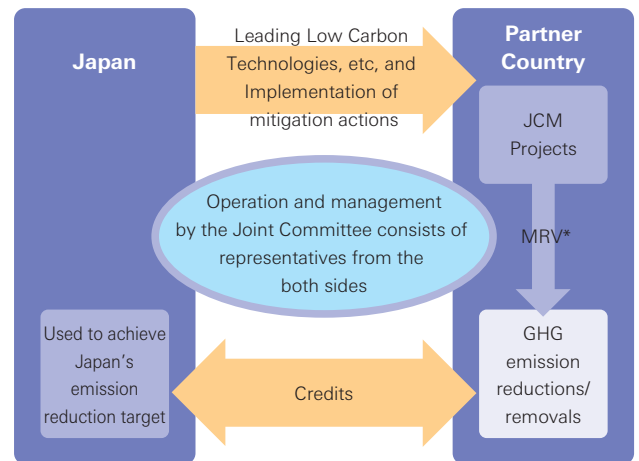
Joint Crediting Mechanism (JCM)

GEC implements various activities to support JCM promoted by the Government of Japan. JCM is a mechanism based on bilateral agreements between Japan and developing countries to disseminate GHG mitigation technologies, products, systems, services and infrastructures, then the amount of GHG emission reduction and removal is subsequently evaluated in a quantitative manner as Japan's contributions as well as incorporated into Japan's target for GHG emission reduction. At present, the following 16 countries have officially adopted the JCM: Mongolia, Bangladesh, Ethiopia, Kenya, the Maldives, Vietnam, Lao PDR, Indonesia, Costa Rica, Palau, Cambodia, Mexico, Saudi Arabia, Chile, Myanmar and Thailand.

MOEJ implements several programmes including financing programmes, in order to support various projects under JCM, as well as formulation and finding of such project. GEC is commissioned by MOEJ to serve as an agency or a secretariat to manage the above mentioned MOEJ programmes.

Basic concepts of the Joint Crediting Mechanism (JCM)

- Facilitating diffusion of leading low carbon technologies, products, systems, services and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries;
- Appropriately evaluating contributions from Japan to GHG emission reductions or removals in a quantitative manner, and use them to achieve Japan's emission reduction target;
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GHG emission reductions or removals.



*measurement, reporting and verification

Support Programme Enabling "Leapfrog" Development in FY2015

Financing Programme for JCM Model Projects

GEC has been assigned by MOEJ as an agency to implement the Financing Programme for JCM Model Projects, which forms a part of the Support Programme Enabling "Leapfrog" Development, implemented by the MOEJ. GEC will conduct the Financing Programme from FY2015 to FY2017.

With the Financing Programme GEC subsidise projects installing necessary facilities under JCM, after confirming the completion of facility installation, and settling the relevant expenses. Then the projects will be registered as JCM projects which operate the installed facilities to reduce GHG emissions, and then the amount of reduction will be converted into JCM credits.

GEC held public calls for proposals of JCM Model Project twice in FY2015. The applications were reviewed by GEC through document assessments and interviews with each applicant, followed by consultation between MOEJ and GEC to finalise the selection process. GEC will manage the progress of the selected projects after contracts of finance are made between GEC and selected applicants, execute the delivery of subsidies, and administrate the subsidies that are dispensed.

List of projects selected in first public call FY2015

| No. | Partner Country | Representative Participant | Title |
|-----|-----------------|---|--|
| 1 | Bangladesh | Toyota Tsusho Corporation | Installation of High Efficiency Loom at Weaving Factory |
| 2 | Bangladesh | YKK Corporation | Introduction of PV-diesel Hybrid System at Fastening Manufacturing Plant |
| 3 | Cambodia | Minebea Co., Ltd. | Introduction of High Efficiency LED Lighting Utilizing Wireless Network |
| 4 | Indonesia | Mitsubishi Plastics Inc. | Introduction of High Efficiency Once-through Boiler System in Film Factory |
| 5 | Indonesia | NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. | Installation of Cogeneration System in Hotel |
| 6 | Indonesia | NTT FACILITIES, INC. | Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller |
| 7 | Indonesia | NTT FACILITIES, INC. | Energy Saving for Industrial Park with Smart LED Street Lighting System |
| 8 | Indonesia | NTT FACILITIES, INC. | Energy Saving for Office Building with High Efficiency Water Cooled Air-Conditioning Unit |
| 9 | Indonesia | Takasago Thermal Engineering Co., Ltd. | Energy Saving by Utilizing Waste Heat at Hotel |
| 10 | Mexico | Mitsubishi Hitachi Power Systems, Ltd. | Domo de San Pedro II Geothermal Power Generation |
| 11 | Mexico | ThyssenKrupp Uhde Chlorine Engineers (Japan) Ltd. | Energy Saving by Converting from Hg-Cell Process to Ion-exchange Membrane Process at Chlorine Production Plant |
| 12 | Myanmar | JFE Engineering Corporation | Introduction of Waste to Energy Plant in Yangon City |
| 13 | Thailand | FamilyMart Co., Ltd. | Energy Saving at Convenience Stores with High Efficiency Air-Conditioning and Refrigerated Showcase |
| 14 | Thailand | PACIFIC CONSULTANTS CO., LTD. | Introduction of Solar PV System on Factory Rooftop |
| 15 | Thailand | Sony Semiconductor Corporation | Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor |
| 16 | Thailand | Toray Industries, Inc. | Reducing GHG Emission at Textile Factory by Upgrading to Air-saving Loom (Samutprakarn) |
| 17 | Viet Nam | NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. | Introduction of High Efficiency Air-conditioning in Hotel |
| 18 | Viet Nam | Ricoh Company, Ltd. | Energy Saving in Lens Factory with Energy Efficient Air-Conditioners |

The projects listed on No. 15 and 17 above have been completed and inspected through on-site and documentation review. The representative participants of the projects listed on No. 5, 8, 9, and 11 have withdrawn their applications before the conclusion of contracts of finance, while the project listed on No. 10 was abolished after the conclusion.

List of projects selected in second public call FY2015

| No. | Partner Country | Representative Participant | Project Title |
|-----|-----------------|--|---|
| 1 | Bangladesh | EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO., LTD | Installation of High Efficiency Centrifugal Chiller for Air Conditioning System in Clothing Tag Factory |
| 2 | Bangladesh | PACIFIC CONSULTANTS CO.,LTD. | 50MW Solar PV Power Plant Project |
| 3 | Cambodia | Asia Gateway Corporation | Introduction of Ultra-lightweight Solar Panels for Power Generation at International School |
| 4 | Ethiopia | PACIFIC CONSULTANTS CO.,LTD. | Introduction of Biomass CHP Plant in Flooring Factory |
| 5 | Indonesia | Sharp Corporation | 1.6MW Solar PV Power Plant Project in Jakabaring Sport City |
| 6 | Indonesia | Sumitomo Rubber Industries, Ltd. | Introduction of High Efficiency Once-through Boiler in Golf Ball Factory |
| 7 | Indonesia | TOYOT A TSUSHO CORPORATION | Installation of Gas Co-generation System for Automobile Manufacturing Plant |
| 8 | Kenya | PACIFIC CONSULTANTS CO.,LTD. | 6MW Small Hydropower Generation Project in Rupingazi |
| 9 | Kenya | PACIFIC CONSULTANTS CO.,LTD. | Introduction of Solar PV System at Salt Factory |
| 10 | Mongolia | Farmdo Co., Ltd. | Installation of 2.1MW Solar Power Plant for Power Supply in Ulaanbaatar Suburb |



No.15: Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor (Chiller)



No.15: Energy Saving for Semiconductor Factory with High Efficiency Centrifugal Chiller and Compressor (Compressor)



No.17: Introduction of High Efficiency Air-Conditioning in a Hotel (units installed in the guest rooms).



No.17: Introduction of High Efficiency Air-Conditioning in a Hotel (outdoor air-processing units installed in the terraces).

| No. | Partner Country | Representative Participant | Project Title |
|-----|-----------------|---|---|
| 11 | Mongolia | Sharp Corporation | 10MW Solar Power Project in Darkhan City |
| 12 | Saudi Arabia | KANEMATSU CORPORATON | Introduction of High Efficiency Electrolyzer in Chlorine Production Plant |
| 13 | Thailand | Inabata & Co., Ltd | Energy Saving for Air-Conditioning in Tire Manufacturing Factory with High Efficiency Centrifugal Chiller |
| 14 | Thailand | NIPPON STEEL & SUMIKIN ENGINEERING CO.,LTD. | Installation of Co-Generation Plant for On-Site Energy Supply in Motorcycle Factory |
| 15 | Thailand | Sony Semiconductor Corporation | Installation of High Efficiency Air Conditioning System and Chillers in Semiconductor Factory |
| 16 | Vietnam | AEON RETAIL Co., Ltd. | Introduction of Solar PV System at Shopping Mall in Ho Chi Minh City |
| 17 | Vietnam | Hitachi Chemical Company, Ltd. | Energy Saving in Acid Lead Battery Factory with Container Formation Facility |
| 18 | Vietnam | NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc. | Introduction of High Efficiency Electric Furnace at Foundries |
| 19 | Vietnam | TOTO LTD. | Installation of High Efficiency Kiln in Sanitary Ware Manufacturing Factory |
| 20 | Vietnam | Yuko Keiso Co., Ltd. | Energy Saving in Factories with Air-Conditioning Control System |
| 21 | Vietnam | Yuko Keiso Co., Ltd. | Introduction of Amorphous High Efficiency Transformers in Southern and Central Power Grids |

With all the projects selected through the first and second public calls except one, GEC has made contracts of finance with relevant representative participants. After that each participant has commenced their projects. GEC is monitoring and managing the progress of the projects through periodical meetings and on-site inspections.

Collaborative Financing Programme with JICA and Other Concerned Organisations

As part of the JCM Financing Programme, this programme provides financial support to the projects under the JCM in collaboration with the project supported by concerned organisations such as JICA.

GEC managed the programme in parallel with the financing programme for the JCM model projects. One proposal submitted to the public call for the programme was not selected after deliberations by the advisory panel acting as a selection committee. The budget allocated for the programme was subsequently converged with the financing programme for the JCM model projects.

Operation of the Financing Programme for JCM Model Projects in FY2014

The GEC has been assigned by MOEJ as an agency to implement the Financing Programme for JCM Model Projects from FY2014 to FY2016.

This entails the responsibility to subsidise the projects operating within the JCM framework for a necessary facility installation, to confirm the completion of the work, and to settle the relevant expenses.

Projects for the financing programmes adopted in FY2014

| No. | Host Country | Representative Participant | Project Period | Title |
|-----|--------------|--|---------------------|---|
| 1 | Bangladesh | Ebara Refrigeration Equipment & Systems Co., Ltd | 2 years | Energy saving for air conditioning & facility cooling by high-efficiency centrifugal chiller (Suburbs of Dhaka) |
| 2 | Indonesia | Ebara Refrigeration Equipment & Systems Co., Ltd | Completed in FY2014 | Energy Saving for Textile Factory Facility Cooling by High Efficiency Centrifugal Chiller |



No.1: Energy saving for air conditioning & facility cooling by high-efficiency centrifugal chiller (Bangladesh)

| No. | Host Country | Representative Participant | Project Period | Title |
|-----|--------------|--|----------------|---|
| 3 | Indonesia | ITOCHU Corporation | 3 years | Solar Power Hybrid System Installation to Existing Base Transceiver Stations in Off-grid Area |
| 4 | Indonesia | JFE Engineering Corporation | 3 years | Power Generation by Waste Heat Recovery in Cement Industry |
| 5 | Indonesia | KANEMATSU CORPORATON | 3 years | Introduction of high efficient Old Corrugated Cartons Process at Paper Factory |
| 6 | Indonesia | Toray Industries, Inc. | 3 years | Reducing GHG emission at textile factories by upgrading to air-saving loom |
| 7 | Indonesia | TOYOTSU MACHINERY CORPORATION | 2 years | Energy Saving through Introduction of Regenerative Burners to the Aluminium Holding Furnace of the Automotive Components Manufacturer |
| 8 | Kenya | Ingerosec Corporation | 3 years | Solar Diesel Abatement Project |
| 9 | Malaysia | NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc | 2 years | PV power generation system for the office building |
| 10 | Maldives | PACIFIC CONSULTANTS CO., LTD. | 2 years | Solar Power on Rooftop of School Building Project |
| 11 | Palau | PACIFIC CONSULTANTS CO., LTD. | 2 years | Small-Scale Solar Power Plants for Commercial Facilities Project II |
| 12 | Palau | PACIFIC CONSULTANTS CO., LTD. | 2 years | Solar PV System for Schools Project |
| 13 | Vietnam | Hitachi Zosen Corporation | 3 years | Anaerobic Digestion of Organic Waste for Biogas Utilization at Market |
| 14 | Vietnam | NIPPON EXPRESS | 2 years | Eco-driving by Utilizing Digital Tachograph System |
| 15 | Vietnam | Yuko Keiso Co., Ltd., | 2 years | Introduction of Amorphous high efficiency transformers in power distribution systems |

Regarding Project No. 15 above, we have conducted an interim on-site inspection to verify the current status.

Project Numbers 1, 7, 11, 12, 14, and 15 above have undergone an inspection to verify their completion.

Project No. 13 was not able to establish a prospect for its completion within the allocated time-frame, and this project was therefore terminated.

For all other projects with the execution period of three years, we have either paid out a portion of the allocated subsidies or have forwarded the funding from FY2015 to the FY2016 budget.



No.7: Energy Saving through Introduction of Regenerative Burners to the Aluminium Holding Furnace of the Automotive Components Manufacturer (Indonesia)



No.12: Solar PV System for Schools Project (Palau)



No.14: Eco-driving by Utilizing Digital Tachograph System (Vietnam)



No.15: Introduction of Amorphous high efficiency transformers in power distribution systems (Vietnam)

Project Planning Studies (PS) for JCM Projects

GEC was commissioned the management of a JCM scheme by MOEJ in FY2015 to conduct Project Planning Studies and other tasks for the JCM projects. In this regard, GEC served as the secretariat in selecting the studies/projects and managing progress of those studies and projects conducted by private business operators in JCM partner countries. The studies/projects included project planning studies (JCM PS), feasibility studies (JCM FS), and REDD+ model project (REDD+). GEC was also engaged in the validation and verification support for the JCM model projects.

• Adoption of studies/projects

GEC issued a public call for proposals regarding the following projects/studies targeting private firms in Japan. Through evaluation by the advisory board of experts, a total of 20 studies/projects (10 JCM PS, 8 JCM FS and 2 REDD+ as stipulated below) were adopted.

JCM PSs

| Partner Country | Business Entity | Title | Sectoral Scope |
|-----------------|---|---|-----------------------------|
| Bangladesh | GS Yuasa International Ltd. | Energy saving by utilizing lithium-ion batteries at base transceiver stations in unstable-grid areas | Energy demand |
| Costa Rica | NTT Data Institute of Management Consulting Inc., | Low-carbon project by introducing PV and energy saving equipment in Hotel, Office Building and others | Energy demand |
| Indonesia | Environmental Management and Technology Center (EMATEC) | Energy saving in industrial wastewater treatment for rubber industry | Manufacturing Industries |
| Indonesia | Next Energy & Resources Co., Ltd. | Hybrid Power Generation Project Using Biogas and Solar Power | Waste handling and disposal |
| Lao PDR | Taiheiyo Engineering Corporation | Utilization of agricultural biomass in Cement Kiln | Chemical industries |
| Myanmar | Fujita Corporation | Rice husk power generation in rice mill factory in Ayeyarwady | Energy industries |
| Philippines | Tokyo Electric Power Services Co., Ltd. | Talubin Mini-Hydropower Project | Energy industries |
| Thailand | Mitsubishi Electric Corporation | Saving Energy for station facilities utilizing regenerative energy from trains | Transport |
| Thailand | Nippon Koei Co., Ltd | Energy saving by introducing regenerative energy storage system in Skytrain | Transport |
| Vietnam | Kubota Environmental Service Co., Ltd | Recovery and utilization of biogas from agricultural processing waste in Ninh Binh Province | Waste handling and disposal |

JCM FSs

| Partner Country | Business Entity | Title | Sectoral Scope |
|-----------------|-------------------------------------|--|-----------------------------|
| Cambodia | PricewaterhouseCoopers Co., Ltd. | Installation of high-efficiency chillers in large-scale hotels | Energy demand |
| Chile | Deloitte Touche Tohmatsu LLC Japan | Geothermal Power Generation in the south of Santiago | Energy industries |
| Indonesia | JGC Corporation | Development of District Energy Supply Business by introducing co-generation | Energy industries |
| Indonesia | Nomura Research Institute, Ltd. | Introduction of co-generation and solar power generation systems in large shopping malls | Energy distribution |
| Lao PDR | PACIFIC CONSULTANTS CO., LTD. | Biogas recovery and utilization in tapioca starch factory | Waste handling and disposal |
| Mongolia | PEAR Carbon Offset Initiative, Ltd | Distributed heat supply system using biomass and coal mixture combustion type boiler | Energy industries |
| Thailand | The Kansai Electric Power Co., Inc. | Energy saving by co-generation project in the fibre factory | Energy demand |
| Vietnam | JFE Engineering Corporation | Waste Heat Recovery Power Generation at Cement Factory in Quang Ninh Province | Energy industries |

REDD+ projects

| Partner Country | Business Entity | Title |
|-----------------|-----------------------|--|
| Indonesia | Kanematsu Corporation | REDD+ project in Boalemo District |
| Lao PDR | Waseda University | REDD+ project in Luang Prabang Province through controlling slash-and-burn |



Cacao Nursery, REDD+ Project, Indonesia

• Progress management of the adopted studies/projects

GEC managed the progress of all the adopted studies/projects through field survey reports and monthly reports submitted by business operators, as well as by conducting face to face meetings with them. Out of the two REDD+ projects, GEC accompanied site investigation once during the field survey and inspected the progress of the project.

Additionally, GEC organised a review meeting in



Participants to the review meeting in Indonesia

Indonesia to provide an opportunity for the involved entities to share outcomes and challenges of the JCM-related studies and projects with participation of each private business operators of these projects/studies, representatives from MOEJ, the Ministry of Economy, Trade and Industry of Japan, the Indonesian Governmental Offices and other relevant parties.

- **Support for validation and verification**

GEC was engaged to perform validation and verification by third-party entities (TPE) for those JCM model projects whose methodologies were approved and which are already in operation. Accordingly, GEC prepared 10 reports on validations and 4 on verifications.

Programme to Promote Participation in Projects with JCM Financial Support

GEC were committed/assigned by MOEJ to undertake a promotion of participation to JCM model projects under JCM financing programme. Aiming to boost the number of private operators participating in JCM, GEC disseminated information about the JCM and relevant financing programmes as well as took supportive action for preparation of actual GHG emission reduction projects and promotion of investment to those projects.

(1) Identification of private business operators (individual interviews, etc.)

a. Approaching private business operators

GEC pursued measures to identify enterprises that could be potential operators in JCM financing programme, by focusing mainly on the companies listed on the stock exchange market.

b. Approaching participants through events such as JCM presentations

GEC organised events in order to explain system and financing programmes of the JCM.

c. Approaching private business operators within the participants in GEC's networks

GEC explored own network with private businesses, such as "Osaka JCM Network" and "Team E-Kansai", in order to find new project.

Through these activities, approximately 180 corporations and organisations were identified, with whom GEC then conducted individual interviews.

(2) Follow-ups leading to the project operations

Following the identification of the private business operators who were highly interested in JCM and its financing programmes, GEC conducted additional interviews with these parties and gathered information about whether they had specific project candidates to be considered, and how progressed they were. This information served to determine the potential for commercialisation of those project candidates. In order to realise JCM projects out of them, GEC investigated some of the aspects that were necessary for formulating the project proposal (GHG calculation methods, monitoring plans, etc.).

(3) Organising various information related to JCM projects

a. Organising the information gained through individual interviews

We processed the information in terms of the willingness of the parties to operate projects outside of Japan, and their level of awareness of JCM and its financing programmes.

b. Organising and analysing the information gained through the follow-up measures leading to the project operations

We classified projects with a potential for commercialisation according to their promising nature.

Dissemination of Information on Climate Change Countermeasures

GEC put its website to good use for the purpose of disseminating information about the JCM to a wider audience, and offering examples of its financing programmes for the JCM model projects as well as relevant studies. GEC also organised side events at international conferences and held symposia in Japan.

• Information dissemination through GEC website

In FY2014, GEC installed a dedicated website for JCM projects (in Japanese and English) on GEC website and maintained the same since then. On the site, GEC created special pages for each of the 54 projects that were adopted and/or executed during FY2015, with descriptions of their operators, project overviews, project sites and the expected volume of GHG emissions reduction. Some additions were also made to the website, such as a map-based search engine that covers the projects/studies from FY2013, and a sorting feature on the Projects/Studies page that enables visitors to filter and rearrange the list by countries, years when the projects were conducted, and by sectors.



<http://gec.jp/jcm/>



Open discussion session

• Hosting the Global Warming Countermeasures Symposium 2016

On 17 February 2016, GEC and MOEJ co-hosted the 'Global Warming Countermeasures Symposium 2016: further expansion of JCM projects' aimed at presenting the latest developments in the JCM and reporting on the outcomes of JCM model projects, JCM PSs and JCM FSs. MOEJ delivered lectures to provide updates on JCM initiatives and financing programmes. The operators of the three projects/studies that were adopted in FY2015 (1 JCM Model Project, 1 JCM PS and 1 JCM FS) also gave reports on their respective projects in detail, as well as describing the project's background, plans and future challenges.



Official side event

• Information dissemination at the 42nd UNFCCC Climate Change Talks (SB42)

GEC, jointly with the MOEJ and the Overseas Environmental Cooperation Center, Japan (OECC), held an official side event during the UNFCCC SB42, which took place from 1-11 June 2015, in Bonn, Germany. MOEJ made a presentation on "Recent development of the JCM," while a presentation of the UNFCCC secretariat was "Updates on UNFCCC discussion on market." Participants in the panel discussion included key personnel from JCM partner countries. The event facilitated fruitful discussions among the members, as well as occasional questions from the floor.

At the official booth co-provided by GEC and OECC, GEC exhibited a tapestry poster that conveyed an overview of the JCM. Also, booklets (and their data version stored on USB Flash memory) were made available for distribution.

• Information dissemination at the 21st Session of the UNFCCC Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21)

During the UNFCCC COP21, held between 30 November and 13 December 2015 in Paris, France, GEC organised an official side event, as well as another side event for the Japan Pavilion. GEC also ran an official booth, through which JCM model projects and their relevant studies were introduced to the visitors.

(1) Information dissemination at the official side event

GEC, jointly with the MOEJ and OECC, held an official side event on 11 December. Entitled 'The Joint Crediting Mechanism (JCM): Achievements and the current progress of project implementations', this side event presented Indonesia as one of the panellists representing JCM partner countries, and featured a discussion on the progress and expectations related to the implementation of the JCM. MOEJ delivered a presentation on the latest updates concerning negotiations about the market mechanism.



The official side event floor

(2) Information dissemination at the Japan Pavilion side event

On 7 December, a side event was co-hosted by GEC, the Kansai Economic Federation and the OECC, entitled 'Use of JCM scheme and the development of JCM projects'. This side event was organised with the aim of promoting advanced technology overseas through the JCM, and of disseminating JCM-related information. It took place at the Japan Pavilion, which was run by the Government of Japan during COP21. In addition to the lectures given by the co-hosts, a lecture was delivered by one of the JCM partner countries: Vietnam. This country's Ministry of Natural Resources and the Environment (MONRE) gave a presentation on JCM scheme in Vietnam, and described the progress made by the projects currently in operation. Additionally, the MOEJ gave an overview of JCM scheme and JCM Model Project programme, explaining how the JCM scheme is helping to promulgate superior low-carbon technologies, which facilitate the execution of GHG emissions reduction projects.

(3) Information dissemination at the official booth

The official booth was set up in the official venue of COP21. GEC offered information on the JCM initiatives, with a focus on the financing programme for JCM model projects being managed by GEC. At the booth, GEC prepared and made available a booklet entitled 'The Joint Crediting Mechanism (JCM): Progress of JCM Financing Programme and Feasibility Studies for JCM Projects by MOEJ in 2015'. This detailed each JCM model project, as well as each JCM PS, JCM FS, and REDD+ project.



Side event



The official booth



The booklet

Feasibility Studies for JCM Projects

In response to the 'FSs for JCM Projects for the realisation of a Low-Carbon Society in Asia for FY2015' commissioned by the MOEJ, GEC was engaged as a research secretariat to coordinate and support the development of two JCM projects: one project concerned Ho Chi Minh City in Vietnam and the other concerned Vientiane Capital in Lao PDR.

The work conducted during FY2015 is as follows:

Feasibility Studies on Supporting the Development of a Low-Carbon City through Cooperation between Ho Chi Minh City and Osaka City

Ho Chi Minh City is the largest city in Vietnam, both in terms of its population and its economy. The environmental impact on the city due to rapid urbanisation and economic growth is becoming increasingly serious. It is also said to be one of the most susceptible cities to climate change in the world. Osaka City and Ho Chi Minh City concluded a memorandum of understanding in July 2011 to promote their bilateral cooperation in some major fields (economy, environment and water management). Thereafter, concerted efforts were made to facilitate policy-making dialogues and local workshops, as well as receiving training participants, involving local authorities, private enterprises and research institutions. To expand the two cities' cooperation initiatives to the one that supports the development of a low-carbon city in the areas covering energy-saving and transport services, the following two objectives were set:

- (i) to export Osaka's excellent environmental technology and administrative scheme as a comprehensive system, and to identify and develop large JCM projects as a package
- (ii) to establish a structure to operate, maintain and manage the projects, as well as to help in launching a cooperative organisation for the two cities to support a large-scale rollout of the JCM projects, structurally and systematically, and to create a low-carbon city master plan.

This feasibility study started in FY2013. Its aim is to develop the low-carbon society in Ho Chi Minh City with increasing environmental load, and to facilitate the study as a model case, which will apply to other mega cities facing similar problems. With the aim of realising specific activities as JCM projects for attaining a low-carbon society, GEC paved the way for the development of the large-scale JCM projects by having FSs conducted by private companies with excellent low-carbon technologies. We also ensured the two cities were committed to the projects through the signing of the MOU on Developing Low-Carbon City between Ho Chi Minh City and Osaka City.

Based on this MOU, the Climate Change Action Plan for Ho Chi Minh City 2016–2020 (CCAP 2016–2020) was prepared in FY2015. GEC provided support in the preparation of this action plan, as well as in the implementation of the JCM FSs for three prospective projects that were to be executed in Ho Chi Minh City. Through these and other operations, we worked to strengthen this inter-city cooperation, to further promote public-private partnerships, and to identify and develop new JCM-project cases.

(1) Support for the preparation of the ‘Ho Chi Minh City Climate Change Action Plan’

There is a current CCAP that covers the period of 2013–2015. This plan must be renewed for the next five-year period of 2016–2020. GEC also cooperated with the Osaka City Government to review and update the action plan, following the commencement of the projects in 2013.

More specifically, GEC regularly organised working groups and workshops to discuss and deliberate on the CCAP content, with participation of the Ho Chi Minh City Climate Change Bureau (HCCB) as a major counterpart, and members of the municipality’s relevant sections. We identified the following ten areas in the Ho Chi Minh City that urgently require anti-climate change measures: (i) urban planning, (ii) energy, (iii) roads and transport, (iv) industry, (v) water resource management, (vi) waste management, (vii) construction, (viii) health, (ix) agriculture, and (x) tourism, culture and awareness-raising among citizens. Based on these categories, we prepared a draft of the annual GHG-emission inventories, and considered the emission forecast and specific countermeasures to be taken against climate change.

These considerations were summarised and presented as the CCAP proposal at the International Symposium of the Mayor-level Dialogue on Policy-making, held in November 2015. We are working to ensure that the proposal will be officially adopted in 2016.

(2) Conducting the JCM FSs

GEC conducted the following three JCM FSs, which were included in the CCAP as specific projects. For these JCM FSs, we considered their implementation structures and their financial plans, so that the respective projects could attain the JCM Model Project status. Consequently, two of the projects were adopted as JCM model projects in FY2015.

- **Enhancement of Energy Efficiency in Industrial Parks in Ho Chi Minh City (Operators: Nihon Tepia K.K. and the Panasonic Corporation) [adopted as a JCM model project for FY2015]**

The industrialisation of Ho Chi Minh City is expected to progress, and thus its power consumption is likely to increase. Therefore, a reduction of the city’s consumption is an urgent task. This project aims to help Ho-Chi-Minh-based factories in industrial parks to enhance their energy efficiency by evaluating plant-wide energy-saving schemes, as well as by introducing air-conditioning systems, compressors and other energy-efficient engineering measures.



Joint-city workshop for Osaka and Ho Chi Minh (held in Ho Chi Minh City)

- **Installation of High-Energy-Efficiency LEDs for Streetlights (Operator: Ogawa Denki Co., Ltd.)**

Currently, the roads in Ho Chi Minh City are equipped with 147,000 high-pressure sodium-vapour lamps. A plan is under way to replace these with highly efficient LED lamps, which will thereby lower the power consumption level and reduce the GHG emissions. The project proposes to replace 4,000 sodium-vapour lamps with the LED counterparts as a pilot case, which will pave the way for the subsequent city-wide expansion.

- **Promulgation of Industrial Photovoltaic (PV) Power Generation (Operator: Next Energy & Resources Co., Ltd.) [adopted as a JCM model project for FY2015]**

In order to cater for its growing electricity demands, Vietnam is pursuing the diversification of its energy sources. This includes the enhancement of the country's power-generation capacity and the promotion of the use of renewable energy. PV power generation has some advantages for Ho Chi Minh City: installations can be performed more easily than other renewable energy options (the systems can be mounted on the roofs of existing industrial facilities), and southern Vietnam, where Ho Chi Minh City is located, offers certain geographical advantages such as a sufficient amount of solar radiation and sunlight hours, which presents a great potential for a high volume of energy generation. Therefore, it is highly desirable for PV power generation to be introduced in Ho Chi Minh City. This project, as a pilot case, proposes the installation of a PV system on a large-scale commercial complex to be newly constructed, which will then pave the way toward a city-wide promulgation of PV power generation.

(3) Promoting cooperation among local governments and the public-private partnership

To discover cases for JCM projects, GEC hosted exchange events for local private business operators in Ho Chi Minh City who were interested in becoming involved. Furthermore, through the Team OSAKA consortium (a subordinate body of this initiative), GEC worked to garner more supporters from private corporations and to enhance the public-private partnership to support the implementation of JCM projects.

Specific undertakings included a presentation on the JCM project development to achieve a low-carbon city in Ho Chi Minh City, hosted by the Osaka City Government and held on 30 October 2015. GEC also hosted a presentation aimed at Vietnam-based businesses on the application process for JCM project status, which was held on 26 February 2016.

(4) Organising symposia

GEC held the 'Ho Chi Minh City-Osaka City International Symposium for the Development of a Low-Carbon City' in Ho Chi Minh City on 6 November 2015, and reported on the progress of the CCAP preparations and the implementation of the JCM projects.

The Vice Mayor of Osaka City, Mr. Tanaka, and approximately 40 individuals from Japan attended the symposium. The attendees from Vietnam included Mr. Cang, Vice Chairman of the Ho Chi Minh City People's Committee, and; Mr. Phuo, Vice Director of the Department of Natural Resources and Environment (DONRE),; and approximately 60 representatives of relevant government offices (the Ministry of Industry and Trade, the Ministry of Planning and Investment, the Ministry of Transport, the Ministry of Construction, etc.). The presentation by the Ho Chi Minh City on the draft of CCAP 2016–2020, was followed by the discussions concerning the expertise and knowledge featured in the urban development and management of Osaka City, and the ways that these could be applied in the low-carbon city that Ho Chi Minh City aims to attain. We also introduced some JCM model projects and their FSs that



At the international symposium
(presentation of the letter from the
Chairman of the People's Committee)

were ready for implementation, as well as the JCM FSs for the projects under preparation for implementation in the near future. The participants confirmed that a steady progress was made in the initiatives carried out so far by Osaka City and Ho Chi Minh City toward creation of low-carbon city, and implementation of the specific projects for its realisation. During the event, a letter from the Chairman of the Ho Chi Minh City People's Committee was presented to the Mayor of Osaka City, with a request for continued support in the training of personnel and the propelling of the projects.

Feasibility Study for Developing a Low-Carbon Historic City Based on City-to-City Cooperation between Vientiane Capital and Kyoto

Vientiane Capital is the capital city of Lao PDR, and is the largest city in the country in terms of its population (approximately 800,000 people). While being a home to a number of cultural and historic heritage sites, the city is also undergoing a rapid urbanisation, stimulated by a population migration from the surrounding areas, international tourism and rapid economic growth. Owing to delays in the development of an infrastructure and urban planning, the city is experiencing an urban sprawl, with emerging problems that include traffic congestion, air pollution, waste generation and GHG emissions, in tandem with the growing population. Given the challenges that face Vientiane, Kyoto City has been pursuing this FS with Vientiane Capital since FY2015, on the basis of an inter-city partnership, by offering its rich experience in practising advanced and innovative environmental preservation measures and sustainable development as a globally-recognised historic and environmental city.



The mayors of Kyoto City and Vientiane Capital signed the MOU

This study integrates the creation of a low-carbon city through the adoption of the JCM with the conservation of its cultural and historic heritage, as well as seeking the development of a management structure necessary for the implementation of these features. Kyoto City is endowed with rich experience that has been accumulated through its development as a historical and environmental city. By providing Vientiane Capital with the experiences in creating regulations, planning, and implementation with environmental technologies in a comprehensive package, it also aims to expand this project throughout the world as a model of sustainable development, which will be highly visible in Asia, through the 'League of Historical Cities.'

A new initiative has been introduced in Vientiane Capital, where there was a great demand for the development of a waste management system. Kyoto City started this project in November 2015, as part of the JICA Partnership Programme (Project for Assistance to Develop an Effective Waste Utilization System with Citizen Cooperation in Vientiane Capital, Lao PDR).* The mayors of Vientiane Capital and Kyoto City, in recognition of the need to strengthen their cooperation over environmental issues based on these activities, signed the MOU to Promote Bilateral Cooperation in the Environment, which encompassed both this FS and the JICA Partnership Programme.

(1) Preparation of the urban development and environmental measures for creating a low-carbon historic city

Working toward the development of low-carbon historic city in Vientiane, GEC provided support in preparing the urban development and environmental measures toward the realisation of the low-carbon historic city, drawing on the expertise of Kyoto City in the area of countering global warming. As part of this initiative, GEC was engaged in discovering and expanding the JCM projects to be executed in FY2016 and thereafter, with the aim of contributing to the creation of the low-carbon historic city in Vientiane.

a. Support for the preparation of the Vientiane Low-Carbon Historic City Development Plan

Working with Kyoto City, GEC helped Vientiane City to draw up a basic plan for the development of a low-carbon historic city as a basis to such development. In FY2014, we identified the components that should be included in this Vientiane Low-Carbon Historic City Development Plan, including an appropriate waste management system, improvement of the road traffic system, countermeasures for a fossil-fuel-based energy system, water resource management, and the appropriate treatment of effluents and sewage. Continuing with these themes, in FY2015, the International Committees of both cities discussed the overall structure of the basic plan (draft), and developed a first draft of a section on the waste management issues.



The International Committee (in Vientiane Capital)

b. Capacity-development toward attaining a low-carbon historic city

GEC gave support by organising training and educational opportunities for the Vientiane Government officers, by means of delivering presentations on the governance systems in Kyoto City, and by showcasing the Japanese excellent technologies and the relevant information in the field of environmental engineering.

c. Promoting inter-city and public-private partnerships

GEC was engaged in identifying the factors that were required in order to realise a low-carbon historic city and sustainable development in Vientiane, and promoted the introduction of Kyoto City's experience, knowledge, know-how, technologies and system of urban development.

(2) Feasibility Study of the JCM Projects

GEC conducted the following two JCM FSs, which formed part of specific projects to realise the Vientiane Low-Carbon Historic City. For these JCM FSs, we studied their implementation structures and financial plans, that are created for the respective projects to attain the JCM Model Project status.

- **Project to introduce biomass and other fuel options, in order to reduce the use of coal fuel at a salt refinery plant (Operator: Japan Environmental Consultants, Ltd.)**

The salt refinery plant on the outskirts of Vientiane City, uses coal to operate flat pans for the salt water from the ground in producing salt. Meanwhile, local rice refinery plants discard the rice husks after their refining process. This project proposes to introduce the Japanese briquetting (compressing) technology in order to turn the husks into biomass fuel that will replace the coal used at the salt refinery plant. The alternative fuel aims to reduce GHG emissions.

- **Generation and utilisation of bio-gas from organic waste (Operator: Hitachi Zosen Corporation)**

Vientiane practises open-dumping for its waste disposal, but the available landfill sites are estimated to be filled within a few years. Therefore, countermeasures such as waste reduction practices are urgently needed. In this context, one of the crucial tasks is to make use of organic waste, by separating waste and improving the efficiency of the waste collection. This project offers to use the organic waste to produce methane gas by placing it in fermentation tanks, and to provide methane gas to hotels and restaurants where it can replace the LPG being used in their kitchens. In this way, the GHG emissions from the fossil fuel consumption will be reduced, and the volume of organic waste is reduced for disposal, thereby contributing to the prolongation of the landfill site lifetimes.

Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries

GEC has been assigned by MOEJ as an agency to implement the MOEJ's Financing Programme to Demonstrate Advanced Low-Carbon Technology Innovation for Further Deployment in Developing Countries in FY2015.

MOEJ has been managing this programme since FY2014, with the aim of promoting the development of low-carbon technologies with the prospect of their diffusion in developing countries, by means of which a contribution is made toward the global environmental conservation. Through the project, therefore, subsidies are provided to cover part of the cost (on an annual basis up to three fiscal years) of the development and testing facilities for low-carbon technologies to reduce CO₂ emissions that derive from energy consumption. Such facilities must be based on a low-carbon technology that is being fundamentally revised based on the environmental regulations, culture and customs, resource restriction and climate of the target country.

In FY2015, GEC held public call for new project proposals from private enterprises, followed by selection, and conducted the progress management for all projects including those carried forward from FY2014, and administrated the work for the issuance of subsidies for each project.

New projects adopted in FY2015

| No. | Representative Participants | Country | Project Title (main subject) |
|------|--|---------------------|---|
| 15-1 | SINFONIA TECHNOLOGY CO.,LTD. | Indonesia | Low-Head Micro Hydro-Turbine Power Generation System for Indonesia Cellular Base Transceiver Stations |
| 15-2 | TOYOBO ENGINNERING CO.,LTD. | Thailand | Energy conservation of Seawater desalination system with hollow fibre Reverse Osmosis membrane |
| 15-3 | NIPPON STEEL & SUMIKIN ENGINEERING CO.,LTD | Philippines | Establishment of bioethanol production system by utilizing unused biomass |
| 15-4 | Digital Grid Solutions Inc. | Kenya Tanzania | Electricity Retail Service at Kiosk in Off-grid Area |
| 15-5 | GIKO Corporation | Indonesia | Energy saving for the de-greasing process of aluminium chips by utilization of superheated steam |
| 15-6 | Mansei Recycle Systems Co., Ltd. | Philippines | Waste plastics recycling project in Cebu to produce fluff fuel (alternative to fossil fuel such as coal) consumed by cement manufacturers |
| 15-7 | DATA TEC CO.,LTD. | Vietnam Thailand | Promotion of eco-driving by the renovation of communication type Safety Recorder System |
| 15-8 | Soft Energy Controls Inc. | Vietnam | Development of Zero emission Electrical Bus for Cat ba island in Viet Nam |
| 15-9 | YANMAR CO.,LTD. | Myanmar | Development of rice husk gasification CHP system |



No. 15-2: Seawater desalination system (Reverse Osmosis (RO) module with hollow fibre Reverse Osmosis membrane)



No. 15-5: Superheated steam generator and Dry distillation gas combustion equipment



No. 14-2: Electric motorcycle with a passenger carriage (prototype)



No. 14-4: Central monitor room for a district cooling plant (an optimum control system is planned to be installed)

The projects carried forward from FY2014

| No. | Representative Participants | Country | Project Title (main subject) |
|------|--|-----------------------------|---|
| 14-1 | PEAR Carbon Offset Initiative, Ltd. | Bangladesh Ethiopia | Electrification of off-grid households by renewable energy in Bangladesh and Ethiopia |
| 14-2 | MILAI Corporation | Cambodia | Promotion of Low-carbon Transportation System by Renovation of the Electric Scooter; ES 11 |
| 14-3 | Hitachi Industrial Equipment Systems Co., Ltd. | Thailand Indonesia, etc. | Contribution to low carbon society by renovation to the newly developing countries by high-performance motors, inverters and others that are essential for maintenance and build up the social/industrial infrastructure. |
| 14-4 | Mitsubishi Heavy Industries, Ltd. | Malaysia, etc. | Development of Optimum Control System for District Cooling Plant in South East Asia Aiming CO ₂ Reduction |
| 14-5 | GEOCRAFT CO., Ltd. | Cambodia | The introduction of the water facilities management system for the leakage reduction using GIS technology for the purpose of low-carbon society |
| 14-6 | Prozza Corporation | Lao PDR | Reducing GHG emissions through improvement and diffusion of the E-tuktuk "Pecolo" |
| 14-7 | AXIOHELIX Co. ltd. | Vietnam | Promotion of Energy Conservation through Development and Introduction of Cost-effective Industrial LED Lighting Equipment to Meet the Needs for Developing Countries. |

- Progress management: contacting the representative participants for each project, and conducting local inspections as necessary, in order to obtain relevant information and give advice for each participant. All of the participants were required in January 2016 to prepare and submit an interim report. Based on these reports, the selection committee evaluated each project in terms of its performance and the possibility of continuing the project in the following fiscal year.
- Assessment of the performance reports and the issuance of subsidies: all 16 projects were assessed on the basis of their performance reports (with a report review and a on-site inspection, where it was required). The granting of a subsidy was subsequently determined in terms of the amounts for each project, and was issued before the end of FY2015.
- Completed projects: two projects (14-1 and 14-2) that had continued from FY2014 were completed in FY2015, and the respective project reports covering the period up to March 2016 were received. The scheme of this programme mandates each participant to submit an annual project report to MOEJ for three years followed by the completion of each project.

Osaka JCM Network Project

The GEC has assumed the role of the representative secretariat for the Osaka CDM Network, which was founded in February 2004 in cooperation with the OISCA Kansai and the Osaka Urban Industry Promotion Center, for the purpose of encouraging Kansai-based enterprises to become proactive in the CDM project. This network was renamed the “Osaka JCM Network” in FY2015, and began disseminating JCM-related information throughout the Kansai region, in order to stimulate the businesses and activities related to the subject of energy-conservation.

Activities in FY2015

- Holding the general meeting and providing opportunities for information exchanges
 - At the general meeting it was agreed to rename the network the “Osaka JCM Network,” and the by-laws were modified. The network’s annual activity programme was also decided, centred on JCM-related topics.
 - The GEC also provided some opportunities for the members to participate in information exchanges on the subject of financing programmes for the JCM projects.
- Osaka Carbon Conference 2015

As part of an effort to disseminate the latest developments in the international debate on climate change, the GEC organised a conference immediately after the conclusion of the UNFCCC COP21. The leading researchers in the international debate on climate change and diplomats from the Government of Japan were invited to attend. This was a good opportunity to convey the results from the Paris event. At the conference, we gave progress reports on the JCM model projects, and the participants were able to gain information on Japan’s international contributions toward GHG-mitigation efforts and the country’s development of businesses to counter global warming.



Osaka Carbon Conference 2015
(presentation by MOEJ)

Human Resource Developments in Developing Countries

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 minimise 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 the audience (mainly from course instructors and advisers) on how to improve its feasibility.

Japan International Cooperation Agency (JICA) Group Training Project

As commissioned by the JICA, GEC has carried out two training courses that are designed for engineers and government officials in developing countries. These courses were entitled 'Improvement of Solid Waste Management Technologies (Basic, Techniques)' and 'Effluent Pollution Control Caused by Mining and Manufacturing Industries.'

At the beginning of each course, the participants from each country presented their 'country report'* in order to share the challenges that their country faced. They worked on developing 'action plans'* through the participation in the course, and shared amongst themselves how the knowledge and expertise gained in the programme could be applied in their country's policy-making.

The popular training courses in developing countries will continue to be provided, on the basis of coordination with the relevant organisations, in order to meet diverse individual needs. Also, we will remain vigilant to the emerging demand for training in new areas of interest and will bolster the cooperation with research institutions and other relevant organisations.

| Training dates/participants | Programme |
|-----------------------------|-----------|
|-----------------------------|-----------|

Improvement of Solid Waste Management Technologies (Basic, Techniques)

2015
 15 May – 3 July

 [12 participants]
 Guyana (1)
 Sri Lanka (1)
 Tanzania (1)
 Nigeria (2)
 Former Yugoslav Republic of Macedonia (1)
 South Sudan (2)
 Myanmar (1)
 Mauritius (1)
 Lao PDR (2)

Objective
 To develop leaders and core people who will play a major role in the planning and execution of waste treatment projects in their own countries.

Collaborators
 Osaka City Environment Bureau, Fukuoka City, Kitakyushu City, Fukuoka University, Toyo University, Osaka City University, Osaka City University Hospital, Nantan City Yagi Bioecology Center, EX Research Institute Ltd., Kokusai Kogyo Co. Ltd., JPec Co. Ltd., Kansai Recycling Systems Co. Ltd., Kawase Co. Ltd., Sunny Metal Corporation, Daiei Kankyo, Kyohei Mesona Inc., etc.

Lectures
 Introduction to Waste Treatment; Introduction to Intermediate Treatment Facilities; Introduction to Sanitary Landfill Technology; Introduction to Hazardous Waste Treatment Technology, etc.

Site visits and workshops
 Waste Collection and Transportation Work, Waste Incineration Plant, Plastic Containers Recycling Facility, Composting Facility, Sanitary Landfill Disposal Plant, etc.



Workshop on composting

Effluent Pollution Control Caused by the Mining and Manufacturing Industries

2015
 28 August – 2 October

 [22 participants]
 Argentina (3)
 Uruguay (3)
 Ecuador (3)
 Cuba (3)
 Paraguay (3)
 Peru (4)
 Bolivia (3)

Objective
 To develop effective solutions and policies to mitigate the environmental destruction and pollution caused by the mining and manufacturing effluent that contains hazardous substances.

Collaborators
 Kwansei Gakuin University, University of Hyogo, Japan Oil, Gas and Metals National Corporation, National Institute for Minamata Disease, MOEJ, Osaka City Public Works Bureau, Kumamoto Prefecture, Kagoshima City, Kanden Geo-Re Inc., Sumitomo Metal Mining Co. Ltd., Kosaka Smelting and Refining Co. Ltd., Mitsubishi Material Techno Co. Ltd., Kotoku Group, Taiyo Manufacturing Co. Ltd., etc.

Lectures
 Mining Pollution and the Mine Safety Act in Japan; Countermeasures for Hazardous Materials; Plant Effluent Regulations in Osaka City, Mining Effluent Treatment Technology at Suspended and Abandoned Mining Sites; Salvation and Compensation System for Pollution Victims, etc.

Site visits and workshops
 Waste Water Treatment in a Metal Plating Factory, Effluent Treatment at a Mining Facility, A Contaminated Soil Purification and Regeneration Plant, The Minamata Disease Municipal Museum, etc.



Wastewater Treatment Project for Matsuo Mine

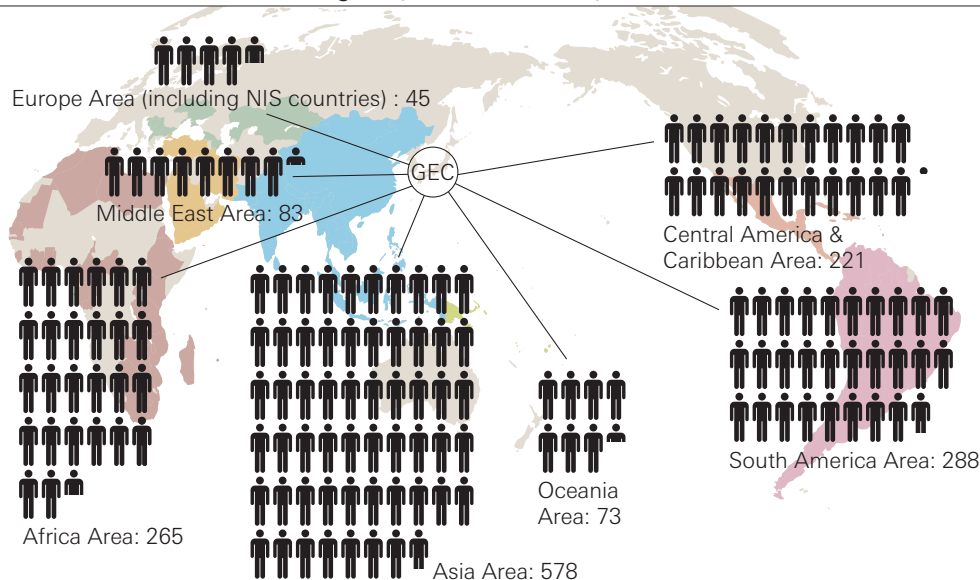
GEC Networking Project for Former Training Course Participants

Since 1998, GEC has established a network consisting of overseas participants in the JICA training programmes, in order to provide follow-ups and to accurately understand the current needs in developing countries. We have strengthened this network by exchanging information through our website (which was renamed the 'JICA-GEC Network' in 2005) and the email newsletter 'Connect the World', which is delivered to our members (the individuals who have completed our training courses). We also hold local follow-up seminars as part of this networking initiative.

In FY2015, 34 participants from 2 training courses joined the network, and the total number of members reached 1,553 (in 120 countries).

GEC will continue to contribute to the growth of developing countries through the network, by providing support to previous training participants and by helping with the activities in their respective countries.

Network Member Distribution Diagram (As of March 2016)



Expanding the GEC Networking Project for Former Training Course Participants

| | |
|--------------|---|
| 1998 | Started conducting One Day Seminars and publishing the official newsletter |
| May 2001 | Commenced the full operation of the GEC Information Board on the Internet |
| April 2002 | JICA trainees participated in four environmental courses (given by Osaka City) and joined the GEC network |
| May 2003 | Training text materials were made available online |
| April 2004 | Country Reports, postings and photo albums were published online |
| April 2005 | The website was renamed 'JICA-GEC Network' |
| January 2007 | The email newsletter 'Connect the World' was launched |
| March 2009 | Questions from training course participants were published online |

Background of the Establishment

Establishment of the 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.

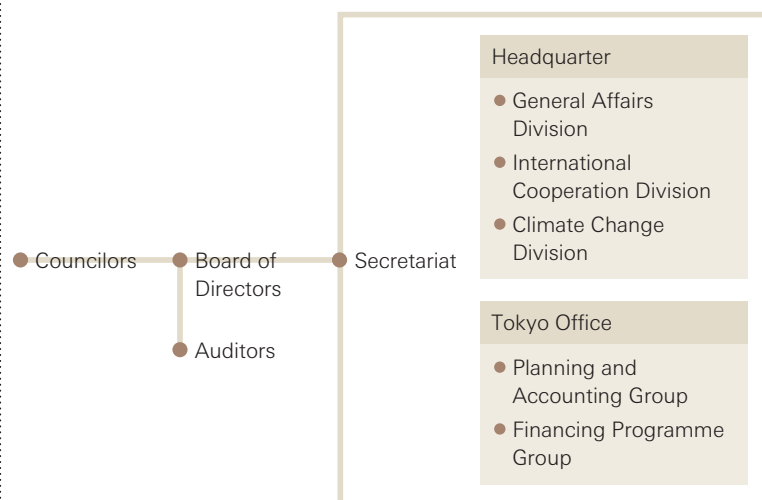
In 2008, GEC subsequently filed an application for change of legal entity from an incorporated foundation to a public interest incorporated foundation on 27 October 2009 in response to the 2008 enforcement of the three laws relating to reform of the public interest corporation system. After receiving 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.

Outline

| | |
|-----------------------|--|
| Name | Global Environment Centre Foundation (GEC) |
| Date of Establishment | 28 January 1992 |
| Office Location | [Headquarter] 2-110 Ryokuchi-koen, Tsurumi-ku, Osaka 538-0036 Japan Telephone: +81-6-6915-4121 Facsimile: +81-6-6915-0181 [Tokyo Office] Hongo Ozeki Bldg., 3-19-4, Hongo Bunkyo-ku, Tokyo 113-0033, Japan Telephone: +81-3-6801-8860 Facsimile: +81-3-6801-8861 |
| Endowments | 1,754,160,000 yen |
| Activities | (1) Projects in support of UNEP 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 | 46 |

Organization Chart



(as of 1 August 2016)

Board Members of the GEC

| | | |
|----------------------------------|---------------------|---|
| Councilors | KATAOKA, Shigehiro | Attorney |
| | KAWAKAMI, Yutaka | Corporate Auditor, The Kansai Electric Power Co., Inc. |
| | KITATSUJI, Takuya | Director General, Environment Bureau, Osaka City Government |
| | MIZUNO, Minoru | Professor Emeritus, Osaka University |
| | MORIOKA, Toru | Professor, Faculty of Environmental and Urban Engineering, Kansai University |
| | NAITO, Noboru | Adviser, Environmental Management and Technology Center |
| | OSHITA, Tatsuya | Senior Executive Director - Environmental Management, Department of Environment, Agriculture, Forestry and Fisheries, Osaka Prefectural Government |
| | OTA, Susumu | Executive Managing Director, Overseas Environmental Cooperation Center, Japan |
| | SUZUKI, Yutaka | Director, Institute for Global Environmental Strategies, Kansai Research Centre |
| | ONISHI, Yasunori | Director General, Kansai International Centre of the Japan International Cooperation Agency |
| | WASHIO, Shuji | General Manager, CSR and Environment Department, Osaka Gas Co., Ltd. |
| President | SUZUKI, Naoshi | |
| Executive Director | TAKI, Hideo | |
| Executive Director, Tokyo Office | KIMURA, Yuji | |
| Directors | FUJIWARA, Yukinori | General Manager, Economic Research Department, Kansai Economic Federation |
| | FUKUOKA, Masako | Associate Professor, Department of Environmental Engineering, Osaka Institute of Technology |
| | NAKANO, Ryoichi | Director, Economy and Industry Division, The Osaka Chamber of Commerce and Industry |
| | OTSUKI, Yoshinobu | Former General Manager, Environmental Management Office, Department of Environment, Agriculture, Forestry and Fisheries, Osaka Prefectural Government |
| | SOURI, Norio | President, Society for the Consumers of Kansai |
| Auditors | KAGATSUME, Toshiaki | Technical Adviser, International Lake Environment Committee Foundation |
| | MIYAMOTO, Hiroshi | Former Manager of Community Welfare and Services Division, Chuo Ward Public Health and Welfare Center, Osaka City Government |

(as of 1 August 2016, honorific omitted; name in alphabetical order <Surname>)

Overview of the UNEP 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 | Transfer of environmentally sound technologies to developing countries and countries with economic transition with a focus on waste management. |
| Contacts | Office: 2-110 Ryokuchi-koen, Tsurumi-ku, Osaka 538-0036 Japan Telephone: +81-6-6915-4581 Facsimile: +81-6-6915-0304 Email: ietc@unep.org IETC homepage: http://www.unep.org/ietc |

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