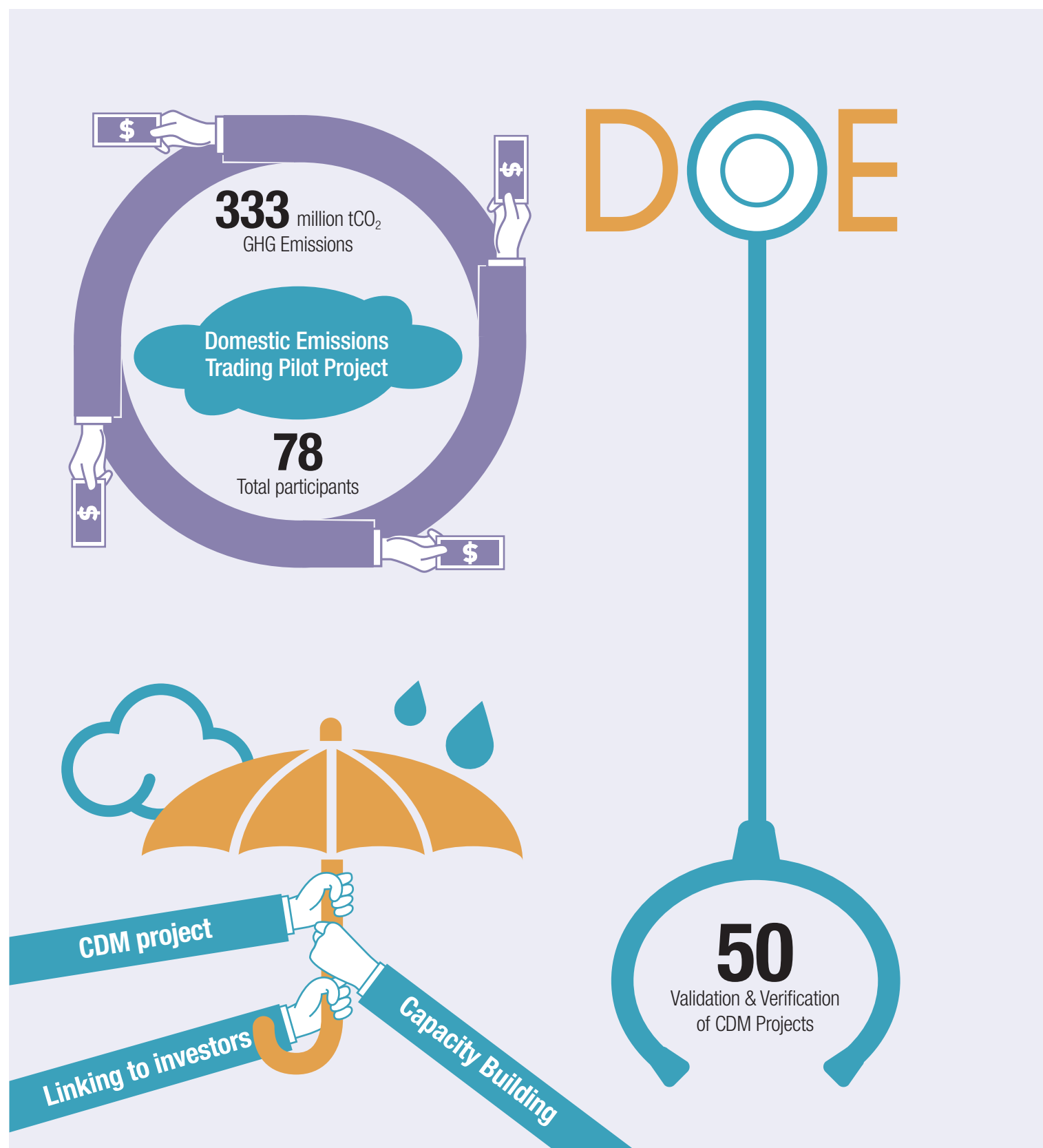
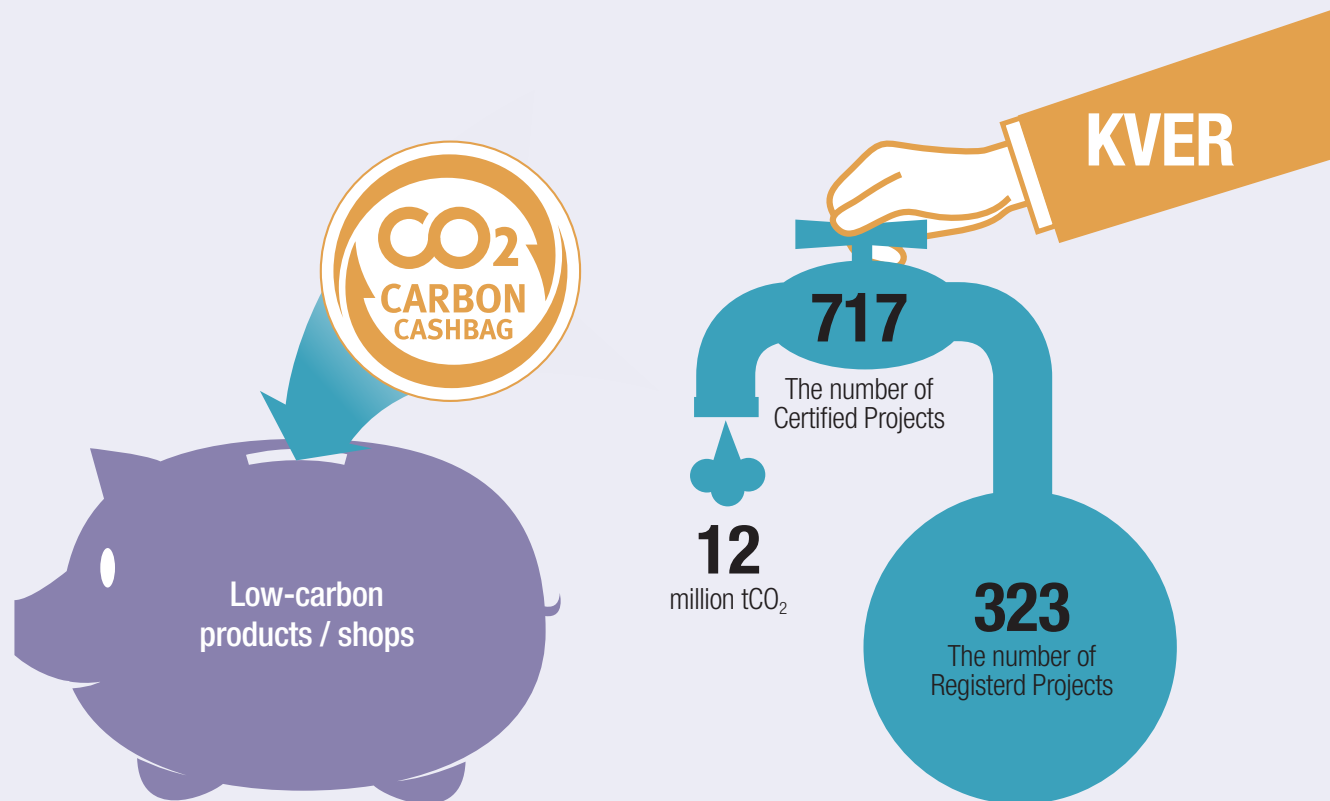
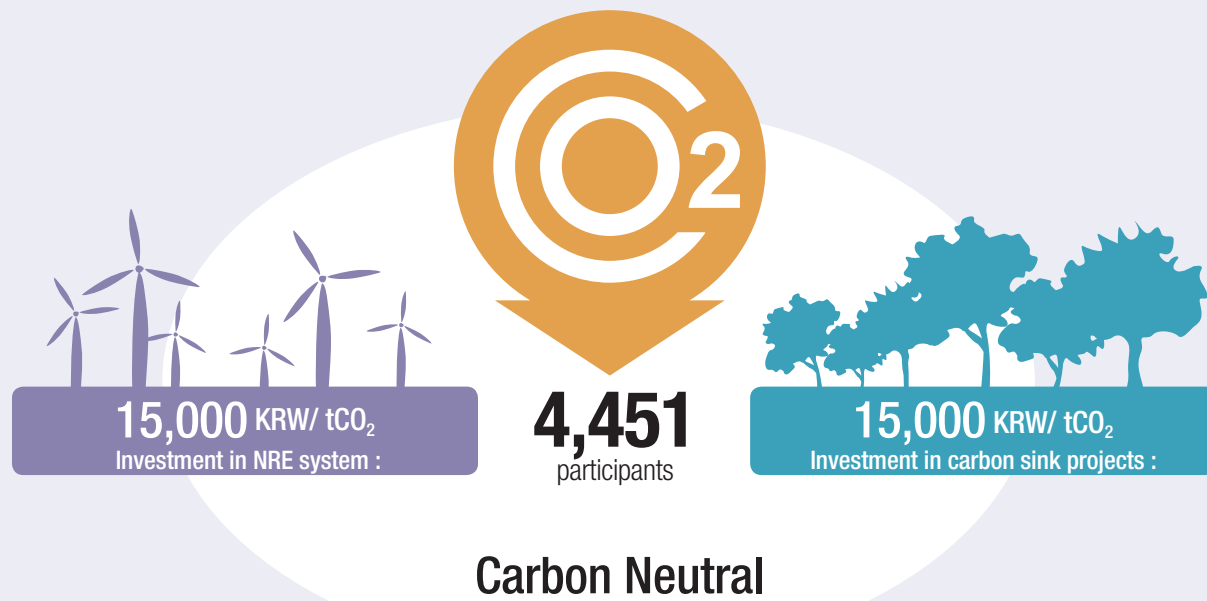


Annual Report 2011

Korea Energy Management Corporation

Climate Change Mitigation & GHG Emission Reduction





Climate Change Mitigation & GHG Emission Reduction

Annual Report 2011

Domestic Emissions Trading Pilot Project

Climate change Cooperation Department
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This pilot project aims to provide Korean industries and power sectors with opportunities to accumulate experience in emissions trading before the implementation of the national emissions trading scheme in 2015.

In particular, KEMCO provides a web-based trading platform for online simulated trading, using cyber money to minimize the burden of the project participants. Also, KEMCO aims at enhancing the effectiveness of the domestic emissions trading pilot project by rewarding high-performance companies.

78 Total participants
333 million tCO₂ GHG Emissions of the participants

Overview of Domestic Emissions Trading Pilot Project

Phase I (2011)	Participating Companies	Total Players	GHG Emissions of Total Players (A)	GHG Emissions of Industry Sector (B)	Ratio (A/B)
	69	78	333 MtCO ₂	426.1 MtCO ₂	78%

Pilot Emissions Trading 2011



KEMCO-ETS III : Web-based Trading Platform



GHG Certification Service

GHG Certification Office
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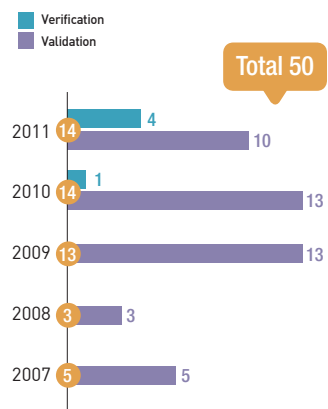
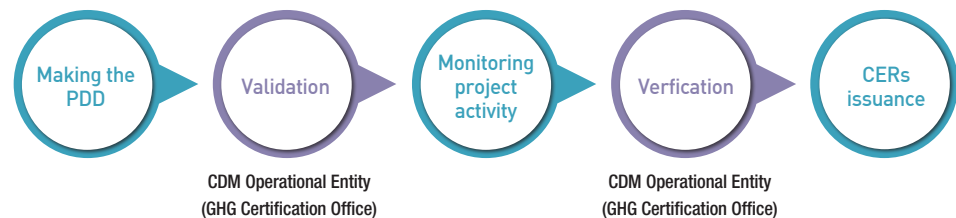
CDM DOE

Since 2005

CDM Certification Service

The Clean Development Mechanism (CDM) was established under Article 12 of the Kyoto Protocol. It allows Annex I countries(mainly developed countries) to invest in GHG reduction projects in non-Annex I countries(mainly developing countries) to create Certified Emission Reductions (CERs) which can be used to achieve their compliance obligations under the Kyoto Protocol. CDM offers mutual benefits to both Annex I and non-Annex I Parties. Annex I Parties can minimize GHG reduction costs by implementing CDM projects in non-Annex I parties. On the other hand, non-Annex I Parties can attract foreign investments and technology transfer, gaining tangible support to their efforts to achieve sustainable development.

The KEMCO GHG Certification Office is the first to be designated as a CDM DOE (Designated Operational Entity) by the UNFCCC, as an organization of a non-Annex 1 country. It was established as an independent body in January 2006 to ensure the reliability and impartiality of its CDM project validation and verification services. With over 30 years of successful energy consultation experience for a wide range of industrial facilities, KEMCO is ready to take an active role in providing certification services to GHG projects around the world such as CDM, VCS, KVER, Inventory, etc.



To proceed with the CDM project, a Project Design Document (PDD) should be completed in accordance with the form and criteria given in the CDM Executive Board (CDM-EB) template. Then, the PDD should be submitted to the DOE (such as KEMCO GHG Certification Office) for validation. If it is confirmed that the project meets the CDM registration requirements, the KEMCO GHG Certification Office can request the CDM Executive Board to proceed with the project registration.

CDM projects registered by the CDM EB are eligible to request the issuance of CERs by submitting a monitoring report to the KEMCO GHG Certification Office. When the verification process is successfully completed, the KEMCO GHG Certification Office can request the issuance of CERs to the EB. On the left is the number of validation and verification cases conducted by KEMCO.

152

KVER validation

73 enterprises ^{sites} **259**

The number of GHG inventory verification

Other Certification Services

KVER Validation

KVER stands for Korea Voluntary Emission Reduction program. The Korean government has encouraged domestic enterprises to register voluntary GHG emission-reduction projects by providing financial incentives to enterprises that reduce GHG emissions since 2007. There are 7 KVER certification organizations in Korea, including the KEMCO GHG Certification Office.

GHG Inventory Verification

A GHG inventory quantifies the amount of GHG that business activities emit into the atmosphere. A GHG inventory enables enterprises to manage GHG risks and identify emission reduction measures, and it provides new business opportunities such as KVER and CDM projects. The KEMCO GHG Certification Office started verifying GHG inventories in 2006, with the oil-refining industry and the chemical industry. As a part of win-win growth strategy, the GHG Certification Office has provided free GHG inventory verification services to SMEs since 2011.

Future Plans

Based on the accumulated experience and achievements, KEMCO is planning to extend the scope of certification services to cover voluntary carbon markets such as Verified Carbon Standard(VCS) and Gold Standard(GS). Also, KEMCO will keep training regional experts and investment analysts for CDM projects to improve the certification process.



Validation on Vietnam CDM project



Verification of GHG inventory

Korean Voluntary Emission Reduction Program (KVER)

GHG Reduction Registry Department
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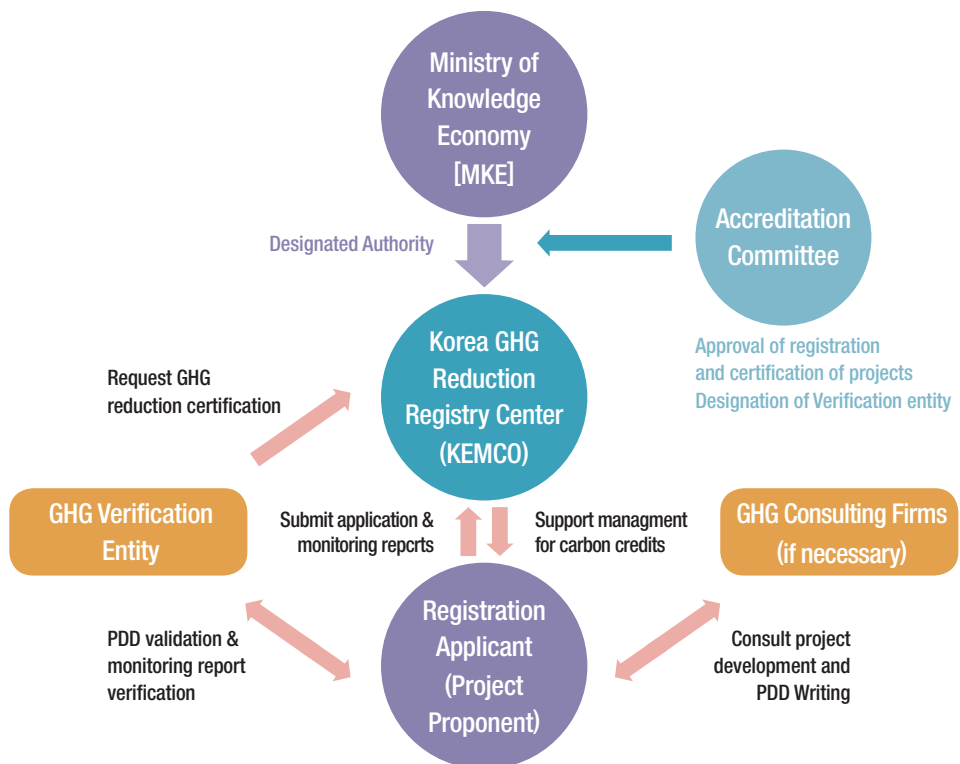
KVER

The 1st GHG emissions reduction program among non-Annex I countries

Background

Since the Kyoto Protocol took effect, Korea has made continuous efforts to combat climate change as a Non-Annex I country by integrating its energy-saving efforts with greenhouse-gas emissions reduction efforts. Recognizing the necessity of taking immediate action on climate change, KEMCO has championed numerous energy-saving initiatives, including the Korea Voluntary Emission Reduction Program (KVER). Launched in October 2005, the KVER is the first GHG emissions reduction program among non-Annex I countries. The objective of the KVER is to elicit active participation of Korean companies and to build capacity in tackling climate change.

Framework of the Korean Emissions Reduction Registry Program

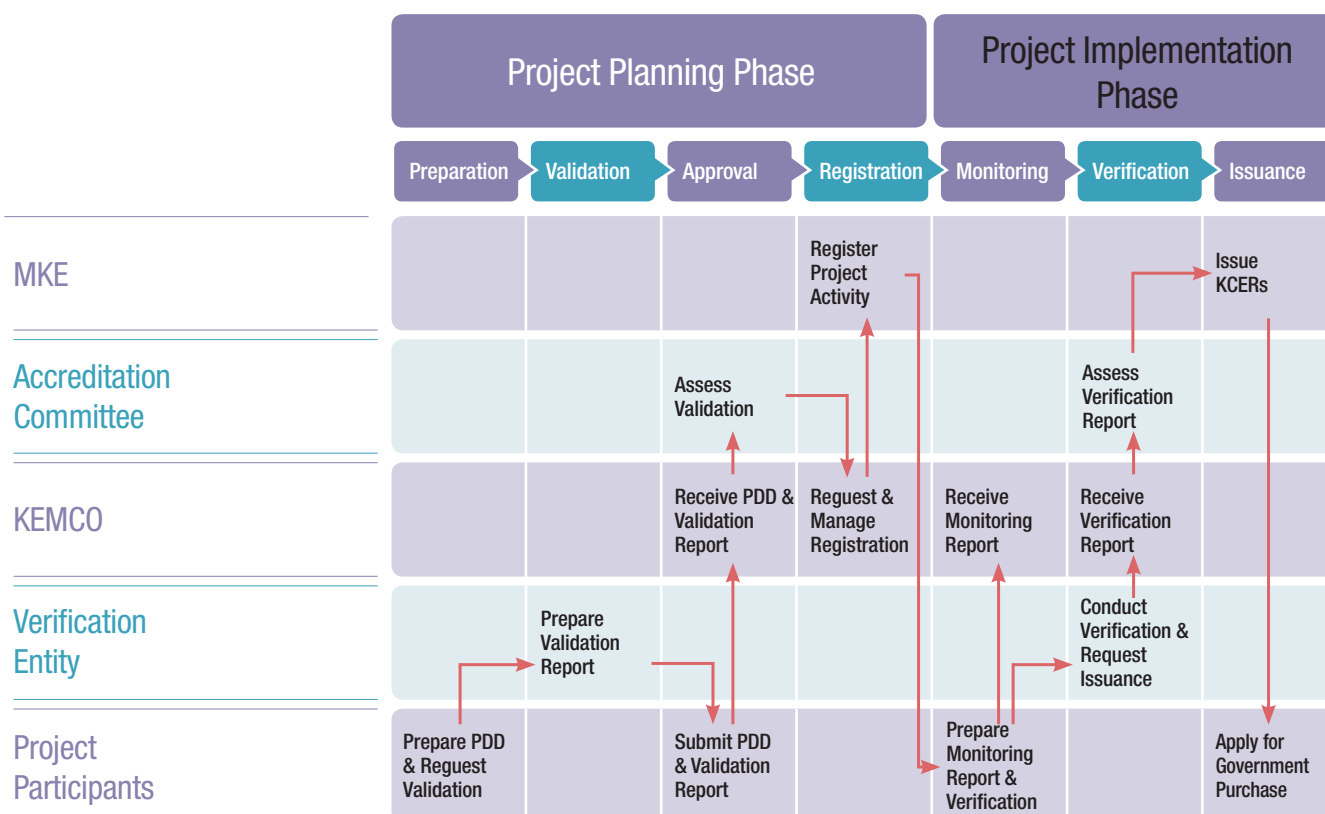


Eligibility Criteria

- Reduction amount: more than 100 tCO₂ GHG emissions annually
- Project start date: should fall within 1 year from the date of registration request
- Eligible Project :
 - GHG reduction projects through improved energy efficiency
 - Renewable energy projects
 - Other GHG emission-reduction projects approved by the government

Bundled projects : **100~2,000** tCO₂ *total amount of reduction: less than 5,000 tCO₂*

Procedures for GHG Emissions Reduction Registration



323

The number of registered projects

717

The number of certified projects

12

The equal amount of GHG reductions from issued KCERs

International Cooperation Programs

Overseas Project Team
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Incentives

- The government subsidizes project development.
 - PDD completion including methodology development: USD 2,500 — 4,200 per project
 - Verification cost for SME participants: USD 2,500 per year
- The government also purchases KCERs (1 KCER = 1 tCO₂ reduction) from certified projects to promote companies' participation and to voluntary GHG emissions reduction efforts.
 - Purchase price: variable (About USD 10/tCO₂ in 2012)
 - After purchasing the KCERs, the ownership of project credits is passed onto the government.

Current status of KVER

As of December 2011, 323 projects were registered in the program in areas such as energy efficiency improvement, new and renewable energy, and industrial process innovation. Each registered project can create annual carbon credits for 5 years. 717 projects have passed through the annual monitoring and verification processes; have been certified and issued KCERs equal to about 12 million tCO₂.

Status of Projects under KVER

Year	2007	2008	2009	2010	2011
Registered projects	62	86	66	44	24
Certified projects	38	88	161	204	226
KCERs	941,307	1,926,752	2,720,353	3,199,545	3,333,095

International Cooperation in Energy Efficiency

KEMCO takes part in several major international meetings or initiatives that work towards energy efficiency: IEA 4E and DSM; APEC EWG and EGEE&C; and IPEEC. KEMCO is sharing information and experience on energy efficiency by participating actively in international cooperation programs.

IEA: 4E & DSM

IEA 4E

The Implementing Agreement of the International Energy Agency (IEA) for a Cooperating



Program on Efficient Electrical End-Use Equipment (4E) was approved by the IEA Governing Board in 2008. The 4E Implementing Agreement focuses on equipment that contributes the most to the total end-use electricity consumption, including technologies with fast-growing global or regional market shares and stand-by consumption.

Under the 4E framework, a number of research projects were developed.

In cooperation with the IEA 4E, the Ministry of Knowledge Economy and KEMCO are participating in the three main Annex projects: Mapping & Benchmarking (M&B), Standby Power and Solid State Lighting (SSL).

IEA 4E Projects

Annex	Leader	Participant Countries
Mapping & Benchmarking	UK	USA, Canada, Australia, France, Netherlands, Denmark, Switzerland, Austria, Korea
Standby Power	Australia	Netherlands, Canada, Switzerland, Korea, UK
Motor System	Switzerland	Denmark, Australia, Netherlands, UK, Austria
Solid State Lighting (SSL)	France	-



IEA DSM

The Demand-Side Management Technologies and Programs of IEA, also known as IEA DSM, was launched in 1993. IEA DSM consists of 19 countries and the EC and it develops a variety of strategies for reducing energy demand. Korea has attended the meetings since May 1994 and officially became a member in March 2002. IEA DSM has been conducting 24 international joint researches, called "TASK", since its establishment. Korea has taken part in 9 tasks and 7 tasks are underway as of 2011.

APEC

APEC EGEE&C

APEC Expert Group on Energy Efficiency and Conservation (EGEE&C)
Under the APEC Energy Working Group



The Asia-Pacific Economic Cooperation-Energy Working Group (APEC-EWG) is a voluntary, regional forum operating under the APEC umbrella. It helps further APEC goals of facilitating energy trade and investment, and ensures that energy policies and use contribute to the

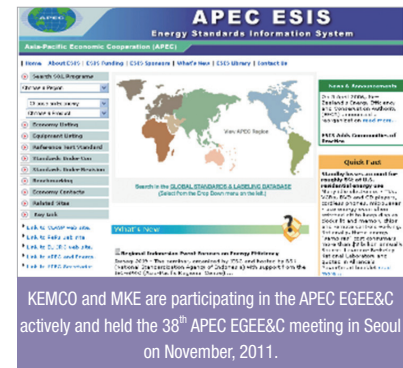
economic, social and environmental enhancement of the APEC community.

The EWG has four expert groups, each focusing on a specific energy area. They provide a forum for fostering cooperation between research and technical specialists within APEC economies.

The Expert Group on Energy Efficiency & Conservation (EGEE&C) is an expert group within the EWG that promotes energy conservation and the application of energy efficiency practices and technologies through various cooperative activities.

The EWG has operated the Energy Standards Information System (ESIS) since 2002. ESIS provides the latest information about energy standards and regulations for appliances and equipment. The Ministry of Knowledge Economy and KEMCO funded USD10,000 for the ESIS project in 2007 and continues to take an active role in this system.

APEC ESIS : <http://www.apec-esis.org>



IPEEC

IPEEC

International Partnership for Energy Efficiency Cooperation

The International Partnership for Energy Efficiency Cooperation (IPEEC) is an international partnership for energy efficiency cooperation that includes the G8 (USA, UK, France, Germany, Italy, Canada, Japan, Russia) +6 (China, India, Brazil, Mexico, Korea, Australia) countries. IPEEC aims to improve energy efficiency through international cooperation to share policies on energy efficiency.

Under IPEEC, 8 international projects are currently being carried out. Korea is participating in 3 programs, including Sustainable Buildings Network(SBN), Super-efficient Equipment and Appliance Deployment(SEAD) and Global Superior Energy Performance Partnership(GSEP).



IPEEC Task

Task	Leading Country
Worldwide Energy Efficiency Action through Capacity Building and Training (WEACT)	Italy
Sustainable Buildings Network (SBN)	Germany
Assessment of EE Financing Mechanisms (AEEFM)	India
Energy Management Action Network (EMAK)	Japan
Improving Policies through Energy Efficiency Indicators (IPEEI)	France
Super-efficient Equipment and Appliance Deployment (SEAD)	USA
Global Superior Energy Performance Partnership (GSEP)	USA, Japan
Global Cooperation on Utility Delivery of Energy Efficiency (GCUDEE)	UK

International Cooperation for Climate Change Mitigation

KEMCO delivers several programs to facilitate international cooperative efforts on climate change mitigation. These programs encourage Korean companies to expand their businesses into international markets.

In 2011, KEMCO operated a training course for government officials from China, Mongolia, Kazakhstan and Tajikistan. The courses consisted of lectures on energy efficiency and climate-change mitigation policies in Korea, including the GHG Emissions & Energy Target Management scheme, CDM and KVER. Also included were site visits to the Green Energy Experience Hall of KEMCO, the Sihwa Tidal Plant and the Gas Science Museum. A total of 14 participated in the course (5 from China, 4 from Mongolia, 2 from Kazakhstan and 3 from Tajikistan).

Training Courses for Government Officials or DNA Members



To deal with climate change mitigation and build infrastructure in Southeast Asia and the CIS region, KEMCO has designated 4 regional expert organizations. As of 2011, the organizations have established networks, developed co-projects, provided training courses, shared technical information and reported on national CDM policies.

KEMCO and the ASEAN Centre for Energy (ACE) are working closely together in the ASEAN+3 CDM Cooperation Program. The program was started by the Ministry of Knowledge Economy as it intended to develop a new cooperation program on CDM under the framework of the ASEAN+3 meeting in 2008. The program of 2011 consisted of identifying CDM project candidates in ASEAN region, capacity-building workshops on CDM and collaborative feasibility studies and on-site visits to CDM projects.

In 2011, CDM Cooperation Bodies (CCBs) were organized in 6 member countries (Indonesia, the Philippines, Vietnam, Malaysia, Cambodia and Thailand) to stimulate activities under the program. CCBs consist mainly of central government officials, local government officials, technicians, local companies and consultants. Their major roles are to conduct surveys and research on CDM projects; to assist and arrange project on-site visits; to provide data on related laws, regulations, and environment; to make reports on the projects; and to provide information to Korean investor companies.

ASEAN+3 CDM Cooperation Program



The Green Business Forum was held in October 2011 to publicize the results of international cooperation programs and to introduce important projects to Korean investors. A total of 285 persons participated and a dozen of major media outlets broadcast the forum. As a result of the forum, 2 MOUs were signed to seek further cooperation or to invest in the projects.

Green Business Forum 2011



Development of GHG Emissions Inventory System

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KEMCO has developed the national statistics database (DB) system on energy consumption and GHG emissions. Based on this system, one can understand the main cause of energy consumption and the potential for reductions.

KEMCO is providing data analysis results of energy consumption behaviors and GHG emission types on the NETIS (National Emissions Total Information System).

Constructing and Analyzing Energy and GHG-related Data Base

An accurate grasp and analysis of the energy use and GHG emissions are prerequisites for responding to climate change. KEMCO has conducted extensive research on energy consumption, GHG emissions from energy use and industrial processes, and technologies emitting or mitigating GHG. As a result, KEMCO has established and analyzed a comprehensive database related to energy, GHG reduction potential and costs for various technologies.

Development of Country-specific (Korea) Emission Factor

IPCC published its guideline 2006 for the National Inventory Report (NIR). It recommended developing more precise emission factors for each country, even if they suggest default emission factors in the guideline.

In building an accurate, reliable national statistical system, KEMCO has researched and managed country-specific (Korea) emission factors as carbon emission factors for all combustion processes, and non-CO₂ emission factors for energy and industry sectors since 2007.

Carbon Neutral Program

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To enhance public awareness and promote voluntary participation in GHG mitigation activities, the Carbon Neutral Program was introduced in 2008. Companies and individuals who want to mitigate their carbon emissions submit their intent to participate and then perform actions to reduce GHG emissions, such as turning off lights, lowering heating temperatures, and using public transportations etc. Offsets, including forestation and NRE deployment, are also options for carbon mitigation. After Participants' completion of activities to reduce GHG emissions, KEMCO confirms that the person or company has successfully participated in the Carbon Neutral Program by issuing a certificate.

- Two types of carbon offsets :

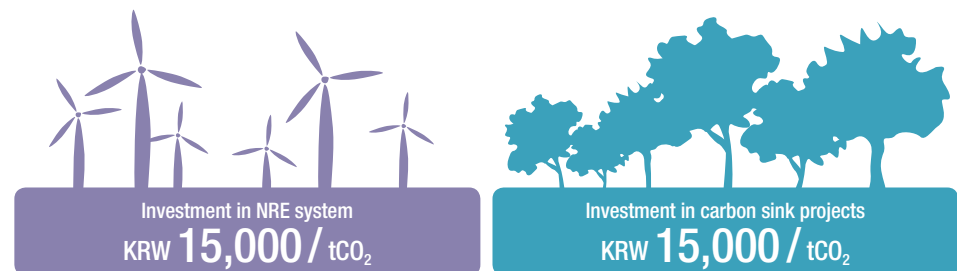
4,451

The number of participants in
Carbon Neutral Program

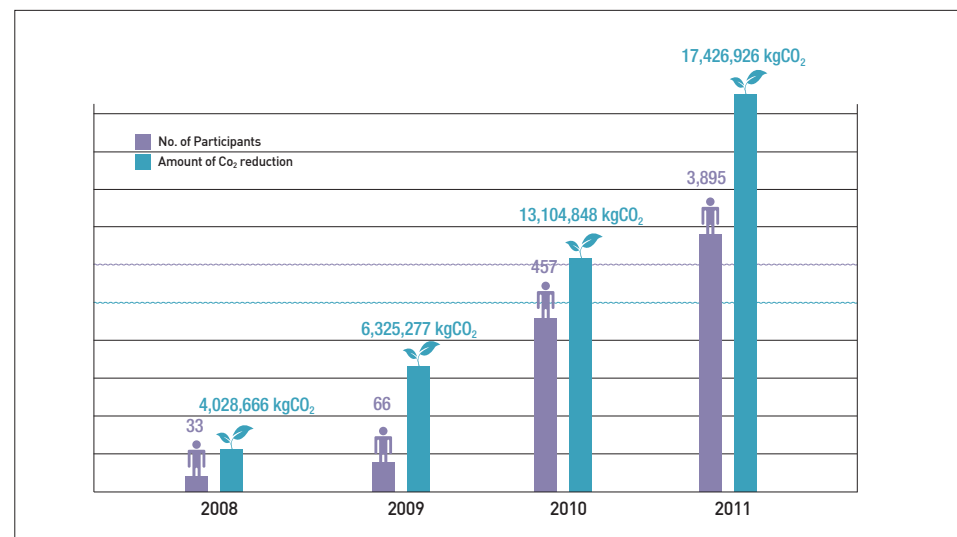
40,885

tCO₂

Total amount of CO₂ reductions
from Carbon Neutral Program



- As of 2011, a total of 4,451 firms/individuals have participated in CO₂ mitigation activity equivalent to 40,885,667 kgCO₂ since the initiation of the program.



Carbon Cashbag

Objectives

The Carbon Cashbag program intends:
to raise the public awareness on climate change;
to guide consumers to purchase products with low GHG emissions and high efficiency; and
to form a national consensus on climate change.

Concept

When a consumer purchases low-carbon products (e.g. high-efficiency products) or makes a purchase at a low-carbon shop, carbon points will be awarded to the consumer. 1 point is equivalent to 1 KRW, and consumers can use the points to use public transportation, purchase products and for other purposes.

Program Procedure

