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Keco Facilitates Resource Circulation



## Resource Circulation Program

### ❶ Confiscated Goods Recycling Program

Keco contributes to the advancement of efficient use and circulation system of resources by transporting, storing, disposing, and recycling illegal game machines and oil products acquired by police and prosecutors into legal objects using its own manpower, equipment, and facilities.

#### ❶ Resource recovery of illegal game machines and computers

The game machines and computers acquired from investigation authorities are stored and they are selected in accordance with the Business Process Guideline of Confiscated Goods based upon the authorities' direction of disposal. The recyclable items are sold through competitive bids and other items are sold to disposal agencies or recycling agents after their use is abolished.

#### ❶ Resource recovery of illegal oil product

Illegal oil products (illegal gasoline and diesel) acquired from investigation authorities are stored at the warehouse designated by Keco and the entire quantity is sold to the refineries upon the disposal decision of the authority.

### ❷ Financial Support for the Establishment of Recycling Businesses and Technical Consulting

#### ❷ Financial support for the establishment of recycling business

This service aims to foster the recycling business by providing financial support (Keco 80%, company 20%) for those who intend to establish recycling businesses, thereby, shortening the period and cost of business establishment.

#### ❷ Financial support for technical consulting on recycling industry

When small or medium-sized recycling company which lacks in its own technology and product manufacturing abilities get technical consulting through the research infrastructure obtained by academic and industrial fields Keco provides financial support (Keco 80%, company 20%) for the consultation fee.

### ❸ Provision of Environment Statistical Information

Provides various environment statistical information as basic data for establishing domestic environmental industry nurturing policies and improving systems by making 11 types of nationally approved statistics on waste and recycle products, managing quality, and operating website for environment statistical information.

#### Major Service

- Quality management of waste and recycle statistics
- Operation of environment statistical information
- Formation of nationally approved statistics on environment field (11 types)

Search Environment Statistical Information <http://stat.keco.or.kr>

### ❹ Packaging Material and Method Inspection and Material Test for Recycling Mark

Packaging wastes refer to the wastes disposed after being used as packaging materials for distribution of products. Keco inspects the methods of product packaging and recycling marks to minimize packaging wastes and promote recycling.

#### ❹ Product packaging method inspection

Keco minimizes unnecessary packaging by reducing the volume and the number of packaging materials required. Product types subject to packaging method regulations include foods, cosmetic products, detergents, commodities, over-the-counter drugs, apparels, and synthetic products, total 7 products and 23 items. The packaging space ratio and the number of packaging is inspected according to the packaging standard by product type.

#### ❹ Recycling mark inspection

For those who intend to apply for recycling marks that are not included in the packaging subject to separation in accordance to extended producer responsibility should pass the inspection on synthetic resin and other complexes.

Search Packaging Inspection System <http://pack.keco.or.kr>

### ❺ Agricultural Waste Collection and Disposal Program

Keco contributes to the agricultural environment preservation and resource circulation by collecting and disposing agricultural waste produced by farming activities (plastic waste and agricultural pesticide container) by itself.

#### Types of Business

##### ■ Agricultural plastic waste

Agricultural plastic wastes are collected in regional place after removing all the foreign substances in plastic waste and dividing them by materials and colors. The private waste collector picks up those wastes and they are either transferred to disposal facility outsourced by Keco or supplied to private recycling companies to be produced as recycling materials.

##### ■ Agricultural pesticide container

Glass, plastic, and vinyl materials are separated and the private collector picks them up. They are delivered to Keco business sites to be provided to either recycling company or waste disposal (incineration) company to be made into recycling materials or incinerated.

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## Operation and Management of Resource Circulation System

### Eco-Assurance System (EcoAS 환경정보장제)

Search Eco Assurance System [www.ecoas.or.kr](http://www.ecoas.or.kr)

The purpose of Eco-Assurance System is to minimize environmental loads through systematic management of entire life cycle of electrical products, electronic devices and vehicles, from design and production to disposal, in order to reduce wastes and promote recycling activities.

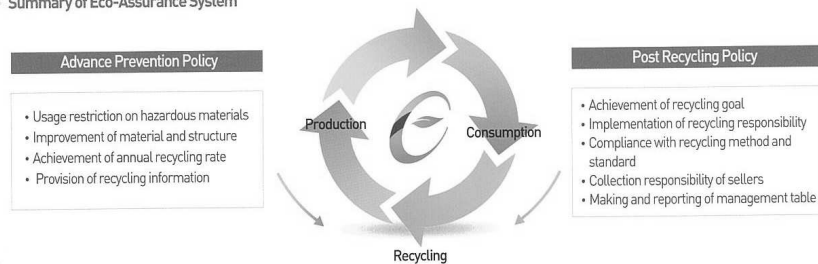
#### Products subject to Eco-Assurance System (27 electric and electronic product types, 3 vehicle types)

##### Electric and electronic products

Large devices (5 types including TV), telecommunication and office devices (4 types including computer), medium devices (5 types including microwave), small devices (12 types including vacuum), mobile phone

Vehicle Car, vehicle (less than 9 passengers), truck (light and small size)

#### Summary of Eco-Assurance System



### Waste Charge System (폐기물부담금제도)

Search Waste Charge System [www.budamgum.or.kr](http://www.budamgum.or.kr)

The waste charge system was established to minimize wastes and prevent resource waste. This system makes manufacturers or importers of products, materials, and containers that have harmful materials, are hard to be recycled, and may cause problems in terms of waste management to be responsible for the cost required in waste disposal.

#### Products subject to waste charge system

Pesticide containers (glass bottles and plastic containers), toxic material containers (metal cans, glass bottles and plastic containers), anti-freezing liquid, gums, disposable diapers, cigarettes, and products made of plastic materials (36 sectors from KSIC).

#### Use of waste charges

Collected charges are paid to the special account for environment improvement and are used for the purchase and storage of recyclable resources, waste recycling programs, installation and support of waste disposal facilities waste recycling and deduction R&D, and financial support for waste collection and recycling of local governments.

#### Voluntary agreement for collection and recycling of plastic wastes

On the basis of an agreement made with the Ministry of Environment on the mandatory recycling rate, those who comply with the waste collection and recycling requirements are exempt from waste charges.

### Extended Producer Responsibility System (EPR 생산자책임재활용제도)

Extended Producer Responsibility (EPR) mandates producers and importers of products that fall under EPR requirement or those with packaging materials that fall under EPR requirements to recycle a certain amount of wastes from products or packaging materials. For individuals who fail to follow this are subject to recycling charges.

#### Items for mandatory recycling

##### 4 packaging materials

paper packs, metal cans, glass bottles and packaging materials made of synthetic resin

##### 5 products

lubricants, batteries, tires, fluorescent lamps and buoys for aquaculture

#### Determination of recycling requirement rate by item

The Minister of Environment announces the mandatory recycling rate for each item by considering the disposal volume, recycling performance, and recycling conditions.

#### Determination of recycling obligation by business

The mandatory recycling volume of each business is calculated by multiplying the mandatory recycling rate for each item by the volumes of sales and import.

#### Fulfillment of recycling obligation

Producers set up the recycling obligation fulfillment plan, seek the approval of the Minister of Environment, and fulfill their recycling responsibilities. They may also fulfill the recycling obligations by joining recycling business cooperative.

Search Extended Producer Responsibility System [www.iepr.or.kr](http://www.iepr.or.kr)

## Recycling Mark System

Along with Extended Producer Responsibility System this system helps producers to easily achieve their recycling responsibilities by enabling convenient separation and increasing separation of recyclable wastes.

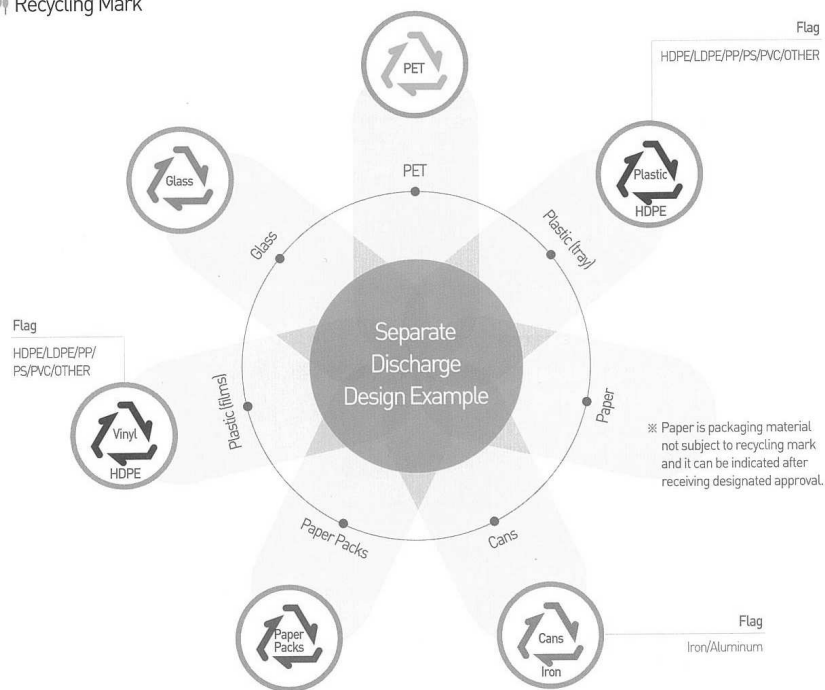
### Subjected items for recycling marks

Paper packs, glass bottles, metal cans, packaging materials made of synthetic resin used for packaging foods and beverages, agricultural, fisheries and livestock products, detergents, cosmetic products, medicines and over-the-counter drugs, canned butane, pesticides and germicides, apparel, paper products, rubber gloves, filters and film-type packaging materials for electronic products, waste bags, plastic shopping bags and packaging materials made of synthetic resin for anti-freezing liquid, brake fluid and lubricants. Other products (packaging with synthetic resin materials).

### Designated items

Products and packaging materials using papers, metals, glasses, and plastics except packaging subject to recycling.

### Recycling Mark



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## Waste Management

### Operation of Allbaro System (Allbaro)

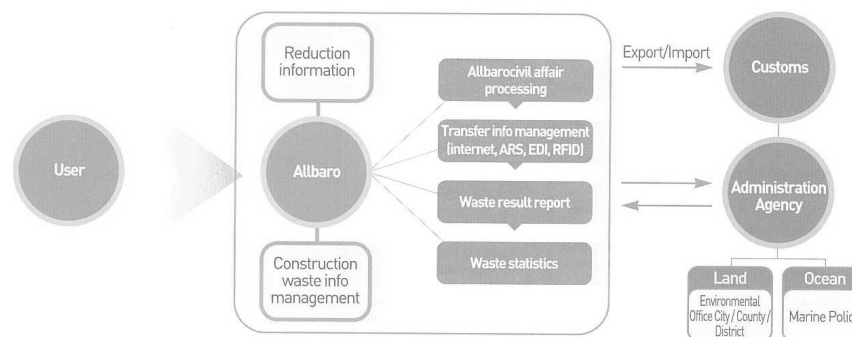
Search Allbaro System [www.allbaro.or.kr](http://www.allbaro.or.kr)

This system provides real-time monitoring by internet or RFID, from emission from business plant to transportation and final disposal. Allbaro is IT-based integrated disposal management system which combines all the lifetime control of waste prevention, recycling, and proper disposal.

#### Allbaro System

Provides real time control and establishes statistical database by changing waste process from paper into electronic basis (emission → transportation → recycling, incineration, landfill).

#### Allbaro system structure



### Business Wastes Reduction System

Different incentives are offered to outstanding business sites that have high performance of waste reduction by analyzing and evaluating reduction implementation plan and performance of sites with massive industrial wastes. This system diminishes production of industrial wastes and promotes recycling activities by providing technical diagnosis and training as well as strategies and information for the reduction to those sites with poor performance.

## Major Service

- Provide comprehensive information on business wastes
- Award to the resource circulation leading companies
- Offer technological inspection and instruction to reduce wastes
- Evaluation report on waste reduction
- Demonstration operation of resource circulation performance management

**Business categories** 18 categories under the Korea Standard Industrial Classification including food manufacturing business (the businesses generating a large volume of wastes)

**Standard** Business sites that generate 100 tons of designated wastes per year/over 1,000 tons of general wastes per year

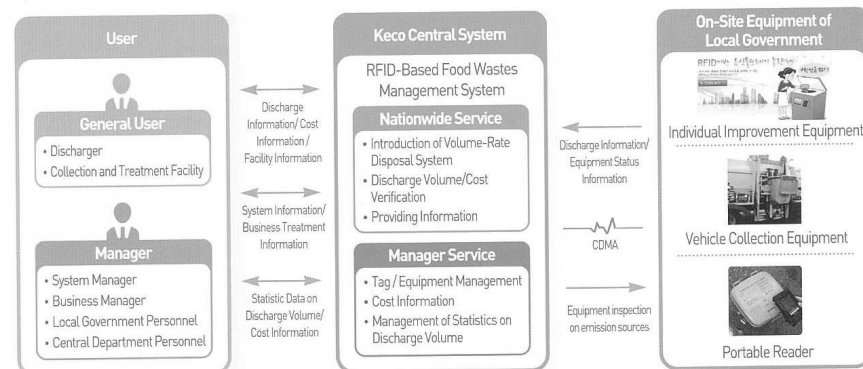
## Operation of RFID-Based Integrated Food Waste Management System

To reduce continuously increasing food waste Keco operates Radio-frequency identification (RFID) based food waste management system which imposes cost based on emission amount.

Search City Waste Integrated Service [www.citywaste.or.kr](http://www.citywaste.or.kr)

### Operation system

Local government is responsible for installation and operation of field equipment, and for the building and operation of IT system as well as DB management Keco's central system is used.



## Operation of Export and Import Wastes Portal

The purpose of waste import and export management system is to regulate the export and import of hazardous wastes in accordance to the Basel Convention and OECD requirements on the international transportation and treatment of hazardous wastes, in order to prevent environmental pollution caused by movement of wastes between the nations and to improve international cooperation. Keco is operating waste export and import portal system, the first of its kind in the world, to ensure compliance with the Basel Convention and the integrated management of waste export and import.

Search Export & Import Waste Portal System <http://exim.allbaro.or.kr>

## Main function of waste export and import portal system

- Introduction of waste export and import reporting and permit system as well as regulations of the Basel Convention
- Preparation and submission of the applications for waste export and import report and permit
- Provide programs to self-determine whether one is subject to reporting and permit
- Introduce list of controlled items and business process

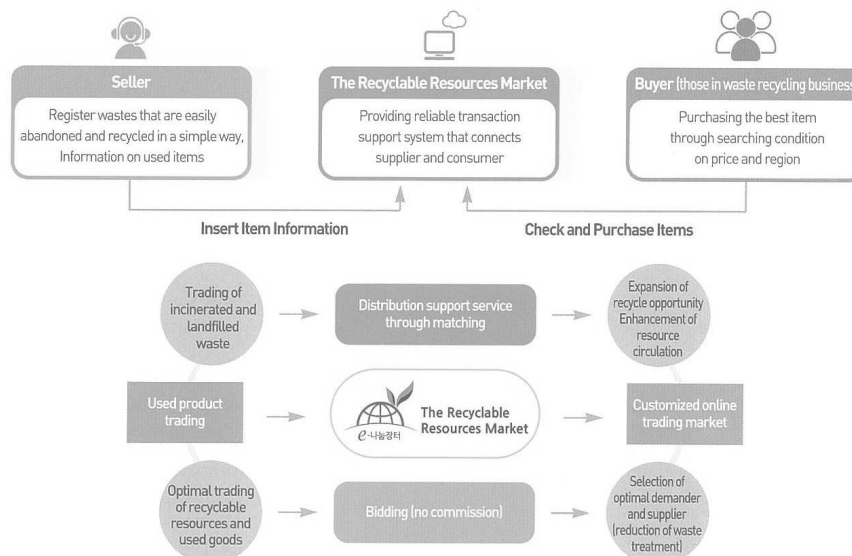


## Operation of The Recyclable Resources Market

The Recyclable Resources Market is an online market established in order to facilitate recycling of used items and waste materials that are recycled, incinerated, or landfilled and safe for anyone to trade.

### Trading item wastes, used items, interim processed goods, recycling (reused) items, and others

#### Operation of The Recyclable Resources Market



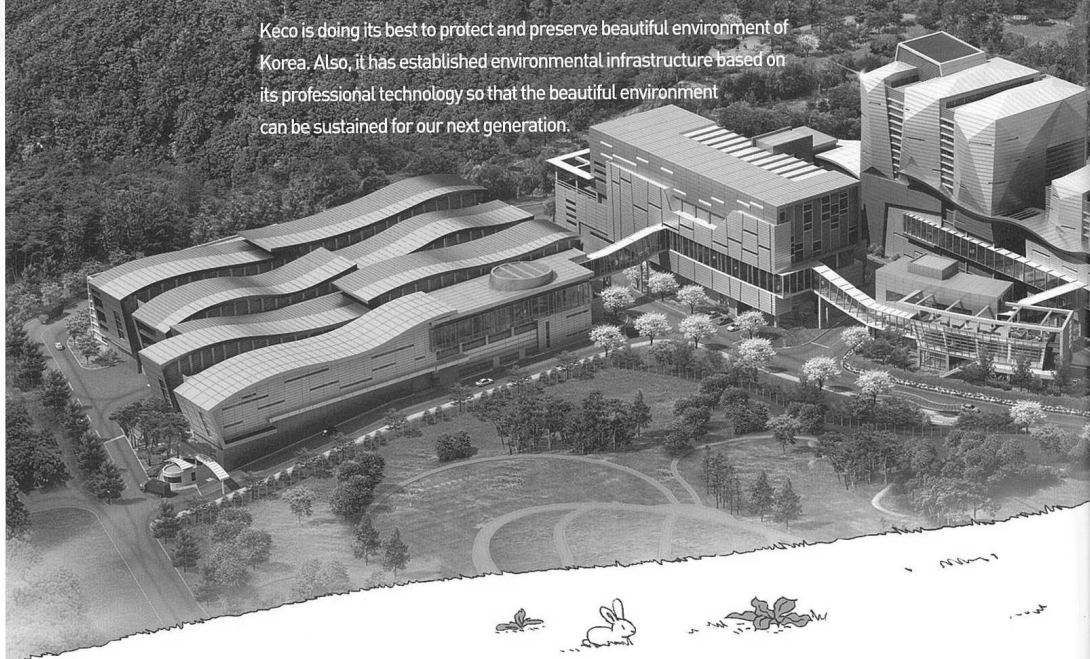
Search The Recyclable Resources Market [www.re.or.kr](http://www.re.or.kr)



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## Keco Establishes Environmental Infrastructure

Keco is doing its best to protect and preserve beautiful environment of Korea. Also, it has established environmental infrastructure based on its professional technology so that the beautiful environment can be sustained for our next generation.



### > 44 Installation Support of Aquatic Ecology Restoration and Water Treatment Facility

Ecological Restoration for the Riparian Area  
Non-Point Pollution Reduction  
Support for Water Treatment Facility Installation

### > 48 Installation and Support of Environmental Energy Recovery Facility

Expansion of Foundation for Environmental Energy Recovery  
Installation of Environmental Energy Recovery Facility  
Optimization of Waste Treatment Facility

### > 46 Installation and Operation of Water and Sewage Facility

Support for Water and Sewage Facility Installation  
Validity Evaluation of Environmental Facility Design  
Integrated Operation of Local Sewage Systems  
Operation and Establishment of Comprehensive Information System on Public

### > 50 Expansion of International Business

Promotion of International Environment Projects  
International Environment Exchange & Cooperation  
Operation of International Offices  
South and North Korea Environmental Cooperation Including Operation of Water and Sewage Treatment Facility in Gyeongju Industrial Complex



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## Installation Support of Aquatic Ecology Restoration and Water Treatment Facility

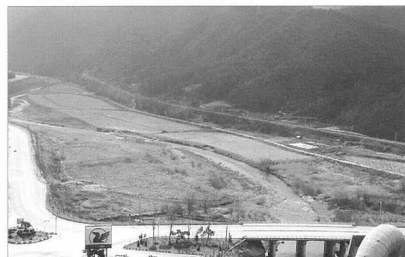
### Ecological Restoration for the Riparian Area

The program improves the quality of aquatic ecology by restoring habitat for creatures that are destroyed from river construction and enhancing water quality of polluted rivers.

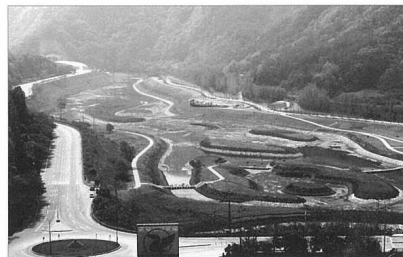
#### Major Service

- Operation of technical support center for aquatic ecology restoration
- Technical review on aquatic ecology restoration
- Promotion of consignment business on aquatic ecology by restoration
- Development of post-restoration management system and other related works

#### Ecological stream restoration in Maepocheon Danyanggun



〈Before〉



〈After〉

### Non-Point Pollution Reduction

The Non-Point pollution refers to the source of emission where the water pollutants are discharged in an unspecified manner from the unspecified places such as cities, roads, agricultural fields, mountainous areas, and construction sites. Keco manages non-point pollution properly by installing non-point pollution reduction facilities.

Search Non-Point Pollution [nonpoint.me.go.kr](http://nonpoint.me.go.kr)

Water Source	Facility Status	Pilot operation of NPS pollution reduction facility and status	
		Natural Type	Equipment Type
Han River	27 facilities	Constructed wetlands (3), grassed swales (2), infiltration trenches (3), vegetation filter strips (2), infiltration retention ponds (2), retention facilities (2), low impact development (1)	Filter type (8), retention ponds (4), screen type (2)
Nakdong River	5 facilities	Constructed wetlands (1), grassed sales (1)	Filter type (1), vortex type (1), coagulation and sedimentation type (1)
Geum River	7 facilities	Constructed wetlands (5)	Large filter type (2)
Yeongsan River	7 facilities	Ecological parking lot (1), constructed wetlands (1), ecology pond (2)	Large filter type (3)

#### Non-point pollution reduction in urban areas

To dispose non-point pollutions from residential, commercial, and industrial areas the ecological retention sites and the ecological parking lots are installed while the infiltration trenches and retention ponds are built by the roads. At the same time, large scale equipment-type facilities are built in the industrial areas.

#### Non-point pollution reduction in rural areas

For the fertilizer, agrochemicals, muddy water, and manure washed off by rainwater from the agricultural and livestock houses, artificial wetland with high efficiency is constructed.

### Support for Water Treatment Facility Installation

Keco contributes to the restoration of healthy national soil by improving water environment in the urban and rural areas. This is done by assisting installation of wastewater disposal facilities (wastewater disposal, public disposal facility for human and animal wastes, and buffer undercurrent).

#### Wastewater treatment facility installation

Keco provides support for the installation of the wastewater treatment facility which is the essential infrastructure for the installation and expansion of the industrial complex. It also supports construction of the advanced treatment facility for the currently wastewater disposal plant so that those industrial sites can comply with the reinforced standards of the effluent water quality.

#### Installation of public manure treatment facility

Keco provides support for the installation of the public treatment facility which can collect and dispose wastewater from the traditional houses and livestock farmhouses scattered around the areas to prevent water contamination in the nearby water sources and to improve water quality and create pleasant living environment.

#### Installation support for buffer undercurrent facility

Keco blocks the direct influx of the hazardous materials that are emitted from the contamination accidents in the industrial complex or industrial districts into the river. It also provides advance prevention of water contamination caused by NPS during the rainy season.

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## Installation and Operation of Water and Sewage Facility

### Support for Water and Sewage Facility Installation

Based on the installation, operational experiences, and accumulated skills of environmental infrastructures Keco contributes to the enhancement of investment efficiency and resident reliability by supporting construction of water and sewage facility (sewage treatment, sewage pipe, undercurrent facility, integrated operation of basic environment facility, etc).

#### Business Field

- Construction of public sewage treatment facility and undercurrent facility as well as sewage pipe
- Installation of reuse facility for treated water and water facility such as water treatment and village water supply system
- Establishment of basic plan for private investment treatment facility and support for business plan evaluation and negotiation
- International business and professional technical support

#### Undergrounding of Bakdal sewage treatment plant in Anyang



〈Before〉



〈After〉

### Validity Evaluation of Environmental Facility Design

Keco strives to achieve quality improvement of environmental facility program and cost reduction by reviewing (by function and alternatives) economic feasibility and on-site application validity regarding design of public environmental facilities.

#### Validity Evaluation of Design Economic Feasibility

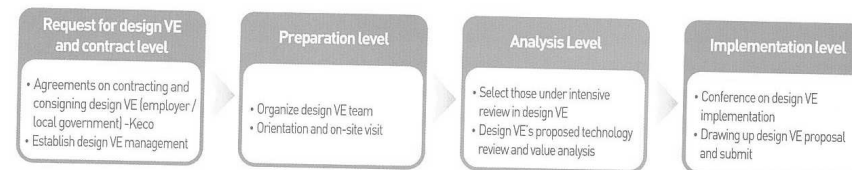
Improves construction quality and reduces cost by reviewing economic feasibility design and application validity by function and alternatives.

Search VE Analysis & Operation System in Environmental Design [www.kecove.or.kr](http://www.kecove.or.kr)

### Target

- Basic and enforcement design for construction project worth over 10 billion Won in total
- Construction project worth over 10 billion Won in total (design change that increases cost over 10% during the construction)
- Construction project worth over 10 billion Won in total awarded 3 years after completion of enforcement design
- Any other construction project that employer sees necessary to review economic feasibility during designing or construction.
- Construction project that requires economic feasibility on design regarding construction project awarded to contractor

#### Process of Work



### Integrated Operation of Local Sewage Systems

The sewage systems are changed from distributed system to centralized system and they are managed comprehensively by water sources (upstream and downstream, mainstream and tributary).

#### Major Service

- Integrated operation management connecting ET and IT on upstream dam sewage facility
- Operation of sewage facility in 5 areas (Soyang river, Choong joo dam, Daecheong dam, Andongimha dam, Hapcheon namgang dam) and integrated management of small sized facilities

### Operation and Establishment of Comprehensive Information System on Public Sewage

The life cycle cost on sewage facility including installation and operation fee is saved by establishing system that enables general diagnosis on policy making, business implementation, and performance analysis on sewage field.

#### Major Service

- Development and operation of management system such as generation of statistical data on sewage and analysis on public sewage facility operation cost
- Development and operation of installation management system such as process control and performance management of public sewage treatment plants
- Development and operation of policy support system such as calculation of sewage distribution rate and analyses on construction and expansion of sewage treatment plant

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## Installation and Support of Environmental Energy Recovery Facility

### Expansion of Foundation for Environmental Energy Recovery

#### Construction business for sustainable eco-friendly city

Keco develops a wonderful city that plays the role of Test-Bed of climate changes and green technology.

##### Sustainable eco-friendly city

Sustainable eco-friendly city means a city is developed by considering environmental factors first such as reforming its city infrastructure and life type into low-carbon type to reduce greenhouse gas and environmental pollution.

#### Development of environment energy town

Keco develops energy-independent town by using biomass and natural power produced in a small town.

##### Environment Energy Town

Based on the active participation of town residents the town reduces unnecessary energy consumption and by directly generating energy within the town this contributes to the reduction of greenhouse gas and increase in energy independency.

#### Bio green energy fund

The purpose of this project is to promote domestic policies and oversea business regarding waste-to-energy and biomass-to-energy program.

### Installation of Environmental Energy Recovery Facility

Keco provides design management, construction management, and supervision from the planning stage in order to support technical administration work of local governments regarding establishing basic environment and energy recovery facilities.

#### Major Service

- Basic plan setting and managing & inspection of environmental effect, management of basic and implementation facility design
- Execution and calculation of business costs for engineering service, contract and construction, overall supervision, and test-run instruction.

#### Support for installation of basic environment Facilities (incineration, landfill, sewage sludge, resource recovery center, etc)

Provides support for installation of facilities required for environmental preservation in local governments such as waste landfill and incinerating facilities.

#### Support for installation of energy recovery facility for combustible wastes

Combustible wastes go through mechanical selection and the wastes are processed into solid fuels after the selection. The solid fuels are used to generate electricity and heat energy.

#### Support installation of organic waste-to-energy facility

Biogas is produced by using organic wastes (foods waste and livestock excretions) and clean fuels and energy are produced from the biogas.

#### Environmental energy complex town construction business

This project aims to seek broad connection and aggregation of energy-converting facilities dispersed by respective self-governing bodies while maximizing the efficiency by reducing the inefficiency caused by reckless establishments of small facilities.

#### Installation of basic environmental facility carbon-neutral program

This program expands distribution of new renewable energy by installing new renewable energy generation facility such as solar light in basic environmental facility.

#### Installation of energy-independence facility for sewage treatment

This program enhances energy independence by producing clean fuel and energy with biogas emitted from sewage sludge in sewage treatment plant.

### Optimization of Waste Treatment Facility

This leads to the proper processing and effective financial investment of waste materials by providing systemic support and management on waste treatment business of local governments.

#### Major Service

- Technical support and review during the entire course of national subsidy regarding installation program of waste treatment basic plan and waste treatment facility
  - Entire course of national subsidy program about installation of local government's waste treatment basic plan and waste treatment facility (plan-organize-issue-execute-account), technical support and review for management
- Evaluation on installation and operation or waste treatment facilities
  - Enhances environment, economics, and technology of waste treatment process by investigating and analyzing operation of waste treatment facilities
- Operation of waste energy center
  - Operates wastes energy center for the specialized control of various waste energy such as waste heat from burning, solid fuel, and biogas in landfill



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## Expansion of International Business

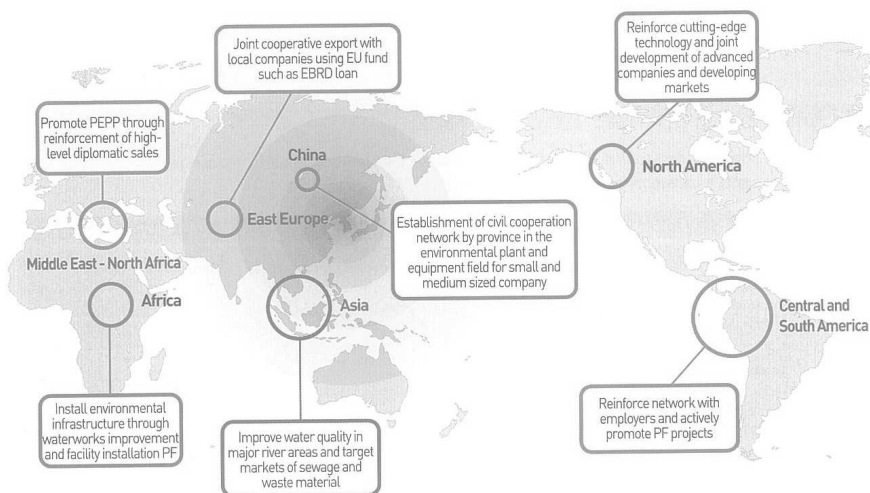
### Promotion of International Environment Projects

Keco is carrying out international environmental business in various fields such as installation of environment facility, environment technical consulting, establishment of master plan, and public aid projects. It is also trying to expand its international foundation and to become the specialized environment consulting organization with international competitiveness.

#### Major Service

- Discovery and execution of overseas projects
- 5 core areas of overseas environmental projects: water environment, waste resources, climate atmosphere, hazardous material, training

#### Strategy Type of Business Promotion in Each Region



### Public/Private sector environmental partnership program (PEPP)

Based on Keco's expertise in installation and operation of environmental facility and technology joint advancement in oversea markets with domestic environmental companies is promoted by reinforcing support program to help private companies to win oversea environmental projects.

### International Environment Exchange & Cooperation

Search [www.singgo.org](http://www.singgo.org)

Keco engages in continuous and various environment exchange & cooperation activities with countries around the world to disseminate excellence of environmental policy in Korea

- International environment training: Invite environmental government employees in developing countries to transfer Korea's environmental management experience.
- Operation of Seoul Initiative (SI) office and implementation of demonstration business.
- International Environment Expert Training Program (IETP): Train young professionals in environment fields and dispatch to international organization.
- Reinforcement of bilateral/multilateral cooperation network: Expand global network through hosting and supporting joint research projects and international events.
- Publication of international information trend book: Contribute to environmental policy and improvement of international understanding in technology by collecting, analyzing, and providing information on recent domestic and international environmental trends.
- MOU conclusion in environment fields and hosting of international environmental cooperation forum and seminar.

### Operation of International Offices

Keco is developing and operating environmental cooperation business by establishing and managing international offices in Beijing, China and Hanoi, Vietnam. Furthermore it is also building up the foundation for North-East Asia and South-East Asia areas.

Type	Address	Phone
Vietnam Office	15th Floor VIT Tower, 519 Kim Ma, Ba Dinh District, Hanoi, Vietnam	(84)-4-2220-8205
China Office	Room No. A303, Boya Guoji Center, No.1, Wangjing Lize Zhong Road, Chaoyang Dist, Beijing, China	(86)-10-8591-0994 (02)-3490-7447(INT)

### South and North Korea Environmental Cooperation Including Operation of Waste and Sewage Treatment Facility in Gaesong Industrial Complex

Keco operates waste water treatment facility in Gaesong Industrial Complex based on rich experience in operation and management of basic environmental facilities.

Type	waste water treatment facility	waste (incineration, landfill) treatment facility
Operation period and personnel	2002.7.1~2014.12.31/5 Workers	2008.8.1~2014.12.31/6 Workers
Facility capacity	15,000m <sup>3</sup> /day	Incinerates 12 tons/day, 6,100m <sup>3</sup> for landfill
Treatment target	Plant wastewater, municipal wastewater, landfill leachate	General wastes in business sites, municipal wastes

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## Keco Promotes Public Health

Keco will provide various environmental services such as safety diagnosis of children's playground and recovery system for asbestos damage that allow all the nations to enjoy the healthy life by making a pleasant living environment.

### > 54 Provision of Life-Based Environmental Services

Operation of Environmental Love PR Center  
Operation of Among Neighbors Center for Floor Noise  
Light Pollution Investigation and Foundation Establishment  
Operation and Management of Noise and Vibration Monitoring Network  
Operation and Management of Indoor Air Quality Automatic Monitoring Network  
Technical Diagnosis of Malodor in Public Environmental Facilities and Technical Support for Business Sites with Malodor

### > 56 Provision of Environmental Public Health Service

Free Measuring and Reduction Consulting Service on Radon  
Operation of Asbestos Damage Relief System  
Asbestos inspection and analysis  
Slate-Roofed Disassembling & Disposal and Roof Amelioration

### > 59 Management of Hazardous Materials

Measurement and Analysis of POPs  
Test and analysis of hazardous materials  
Good Laboratory Practice (GLP)

### > 61 Prevention and Reduction of Pollutant Discharge

Vapor Collection Facility and Low-NOx Monitoring  
Environmental Monitoring Equipment Inspection  
Technical Diagnosis on Water Treatment Sewage Pipe in Public Environmental Facility  
Inspection and Diagnosis of Waste Treatment Facilities  
Test, Inspection and Certification of Environmental Products

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## Provision of Life-Based Environmental Services



### Operation of Environmental Love PR Center

Search Environment Love PR Center <http://pr.keco.or.kr>

Keco operates PR center in 7 areas nationwide for the environment education of children and enhancement of eco-friendly living practices of the nation.

Operation Status	Seoul, Anseong, Jeongeup, Gwangju, Daegu, Gimhae, Uryeong
Tour Application	Online (Environment Love PR website) or telephone application
Opening Hours	Weekdays 9:30~17:30 (excluding Saturday, Sunday and public holidays)
Program	Operation of Eco-School, watching video (animation), works of junk art, environment education and experience, operation of environmental playing facilities

### Operation of Among Neighbors Center for Floor Noise

Keco's professional call center to solve inconvenience caused by floor noise and at the same time, provides site visit and measuring services.

Service Area	Residents living in apartment house in the country. ※ Application (Seoul metropolitan and 5 major cities → expansion to the nationwide)
Application	• Online: National Noise Information System Website ( <a href="http://www.noiseinfo.or.kr">www.noiseinfo.or.kr</a> ) • Call Center: Floor Noise Neighbors Service Call Center (1661-2642)

### Light Pollution Investigation and Foundation Establishment

To prevent light pollution caused by inappropriate use of artificial light, Keco forms clean light environment by implementing light pollution management policy business such as investigation on light pollution, examination and research on light pollution sources, and information provision to the nation.

Operation of Good Light Information Center ([www.goodlight.or.kr](http://www.goodlight.or.kr))

- Provides information on law and policies related to light pollution
- Publicizes result of brightness analysis on pictures taken by the nation

Search Good Light Information Center [www.goodlight.or.kr](http://www.goodlight.or.kr)

### Operation and Management of Noise and Vibration Monitoring Network

(NOISE Info 국가소음정보시스템)

Search National Noise Information System [www.noiseinfo.or.kr](http://www.noiseinfo.or.kr)

Noise and vibration monitoring network systemically identifies the conditions of national noise and vibration and scientifically evaluates and analyzes the actual cause in areas with too much noise and vibration. Data obtained from this system is used as the basic information for making national noise and vibration reduction policy.

Operation and Management of Integrated Management System of National Noise Information System and Noise/Vibration Auto Monitoring Network

Operation and Management of Noise Auto Monitoring Network	Operation and Management of Noise / Vibration Manual Monitoring Network
<ul style="list-style-type: none"> <li>• Environmental noise auto monitoring device management and monitoring data analysis: 62 places in 14 cities</li> <li>• Aircraft noise auto monitoring device management and monitoring data analysis: 90 places in 14 airports</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly monitoring of environmental noise monitoring network and monitoring data analysis (605 places)</li> <li>• Semiannual monitoring of railway noise monitoring network and monitoring data analysis: 35 places</li> <li>• Semiannual monitoring of road vibration monitoring network and monitoring data analysis: 34 places</li> </ul>

### Operation and Management of Indoor Air Quality Automatic Monitoring Network

Keco identifies and analyzes cause of indoor air pollution at multi-use facilities. Data obtained from this system is used at the basic information for making indoor air quality management plan.

Target Facilities	Underground stations, underground shopping malls, passenger terminal, waiting area at airport facilities, libraries, nursery facilities, port concourse, medical facilities, museums, rehabilitation centers for the elderly, waiting room at railway stations, large stores, indoor parking lot
Measurement	CO <sub>2</sub> , PM10, CO, NO <sub>2</sub> , O <sub>3</sub>

### Technical Diagnosis of Malodor in Public Environmental Facilities and Technical Support for Business Sites with Malodor

#### Technical diagnosis of malodor in public environmental facilities

Keco offers odor reduction and effective management strategies through periodic technical diagnosis for the public environmental facilities with odor problems.

Obligated Facility	Public environmental facilities established and operated by the head of local government agency are obligated to execute technological inspection every 5 year according to 'Odor Prevention Act.'
Target Facilities	Public sewage treatment facility, excrement treatment facility, public manure treatment facility, waste water treatment facility, food waste treatment facility.

#### Technical support for business sites with odor

Keco serves to reduce odor in industrial complex and business sites and improve surrounding environment by offering customized technical support to business sites suffering from odor problems.

Field of Technical Support	Odor emitting business sites
Technical Support Cost	Free government grants (includes monitoring and analysis on odor material)

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## Provision of Environmental Public Health Service



### Free Measuring and Reduction Consulting Service on Radon Search [www.radon-free.or.kr](http://www.radon-free.or.kr)

This service provides complimentary door to door measuring of radon concentration which are easily exposed to radon (basement, semi basement or 1st floor of detached house, tenement and multiplex houses). It also offers customized consulting service for reducing radon so that each family can voluntarily manage their own indoor radon reduction.

#### Radon ( $^{222}\text{Rn}$ )

This is colorless, tasteless, and odorless gas produced during the process of destruction of uranium which exists in rock, soil, and construction materials. Radon is natural radioactive material that exists anywhere in the earth and causes lung cancer.

#### Application

Basement, semi basement or 1st floor of detached house, tenement and multiplex houses

#### Service Subjects

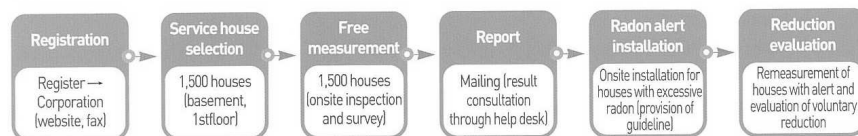
Total 1,500 houses selected based on house type, deterioration, and registration

※ The final selection of service houses will be informed to the residents privately.

#### Complimentary Service

Free radon measurement, radon reduction consulting, installation of alert in houses with excessive radon

#### Process



### Operation of Asbestos Damage Relief System Asbestos Damage Relief Center [www.adrc.or.kr](http://www.adrc.or.kr)

The relief system aims to make compensation for those who live close to asbestos mine and have health damage from asbestos exposure or cannot have legal support even if they have disease caused by asbestos because accurate reason cannot be defined.

Search [Asbestos Damage System www.adrc.or.kr](http://www.adrc.or.kr)

### Relief procedure

#### Qualifications

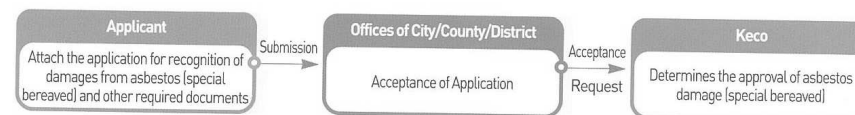
- Asbestos Victims: Those with diseases caused by exposure to asbestos in Korea and who intend to be recognized as victims of asbestos.
- Special Bereaved: Families of the deceased who died due to asbestos diseases before or after the enforcement date (January 1, 2011) of Asbestos Damage Relief Act.

#### Designated Diseases Caused by Asbestos

Primary malignant mesothelioma, primary lung cancer and asbestosis (class 1 to 3), diffused pleura thickening

※ Diffuse pleura thickening? Pleura surrounding lung get inflammation due to asbestos and lung cannot have normal perspiration function.

#### Application Procedure



※ The application for recognition of special bereaved shall be submitted to and accepted by offices of cities managing the address of the deceased at the time of death.

#### Relief benefit application procedure

Those who are recognized as victims (special bereaved) of asbestos must submit the application for relief benefit (recuperation benefit, livelihood subsidy during recuperation period, funeral expenses, special condolence money for the bereaved and special funeral expenses) and other required documents to offices of cities.

※ Applications for payment of recuperation benefits must be submitted when medical fees are incurred. Applications for livelihood subsidy during recuperation period must be submitted on a monthly basis.

### Asbestos inspection and analysis

#### Asbestos inspection and analysis business

KECO supports safe management of asbestos containing building by providing asbestos map and risk assessment results after inspection asbestos containing of the building or facility.

#### Target Facilities

Public organization, kindergarten, school, multiuse facilities under Article 21 of 'Asbestos Safety Management Act' and building demolished or dismantled under Article 38 2 of 'Occupation Safety Management Act.'

#### Asbestos analysis

Analysis of suspected asbestos containing materials such as building materials, soil, wastes, etc. and in an air.

#### Operation of asbestos environment center

According as Asbestos Safety Management Act; we operate Asbestos Environment Center to contribute to the health of its citizens and environmental preservation through inspection and analysis of asbestos over a living environment.

## Major Service

- Sampling and analysis for approving of import & production of presumptive asbestos containing material(talc, vermiculite, serpentine, sepiolite)
- Airbone asbestos measurement and evaluation in removal and process of asbestos at construction site
- Level of asbestos in air, water and soil over Naturally Occurring Asbestos areas, risk and health impact assessment
- Project on research, study and engineering development for asbestos safety management

## Operation of integrated information network for asbestos management and help desk (1661-4072)

Keco has established integrated asbestos control system based on the result of asbestos inspection on construction materials and database of asbestos map. Moreover, it introduces the system and operates the Help Desk for the asbestos safety management.

## Major Service

- Development of systematic management plan for asbestos inspection by establishing and operating integrated information network for asbestos management
- Promotion of asbestos safety management system and integrated information network for asbestos management
- Introduction of asbestos safety management system and operation of consulting booth (asbestos safety management help desk 1661-4072)

Search Asbestos Information Network [www.asbestos.me.go.kr](http://www.asbestos.me.go.kr)

## Slate-Roofed Disassembling & Disposal and Roof Amelioration

Asbestos known as a Category 1 carcinogen containing Slate-roofed had been used as Roof and structural wall in 70s. As they have deteriorated and threaten health of its citizens, we enhance the project of slate-roofed disassembling&disposal through agreements with local governments.

### Type of Projects

- Slate-roofed disassembling&disposal and roof amelioration
- Vacant Housing destruction with slate-roofed
- Amelioration of housing in agricultural and fishing villages

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## Management of Hazardous Materials

### Measurement and Analysis of POPs

Keco performs investigation on POPs discharge volume in non-incineration and incineration facilities, verifies trends and status of pollution, establishes base data for POPs policy making, and develops POPs reduction measures.

### Investigation on source and amount of POPs emission

#### Scope of application

Mandatory measurement under POPs Management Act and sources with concerns over POPs discharge (175 facilities)

#### Methodology

Measurement of POPs discharging sources and on-site inspection by using the investigation sheet of relevant facilities.

#### Target

PCDD/DFs, Co-PCBs, and HCB

### Installation and operation of POPs monitoring network program

Scope of Application Nationwide POPs monitoring sites for air, soil, water, sediment (171 sites)

Target Compounds Organochlorine pesticide (13 chemicals), industrial chemical material (4 chemicals), process byproduct (5 chemicals).

Items	Air	Soil	Water quality	Sediments
Number of sites	38	61	36	36
Monitoring frequency	3 times / Yearly	1 time / Yearly	2 times / Yearly	1 time / Yearly

### Measurement and analysis of dioxin

Keco provides measurement and analysis service on dioxin by measuring and analyzing dioxin discharge level in incineration facilities and POPs discharging facilities.

#### Scope of application

POPs discharging plants including waste incineration facilities, non-incineration facilities (steel, iron, aluminum, copper, cement, chemical manufacturers based on oil chemicals)

### Test and analysis of hazardous materials

Keco conducts accurate and prompt analysis on hazardous materials that may contaminate environment or harm people's health by having comprehensive examination capacity for inspection.



## PCBs inspection and analysis

### Scope of analysis

Waste insulating oil and additional materials of waste transformers and condensers, insulating oil and additional materials of new transformers and condensers, new insulating oil and base oil and other wastes requiring PCBs level analysis

## Waste inspection and analysis

Scope of Analysis	Dust and Cinder	Slag, Waste Foundry Sands, Waste Sand, Refractor Waste, Waste Catalyst for Ceramic Stabilization or Solidification Disposal / Pb, Cu, Cd, CN, Hg, As, Cr6+ and oils	Sludge, Waste Adhesion, Waste Absorbent	Waste Solvent
Items of Measurement	Pb, Cu, Cd, CN, HG, AS and Cr6+	Pb, Cu, Cd, CN, Hg, AS, Cr6+ aCH2Cl2nd oils	Pb, Cu, Cd, CN, Hg, As, Cr6+, oils, organic phosphorus, TCE and PCE	16 items including CH2Cl2

## Good Laboratory Practice (GLP)

Good Laboratory Practice evaluates influence (toxicity) of harmful materials such as chemicals and pesticides on aquatic creatures.

### GLP (Good Laboratory Practice)

GLP is international standard (OECD) which systematically manages the entire process of the inspection in order to guarantee the reliability of various toxicity test conducted for the safety assessment of chemical materials.

### Scope of Application

Chemical materials, pesticides and preventive medicines

### Test Category

- Algae, Growth Inhibition Test: Algae is exposed in test materials with different concentration and observed for 72 hours to induce concentration of test material which affects growth of growth rate of algae.
- Daphnia sp., Acute Immobilization Test: The water flea is exposed to test materials with different concentration and observed for 48 hours to calculate concentration (EC50) which 50% of water flea is affected with their swimming.
- Fish, Acute Toxicity Test: Fishes are exposed to test materials with different concentration and observed for 96 hours to calculate concentration (LC50) which 50% of fishes have died.
- Ready Biodegradability: Induces degradability of chemical materials by aerotropic microorganisms.

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## Prevention and Reduction of Pollutant Discharge

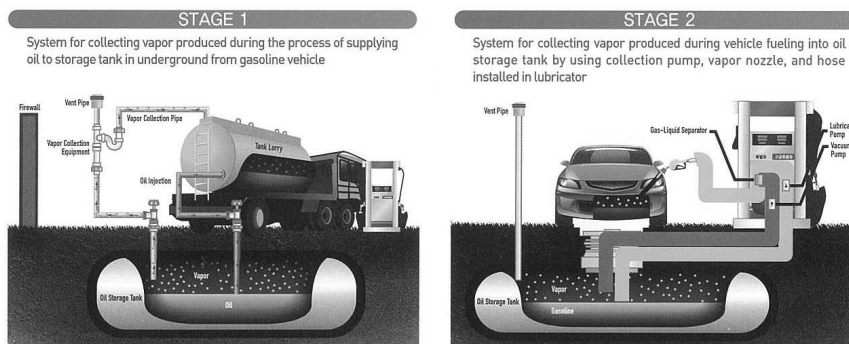
## Vapor Collection Facility and Low-NOx Monitoring

### Installation of vapor collection facility

Improves atmospheric quality and enhances national quality of life by indicating managing vapor collection facility in oil stations and thereby reducing VOCs.

### Target

Special atmosphere preservation area, oil stations selling more than 300m³ of gasoline a year and located within the area of atmosphere environment restriction



### Low NOx burner approval test and performance verification test

Improves air quality through efficient management of NOx emitted from small-medium-sized boilers and chiller-heater.

### Low NOx burner accreditation test

This test accredits Low NOx products of manufacturer/supplier/vendor approving that they have NOx reduction efficiency of over the certain standard.

### Performance verification test

This test verifies if the recipient of the subsidy has installed the accredited products or complies with the low NOx accreditation standards in their operation

## Monitoring Equipment Inspection

the inspection of environment monitoring equipment used for monitoring pollutants and emission facilities to set accuracy and homogeneity of monitoring equipment and thus, rise the

ing water, vehicles, indoor air quality, noise/vibration, soil, calibration of fluid velocity, liquid

Description
for getting type approval of each model to maintain accuracy and homogeneity of environmental monitoring equipment acturer, importer and distributor sale their equipment in Korea(regulated in law)
checking accuracy when anyone who use type approved equipment wants to check reliability of equipment and in law)
f standard gas and car exhaust dust filter/paper for calibrating environmental monitoring equipment(regulated in law)
action for environmental monitoring equipment that are not regulated in law
ration through the relationship between the value of test flowmeter or measuring system and the value of standard ed by KOLAS on the field of fluid flow calibration: KS Q ISO/IEC 17025/2006, Approval NO. KC01-074)

## Inspection on Water Treatment Sewage Pipe in Public Environmental Facility

analysis on entire treatment facility including installation, processing, maintenance, and emission facilities under operation to improve their life span and efficiency.

sewage treatment facility, excrement treatment facility, manure treatment facility, waste treatment facility, and sewage pipe

every 5 years starting from the announcement date of first use

## Diagnosis of Waste Treatment Facilities

### Types of Waste Treatment Facilities

to prevent breakdown and support effective operation by improving facility and providing diagnosis is done by implementing onsite inspection and symptom and function analysis for public waste landfill, incineration, and food waste disposal facility.

processes of carrying wastes

process, operation, and other diagnosis

agency: establishment of enhancement and optimal method

issues for sustaining proper processing efficiency

application (no specific interval)

## Waste treatment facility inspection

### Purpose

By implementing regular inspection on installation before use and during operation of waste treatment facilities to prevent the second contamination caused by incineration, landfill, and treatment food wastes this enables public environment facilities to operate in accordance to installation and management standards.

### Business Scope

Types of Facility	Types of Test	Test Interval/Time
Waste Landfill Facility	Installation test	After installation and before the first use
	Regular test	After first one year, every 3 years
	End of use & Closing test (new)	After completion of final capping and before closing process
	Post care regular test (new)	After first one year, every 3 years
Waste Incineration & Heat Recovery Facility	Installation test	After installation and before the first use
	Regular test	Every 3 years
Food Waste Treatment Facility	Installation test	After installation and before the first use
	Regular test	Every 1 year

## Test, Inspection and Certification of Environmental Products

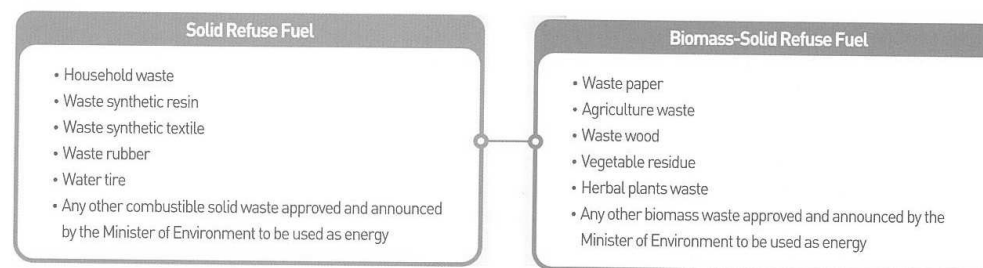
### Inspection of medical waste container

To manage and keep the medical waste safely Keco induces proper producing and use of container by inspecting legalized dimension and function of medical waste container (plastic bag type, corrugated cardboard type, and synthetic resins type).

### Certification of quality and class of solid fuel

Keco contributes to the expansion of new and renewable energy use by inducing combustible waste that was simply incinerated and buried due to difficulty of recycling to be recycled as a solid fuel.

### Types of Solid Fuels



# Social Responsibility



## Corporate Social Responsibility

Keco promises to fulfill its CSR by building trust with the public through promoting strategic CSR linked with expertise in environmental sector, and to continuously spread its friendly value through love sharing campaign.

### Taking Care of Public Health

- Environment Love Clinic on Reduction of Individual Sewage, Malodor, Living Noise
- House Repair (Sarang's House Repair)

### Taking Care of Local Community

- One-Company One-Traditional Market Restoration Campaign
- One-Company One-River Restoration Campaign
- One-Company One-Agricultural Village Campaign
- One-Company One-School Support Campaign
- Supporting Environmental Education for Local Community

### Taking Care of Under privileged Neighbors

- Sharing Management of Supporting Disadvantaged Class and Disaster Relief
- Expanding Social Contribution through Private Partnership



## Ethical Management

Keco aims to establish practical culture on ethical management through promoting an ethical consciousness among employees with company-wide education and improvement of corruption extermination system.

### Ethics and Integrity System

- **Work Integrity Undertaking** : Undertaking to accept professional and economic sanctions in case of a violation of a code of conduct
- **Guidelines on Corporate Card** : Providing guidelines on use of a corporate card
- **Guidelines on Crime Report** : Making it mandatory to report to prosecutor/police office in case work-related crimes are uncovered
- **Guidelines on Integrity Allegiance** : Making it mandatory to hold resolution conference on integrity in every events
- **Voluntary Registration System of Property** : Registration system for executive staff
- **Integrity Agreement System** : Inserting special terms on integrity in every agreement



## Shared Growth

Keco aims to promote various policies based on fair and transparent transaction principle, so as to achieve shared growth with small and medium sized companies.

- Preferential purchase policy of small and medium sized companies product
- Technical support and joint research and development with small and medium sized companies
- Operation of educational programs to reinforce capabilities of collaborating companies
- Supporting expansion of overseas business and extension of markets for small and medium sized companies
- Management support for small and medium sized companies



## Communication Channels with Customers

Keco aims to fulfill customer's rights to be informed and to improve their convenience by operating various communication channels with customized services.



Home page  
[www.keco.or.kr](http://www.keco.or.kr)



Mobile Website  
[www.mkeco.kr](http://www.mkeco.kr)



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