GREEN KOREA 2004

www.me.go.kr

Cover Image: One of the winners of the
Environmental Drawing Contest held on the occasion of the
8th UNEP GCSS/GMEF in Jeju Island, March 2004.
<Lee Ga Eun, 2nd Grade, Kye-Song Elementary School>

Published by the International Affairs Office
Ministry of Environment

Government Complex Gwacheon, Jungang-dong 1,
Gwacheon-si, Gyeonggi-do, 427-729 Republic of Korea
Tel. (822) 2110-7910 Fax. (822) 504-9206

This publication uses recycled paper.

GREEN KOREA 2004

Building an Eco-Community for the 21st Century

Ministry of Environment
Republic of Korea

Contents

Minister's Message

It is my great pleasure to present to you Green Korea 2004, the annual publication by the Korean Ministry of Environment (MOE) introducing Korea's environmental policies to the global community.

Following the proclamation at the World Summit on Sustainable Development that environment, economy, and society cannot be separated but are inextricably linked, humanity has been working on implementation measures to address major issues of our day such as environmental conservation, poverty eradication, consumption and production patterns, and natural disasters. I believe global collaboration and action are moving us step by step towards the common good of sustainable development.

In March this year, Korea hosted the 8th UNEP Special Session of the Governing Council/Global Ministerial Environment Forum in Jeju Island. It gave me joy to be the host of this international gathering where participants discussed integrated water resources management, water, sanitation, poverty, and human settlements in another step forward to realizing internationally recognized goals.

Korea, in parallel with worldwide discussions on sustainable development, has been undertaking many efforts, which include: building an eco-community where all of nature's creations live in harmony, securing a resource-circulating waste management system, promoting environmental policies that provide win-win situations for the environment and economy, improving the water quality in the 4 major rivers, and supplying safe and clean drinking water.

To briefly explain our national goals in the field of environment:

First, to conserve Korea's beautiful national environment breathing with life, MOE has established a National Environmental Conservation Plan based on 'planned unit development' and introduced the Strategic Environmental Assessment System to raise the effectiveness of the Environmental Impact Assessment System. Also, the National Biological Resources Center began construction this year and a comprehensive plan was established for conserving the Demilitarized Zone and ecosystems of small islands and coastal areas.

Second, to create a pleasant living environment for the Korean people, MOE has developed the Mid- & Long-term Comprehensive Measures for Indoor Air Quality Management, as well as the Framework Plan for Metropolitan Air Quality Control, whose contents include adjusting the fuel pricing system and introducing ultra low sulfur fuels into the market.

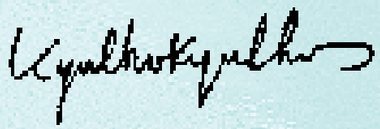
Furthermore, the Total Water Pollution Load Management System came into effect this year, while the Comprehensive Measures for Non-Point Source Pollution Management were established. Items under the Extended Producer Responsibility System also increased to further establish a resource-circulating recycling structure.

Third, to enhance ecology and economy together, MOE has worked on institutional preparations for building a system of sustainable consumption and production patterns by promoting corporate environmental management guidelines and the enactment of the Act on the Promotion of Environmentally-friendly Products Purchasing . Moreover, phase 2 of the Eco-Technopia 21 Project has started, under whose framework the Eco-STAR Project began in September on cutting-edge technology such as low and zero emission vehicles, and water treatment advancement.

Additionally, a special task force team has been created to lead preparations for the Fifth Ministerial Conference on the Environment and Development in Asia and the Pacific to be hosted in Seoul in March next year.

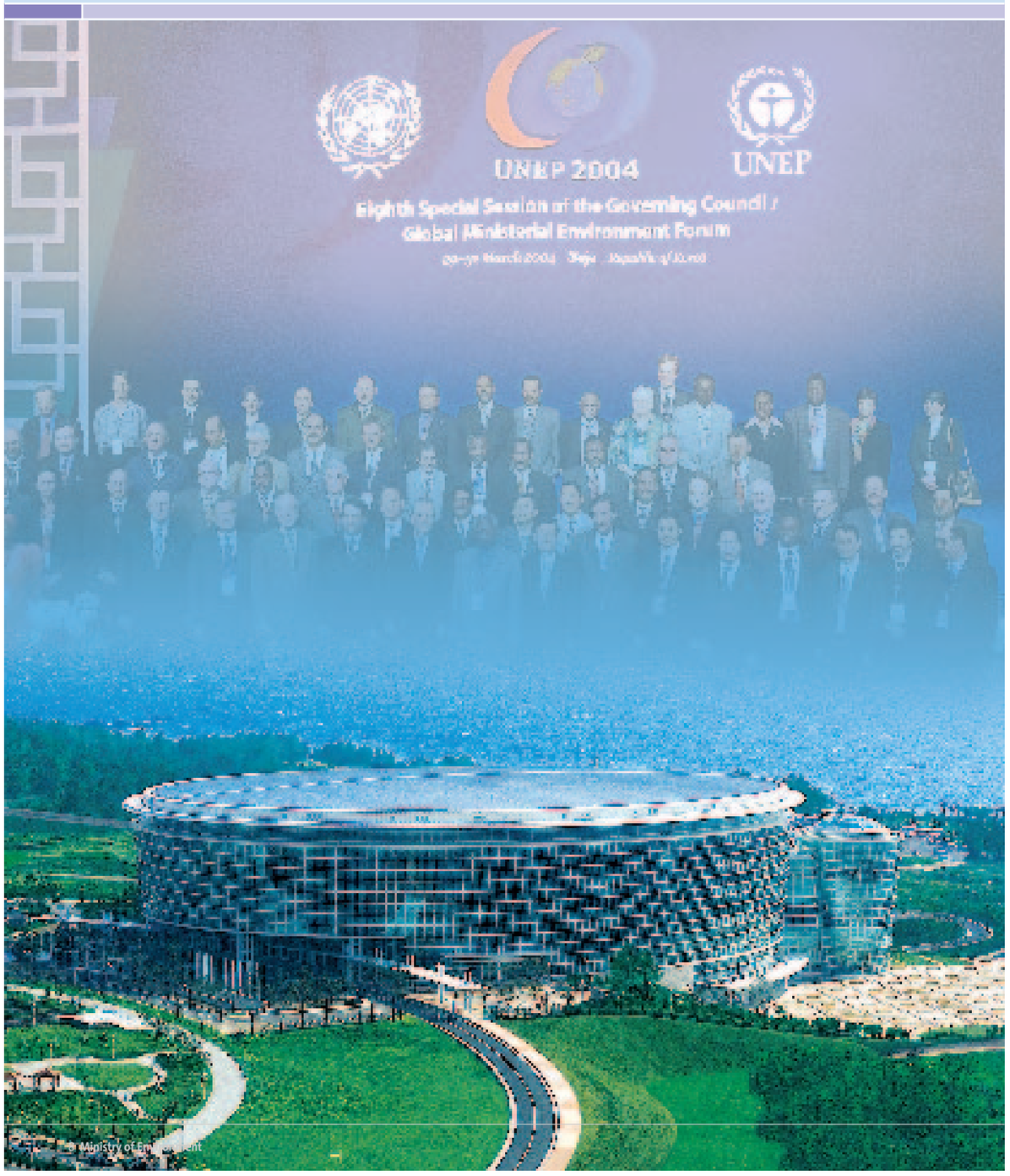
MOE gives you Green Korea 2004 in hopes that Korea's experiences and examples in environmental policy, developed through the past 40 years of rapid economic growth, will contribute to global sustainable development in mutual fulfillment of environmental conservation, economic development, and social welfare.

November 2004



KWAK, Kyul-Ho Ph.D
Minister of Environment
Republic of Korea

Special Section



The 8th UNEP Special Session of the Governing Council / The 5th Global Ministerial Environment Forum

More than 1,200 participants from 158 countries gathered for the 8th UNEP Special Session of the Governing Council/Global Ministerial Environment Forum (UNEP GCSS/GMEF), held at the International Convention Center in Jeju Island, Republic of Korea, between March 29~31, 2004, to share experiences and know-how regarding water resources use and management, in relation to the cluster themes of water, sanitation, and human settlements.

At the Conference, Korea shared its experiences of addressing environmental issues that have risen in the process of achieving rapid economic growth.

This international conference was largely composed of two parallel meetings, the GMEF and the Committee of the Whole (COW). At GMEF, the Jeju Initiative was produced containing 31 action items based on the experiences and case studies from all over the world for the achievement of the implementation goals agreed at WSSD regarding integrated water resources management, water and sanitation, water and poverty, and water and human settlements.

At the working-level meeting of the Committee of the Whole, although a consensus was not reached on the issue of universal membership of the UNEP Governing Council/Global Ministerial Environment Forum, it was agreed to continue further discussions. Also, with respect to raising contributions made to UNEP, many nations welcomed the idea of an indicative scale of contributions, but made note of the fact that the indicative scale of contributions must be used on a voluntary basis.

Korea also partook in bilateral meetings with 15 nations, including nations from Africa and Central and South America, i.e. regions with which environmental cooperation has been minimal, as well as other nations to strengthen existing ties of environmental cooperation. The list of countries include Burundi, Chile, Costa Rica, Egypt, Germany, Ireland, Iran, Jordan, Kenya, New Zealand, Sudan, Sweden, Switzerland, the UK, and the USA. Among these bilateral dialogues, a Memorandum of Understanding (MOU) regarding National Parks was signed with Costa Rica, and agreements were made to draft a MOU with Burundi, Chile, and Sudan.

Also, the 5th Global Civil Society Forum, the Meeting on Capacity Building for Integrated Policy Design, and the Network Meeting of Women Ministers for the Environment were held, in addition to side events organized by the Korean Ministry of Environment and UNEP on topics including Small Islands Developing States (SIDS), Dust and Sand-storms (DSS), technology transfer, and eco-friendly technology.

At the 5th Global Civil Society Forum, discussions took place on global perspectives on water, sanitation, and human settlements, a human rights approach and assessments of implementation mechanisms. A statement of outcomes was presented at the Global Ministerial Environment Forum.

At the side event on Dust and Sandstorms (DSS), presentations were made on Northeast Asian DSS, Joint International Research on Atmospheric Brown Cloud, and Air Pollution in the Mega cities of Asia,

triggering much interest and support from high-level policy-makers of the Asian region.

Korea is committed to continuously promoting the Jeju Initiative, the major outcome of the UNEP Special Session, in the international society and to maintaining active participation in global environmental discussions regarding water resources use and management.

With respect to bilateral cooperation, Korea will establish mid- to long-term plans to transfer Korea's unique experiences and know-how to developing nations. In order to strengthen environmental cooperation with developing countries Korea recognizes the need to identify concrete fields for cooperation and to support developing countries through projects such as the Knowledge Partnership (KP) Project, which is conducted in cooperation by the Korean Ministry of Environment and the World Bank.

Furthermore, Korea will utilize the human, material, and intellectual resources accumulated through the experience of hosting the UNEP Jeju Conference in the preparation for a successful Fifth Ministerial Conference on Environment and Development in Asia and the Pacific (MCED 2005), which will take place in Seoul, Republic of Korea, in March next year.

Network of Women Ministers for the Environment

The Fifth Ministerial Conference on Environment & Development in Asia and the Pacific, 2005

The Fifth Ministerial Conference on Environment & Development in Asia and the Pacific (MCED 2005) will be hosted by Korea in Seoul from 24~29 March, 2005. Korea expressed its willingness to be the host country at the 60th Session of ESCAP in Shanghai, China in April 2004, and submitted its final decision for hosting MCED 2005 in August.

The Asia-pacific region, which accounts for 1/4 of the global landmass and more than half of the world population, has undergone unprecedented political, economic, and social developments throughout the past decades. The rapid modernization of the region gave rise to unanticipated pressures including environmental deterioration and the loss of natural resources, and such challenges have been exacerbated by the poverty experienced in many nations.

In this backdrop, the UN ESCAP MCED was established with the goal of facilitating the sustainable development of the region while responding to the environmental challenges. With a launch of the first conference in Thailand, the home ground for ESCAP headquarters, MCED has been held every 5 years since then. After the Kitakyushu Conference in Japan, this is the second time that the conference is being held outside of ESCAP headquarters.

At MCED 2005, approximately 62 environment ministers of the ESCAP member states and associate members, and representatives from international organizations and NGOs will gather to discuss the 'Implementation Plan for Sustainable Development in Asia and the Pacific' for year 2006 ~2010 and reaffirm their commitment through the ministerial declaration.

The main theme will be "environmentally sustainable economic growth." Regional initiatives including the Seoul Initiative on the main theme and sub regional initiatives on "dust and sandstorms," "soil degradation," "education for sustainable development," etc. will be developed through the conference. The participants will also review the implementation outcomes and the follow-up measures to MCED 2000 with the united vision towards sustainable development of the region. Furthermore, side events such as a Science Symposium, Civil Society Forum, and Private Sector Forum will take place in conjunction with the conference.

Among these side events, a two-day Science Symposium will give presentations and bring lively discussion on "Global Change, Environment and Development." In particular, it is noted that the symposium will have eminent experts and scientists like Dr. Mostafa Tolba, former Executive Director of UNEP. The Civil Society Forum will discuss the role of civil society on sustainable consumption. At the Private Sector Forum, participants from industry and international organizations in Asia and the Pacific will deal with the role of business for sustainability. Other side events will address environmental issues such as environment technology, trade and environment, and environmental education.

The host venue - the City of Seoul - promises to make the conference memorable for all participants. Seoul became the national capital in 1394

Preparatory Meeting for MCED 2005

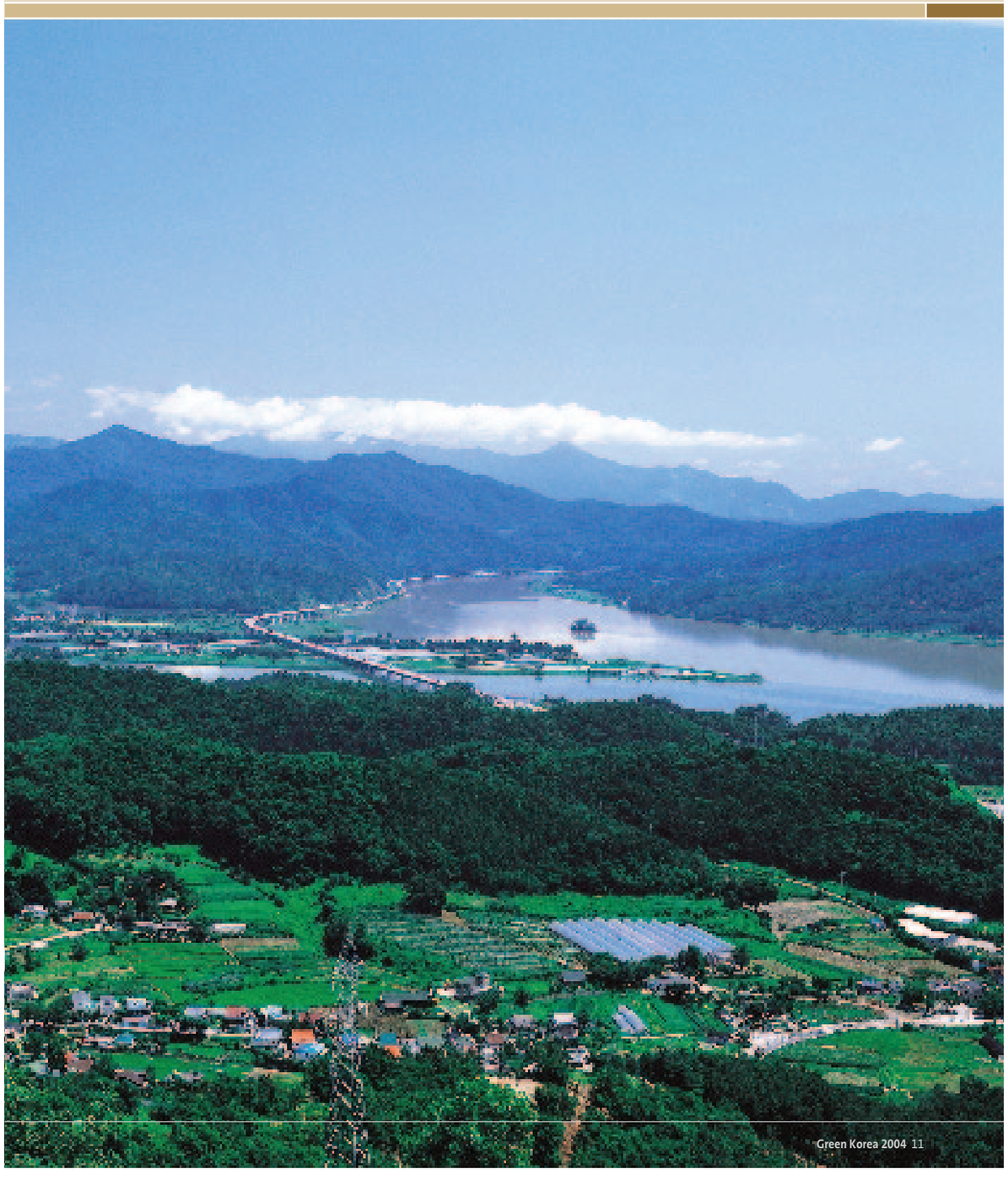
during the Joseon Dynasty and has remained the hub of Korea for more than 600 years. Seoul is special in that historical sites and modern facilities of the latest technology coexist side by side.

Seoul's Jongmyo Royal Shrine - the house of worship for the kings of the Joseon Dynasty - is sure to delight visitors with its beautiful cultural assets as one of Korea's "UNESCO World Cultural Heritage Sites." Furthermore, Changdeok-gung and Changgyeong-gung Palaces present visitors with the opportunity to enjoy distinctive features of Korea's traditional gardens where colorful pavilions harmonize with rich forests and ponds.

Seoul is also highly recognized as a world-class city with numerous amenities and shopping districts such as Insa-dong and Myeong-dong. Insa-dong is a tourist attraction district where alleys of galleries and folk art stores make the perfect complements to traditional restaurants and teahouses, while Myeong-dong district resembles a massive shopping city where Korea's trendsetters fill the streets with vibrant energy.

The Government of Korea already has a proven record of hosting the UNEP 8th Special Session of the Governing Council with great success. Based on the accumulated experience and the nation's passion and commitment towards regional environmental conservation, the Government of Korea will make earnest efforts to successfully host this MCED 2005.

The Environment of the Korean Peninsula



Natural and Geographical Characteristics

The Korean peninsula borders China and Russia to the north, and stretches from the northeast to the southwest across about 1,000 km. Total land area is around 222,000 km^2 and ROK to the south comprises 99,866 km^2, which is about 45% of the peninsula.

Around 66% of the land strata were formed in the Cenozoic Era and more than 70% of the bedrock is composed of granite and gneiss. Korea's topography is steep to the east and gentle to the west. The Baekdu Daegan Mountain System stretches north and south along the eastern length of the peninsula, and gives way to farmlands of eroded plains to the southwest. Such characteristics make slow-moving waterways in the west and south, and shorter fast-moving waterways in the east.

Forests cover 65.4% of the country, giving Korea a variety of vegetation and rich biodiversity. Broad-leaved deciduous forests can be found throughout the middle regions, while in the southern regions and east and west coastal regions there are broad-leaved evergreen forests. In the southernmost regions, as well as islands off the southern coast, warm temperate evergreen forests have developed.

The Korean peninsula is surrounded by the ocean on three sides with more than 3,200 islands and the coastline extends for about 17,000 km (including those of islands). The continental shelf including tideland (beaches, tidal flats, etc.) accounts for twice the size of terrestrial land at 500,000 km^2 (345,000 km^2 in ROK), of which 80% is located along the west coast.

The number of species existing in Korea is expected to be around 100,000. However, asides from vertebrate and flowering plant species, the species are not well known or documented. Those currently identified include 18,052 animal species, 8,271 plant species, and 3,528 species of mycota and protista, for a total of 29,852 known species.

Scenic Beach in Jeju, the Island of Peace

Korea has four distinct seasons of spring, summer, autumn, and winter, with cold dry winters and hot humid summers. Average yearly precipitation is 1.3 times the world average at around 1,283mm, but due to high population density, the per capita yearly precipitation is 2,705 tons, which is 10% of the world average of 26,871 tons (2002 figures). In addition, because rainfall is primarily in the summer season, streams and rivers often become dry for most of the year making water supply sources vulnerable to heavy volume fluctuations.

Changes in Environmental Conditions and Future Challenges

With a population of 48 million, ROK's population density is among the highest in the world at 481 people per km^2, leading to high environmental pressures. Also, accelerated economic growth within a short span of time since the 1960s has led to the destruction of scenic sites of natural beauty and ecosystems, the rapid increase of environmental pollution, and the emergence of issues of social conflict surrounding various large-scale development projects such as dams and highways.

In particular, the explosive growth of vehicles in the Seoul Metropolitan Region, which accounts for 12% of the landmass and has a high population density of 1,858 people per km^2, has brought about severe deterioration of air quality.

Water quality has largely improved over the years, but non-point source pollution such as run-off from agricultural fields, forests, and roads has become highlighted as a major area of concern. Waste generation has steadily increased with economic growth and rising consumption levels, and greater amounts of hazardous chemicals use is leading to various harmful side effects.

As the environmental awareness of Koreans rise, so does the demand for improvements to be made in response to emerging environmental disorders including the sick house syndrome and hyper-sensitivity to chemical substances from worsening indoor air quality in public facilities, apartments, etc.

With respect to international environmental cooperation, the need for implementation measures on major multilateral environmental agreements including the UN Framework Convention on Climate Change and the Stockholm Convention on Persistent Organic Pollutants is being highlighted as worldwide concerns deepen regarding issues such as global warming and ozone layer depletion.

In the Northeast Asian region, there is growing expectancy for increased multilateral environmental cooperation to effectively respond to major regional environmental issues including dust and sand storms (DSS) and acid deposition. Also, following the hosting of the UNEP 8th Special Session of the Governing Council/Global Ministerial Environment Forum in Jeju in March 2004, the commitment is rising to increase Korea's role in international environmental cooperation to befit the heightened position of Korea in the international community.

Overview of MOE Policies & Efforts

Nature Conservation

Korea is blessed with outstanding natural beauty, surrounded by the ocean on three sides of the peninsula and with 65.4% of its land covered by forests. It is also full of various natural habitats and abundant biodiversity. After all, Korea has long been called "geum-su-gang-san," which refers to a beautiful land seemingly embroidered with silk mountains and rivers.

However, land use and management in the last 40 years have followed supply-oriented development policies based on economic efficiency more than sustainable conservation and management based on ecological planning. As a result, Korea established the foundation for rapid economic growth and national development within a short period of time, but not without problems of degradation in the natural environment such as the destruction of ecosystems, as well as the reduction of forests in the Baekdu Daegan Mountain System and tidal flats in many island and coastal regions.

The Ministry of Environment(MOE) recognizes the need to systematically conserve and manage outstanding ecosystems, scenic natural sites, and biodiversity on the Korean peninsula and has adopted the overarching vision to realize a sustainable community of life where nature and society can symbiotically develop.

A key MOE initiative is to create an **eco-network** on the Korean Peninsula, conserving the notably bio-diverse ecosystems of Baekdu Daegan Mountain Sytem (BDMS), the Demilitarized Zone (DMZ), and various small islands and coastal regions. Recent efforts to this end include the **Act relating to Baekdu Daegan Mountain System Protection** enacted in December 2003, the plans to establish and follow a comprehensive conservation and management strategy for the DMZ and bordering areas, and the environmental survey conducted on 648 small islands between 1998 and 2003. (Please go to page 46 for more details.)

View of Baekdu Daegan Mountain System

Korea's system of conserving natural ecosystems focuses on the protection and conservation of areas with outstanding ecosystems and high biodiversity through designations as ecosystem conservation areas, wetland protection areas, and specially designated islands. Currently, there are 22 ecosystem conservation areas (247.76km^2), 14 wetland protection areas (186.50km^2), and 20 national parks (6,473km^2) for a total of 56 zones covering 7,014km^2 (7% of total land). In addition, there are 155 designated special islands comprising 10.22km^2 (as of June 2004).

Several areas in Korea are internationally recognized for its conservation value. Two wetland sites have been registered in the Ramsar List of Wetlands of Inter-

national Importance under the **Ramsar Convention** - the High Moor, Yongneup of Mt. Daeam (106ha), the only of its kind in the country, and Woopo Wetland (854ha), the largest natural inland wetland in Korea. Mt. Baekdu (in the DPRK), Mt. Sorak (3,932km^2), and parts of Jeju Island (Mt. Halla, 2 stream corridors, and 3 islets, 831km^2) have each been designated as a **UNESCO Biosphere Reserve**.

Ecosystem conservation areas are further divided into core, buffer, and transition zones, where land use regulations are imposed on a differentiated scale. MOE also plans to introduce first-hand nature exploration programs at national parks.

A Master Plan for Biological Resources Conservation is being established by MOE to strengthen wildlife protection measures such as conducting surveys on indigenous species and controlling their unchecked export. In June 2004, construction on the **National Biological Resources Center** began with a target of opening to the public in 2007. Also, Korea is continuing its efforts to restore the Asiatic Black Bear in the peninsula, a species which is a designated Natural Monument but highly endangered.

Another important policy development is the enactment of the **Wildlife Protection Act**, which takes effect in February 2005. Related efforts include the establishment of a wildlife rescue center and a comprehensive listing of invasive species harmful to native ecosystems.

With respect to land use and development, MOE is establishing a **Strategic Environmental Assessment System** to prevent the damage of natural ecosystems from reckless development. A major component is to improve the existing Prior Environmental Performance Review System to assess impacts from the drafting stage onwards and review alternatives, as well as consider site suitability. The number of review items was increased from 58 to 68 and legal statutes that strictly restrict the start of construction on a project prior to the end of reviews came into force in June 2003. Also, the number of types of development plans under obligation to conduct such reviews will be expanded from 46 to 107. Furthermore, to raise the effectiveness of the Environmental Impact Assessment system, on-site investigations will be strengthened and it will become mandatory to have separate bodies conduct the EIA design and the actual assessment in order to have a better system of checks and balances.

Lastly, MOE is currently working on the enactment of related statutes for the introduction of an **Assessment System for Scenic Sites of Natural Beauty** that will be applicable to projects required to conduct EIAs under the Environmental Policy Act, as well as development projects which are within a certain distance from scenic sites of natural beauty, including natural parks (national, provincial, and local), ecosystem conservation areas, and wetland protection areas. The **National Environmental Zoning Map** is another tool for environmental conservation and sustainable development. Covering ROK territory in a series of 3 maps, the first of which is complete for the Seoul metropolitan region, it will visually differentiate between essential conservation areas, buffer areas, and transition areas to better guide development plans and provide a comprehensive outlook.

Air Quality Management

The deterioration of air quality from vigorous industrial activities and the soaring number of vehicles on the road is one of the most striking changes that Korea experienced during the process of achieving unprecedented economic and social growth. In particular, air-related risks such as smog in major cities and serious health concerns including respiratory problems and early death called for immediate actions to be taken.

In response, the Ministry of Environment(MOE) not only set up air quality improvement targets on 6 major air pollutants including carbon dioxide, ozone, and particulate matters, but also introduced practical measures to pave the way towards achieving these goals. Among the measures include the **Special Measures for Metropolitan Air Quality Improvement**, a landmark policy that stipulates emission standards, a total air pollution load management system, an emissions trading system, and the supply of low emission vehicles.

Today, legally binding **emission standards** are actively enforced in industrial sites. Korea took the initial steps by setting the emission standard on nitrogen oxide in February 1979, followed by standards on carbon monoxide, nitrogen dioxide, dust, ozone, and hydrocarbon in 1983, and lead in February 1991. These were further strengthened in 1993 by establishing new standards on sulfurous acid gas and hydrocarbon.

View of Seoul Metropolitan Area

In parallel, in order to clearly understand the air quality status and secure basic information required for the establishment of improvement measures, MOE and local governments have installed and are operating a total of 10 monitoring networks to produce more precise national and regional data, as well as the levels of heavy metal and photo chemical substances in the ambient air. There are 372 monitoring centers operating in Korea as of April 2004.

Seoul and its vicinities take up only 12 % of the total national land area yet account for 46% of the total population and vehicles, making the management of urban air quality very difficult. The air pollution level in the region marks 1.7-3.5 times higher than those in other major cities globally, and social costs inflicted by air pollution reach 10 trillion Won (8.7 billion USD) annually. Against these serious challenges, MOE has been promoting the Special Measures for Metropolitan Air Quality Improvement, and led to the legislation of the **Special Act on Metropolitan Air Quality Improvement** in December 2003. The plan is to invest 6 trillion Won (5.2 billion USD) by 2012 to promote the Special Act in stages, aimed at a substantial reduction of major pollutants including particulate matters and sulfur oxides. (Please go to page 54 for more details.)
To **control point pollution sources** (e.g. particulate matters, SOx, NOx) generating from industrial sites, the Ministry of Environment has set the emission standard

on each pollutant and is expanding the restrictions in stages. Furthermore, industrial sites are categorized into five groups according to the amount of annual emission discharge, so as to wield stronger control over large-scale industrial activities.

The **Tele-Monitoring System (TMS)** has also been installed in the smoke stacks of high emission discharge volumes since February 2002. Based on the information observed by TMS, MOE mandates improvements and imposes charges to those who exceed emission standards. As of January 2004, TMS has been installed in 1,841 stacks in 317 industrial sites.

Efforts are also being made to fundamentally **reduce vehicle exhaust air pollution**, which is the highest contributor to air quality degradation. (In the metropolitan region only, 67% of PM-10 and 51% of NOx are from vehicle exhaust.) MOE has set the exhaust emission standard on newly manufactured vehicles and in-use vehicles, in addition to the fuel production standards. In particular, starting in 2006, emission standards on newly manufactured gasoline and natural gas vehicles will be strengthened to the level of ULEV (ultra low emission vehicle) and on diesel vehicles to the level of EURO-4.

MOE has started operating natural gas vehicles (NGVs) in replacement of diesel buses with frequent operation and high emissions discharge. As of May 2004, 4,876 diesel vehicles were replaced with NGVs, and 20,000 diesel vehicles, which account for 48% of the total diesel vehicles nationwide, will be replaced with NGVs by 2007. Also, as a policy to control in-use diesel vehicles that are not subject to the replacement, MOE is promoting another project to encourage the attachment of Diesel Particulate Filters (DPF) and Diesel Oxidation Catalysts (DOC).

Industrial plants located near residential areas are mandated to attain a noise permit and comply with the standards set by MOE. The government also promotes other creative measures to control excessive municipal noise by encouraging the installation of noise and vibration prevention devices and the rearrangement of construction hours.

The soaring number of vehicles in Korea is also giving rise to problems relating to traffic noise. In response, MOE has designated traffic noise control zones where honking of the vehicle klaxon can be prohibited. In addition, a train noise-monitoring network has been established and is in operation, paving the way for the adoption of train noise standards.

Finally, MOE launched and is implementing the **Indoor Air Quality Control Act** (May 2004), which stipulates the prohibition of construction materials with high pollutant discharge, among many other regulations. Also, MOE promotes a certification system on environmentally friendly construction materials and plans to develop **Mid & Long-term Comprehensive Measures for Indoor Air Quality Management** that will serve as a blue print of Korea's indoor air quality management strategies.(Please go to page 50 for more details.)

Water Quality Management

The demand for clear and clean water is ever-growing as the living standards and environmental consciousness of Koreans rise. Since the 1960s, the need to address the deterioration of water resources due to the industrialization, urbanization, and population growth has been increasingly recognized by the government and the public, especially after the major pollution accident involving phenol on the Nakdong River in 1991. Accordingly, the Ministry of Environment (MOE) established the **Comprehensive Measures on the Provision of Clean Water** in 1993 for the protection of public health and the creation of pleasant water environments.

More recently, MOE established the **Comprehensive Water Quality Management Measures for the Four Major Rivers** between 1998 and 2000. The four major rivers are the Han-gang, Nakdong-gang, Geum-gang, and Yeongsan/Sumjin-gang, which meet the water needs of more than 40 million Korean people. Major policies include the total water pollution load management system, riparian buffer zones, land purchasing, a water use charge and resident support measures.

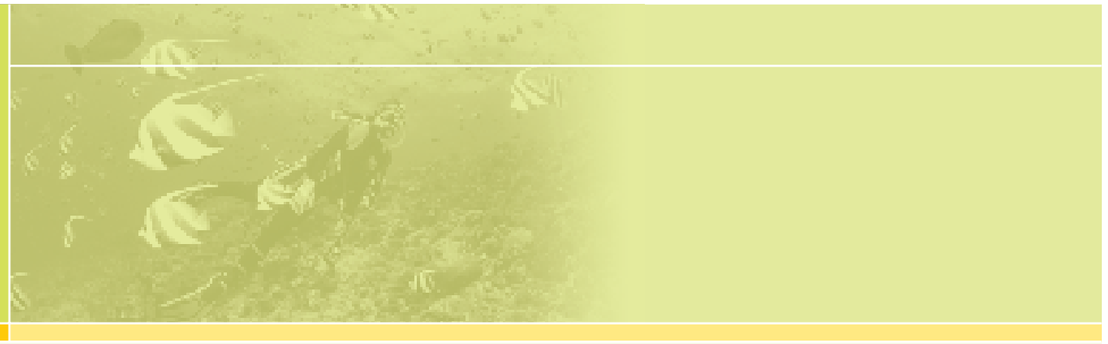
To ensure the smooth implementation of these measures through legal backing, the **Act on Watershed Management and Community Support** was enacted for each of the rivers between 1999 and 2002. These measures and acts were developed through more than 420 discussions and public hearings with stakeholders including residents, local governments, and experts over a period of five years from 1998 to 2002. With 11.1 trillion Won (9.65 billion USD) in total investments, the overarching goals are to raise the quality of water resources to Grade 1 or 2 according to the Korean index (see table below) and to raise the proportion of the population connected to sewerage facilities to 72.6~84.4% by 2005.

The **Total Water Pollution Load (TWPL) management system** contributes to the sustainable management

Grade Level Index

Grade Level	pH	BOD (COD)	Suspended Solids	Dissolved Oxygen	Coliform Count	Total Phosphorous	Total Nitrogen
1	6.5~8.5	Below 1 (1)	Below 25 (1)	Above 7.5	Below 50	Below 0.010	Below 0.200
2	6.5~8.5	Below 3 (3)	Below 25 (5)	Above 5	Below 1,000	Below 0.030	Below 0.400
3	6.5~8.5	Below 6 (6)	Below 25 (15)	Above 5	Below 5,000	Below 0.050	Below 0.600
4	6.0~8.5	Below 8 (8)	Below 100 (15)	Above 2	-	Below 0.100	Below 1.0
5	6.0~8.5	Below 10 (10)	No floating trash	Above 2	-	Below 0.150	Below 1.5

* Unit: mg/L for all except Colon Bacilli, MPN/100ml
* BOD: indicator for streams, COD: indicator for lakes and marshes
* ( ) and T-P, T-N apply to lakes and marshes



of water resources by setting a target water quality, which has been differentially set based on the results of an environmental survey conducted in each river basin and in consideration of the specific water use. This is in direct improvement to the previous regulations based on pollution concentration. For the Han river basin, using the TWPL management system is optional, and Kwangju City is the first to voluntarily establish a TWPL management plan, to be implemented between July 2004 and the end of 2007. In other river basins, water quality goals have been established in 8 locations of the Nakdong river basin, 9 locations in the Geum river basin, and 7 locations in the Yongsan/Sumjin river basin. For achieving these targets, five cities and provinces in the Nakdong river basin have already established TPWL management plans in early 2004 and other local governments in the Geum and Yeongsan/Sumjin rivers are following suit.

As a precautionary measure, **riparian buffer zones** are being established for up to 300m~1km from the water edge along the upstream banks of the four major rivers where the development of new restaurant, lodging, livestock faming, and industrial facilities are restricted. Currently 1,015 km^2 have been designated as riparian buffer zones. Moreover, the government is involved in **land purchasing**, currently around 3,300 km^2, to prevent water pollution from non-point sources, among others.

In accordance with the user-pays-principle and for equitable cost sharing strategies, MOE has levied a **water use charge** on downstream residents since 1999 in proportion to the amount of water usage. The collected revenue supplies the **Watershed Management Fund**, which supports upstream residents and local governments under land use regulations set forth to protect water resources. The Fund supports community projects and provides funding for the construction and operation of basic environmental services, as well as land purchasing. The estimated budget for 2004 is around 524.3 billion Won (456 million USD) for all four river basins.

Securing Stable Water Supply and Sustainable Water Consumption

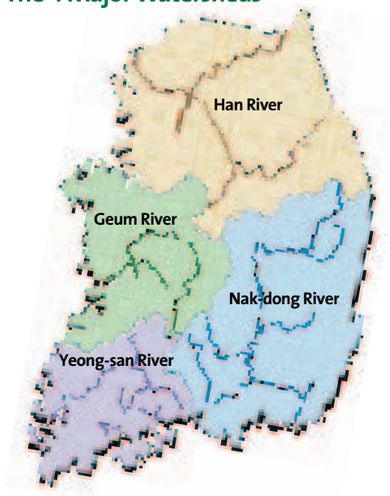
Short-term plans include amending the Special Act on the Han River to shift the TWPL management system from **optional to mandatory**. Also, the TWPL system will be gradually applied on a wider scale per region and watershed, and the local support activities of the Watershed Management Fund will be expanded to incite voluntary cooperation from residents and local governments for protecting water resources.

In the field of industrial waste, the **Sector Based Environmental Action Plan (SBEP)** was established in January 2004. Its contents include ① allowable emissions standards differentiated according to differences in treatment levels and costs between industries and watersheds, ② an increase of items listed as specific water pollutants, ③ the introduction of testing and management of bio-toxins, ④ upgrading the permits system to take into consideration industry and watershed characteristics, and ⑤ improvements for more efficient monitoring. Furthermore, a Council for the Industrial Waste Management System Improvement Plan (24 members) has been created to facilitate the participation of stakeholders such as business, environmental technology professionals, environmental organizations, and local governments.

For **advanced industrial waste management**, short-term plans include pilot projects for improving monitoring and making necessary amendments to related legislations. Mid- to long-term plans include developing concrete measures for differentiated allowable emissions standards by 2008, providing an industrial waste management policy to control bio-toxins by 2007, and increasing the number of special water pollutants from 17 to 27 items by 2008.

Lastly, the management of **non-point source pollution**, including livestock waste, is being actively improved through the new Comprehensive Non-point Source Pollution Management Measures for the Four Major Rivers, settled in March 2004. This set of measures represents the growing focus of MOE water policies on non-point source pollution in light of the fact that point-source pollution is being largely prevented through the widespread increase in sewage systems and treatment facilities. Also, a Task Force Team on **Livestock Waste Management and Use** was created in April 2004 with the Ministry of Agriculture and Forestry.
(Please go to page 59 for more details.)

The 4 Major Watersheds



Water Supply & Sewerage

Korea's annual precipitation is estimated at 1,283 mm, which is 1.3 times higher than the world's average precipitation (973 mm). However, annual precipitation per capita is estimated at 2,705 tons, just one tenth of the world's average. Also, the nation marks 1,550 tons per capita in terms of available domestic water resources, making it a water-scarce country as determined by the UN. Despite the high water usage rate compared to other OECD countries, Korea faces challenges in undertaking dam constructions for water supply due to opposition from residents and environmental impacts in dam surrounding areas. Additionally, Korea has accomplished the formidable task of improving the water supply rate in metropolitan areas to 98.5%, yet the rate in rural areas remains at 31.1%.

In response to these challenges, the Ministry of Environment(MOE) launched the **Comprehensive Measures on Water Saving** in March 2000 and has been pursuing demand-oriented water policies in replacement of supply-oriented policies. Furthermore, significant investments are being made to decrease the water supply disparity between urban and rural areas as well as to strengthen water treatment capacities to provide people with safe tap water.

As of December 2002, Korea's water supply rate was 88.7% and the sewage treatment rate was 75.8%. (daily capacity in waterworks facilities = 28,561,000 tons, daily capacity in sewage treatment facilities = 20,233,000 ton) Despite these relatively high coverage rates, the government has been required to make further efforts to mitigate the water supply disparity that still exists across the nation. Correspondingly, MOE made a total investment of 247.2 billion Won (215 million USD) in 122 facilities located in farming and fishing communities (71 facilities, 94 billion Won), small islands (43 facilities, 71.9 billion Won), and small and medium cities (8 facilities, 81.3 billion Won) in 2003. Also, more than 2.7 trillion Won (2.3 billion USD) in investment has been allocated to water quality improvement projects in water resource areas, including the installation of 443 sewage treatment facilities and 4,992km of water pipe renewals. (Please go to page 63 for more details.)

Drinking water treatment measures have been widely expanded in order to address public concerns related to waterborne viruses and pathogens. These efforts include preparations for the adoption of water treatment standards as well as for the improvements in water treatment facilities ('03.4). In addition, MOE provided thorough technical support for a total of 140 small (70) and technically vulnerable (70) facilities.

In particular, the government has introduced **advanced water treatment technologies** in facilities taking raw water from the 3 major rivers (Han, Nakdong, Yonsan) that are contaminated by domestic and industrial wastes, covering 50% of the total project budget. These advanced techniques have been adopted in 17 facilities by 2002 and will also be introduced in Moon-san County in Paju City, Moon-san County in Dae-gu City, and Ban-song County in Chang-won City. In parallel, expert training for the operators and operation assessments will also be undertaken in order to enhance the efficiency of newly upgraded water treatment facilities. Furthermore, MOE is making a vast investment of 3.8 trillion Won (3.3 billion USD) (1997~2011) to replace 42,757 km of aged water pipelines across the nation. During 1997 ~2002, 13,799km water pipelines were replaced through the investment of 1.7 trillion Won (1.5 billion USD). MOE prioritizes scientific water management that will secure tap water quality, and a shift to consumer-oriented water management that will lead to greater reliability for and trust from citizens.

Replacing Aged Water Pipelines

MOE saw another policy success by saving 585 million tons of water in 2003 compared to the amount used in 1999 through active promotion of the Comprehensive Measures on Water Saving, a wide-ranging set of measures that encompasses 14 action items including the expansion of water saving/reuse devices, adoption of a new water charge system that encourages greater water saving, and gradual replacement of aged water pipelines. With these measures, MOE set the national water saving target of saving 790 million tons of water by 2006.

In particular, significant efforts were made in the area of raising citizen awareness on water saving. MOE organizes the annual Water Day ceremony, and bolsters its endeavors through the promotion of various cultural activities and contests relating to the themes of water and children and the opening of the "I Love Water" homepage. (www.ilovewater.or.kr)

With the launch of the sewage treatment improvement project together with the Comprehensive Measures on the Provision of Clean Water in the early 1990s, Korea had attained 75.8% sewage treatment rate by 2002. In addition, concrete measures are underway to help **manage sewage and excreta** disposals with greater efficiency. (Please go to page 64 for more details.)

In accordance with the **Comprehensive Plans for Water Management** established in 1996, water treatment facilities are undergoing significant expansion with the target of raising water quality in major supply sources to the grade level 2 (see chart on page 19). By 2003, 243 sewage treatment facilities were built, and 254 treatment facilities are being built with the investment of 659 billion Won. (573 million USD).

MOE directed special focus on sewage management in year 2002 by forming the "Special Taskforce for Sewage Pipeline Rehabilitation" with participants from the Ministry of Environment, local agencies, and Environment Management Cooperation (EMC). As a result, the comprehensive plans for sewage pipeline rehabilitation were established, and in particular, remediation pilot projects have been launched in 9 local governments around the Paldang reservoir. These projects will go on during 2002~2005, and 650 billion Won (565 million USD) will be invested for successful implementation of the pilot measures.

Waste Management & Recycling

Korea experiences high environmental pressures due to rapid growth in an environment of particularly limited carrying capacity (population density is 481 people/km^2, 3rd highest in the world). As a result, Korea's amount of waste generation per unit area is one of the highest among OECD member countries.

As the amount of waste generation increases along with the development of industry and improvement of living standards, securing incineration and landfill facilities is becoming more difficult with the NIMBY syndrome.

Since 1993 the total amount of waste generation has steadily increased. Among this amount, Korea's household waste material from everyday life and economic activities has substantially decreased after the introduction of the **Volume-based Waste Fee System** (unit pricing system) in 1995. However, the total amount of waste generation has gradually increased again since 1999. Nevertheless, the daily amount of waste generation per capita has been reduced from 1.3kg in 1994 to 1.04kg in 2002. In particular, the rate of recycling exceeded the rate of landfilling for the first time ever in 2002. Between 1996 and 2002, the recycling rate of household waste increased from 26.2% to 44.0%, while the rate of landfilling decreased from 68.3% to 41.5%.

With such progress, the Ministry of Environment (MOE) has outlined a national framework plan in the **2nd Comprehensive National Waste Management Plan (2002~2011)** in March 2002. The goal is described as the "firm establishment of a sustainable and resource circulating socioeconomic foundation." In order to realize this goal, the consistent promotion of waste reduction policy, the greater utilization of waste resources, and the safe treatment and strengthened management of waste materials have been highlighted as major policy areas to address.

Overarching targets under the plan for a **circulatory waste resources management system** are to reduce municipal waste generation by 12%, which is expected to reach 52,743 tons/day in 2011, to reduce the amount of waste incinerated or landfilled by 22%, from 27,953 tons/day in 2002 to 21,817 tons/day in 2011, and to increase recycling by 53% by 2011 through efforts including a direct investment of 1.3 trillion Won (1.13 billion USD) for expanding recycling facilities, developing recycling technology, and fostering the recycling industry. In addition, industrial waste generation will be reduced by 8%, while industrial waste recycling will be raised to 80%. Policy directions are also geared towards reducing per capita municipal waste generation from 1.04kg to 0.94kg and increasing the per capita municipal waste recycling rate from 44% to 50%, both between 2002 and 2008.

In 2003, the **Extended Producer Responsibility (EPR)** System was introduced in place of the previous policy of the Waste Deposit-Refund System. The EPR System, which holds producers responsible for meeting recycling targets, is being successfully implemented and currently applies to more than 15 items, including glass bottles, packaging film, fluorescent light bulbs, and electronic products like

TVs and computers. (Please go to page 67 for more details.)

As a result of the **restrictions on disposable products use** in place since March 1994, the generation of plastic waste material is decreasing in many areas including the reduction in use of plastic shopping bags by distribution companies, the replacement of plastic containers and cups with paper products by fast food businesses to facilitate recycling, and the use of carry-out food containers that use paper materials instead of plastic. In 2002, 29 fast-food and coffee businesses signed a voluntary agreement with MOE to use reusable containers within their shops and to run a deposit system on disposable take-out containers. To further raise compliance to the restrictions through active citizen participation, a rewarding system was introduced on January 2004 for reports on violations by business establishments.

Regular consumers, businesses, and the private sector have developed a **voluntary action plan** for reducing the use of disposable products. Its main contents are raising the plastic bag price from 20 won to 50 won, promoting the use of cloth shopping bags with incentives like customer coupons, and using the entire revenue from shopping bag sales for customer services and supporting environmental conservation activities. Through a combination of voluntary and government efforts, an environmentally sound shopping culture is spreading, in a sign of increased environmental awareness and environmentally friendly lifestyles.

In order to **control packaging material waste generation**, which comprises the largest proportion among municipal waste at around 37%, it is crucial to quantitatively reduce the amount used as well as to reduce certain types of packaging material that are difficult to recycle. MOE is pursuing a threefold policy of ① regulating packaging materials such as expanded polystyrene i.e. styrofoam, since 1993, and various PVC packaging materials since 2001, ② regulating packaging methods to restrict overpackaging, and ③ gradually reducing packaging

Recycling Saves Money and Natural Resources!

material made from plastics each year. As a result, the total amount of packaging material waste decreased around 20% between 1993 (62,940 tons/day) and 2002 (49,902 tons/day), despite a 7.5% increase in population density during that time.

Meanwhile, construction waste rapidly increased from 10 million tons in 1996 to 44 million in 2002 due to numerous housing and redevelopment projects. Among the construction waste generated during 2002, concrete and asphalt accounted for more than 72%. In response, the **Act on the Promotion of Construction Waste Recycling** was enacted in December 2003 to effectively promote and systematically support the recycling of construction waste. This policy is expected to come into full effect in 2005. Furthermore, a comprehensive information system on the production and distribution of recycled aggregates will be established in order to promote its stable supply and demand. Regarding food waste, there is an ongoing nationwide **food waste reduction campaign** led in partnership with local authorities, citizen groups, civil society organizations, and the food industry. In 2002, the proportion of food waste within municipal waste generation decreased from 29.1% to 22.8%. Preparation for the ban on direct landfilling of food waste to start in 2005 is a particular area of current focus for education, PR, and raising public awareness.

With respect to **increasing utilization of waste resources**, significant progress has been made in the utilization of food waste as resources, for example compost, from 9.8% in 1997 to 62.6% in 2002, a result which successfully met the policy goal set in the Framework Plan on Food Waste Utilization 1998. Also, a project has started at the Sudokwon (Metropolitan) Landfill Site with a total budget of 50 million Won (43 thousand USD) to utilize the carbon dioxide and methane gas produced inside landfills. Site surveys and technology support are being promoted for similar projects at 11 landfill sites administered by local governments.

Lastly, for the **safe treatment** of waste products, the state of incinerators, landfill sites, and other waste treatment facilities are being improved as close inspections and proper operation platforms are being secured, for instance regarding infectious waste management, to prevent secondary environmental contamination.

MOE Roof Garden with flowerbeds & flooring made of reused tires

Cross-cutting Environmental Policies

The Ministry of Environment (MOE) is pursuing environmental policies that can create a win-win system between the environment and economy, in a distinct move away from policies that take economic growth and environmental conservation as contradictory.

The Environmental Policy Office of MOE provides an implementation framework for the achievement of sustainable development while strengthening partnerships with various sectors and levels of society. Also, environmental education in schools, as well as society at large, is being promoted to raise citizen awareness on environmental conservation. Furthermore, MOE is working to properly manage hazardous chemicals, which can affect the human body through various channels, in order to protect public health and ecosystems.

Environmental Technology Development

In order to achieve sustainable development in Korea while resolving environmental problems, as well as to overcome the challenges posed by rising international environmental regulations and trade barriers, the development of competitive and superior environmental technology is crucial. Among efforts to develop technology in preparation of future environmental demands, MOE has focused on resolving existing environmental problems and developing technology necessary for high export-potential industries through the 10-year G-7 Project (since 1992), which has been followed-up with the Eco-Technopia 21 Project (2001~2010). In the 2nd phase of Eco-Technopia 21 (2004~2007), three technological fields are being promoted: generic technology, applied technology, and technology commercialization. In particular this year, MOE began the Eco-STAR (Eco-Science & Technology Advancement Research) project, which promotes technology that can contribute to national competitiveness, with a principal researcher for each project capable of fully managing a large-scale, long-term project. (Please go to page 37 for more details.)

Fostering Environmental Industry

Recognizing the importance and potential of the global environmental market, Korea has pursued the First Phase Environmental Industry Development Strategy (2001~2003). MOE is also preparing the Mid- & Long-term Strategy on Fostering Environmental Industry (2005~2010). Environmental cooperation with China is especially active with jointly run 'Korea-China Environmental Industry Centers,' pilot projects in 10 selected provinces and cities, and the Environmental Ministers Meeting. (Please go to page 37 for more details.)

Eco-Businesses & Green GDP

MOE has developed and distributed environmental management guidelines for shifting business management and production towards being more environmentally friendly. The number of products with the Eco-label continues to expand and negotiations on internationally recognized environmental certification are proceeding. In addition, there are plans to enact legislation for promoting the consumption of environmentally friendly products. A 10-year plan to calculate a Green GDP for establishing an integrated environment-economy account is also in preparation.

Strengthened Partnerships

In order to provide an implementation framework for sustainable development policies, MOE is developing a 10-year Comprehensive Environmental Protection Plan for implemetation during 2006~2015, covering 10 fields including environmental management, nature conservation, and marine environment.

The "Green City" program aims to incite environmentally sound local administration by selecting local governments with exceptional environmental performance. Also, various partnerships for sustainable development are being strengthened such as joint surveys with the Ministry of National Defense on the environmental management conditions of military bases and frequent policy discussions with businesses, environmental NGOs, and religious organizations.

Promotion of Environmental Education

Korea has been providing environmental subjects in school textbooks since 1982 and the environment became an official elective subject in 1995. As part of efforts to institutionalize environmental education in schools, MOE is encouraging more schools to teach environmental subjects and recognizing exemplary schools in the field. Since 1985 a total of 141 schools have been designated for MOE support as model environmental conservation schools, including 26 schools in 2003~2004.

Students and the Purumi Mobile Environmental Classroom

A highlight of MOE programs is the '**Purumi (Green) Mobile Environmental Classroom**,' launched early this year. It is a mobile environmental education center that utilizes the learn-by-experience concept, using specially-equipped trucks with hands-on environmental education tools and materials to provide services tailored to meet students' needs and demands.

MOE is also developing and distributing programs and textbooks for environmental education not only in schools but society at-large, such as for professionals working in environment-related occupations.

Public Health Protection

In response to environment-related diseases, MOE is preparing a 10-Year Plan for Preventing Environment-Related Diseases. MOE plans to conduct risk assessments on 16 high-risk substances, which need immediate assessment, given their toxicity and amount of emission. Also, MOE will continue to assess and manage the impacts of chemical substances on surrounding environments following a chemical accident or leak, as well as continue research and investigation on endocrine disruptors in order to protect public health. (Please go to page 41 for more details.)

International Cooperation

Environmental problems do not pertain to a single nation but to the global community as a whole, leading to wide-ranging impacts across the globe. This makes the concerted effort by the international community an integral element in mitigating environmental challenges such as global warming and desertification. With this recognition, MOE has been making joint efforts towards both regional and international environmental protection.

REGIONAL EFFORTS

Northeast Asia, in which Korea, China, Japan, Mongolia and Russia are located, is a geographically close region that falls under similar environmental influences. Due to rapid economic growth in the region, environmental problems have become exacerbated and transboundary threats like acid rain and marine contamination have substantially increased.

These problems have highlighted the need for joint countermeasures, and environmental cooperation in the region has expanded significantly since the 1990s. Many multilateral agreements were concluded and regional bodies like the Northeast Asia Conference on Environmental Cooperation (NEAC) and the Northeast Asian Subregional Programme of Environmental Cooperation (NEASPEC) were established. In particular, in 1999, the Tripartite Environment Ministers Meeting among Korea, China, and Japan (TEMM) was instituted for a regular discussion of major environmental issues in Northeast Asia. (Please go to page 71 for more details.)

Additionally, since the first Environment Ministers Meeting between Korea and Vietnam in 2000, cooperation with Southeast Asian countries has been steadily increasing through environmental preservation programs, environmental industry exchange, and the Knowledge Partnership Program.

The 8th UNEP GCSS/GMEF, Jeju Island, Korea

Combating Dust and Sandstorms(DSS) in Northeast Asia

At TEMM4 held in Seoul, Korea in April 2002, environment ministers of China, Japan and Korea agreed to develop a joint DSS monitoring network, based on a thorough recognition of the new and urgent environmental challenges involving DSS. The ministers also agreed to promote joint training and education programs to help strengthen capacity in mitigating DSS, while promoting cooperation with international organizations such as UNEP and UN ESCAP. In this light, Korea, China, Japan, and Mongolia, in collaboration with the ADB, UN ESCAP, UNEP, and UNCCD have been promoting the "ADB-GEF Project on DSS in Northeast Asia" since January 2003 with investments by the Asia Development Bank (USD 500,000) and Global Environmental Facility (USD 1,000,000). In addition, the "High-level Meeting on DSS Prevention & Control in Northeast Asia" was organized through the occasion of the TEMM5 with participants from Korea, China, Japan, Mongolia, and the Democratic People's Republic of Korea.

Tumen River Basin Environmental Preservation Project

The Tumen River Basin Environmental Preservation Project (TumenNET) was implemented as a subproject in the environmental segment of the Tumen River Area Development Project (TRADP), which began in 1995 by UNDP (United Nations Development Programme) and the River's neighboring countries. TumenNET was carried out from August 2000 to December 2002 by ROK, DPRK, China, Russia, and Mongolia to analyze the factors that threaten biodiversity and marine resources as well as to establish a mid- to long-term Strategic Action Plan.

The 12th ECO-ASIA Environmental Congress, Japan

The Korean government oversaw the development of the Strategic Action Plan, which was the final outcome of this project, based on the results of project components performed by each country: Environmental Information System (EIS) by China, Awareness Raising Program (AWARE) by Mongolia, Transboundary Diagnostic Analysis (TDA) by Russia, and Regional Water Survey (SURVEY) by DPRK.

The Strategic Action Program consists of 46 projects, including new and expanded designation of ecosystem protection areas, wetlands conservation, monitoring and information sharing for water quality protection, eco-tourism and promotion of environmental consciousness, standardization of environmental impact assessment techniques, and sharing of environmental information among the participating countries. (www.tumennet.org or http://nier.go.kr/nier/tumennet/eng_index.htm).

This project engaged not only the Korean Government but also leading research institutes, local governments and the civil society. For example, civil society made use of the project to awaken people to the importance of preserving the environment in Tumen River basin by promoting voluntary projects such as the "Tumen River Cleaning Day" campaign.

As follow-up to TumenNET, MOE has started training workshops this year for environmental impact assessment experts of Northeast Asian countries.

Bilateral Cooperation with Northeast Asian Countries

Environmental cooperation with China began in full force with the establishment of the Korea-China Environmental Cooperation Agreement in 1993. On the basis of this agreement, the Joint Committee on Korea-China Environmental Cooperation has been alternately hosted every year since 1994. At the 9th meeting held in February 2004 in Busan, Korea, the Joint Committee authorized 16 bilateral cooperation projects. In addition, the Korea-China Environment Ministers Meeting was convened in July 2003, where cooperation in environmental industry and technology were of particular interest and led to the establishment of the Korea-China Environmental Industry Center in Beijing. Moreover, the 1st Expert Meeting on On-time DSS Monitoring Information Sharing was convened in April 2004 in Beijing to discuss detailed implementation measures.

Environmental cooperation with Japan also gained speed through the conclusion of the Korea-Japan Environmental Cooperation Agreement in 1993. Since 1994, the Joint Committee on Korea-Japan Environmental Cooperation has been taking place annually in alternate locations to exchange environmental policy experiences of each country and discuss ways to cooperate on global environmental issues. At the 8th Japan-Korea Joint Environmental Commission Meeting held in Seoul the two nations agreed to undertake 23 new joint projects and discussed measures to strengthen bilateral cooperation within the frameworks of global initiatives including the Decade of

Environmental Education for Sustainable Development, the Cartagena Biosafety Protocol, the Climate Change Convention, CITES, and other multilateral initiatives in Northeast Asia.

In addition to China and Japan, Korea established an environmental cooperation agreement with Russia in 1994 for cooperation in selected research areas like the protection of transboundary migratory birds. Recently, the 3rd Korea-Russia Joint Committee Meeting was organized in March 2004. With Mongolia, Korea organized the Korea-Mongolia Environment Ministers Meeting in Tokyo in 2000 and established an environmental agreement for major areas of interest. Currently, discussions are underway on DSS monitoring and research, as well as the development of Mongolia's water resources. On the other hand, NGOs of Korea are making voluntary efforts to undertake forestation projects and provide training and education in DSS sources area in China and Mongolia.

GLOBAL EFFORTS

There are about 220 international conventions in the areas of air quality, water quality, waste and natural environment. Korea has joined 45 of these conventions, including the Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD), Montreal Protocol on Substances that Deplete the Ozone Layer, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention to Combat Desertification (UNCCD) as means to contribute to global environmental conservation efforts. In particular, Korea ratified the Kyoto Protocol in November 2002 to fully address climate change and related issues of extreme weather patterns and global warming. Also, Korea signed the Cartagena Protocol on Biosafey on September 2000 and is working to ratify the Protocol.

Additionally, since the establishment of the Global Environment Facility (GEF), Korea has been making contributions to financially support global environmental preservation projects of developing countries. By extending considerable financial aid to the projects of Northeast Asia, including a DSS prevention project, GEF has proven to achieve not only global environmental preservation but also regional preservation. Korea has contributed approximately 110 million USD to the 1st and 2nd term funds during 1994-2001, and plans to allocate approximately 5.55 million USD for the 3rd term contribution (2002~2005).

Addressing Climate Change

At the Earth Summit (UNCED) convened in Rio de Janeiro in 1992, most nations joined the United

The 5th Global Civil Society Forum, Jeju Island, Korea

Nations Framework Convention on Climate Change (UNFCCC), an international treaty that seeks to mitigate global warming by reducing greenhouse gases such as CO_2 and methane. The convention also mandated 39 developed countries to set targets for greenhouse gas reduction. Furthermore, the governments agreed to an additional treaty in December 1997, called the Kyoto Protocol with concrete & legally binding measures for the effective implementation of UNFCCC. Korea signed the UNFCCC in December 1992 followed by a ratification Kyoto Protocol in November 2002.

Although Korea is excluded from the list of Annex 1 countries, the nation falls under significant impact from greenhouse gases and the government is required to develop long-term national strategies to correspond to the impact of climate change. Korea formed the Inter-Ministerial Committee on UNFCCC in 1998 and has been promoting the Comprehensive Action Plans since 1999. Currently, the 2nd phase of the Comprehensive Plans is underway, including 84 projects in 5 areas such as emissions reduction.

In order to further expedite greenhouse gas reduction in an economically efficient manner, MOE has developed and is promoting the measures for the pilot operation of the Emissions Trading System - specifically targeting green house emissions - since February 2004. MOE has contracted five research projects with five research institutes, including the Korea Environment Institute (KEI) and Korea Energy Economics Institute to develop a final set of measures for system implementation. Furthermore, the MOE-Korea Meteorological Administration Joint Climate Change Symposium was organized in August 2003 with expert presentations on climate change and adaptation measures, as well as research demonstrations and cooperation forums.

Efforts also include the promotion of 18 projects, such as the climate change impact assessment system and climate change adaptation program, expanding the supply of compressed natural gas (CNG) buses, and promoting the utilization of landfill gas. MOE will further expand the scope of measures and will launch new actions to increase public awareness on climate change by organizing local seminars and utilizing various communication methods such as online and mass media. For example, a Korean website has been set up on climate change, providing citizens with useful and critical information.

Efforts toward Sustainable Development

In 2002, Korea participated in the World Summit on Sustainable Development in Johannesburg. In addition to the Government delegates, various members of the National Assembly, Local Agenda 21, and NGOs attended WSSD. Furthermore, Korea played part in disseminating exemplary practices for environmental protection by introducing the environmentally sound hosting of the 2002 Korea-Japan FIFA World Cup titled "Dynamic Korea, Clean Korea," and successful implementation of the Volume-based Waste Fee System at the official exhibition center. At the Johannesburg Summit, Korea's efforts to implement Agenda 21 in the areas of poverty eradication and sanitation, which constitute the crux of sustainable development, were highly evaluated in the Agenda 21 Implementation Report produced by the United Nations.

Environment & Trade

Korea has been making considerable efforts in international negotiations on environment and trade by joining numerous initiatives including the WTO Doha Development Plan, the OECD Trade & Environment Working Group and others, with the vision towards achieving a mutual development of environment, economy, and trade. In March 2003, the Government of Korea submitted the initial offer of environmental services to WTO and has been negotiating with the WTO members including EU, US and Japan on this matter. MOE has also prepared a list of environmentally friendly products as means to contribute to the global environment by encouraging the active trade of these products.

In addition, efforts are being made to improve the environmental soundness of bilateral Free Trade Agreements by seeking ways to minimize the FTA's negative impacts on the environment. Among efforts to achieve the mutual development of environment and economy include the establishment of FTA Environmental Assessment methods, mutual agreement on environmental labeling, and cooperation among environmental industries.

Cooperation with International Organizations

Korea maintains close cooperation with many international environmental organizations to exchange information and to play our part in global environmental preservation. For example, Korea promotes many cooperation initiatives with UNEP through the secondment of MOE officials to UNEP and making trust fund contributions. In particular, with successful hosting of the UNEP 8th Special Session of the Governing Council in Jeju last March, the collaboration between ROK and UNEP was further bolstered.

Korea is also promoting a partnership project in hands with ESCAP through secondment of MOE officials. Wide cooperation activities are also underway as Korea will host the 5th UN ESCAP Ministerial Conference on Environment and Development in 2005.

Cooperation with international funding organizations including the World Bank and GEF are also being steadily undertaken. In particular, Korea promotes the Knowledge Partnership Project in hands with the World Bank, aimed at disseminating Korea's environmental experiences and expertise to the developing countries of Asia. In 2003, Korea has successfully undertaken three projects, which included the "Environmental Management of Small- and Medium-sized Enterprises (SMEs) and Industrial Zones" in China, "Integrated Watershed Management for Laguna de Bay" in Philippines, and "Regional Environmental Management for Traditional Villages" in Vietnam. Through consultations with the World Bank, Korea plans to launch five new projects in year 2004. (Please go to page 74 for more details.)

National Environmental Dispute Resolution Commission

The Government of Korea legislated the Environmental Dispute Adjustment Act in August 1990, followed by the formation of the National Environmental Dispute Resolution Commission (NEDRC) and Local Environmental Dispute Resolution Commissions in 16 local cities in July 1991. With these accomplishments, Korea has been providing citizens with a structured dispute settlement system that secures the citizens' rights and mutual benefits even without going through traditional legal proceedings.

The separate roles of the National and Local Environmental Dispute Coordination Commissions are defined by the scale of the environmental dispute. When the reported damage exceeds 80,000 USD or the governments are among the concerned parties, the NEDRC coordinates the settlement. For the disputes that arise in local cities or have a reported damange under 80,000 USD , the appropriate Local Environmental Dispute Coordination Commission coordinates the settlement process.

Between 1991 and 2003, a total of 1,345 environmental disputes were reported and 1,016 of them were successfully settled. The disputes arising from noise & vibration marked 859 cases, which accounted for 84% of the total number of disputes, followed by 97 cases on air pollution (10%) and 47 on water pollution (5%).

Among the 1,016 settled cases, 830 negotiation outcomes (approx. 83%) were mutually accepted by the concerned parties. The Commissions aim to further strengthen the expertise of the settlement coordinators while promoting the scientific and structured negotiation procedures, and increasing the transparency of decision-making processes. Through these endeavors, the Korean government will devote itself to facilitating a sound quasi-legal system for citizens that resolves the environmental disputes in the most effective and reliable manner.

Noise and Vibration from Transportation

Status of Environmental Dispute Settlements (1991~2003)

Number of Dispute Cases	Number of Settled Cases					
	Total	Noise & Vibration	Air Pollution	Water Pollution	Marine Pollution	Others
1,345	1,016	859	97	47	8	5

Featured MOE Policies & Efforts

Promotion of Environmental Technology and Industry

Background

The field of environmental technology forecasts a bright future to lead the 21st century with its high value added potential, large-scale marketability, and the ability to provide alternatives towards securing both environmental conservation and economic development. The Ministry of Environment has been making headway in research and development of major environmental technologies, with the goal of expanding the domestic environmental market, job creation, and increasing exports. In parallel with Information Technology (IT) and Biotechnology (BT), Environmental Technology (ET) is now considered as one of the core industries for the 21st century.

Along with ET development, there are growing trends in corporate environmental management. Namely, businesses are raising company value and profit through increased sales, cost reduction, and efficiency that come from environmentally friendly corporate management. MOE is undertaking several initiatives for encouraging such practices in Korea like the Environmentally Friendly Enterprise Certification System.

In addition to the abovementioned areas, the environmental industry is fast-growing in Korea. Since the 1990s, with rising citizen interests in the environment and increasing government efforts, the environmental industry sector has continuously grown over the years and is expected to grow by around 12% each year. MOE has been working towards promoting joint environmental industry development and exchange, especially with China and other Northeast Asian countries.

G-7 Project

With the launch of the G-7 Project (Leading Technology Development Project) in 1992, the Korean government has been developing major technologies to strengthen national competitiveness. The G-7 Project is a government project aimed at developing 7 areas of environmental technology to the level of G-7 countries.

Korea has been rapidly closing the technological gap - particularly in the area of post-treatment technology - that existed between Korea and other advanced countries. For example,post treatment technologies such as “high efficiency dust collecting technology” and “exhaust gas desulfurization technology” have been upgraded, reaching 80~90% of the leading country’s technological level. While public-private matching investments were made in the abovementioned areas, the government also gave full support in developing technologies for infrastructure building and transferring these technologies to the private sector.

A total of 331 projects were successfully completed by the end of 2003 in the G-7 framework, the first and largest research & development initiative on environmental technology.

Eco-Technopia 21 Project

Despite the significant success achieved through the G-7 project, a number of environmental fields including environmental conservation/restoration and precautionary pollution prevention were in need of

focused development. In efforts to meet these new challenges, MOE has been promoting the Eco-Technopia 21 Project with the investment of 1 trillion Korean won (800 million USD) in a 10-year framework.

For systematic implementation of the Eco-Technopia 21 Project, MOE developed a **10-year Master Plan for Eco-Technopia 21** in July 2002. With this plan, MOE outlined concrete goals and strategies by phases, while introducing the Technology Road Map (TRM) of the nation.

Following the completion of phase 1 (2001~2003) of Eco-Technopia 21, MOE launched phase 2 (2004~2007) with 85 billion Won (73 million USD) in investments in 2004 alone.

In Phase 2, MOE will first select and develop core technologies based on the top-down approach by securing the technological infrastructure (eg. development of source technologies) prior to launching efforts toward core technology development. Furthermore, areas of less success will be highlighted in the next phase plan and be given priority.

Second, MOE will categorize the phase 2 projects into three units: ① source technology development for the future (10%), ② technology refinement before entry into the market (20%), and ③ core technology development (70%). (Number in ( ) shows budget allocation percentage.)

Recently, MOE launched the **Eco-STAR Project** with the goal of developing large-scale projects in selected fields of environmental technology that show good prospects and marketability. In 2004, two pilot task force teams began on the "reduction of vehicle exhaust emission" and "advancement of water treatment." Notably, the two task forces will operate according to the milestone system, a method of setting prior targets in each stage and reshaping the follow-up measures based on the progress and outcomes. MOE plans to promote gradual expansion of the Eco-STAR Project based on the outcomes and experiences from these pilot initiatives, and will further maximize project success through optimum coordination between technological development and the successful practice of environmental policies.

Investment Plan for the Eco-Technopia 21 Project

			Phase 1 (2001~2003)	Phase 2 (2004 ~ 2007)	Phase 3 (2008 ~ 2010)
Goals	World's 5th power in the env'l industry		Dev't of pollution control technology	Dev't of mid- and long-term strategic env'l technology	Env'l technology dev't for future generations
Investment (billion KRW)	Total	143.5	280	660	495
	MOE	100.0	195	460	345
	Private	43.5	85	200	150

Major Outcomes of Eco-Technopia 21 (As of December 2003)

	Gov't-Private Contracts for Technology Transer		Patents		Published/presented in Academic Journals or Conferences	
	No. Projects	Deposit (bil. KRW)	Filed	Patented	Domestic	Abroad
No. cases	157	266	207	70	3,149	1,306

Corporate Environmental Management

The Environmentally Friendly Enterprise Certification System is one of Korea's efforts in this field. Companies are recognized on the basis of performance and employee participation in proper treatment of pollution from the company, as well as precautionary environmental management and environmental improvement efforts. Introduced in April 1995, a total of 146 companies were designated in the year 2003.

Certified companies can increase information exchange with each other and strengthen capacity to provide technology support and consulting to small and medium sized enterprises (SMEs) through the

The 26th International Exhibition on Environmental Technologies (ENVEX 2004)

nationwide online network (www.ef21.co.kr) established in 2001, led by the Korean Association of Environmentally Friendly Enterprises. In addition, certified companies play key roles in relation to the environmental management know-how being developed and distributed by MOE such as environmental reporting, performance review and accounting.

Environmental Industry

In order to encourage private sector investment in environmental facilities and to foster the growth of the environmental industry sector, MOE operates the tax support system for investments in pollution prevention devices. Also, MOE facilitates long-term, low-rate loans and other financial support for establishing pollution prevention devices and technology R&D funds.

Through the Korea-China Summit in 2003, both sides agreed to strengthen bilateral environmental industry cooperation and host environmental industry forums. The First Korea-China Environmental Industry Forum was held in December 2003 with 250 participants from both governments and relevant industries. Also last year, 2 dialogues were arranged between the environmental ministers, where 5 action items were agreed upon that are now in implementation. The action items include promoting joint technology development, the joint operation of the environmental industry center, implementing EDCF pilot projects, forming a working-level committee, and continuing invitational trainings.

Moreover, to further strengthen environmental cooperation with China, bilateral environmental exchange is being promoted by inviting Chinese government officials and environmental industry experts to Korea to share experiences in environmental industry and technology.

At a tripartite level, the Korea, China & Japan Environmental Industry Roundtable has taken place every year since 2001 to strengthen regional cooperation for ET development. In June 2004, the Roundtable was hosted in Korea with fruitful deliberations on hazardous waste treatment technology, sustainable business management, environmental labeling and green consumption patterns.

MOE is also pursuing efforts to enter the global market, such as identifying promising domestic businesses for foreign market penetration and assessing international trends in the environmental market by hosting the Korea-Japan Eco-labeling Forum and participating in exhibitions like Eco-Products 2004 in Japan, WEFTEC 2004 in the US, and Pollutec 2004 in France.

Public Health Protection & Management of Chemical Substances

Background

Since Korea joined the Organization of Economic Co-operation and Development (OECD) in 1996, MOE has introduced an advanced management system for chemical substances as recommended by OECD, including a risk assessment system and a chemicals accident response system. In addition, MOE has established the Framework Plan on Hazardous Chemicals Management (2001~2005) under a policy goal of "human and environment-centered chemical substance management" to promote precautionary measures for protecting the health of the Korean people.

MOE is establishing a legal basis for implementation of an advanced chemical substance management system, as well as applying relevant international agreements in Korea, by working on amending the Toxic Chemicals Control Act and on enacting the Dioxin and Persistent Organic Pollutants Control Act (provisional name). Furthermore, MOE is developing a 10-Year Plan for Preventing Environment-Related Diseases in order to protect public health from environment-related diseases, such as asthma, atopic dermatitis, and cancer, which are either directly or indirectly caused by chemical pollutants in the environment.

Policy changes Regarding Management of Hazardous Chemicals

	Current Management	Advanced System
Scope	· Management Based on Hazardousness · Safety Management for Accident Prevention	· Management Based on Risk Assessment · Safety Management for Accident Prevention+ Impacts on Human/Ecosystem · Short-term + Mid-and Long-term Impacts (Prevention of Environment-related Diseases)
Method	· Ex Post Facto Measures · Regulation Oriented Policies · Evaluating Hazards and Risks	· Prevention Measures for Public Health Protection · Establishing Exposure Prevention & Pollution Reduction Measures
Cooperation	· Individual Implementation by Agencies · Meeting Domestic Standards	· Cooperation Among Related Agencies & Bureaus · Encouraging Information Provision by Industry · Meeting International Standards (GHS, MEAs)
Legal system	· Toxic Chemical Control Act	· Reengineering Legal System - Amendments on "Toxic Chemical Control Act" - Preparing Enactment of "Persistent Organic Pollutant Control Act" and "Act on Classification and Labeling Chemicals"

Examination of Chemical Hazards

For safe distribution and management of chemicals, when a new chemical that has not been traded commercially in Korea is produced or imported, it is necessary to examine the hazards of chemicals in advance of domestic production and distribution. As of the end of 2003, a total of 2,696 new chemicals have been subject to examining. Among these 106 were classified as toxic chemicals and 6 were classified as observational chemicals.

In recognition of the fact that chemical substances which were introduced prior to the implementation of the chemical hazards examination policy (in effect since February 2, 1991) lack basic toxicity data and can cause unpredicted harms to humans and the environment, MOE has been conducting toxicity evaluations (i.e. safety tests) for about 30 items annually, since 1988. So far, a total of 951 existing chemicals have been evaluated, out of which 438 chemicals were determined as toxic chemicals and eight were determined as observational chemicals.

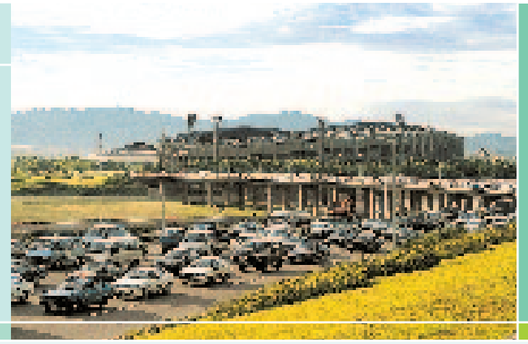
MOE will improve toxicity examination on new chemicals by adding toxicological studies in areas such as repeated dose toxicity, acute toxicity for fish, and irritation to expand the assessment scope to meet the recommendations of OECD concerning the Minimum Pre-Marketing Set of Data in the Assessment of Chemicals.

Safety Management of Hazardous Chemical Substances

More than 38,000 kinds of chemical substances have been distributed in Korea and about 300 new items have been produced or imported annually. As the quantity distributed, as well as the number of facilities dealing with hazardous chemicals have also increased, the safety management of hazardous chemical substances is of great importance. Therefore people who want to produce, market, store, transport, or use toxic chemicals, and people who want to do business involving restricted -use toxic chemicals, are required to register and get certification. MOE also set standards for managing hazardous chemicals in order to prevent accidents and leaks during transportation and distribution.

Increasing Trends: Hazardous Chemical Substances

	Increase (from 1991 to 2003)	Annual Increase
Quantity in Distribution (Million tons)	11 → 21	1 million tons
Number of Facilities Dealing with Hazardous Chemicals	2,700 → 5,467	200 facilities
Number of New Chemicals Produced or Imported	34 → 321	30 cases



Chemicals Risk Assessment

In addition to chemical toxicity evaluation, MOE has introduced the chemicals risk assessment policy in order to assess the impacts of chemical exposure on the human body and environment. Appropriate management measures will be proposed after conducting risk assessments on 16 high-risk priority chemical substances, as well as measuring their concentration in the environment and in fish and shellfish.

Chemical substances that do not have strong toxicity but show high risk of causing damage to the human body and environment over long-term exposure will be designated as restricted chemicals or prohibited chemicals. Currently, relevant legislation is being prepared for the introduction of a restricted or prohibited chemicals designation system.

The Toxic Release Inventory (TRI) System

Since 1999, MOE has implemented the Toxic Release Inventory, a system that mandates companies to report to the government the amount of chemicals released to the environment during the process of production or use, as well as the amount transferred to other places for the purpose of recycling or disposal.

Over the years, the range of companies subject to the TRI system has become more extensive and the scope of the TRI system was expanded. Recently in 2002, non-point pollution sources such as chemicals used in agriculture and in households became covered in the system. MOE plans to continue to expand the system in accordance with the size of the companies and the distribution amounts.

Progressive Changes of the Toxic Release Inventory System

	Year			
	1999	2000	2001	2002
Number of Substances	80	80	160	240
Companies Subject to the Inventory System	Petroleum and Chemical Industry (More than 100 employees)	23 Industries (More than 100 employees)	23 Industries (More than 50 employees)	28 Industries (More than 50 employees)
Inclusion of Non-point Pollution Sources	×	×	×	○

Chemicals Accident Response System

MOE has designated 38 chemicals as high risk substances, which are chemicals with a high risk factor such as acute toxicity, high volatility, or that have a record of frequently causing accidents. Companies involved in the production, use, storage, and transportation of such chemicals are regulated under this system to equip themselves with prevention measures and devises. Furthermore, they are required to establish a comprehensive Prevention Plan for emergency response in the case of accidents.

In addition, MOE created the Chemicals Accident Response Information System to supply relevant response agencies with information on the estimated scale of damage, taking into consideration the chemicals properties and weather conditions, as well as response measures including evacuation methods when an accident does occur. This System facilitates network-building among relevant agencies such as fire departments and city or county governments for the execution of efficient and appropriate responses to a chemicals accident.

Furthermore, current efforts include establishing a Geographical Information System (GIS) Network, developing and providing accident response methods for each region and substance for agencies like police and fire departments, and capacity strengthening on research and follow-up measures to prevent long-term impacts on accident-area residents and the environment.

Examination of the Risks of Endocrine Disruptors

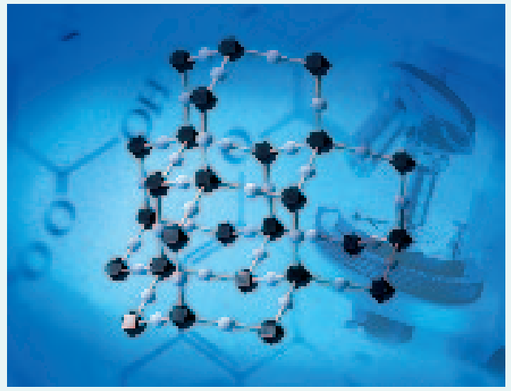
In 1999, MOE and federal agencies such as the Ministry of Maritime Affairs & Fisheries and the Korea Food & Drug Administration began a 10-year joint research project to develop risk assessments and management measures on endocrine disruptors-substances that interfere with regular hormonal functions and cause damage including reproductive problems.

According to the results of environmental monitoring on endocrine disruptors in 2003, 46 out of 93 substances examined (dioxin, benzo (a) pyrene, etc.) were found in at least one of the following environmental mediums: water quality, air, soil, and bottom material. Although the number of detected substances increased in comparison to the earlier three surveys, the number of test areas that showed contamination and substance concentration was either at a similar or lower level than before. In an analysis of data from the ecological impacts survey of 800 test subjects of fish and amphibian species at 20 spots, unusual phenomenon caused by endocrine disruptors have not been found.

Moreover, basic research activities have been executed in order to examine movement patterns of endocrine disruptors such as the "Research on Movement & Behavior in the Environment" and "Research on Development of a Vitellogenin Measurement System in Bullfrogs."

International Cooperation on Chemical Substance Management

Korea is participating in OECD programs related to chemical substances such as the Screening Information Data Set (SIDS) and the Chemical Product Policy (CPP), as well as other international efforts including the Strategic Approach to International Chemicals Management (SAICM) and the Intergovernmental Forum on Chemical Safety (IFCS). In particular, the MOE's Director of the Environmental Health Policy Division is active as the elected Vice Chairman of the OECD Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology.



International cooperation regarding research on endocrine disruptors has been promoted with information exchange through activities such as the Korea-Japan Joint Seminar since 1999. Also, Korea-Japan Joint Symposiums and Intergovernmental Meetings have been annually held in accordance with the agreement between the two countries' respective ministries of environment for joint research on endocrine disruptors since 2001. In 2003, five areas of research were selected and projects began including research on investigation methods using killifish.

Lastly, with respect to the Stockholm Convention on Persistent Organic Pollutants (POPs), which came into effect in May 2004, MOE is preparing the Dioxin and Persistent Organic Pollutants Control Act (provisional name) to facilitate efforts to meet the commitments of the convention.

Systematic Conservation for an Eco-Network

Background

Goals for the creation of an Eco-Network on the Korean Peninsula include establishing eco-corridors between areas of superb scenic and/or ecological value that can facilitate the movement of wildlife in a move towards the conservation and management of ecosystems at the national level instead of fragmented efforts for habitat protection.

During the last 10 years forests and agricultural fields have diminished by a total of 479 km^2. Major efforts for the systematic conservation of vital ecosystems like the Baekdu Daegan Mountain System, the Demilitarized Zone, and small islands and coastal areas are underway as part of national policies for sustainability and balanced national development.

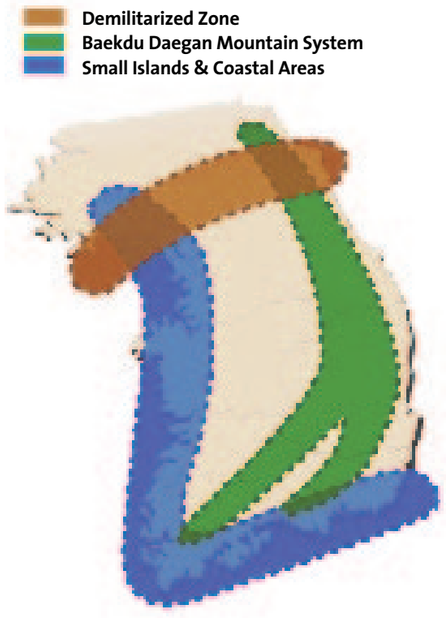
Overall, comprehensive studies are being continued to strategically guide nature conservation in Korea. In relation, a method for producing maps showing the current ecological state, including protected areas, wild flora and fauna, and habitat information, is in development to be distributed to relevant local governments and administrative bodies.

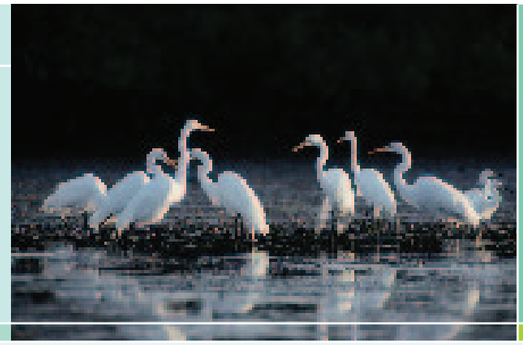
Baekdu Daegan Mountain System

Stretching across an area of 1,400km^2 from Mt. Baekdu on the China-DPRK border to Mt. Jiri down south, the Baekdu Daegan Mountain System (BDMS) forms the backbone of the Korean Peninsula's topography. In the Republic of Korea, 670km^2 of the BDMS can be found, which includes 9 national and provincial parks, and encompasses 6 provinces.

The ecological significance of the BDMS cannot be overstated. Korea is an extremely mountainous country with nearly 70% of the landmass covered in mountains and hills. Throughout history, the lives of the people of Korea have been greatly influenced by the BDMS and Koreans continue to depend on its various resources and ecological functions. For one, the BDMS serves as the principal habitat for wild fauna and flora, as well as a key ecological corridor. Second, the BDMS is a major supply source of biodiversity. Among the 564 known species (34 amphibian and reptilian, 55 mammalian, 110 fish, and 365 bird species) in Korea,

Creating an Eco-Network





except those endemic to particular areas such as Jeju Island, the majority can be found in BDMS habitats. Third, the BDMS has exceptional conservation value due to its biogeography. Depending on altitude and air temperature, there are clearly discernable regions making the BDMS a good index on habitats and because of such characteristics there is high biodiversity in a relatively narrow region.

Despite its importance, the current state of environmental degradation in the BDMS is cause for concern. Furthermore, the headwaters of the four major river systems of Korea are in the BDMS, making environmental degradation and pollution even more costly. Various development projects have taken place throughout the BDMS including 72 paved and unpaved roadways, 5 railways, 12 mines, and 6 dams. Many of these roadways, as well as around 80 roads made specifically to facilitate logging, are cutting through mountain ranges and ecosystems. In addition, the ecological damage and scenic obstructions posed by electrical transmission towers are concerns.

A major policy response of MOE is the **Act on the Protection of the Baekdu Daegan Mountain System** enacted and promulgated in December 2003. This marks a highly significant development for BDMS conservation and the law is under joint jurisdiction of MOE and the Ministry of Agriculture (specifically, the Korea Forest Service). Once it comes into full force in January 2005, MOE will set conservation principles and standards and the Chief of the Korea Forest Service will designate Baekdu Daegan Protected Areas, as well as establish and manage a National Protection Plan on the Baekdu Daegan Mountain System. In fact, these principles and standards are being drafted through ample discussion and negotiation among stakeholders such as experts in relevant fields, citizen groups, and local governments.

Protection efforts also include a comprehensive survey between 2002 and 2004 on the extent of ecological damage in order to develop effective restoration measures, for which a computerized management system has been established according to different sources of environmental damage such as mining sites, tourist zones, and highways. Also, with respect to the remediation of the negative impacts from highway construction, the "construction guidelines for wildlife movement corridors" developed in 1999 were amended and strengthened in November 2003 into the "construction and management guidelines for eco-corridors" and distributed to relevant administrative bodies and local governments to expand the number of eco-corridors.

Demilitarized Zone (DMZ)

The Demilitarized Zone (DMZ) was created when the armistice was signed between the Republic of Korea (ROK) and the Democratic People's Republic of Korea (DPRK) ending the Korean War in 1953. A strip of land encompassing approximately 907 km^2, the DMZ extends west-east for 248 km and north-south for 4km in the middle of the Korean Peninsula. The Civilian Control Zone (CCZ) was established in the area within 20 km of the southern DMZ border. Together, this area of more than 2,270 km^2 is a place where many unfortunate and painful events took place in recent Korean history. Ironically however, due to more than 50 years of limited human impact, this very area

is now a unique treasure trove of wild flora and fauna. In other words, the biodiversity of the Korean Peninsula has been restored and preserved in the small but invaluable area of the DMZ and bordering regions.

Following the historical ROK-DPRK Summit in June 2000, the divided state of the Korean Peninsula has regained increasing interest both in Korea and internationally. Major development projects including railways and highways are moving towards completion, directly impacting the DMZ, as efforts proceed for the reunion meetings of separated family members and South-North exchange. Especially with the Bordering Regions Support Act, enacted in January 2000, it is expected that policy and financial support from the government will increase for various development projects in the region, leading to the concern that reckless development could severely degrade the environmental quality of this extraordinary region.

In response, the Korean government, in cooperation and support from relevant ministries, has been pursuing the designation of the DMZ as a **UNESCO Transboundary Biosphere Reserve** since April 2001. Such a designation would not only mean the conservation and management of a region of major ecological importance, but also contribute to lasting peace on the Korean Peninsula. Furthermore, it would be highly significant in the global context as an internationally protected area for peace and ecosystem conservation.

The successful official designation as a UNESCO Transboundary Biosphere Reserve largely depends on cooperation between ROK and DPRK. Thus far, other major topics such as facilitating family reunions and promoting economic exchange have placed higher on the priority list than environmental cooperation. Therefore, MOE is currently pushing for the issue of DMZ conservation to be incorporated on the agenda of the next ROK-DPRK Summit, as well as planning international cooperation measures to incite the DPRK's participation.

More recently, DMZ area ecosystem conservation plans were discussed at a Cabinet Meeting in January 2004. As follow-up to discussions on how to prevent environmental degradation, a major research study has been commissioned in recognition of the fact that a thorough understanding of the natural environment is necessary for systemic conservation and management. The Korea Environment Institute is leading research with relevant academic institutions on "the state of current land use and rational land use plans for ecosystem conservation of the DMZ and surrounding areas" between April and December of 2004.

The plan is to proceed with DMZ conservation under a comprehensive strategy of differentiated management based on the results of the abovementioned environmental survey. Areas with outstanding ecosystems will be managed for conservation and other areas will be used in an environmentally friendly and sustainable manner. The structure of protected areas will include nature reservation areas, conservation areas, semi-conservation areas, and maintenance areas.

Small Islands and Coastal Areas

Surrounded by the ocean on three sides, the Republic of Korea has around 3,200 islands in its territory. The range of small islands, coastal areas, and, in particular, the variety of shorelines provide valuable socio-economic resources as well as numerous ecological benefits including abundant geographical, geological, and marine resources, the ability to purify environmental pollution, the prevention of natural disasters, outstanding natural scenery and habitats for wild fauna and flora.

However, several problems have emerged in this vital collection of ecosystems. Destruction of tidal flats and estuary habitats, environmental degradation, and decreasing water quality from large-scale coastal development, land reclamation and construction projects, as well as the consequent reduction in fish resources are some examples of the major environmental issues.

As a policy response, MOE has so far identified 155 select islands comprising around 10.22 km^2 for special management over five selection rounds since 2000. The 155 islands were selected based on surveys of the natural environment of 648 islands conducted over a period of 6 years, between 1998 and 2003. The criteria for selection are ① islands of outstanding scenic sites of natural beauty, ② islands necessary for the preservation of native species, ③ islands recognized for their wildlife habitat or resting ground conservation value, ④ islands containing ecologically important natural forests, ⑤ islands of unique topography or geology where scientific research or conservation is necessary, and ⑥ islands otherwise recognized by the Minister of Environment for particular ecosystem conservation.

This initiative is in accordance with the **Special Act on the Ecosystem Conservation of Small Islands such as Dokdo Island**, which legislates the designation of selected uninhabited or minimally inhabited islands of ecological importance and high preservation value for proper management under a Framework Plan on Selected Islands Management currently in the drafting stages.

Extending designated construction areas and altering landforms are strictly restricted in selected islands, as well as ecosystem conservation areas and wetland protection areas. When deemed necessary, human visitors are prohibited or restricted. Also, offenders are imposed with penalties and given an order to restore the impacted area to its original state, while the Korean government is involved in land purchasing for conservation of selected islands through negotiations with current land owners.

Overall, for the effective protection of Korea's small islands and coastal regions, efforts are in the research and development stage, with basic surveys being conducted to guide environmental conservation. For example, conservation measures for coastal sand dunes will be promoted through a detailed survey, creating a distribution map, building a resource database, and further designating ecosystem conservation areas along the coastlines.

Indoor Air Quality Management

Background

In the past, environmental concerns were mainly focused on outdoor environmental degradation, such as water, air, soil, and waste. However, in recent years, citizen's interests toward a "well-being" lifestyle together with research contributions are accelerating concerns regarding indoor air pollution making indoor air quality management an emerging environmental challenge of the era.

Having experienced the energy crisis in the 1970s, efforts were made to save energy while enhancing energy efficiency through improvements in adiabatic and airtight mechanisms. However, these strategies resulted in decreasing the amount of air circulation, which meant a degradation of indoor air quality. For example, research showed that residents in newly built houses often experienced the Sick House Syndrome, which causes eye irritation, nasal congestion, severe headache, and/or bloating. In particular, considering that most people spend more than 80% of their daytime indoors - such as in offices, indoor markets, schools, and hospitals - measures for efficient indoor air quality management were urgently called for. In this recognition, the **Indoor Air Quality Management Act** has been in effect since May 2003, with MOE giving priority to the effective management of indoor air quality and gearing various policy measures to protect citizens against the health risks of air pollution in their daily lives.

Indoor Air Quality Management in Public Facilities

The number of facilities subject to the Indoor Air Quality Management Act has been gradually expanded to 17 facilities whereas only subway stations and underground markets were subjected to the system under the previous Underground Air Quality Management Act of 1996.

Korea enforces air quality standards on PM10 (particulate matters), CO_2 (carbon dioxide), HCHO (formaldehyde), TBC (total bacteria count), and CO (carbon monoxide) among others, with stringent control measures such as imposing charges to those who fail to comply with the standards. Also, indoor pollutants generated from outside sources or those with comparably less risk than the above-mentioned pollutants, including NO_2 (nitrogen dioxide), Rn (radon), TVOC (toxic volatile organic compounds), asbestos and ozone are controlled voluntarily by the industries according to the suggested emission levels.

Furthermore, MOE mandates the managers of public facilities to conduct annual monitoring on the pollutants subjected to mandatory air quality standards and to conduct semiannual monitoring on other pollution sources. They are required to report the monitoring results to the mayor and/or governor by the end of January every year.

Additionally, MOE mandates the installation of air ventilators and air purification devices in order to maintain fresh indoor air quality through sufficient air circulation.

Facilities subject to the Act ('04)

- Subway Stations, Underground Markets, Libraries, Museums, Medical Centers, Indoor Parking Lots, Waiting rooms in Bus Terminals, Railway Stations, Airports and Ports
- Childcare Centers, Medical Centers for Elders, Funeral Houses, Saunas, Maternity Recuperation Centers, Large-Scale Markets

Restrictions on Construction Materials with high pollution discharge

Development of the chemical industry has led to the use of new construction materials and adhesives, which resulted in the soaring release of pollutants such as formaldehyde and volatile organic compounds, the major contributors to the Sick House Syndrome. Therefore, MOE takes precautionary measures to encourage the production of materials with less pollutant release while restraining the use of high risk materials.

Indoor Air Quality Standards

Facility \ Pollutant	PM10 (㎍/㎥)	CO_2 (ppm)	HCHO (㎍/㎥)	TBC (CFU/㎥)	CO (ppm)
Subway stations, underground markets, libraries, museums, galleries, funeral houses, saunas	Under 150	Under 1,000	Under 120	-	Under 10
Medical centers, childcare centers, medical centers for elders, maternity recuperation centers	Under 100			Under 800	
Indoor parking lots	Under 200			-	-

Indoor Air Quality Standards

Pollutant \ Type	Adhesives	General Materials
Formaldehyde	Over 4	Over 1.25
Volatile Organic Compounds (VOCs)	Over 10	Over 4.00

Clean Indoor Air Quality is Especially Important for Children

Indoor Air Quality Management in Newly Built Apartments

The constructors of new apartments with over 100 units are enforced to measure 7 toxic substances (formaldehyde and VOCs including benzene, toluene, ethyl benzene, xylene, dichlorobenzene 1 & 4, and stylene) prior to the moving in of tenants. Those results are submitted to the heads of local governments while being posted for 60 days on bulletin boards in convenient locations for citizens. A fine is imposed on those who fail to submit and/or post the measurement results as well as those who expose false information.

There are no restrictions in terms of selecting construction materials, however the constructors are invited to make voluntary contributions to the environment by choosing the materials of least pollutant release.

Overall, MOE plans to further promote a variety of policy measures and adopt new strategies to reduce indoor pollution while effectively managing indoor air quality.

First, MOE will work to **expand the number of public facilities subjected to the Air Quality Management Act** by conducting environmental surveys on facilities that have not been controlled by the law up until now.

Second, in order to develop appropriate standards on indoor air quality management for citizens, MOE will conduct nation-wide surveys, risk assessments, and analyses on the standards of Korea in comparison to other countries. To this end, MOE will **strengthen the set of indoor air quality standards** tailored to national conditions by the latter half of next year.

Third, **Mid- and Long-term Comprehensive Measures for Indoor Air Quality Management** will be established in late 2004, which will be the blueprint of Korea's future endeavors in the upcoming five years. Among the features will include measures to control each public facility, prevention measures against Sick House Syndrome in apartments, and expansion of environment-friendly building materials.

Fourth, **guidelines with useful information on indoor-air quality** will be developed and distributed to citizens on the Bake-out strategy, a countermeasure against Sick House Syndrome, and adequate ventilation methods.

Bake-out strategy involves sealing up the building as best as possible (closing all windows and doors, sealing up airbricks, gaps under doors, etc.), raising the internal temperature to their highest setting for 48 hours, and afterwards, thoroughly airing out the space. By doing this the pollutant chemicals are rapidly released and diffused, reducing their subsequent risk over a longer period.

In the long run, MOE will provide active support towards conducting mid- and long-term studies on the special characteristics of indoor air pollution including their source and hazardous impact on the human body and developing advanced technologies to eliminate indoor air pollution at source, in particular, the utilization of air ventilation and purification techniques. Lastly, MOE will further strengthen Korea's indoor air quality management infrastructure by supporting research efforts and improving monitoring capacities in the private sector.

Special Measures for Metropolitan Air Quality Improvement

Background

With a variety of air pollution reduction policies, including the tightening of emission standards and expanded supply of low-sulfur fuels and clean fuels (CNG, LNG), the pollution levels of sulfur dioxide (SO_2), carbon monoxide (CO) and lead (Pb) in the metropolitan region have steadily decreased. However, due to increasing number of vehicles and industrial activities, the pollution levels of nitrogen dioxide (NO_2), particulate matters (PM10), and ozone (O_3) have not shown much improvement. The records show that the overcrowding in the metropolitan region has grown at a drastic rate for the past decade, making air quality management in today's setting even more challenging.

In order to fully understand Korea's air quality status and develop effective measures based on a scientific and reliable data, MOE has been conducting various research and analysis on metropolitan air quality by each pollutant, and carried out comparison analysis between the metropolitan area to other major cities in the globe, as well as to other regions across the nation.

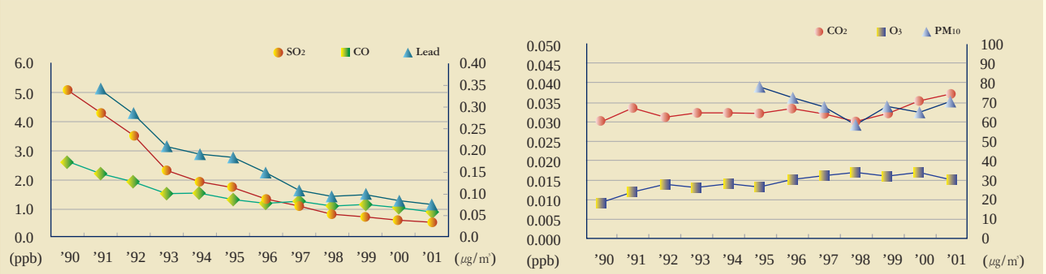
Legislation of the Special Act

With clear indication that the population, vehicles, and energy consumption levels in the metropolitan area will rise continuously, existing measures seemed insufficient to fundamentally deal with the growing number of pollution sources. To overcome

Population and Vehicles in Metropolitan Area: The Growth Rate

	1990	2000	Growth Rate
Population	18,340,000	21,910,000	20%
Number of Vehicles	1,790,000	5,577,000	211%

Trends in Air Pollutant Levels in Metropolitan Area (1990-2001)



Average air pollution level in MTA (2002)

	SO_2 (ppm)	NO_2 (ppm)	O_3 (ppm)	CO (ppm)	PM10(㎍/㎥)
Seoul	0.005(0.020)	0.036(0.050)	0.014	0.7	76(70)
Incheon	0.006	0.027	0.019	0.7	57

Amount in ( ) shows air quality standards

Air Quality Status in MTA and other areas (2001)

Category	NO_2 (ppm)	Number of O_3 Warning	PM10(㎍/㎥)
Metropolitan Area (Seoul)	31(37)	24(5) times	67(71)
Other areas	22	5 times	53

such challenges, MOE developed the **Special Measures on Metropolitan Air Quality Improvement** with a launch of the Joint Task Force Team consisting of competent government officials and representatives from industries, universities, professional institutions and civil groups. This team proceeded through more than 100 consultations until the special measures were finally established in 2002.

Furthermore, in December 2003, MOE legislated the Special Act on Metropolitan Air Quality Improvement in an effort to develop an institutional framework for the effective implementation of these special measures. The Special Act takes effect starting in January, 2005. Some grace periods will be given to a number of industrial plants that require additional preparation work before the adoption of the Total Air Pollution Load (TAPL) management system.

Features of the Special Act

Pollution knows no boundaries, thus controlling the ambient air quality based on a local management system reveals limitations. Therefore, Korea introduced the wide-ranging special measures to bind the whole metropolitan area into an integrated system of air quality control. MOE will develop a 10-year framework plan for metropolitan air quality control after conducting consultations with relevant ministries and local governments. Based on this framework plan, the local governments will establish 5-year implementation plans and selected special agencies will coordinate the air quality control plans.

1. TAPL Management System

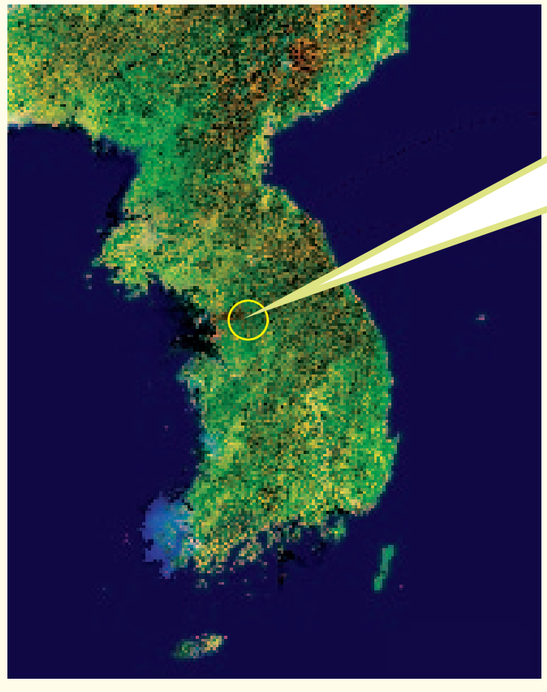
The Total Air Pollution Load (TAPL) management system entails a calculation of the environmental

carrying capacity (or Regional Atmospheric Environmental Critical Loads), and a policy to 'cap' the amount of pollution discharge in the region. With the adoption of this system, MOE allocates the maximum emission load per each pollutant and manages industrial activities accordingly.

Until recently, Korea's environmental regulations such as the emission standards system monitored the pollution level by each emitter (e.g. smoke stacks). Although this system was effective in controlling the pollution level of each emitter, it was unsuccessful in constraining the total amount of pollution because it lacked control over the increasing number of emitters. For this reason, MOE introduced the TAPL management system to allocate a total volume of allowable emission exhaust for each industrial site (e.g. industrial plants). Also, the Emissions Trading System is being adopted to create a market for emission permits trading, which will in turn benefit those who have kept the amount of emission discharge below the allowable level.

2. Supply of Low Emission Vehicles

Emissions from vehicles account for roughly 51% of NOx, 58% of PM, and 85% of CO concentration in the metropolitan air, making emission reduction measures for vehicles and the supply of low emission vehicles (LEV)/zero emission vehicles (ZEV) an important key to improving the ambient air quality. The new Special Act on Seoul Metropolitan Air Quality Improvement categories LEV/ZEV into type 1,2,3 according to the level of pollution reduction.



Improvement Target

	2000	2007	2012
Particulate Matters PM10 (㎍/㎥)	65 (Seoul)	55	40
NOx (ppb)	35 (Seoul)	27	22

- Pollutants subject to the Act: Particulate Matters, Nitrogen Oxide (NOx), Sulfur Oxide (SOx), Volatile Organic Compounds
- Pollution subjected to Total Load Management in industrial sites: Total Suspended Particulate (TSP), Nitrogen Oxide (NOx), Sulfur Oxide (SOx). * Volatile Organic Compounds are excluded from the list, because most of them are exhausted from organic solvent and vehicles.

Starting from 2005, nearly all government bodies in the metropolitan area will be required to purchase a certain portion of newly purchased vehicles with LEV/ZEVs. On the manufacturer side, automakers selling more than 3,000 vehicles/yr in the metropolitan region are advised to supply LEV/ZEVs at a ratio set together with the government.

3. Controlling Vehicles in Operation

Old vehicles that were manufactured according to past emission standards emit a greater amount of air pollution than the newer vehicles. Therefore, taking active measures to reduce emissions from vehicles that are in operation are critical to bring drastic improvement in the air quality. First, recognizing that diesel vehicle exhaust emissions account for 100% of PM and 75% of NOx discharged by cars, MOE strengthened emission standards for diesel vehicles in operation. Also, those who fail the emissions testing will be required to attach Diesel Particulate Filters (DPF) or Diesel Oxidation Catalysts (DOC), or to retrofit with "cleaner" engines. Necessary subsidies will be provided to encourage these activities.

4. Fuel Quality Improvement

Starting from October 2004, through tax incentives, only low-sulfur fuels will be supplied in the Metropolitan area. Current national fuel standards on sulfur contents are 430ppm for diesel, however, the new low-sulfur fuels will possess less than 30ppm sulfur content. Furthermore, by introducing a grade scheme for fuel qualities, MOE is encouraging the consumers to make environmentally sound choices.

5. VOC Reduction

Volatile Organic Compounds (VOC), which are high-

ly challenging to control, is a general term for organic compounds in their liquid or vapor state. In addition to posing threats to humans, VOCs, when combined with NOx in the ambient air, generates ozone due to its character of high photochemical reactivity. In order to reduce VOCs at source, MOE mandates paint manufacturers to decrease the rate of organic solvent content in paints by 30%, and encourages the use of water-based paint.

6. Energy Managment

In order to coordinate an environmentally sound energy pricing system, MOE has revised the tax rate on diesel vehicles with higher emission exhaust levels. Also, based on the 'Polluter Pays Principle,' MOE has amended its regulation to impose Environment Improvement Charge on diesel gas itself, instead of imposing charges on the vehicles that run on diesel gas.

Comprehensive Measures for Non-Point Source Pollution Management

Background

Up until recently, water management measures have focused on controlling point source discharges such as industrial and municipal wastewater that can be collected through pipelines and easily treated. As evident in the table below, water quality levels in the four major rivers have largely improved since 1997. However, policies focused on point source pollution have shown its limitations in achieving water quality improvement, pointing out the need for an advanced management system on river basin water quality beyond the scope of existing policies.

Pollutants from non-point sources are estimated to account for 22~37% of the total pollutant load (BOD level) in the four major rivers. If taking Total Nitrogen (T-N) and Total Phosphorous (T-P) as the standard, both which are the main cause of eutrophication, the proportion of non-point source pollutants is expected to be much higher. With the expansion of wastewater treatment plants and strengthened discharge regulations, point source pollution continues to decrease. However, non-point source pollution continues to increase from cities, roads, and farmlands. For example, analysis shows that 44.5% of the pollutant load in the Paldang water supply resource is from non-point sources. Without proper measures, it is expected to rise to 54.3% by the year 2020.

The Ministry of Environment recognizes the fact that further significant improvements in water quality are difficult to achieve without concentrating efforts in the prevention of non-point source pollution. In other words, comprehensive measures are necessary to control major non-point sources such as runoff from roads, highways, and bridges, as well as livestock waste, agricultural fertilizers, and overflow from combined sewers.

Current State of Non-Point Source Pollution

Non-point source pollution not only occurs at various development sites but also in everyday surroundings including urban & industrialized areas, agricultural regions, forests, roads, rivers and streams. This type of pollution is especially severe during heavy rainfall when there is direct inflow into water bodies. The fact that non-point source pollution fluctuates according to precipita-

Yearly water quality changes, 1997~2003 (BOD levels in ppm)

River	1997	1998	1999	2000	2001	2002	2003
Han	1.5	1.5	1.5	1.4	1.3	1.4	1.3
Nakdong	4.2	3.0	2.8	2.7	3.0	2.6	2.1
Guem	3.4	2.4	2.6	2.7	3.7	3.3	2.1
Yeongsan	7.2	5.9	6.8	6.5	6.2	5.6	4.8

tion causes difficulty in setting up management measures.

1. Urban Areas
Cities are becoming the largest source of non-point source pollution as impermeable land surfaces continue to expand from various land development projects like redevelopment and reconstruction. During rainfall, effluents develop that carry dust, trash, and waste deposits accumulated on road surfaces and buildings, as well as in factories. The contaminated stormwater flows into water bodies through separate sewers or combined sewers.

2. Agricultural Areas
Pollutants that originate from farmlands involve chemical fertilizers, pesticides, insecticides, and livestock waste. Non-point source pollution is transferred through concrete drain pipes from steep areas of agricultural cultivation, high altitude (600m above sea level) fields, and cleared farmlands. This non-point source pollution measured in BOD level is estimated to be around 5,322 tons yearly for the Han River watershed alone.

3. Forested Areas
Major sources of non-point pollution from forested areas include roads designed and constructed to facilitate forest management, steep slopes (natural and man-made), debris and waste material from logging, and forest fire regions where extensive soil erosion occurred.

4. Rivers and Streams
The capacity of water systems to purify pollutants can deteriorate due to aggregate extraction, concrete embankments, the construction of parking lots along riversides, and the paving over of streams for urban development. Such changes lead to the direct inflow of non-point source pollutant discharge from upstream land development and use into water bodies without filtration.

5. Roads
During rainfall, pollutants such as oils and grease on road surfaces, worn tire bits, and silt and gravel from road construction flows directly into water bodies. Roads, highways and bridges need particular management because the amount of non-point discharge is much greater than in most urban regions, as shown in the graph below.

Comparison of pollution generation during rainfall between roads and urban areas

Item Category	Pollution concentration (mg/L)		Pollution load (kg/ha/day)	
	Roads	High-density Apts	Roads	Urban Areas
BOD	7.2	6.1	1.7~5.5	0.8~1.1
COD	4.2	15.9	1.9~6.4	1.3~1.4
SS	3.4	59.6	11.0~28.4	1.7

Source: Korea Environment Institute (2002) "Stormwater effluent management measures for non-point source pollution reduction"

Major Goals of Measures for each phase

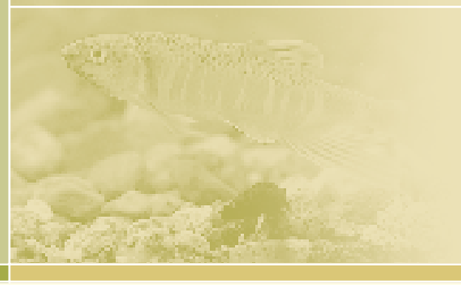
Field	1st Phase ('04~'05)	2nd Phase ('06~'11)	3rd Phase ('12~'20)
Policy system improvements	Build policy foundation (government to establish plan & leads efforts)	Charge responsibility of managing major pollution sources	Continue to strengthen management responsibilities
Related projects	Pilot projects (nation)	Best-fit management projects for 4 major rivers (central & local govts)	Full implementation of projects with local govt in lead & central govt support
Research & PR	Focus on identification of causes and development of treatment techniques	Set techniques for monitoring & standards on treatment facilities	Facility improvements taking into consideration cost and efficiency

Main Contents of the Comprehensive Measures

In March 2004, the "Comprehensive Measures for Non-point Source Pollution Management in the Four Major Rivers" were established under the leadership of the Prime Minister's Office and through the cooperation of related ministries. The Comprehensive Measures contain three major policy fields: ① policy system improvements, ② pilot projects on the construction and management of non-point source pollution treatment facilities, and ③ research and PR. Such areas of concern will be addressed over three phases. The first phase (2004~2005) focuses on policy system improvement and pilot projects, the second phase (2006~2011) focuses on best-fit management projects for major river basins of the four major rivers, and the third phase (2012~2020) focuses on nationwide implementation of non-point source pollution management.

In the area of policy system improvements, through revisions on the Water Quality Conservation Act, the central government and local authorities will be charged with responsibilities and duties of non-point source pollution management. Also, clauses on the management of non-point source pollution will be incorporated into various related legislations and guidelines such as the environmental impact assessment, city framework plans, and land use laws in order to strengthen environmentally sound land use practices that begin in the early planning stages of new urban development and land use.

With respect to related projects, MOE will conduct pilot projects on non-point source pollution abatement programs for each small drainage area of the four major rivers between 2004 and 2009. Such projects will meet drainage area characteristics and will consolidate important data and technology including treatment efficiency, and facility operation and maintenance in order to form the basis upon which



standard guidelines on the construction, operation, and maintenance of non-point source pollution abatement facilities will be established.

The government, in recognition of the importance of efforts by citizens and local governments, will develop and distribute a citizen-wide education program, as well as host regular workshops and seminars in cooperation with related ministries for the reduction of non-point source pollution at source.

If the policy follows through as planned, it is expected that the amount of non-point pollutants will decrease 34.3% from 381 tons/day to 250 tons/day and that the water quality will rise in the 4 major watersheds to BOD levels of 0.20~0.65mg/L.

Livestock Wastewater Management

In terms of volume, livestock waste accounts for about 0.6% of total sewage and wastewater generation in Korea, but in terms of pollution load it amounts to 26%, making livestock waste a major source of pollution.

Because livestock waste has the dual characteristic of being both a resource and a waste product, the government is focusing management activities on using livestock waste as a resource first, while also operating public treatment facilities to support small-scale livestock farms.

In accordance with the Act on the Disposal of Sewage, Excreta and Livestock Wastewater, livestock farms above a certain capacity are required to establish and operate proper facilities to dispose of and treat livestock waste.

There are currently 350,000 farms including 46,510 permitted/registered livestock farms. Most permitted/registered farms have established and operate facilities that convert livestock waste into a resource such as compost. Since 1991, the government has supported the establishment of public treatment facilities for livestock waste from small-scale farms: 41 are currently in operation and 35 are in construction.

For the appropriate disposal and treatment of livestock waste, standards for establishing and managing treatment facilities, as well as water quality standards for the treated effluent, have been prescribed. Also, efforts continue to raise treatment efficiency and to improve the facilities and the collection system.

In April 2004, the Ministry of Environment, in collaboration with the Ministry of Agriculture and Forestry (www.maf.go.kr), established the Task Force Team on Livestock Wastewater. It will issue their full report in late 2004, which is to include comprehensive management measures for the expanded use of livestock excreta as a resource.

Improvement of Water Supply Systems in Rural Areas and Islands

Background

In the past, Korea's water supply system mainly focused on the regions of concentrated population and such policies led to the 98.5% water supply rate in metropolitan areas. However the rate in rural areas and islands has stayed at around 30%, which is one-third of the coverage in metropolitan areas. As a result, people living in rural areas and small islands - the areas of low precipitation in particular - have often been challenged by severe water shortage even during periods of moderate drought. In this backdrop, MOE has been making several efforts to reduce the water supply disparity among regions by implementing effective policy measures while making appropriate investments.

Water supply system in farming & fishing communities

Since 1994, Korea has been promoting the waterworks development project in 215 locations with a total investment of 800 billion Won (~ 640 million USD). The goal is to increase the water supply rate to 50%, which is a 34% increase from 16% in 1994.

Water Supply System in Islands

Small islands, located in remote distance from the mainland, are often faced with many barriers such as distance and poor economic situations in maintaining proper water supply systems. In order to resolve such challenges, Korea is promoting various water supply development projects in 133 locations including: development of river source areas; construction of water treatment facilities; and installation of desalination plants. These projects, of which the implementation budget is estimated at 448.8 billion Won (390 million USD), will be carried out from 1997 to 2005.

Investment Plan for Waterworks Improvement in Farming & Fishing Communities (billion KRW)

	Number of waterworks	Investment
Total	215	800.0 (400.0)
~2002	144	444.6 (222.2)
2003	25	120.0 (56.0)
2004	30	142.3 (71.2)
2005~	16	101.1 (50.6)

Amount in ( ) refers to the budget covered by local governments

Investment Plan for Waterworks Development in Small Islands (billion KRW)

	Number of waterworks	Investment
Total	133	448.8(134.6)
~2002	87	173.1 (51.9)
2003	17	71.9 (21.6)
2004	19	66.4 (19.9)
2005~	10	137.4 (41.2)

Amount in ( ) refers to the budget covered by local governments

Waterworks Development in Small & Mid-sized Cities

Korea is making 916.5 billion (797 million USD) investment for the rehabilitation of waterworks facilities in small & mid-sized cities during 1996 to 2005. With the investment, MOE aims to increase the local water supply rate in stages to reach 95% coverage.

In continuous efforts to expand waterworks system to the areas of insecure water supply such as fishing/farming communities and small islands, the Government of Korea plans to launch a 10-year investment plan of approx. 1.93 trillion Won (1.6 billion USD) starting in 2005. The investment will encompass rehabilitation projects in about 370 locations.

Furthermore, MOE is currently developing the "Mid & Long-term Investment Plan to Resolve Tap-Water Supply Discrepancy." Successful implementation of the plan will result in a doubled supply rate (60~70%) in suburb areas including farming & fishing villages and small islands.

Investment Plan for Desalination Project in Small Islands (billion KRW)

	Number of desalination plants	Investment
2003	47	17.2
2004	8	6.3
2005~	11	6.4

Investment Plan for Water Supply Improvement in Small & Mid-sized Cities (billion KRW)

	Number of waterworks	Investment
Total	81	916.5 (504.0)
~2002	75	780.4 (380.6)
2003	16	126.4 (66.5)
2004	7	36.9 (20.2)
2005~	10	44.8 (36.9)

Amount in ( ) is covered by the central government loan

Integrated System of Sewage and Excreta Management

Previously, sewage and excreta have been separately managed under the Sewerage Act and the Act on Disposal of Sewage, Excreta and Livestock Wastewater respectively. Such arrangement was often subjected to a criticism because they seemed to result in inefficiency by causing overlapping investments and tasks. In response, MOE has appointed competent members of the 'Public-Private Policy Improvement Forum' with plans to integrate the two laws based on the comprehensive review on the enforcement decrees, budgetary system, and organizational structure of each.
The 'Policy Improvement Forum,' headed by the Director of Policy Research of the Korean Environment Institute (KEI) will develop improvement measures for upcoming policy revisions. Working-level scientific experts from KEI, waterworks associations & institutes, businesses, relevant ministries and local governments will formulate three separate teams, which are ① Sewage, excreta disposal ② Sewerage system ③ Integration of enforcement decrees & ordinances. The members of the forum will organize brainstorming sessions on demand, and will also host workshops and public hearing sessions.

Up to date, MOE has constructed large-scale wastewater treatment plants in sewage treatment districts while installing small-scale sewage treatment facilities and septic tanks in other areas. By 2002, 207 sewage treatment plants had been built, and 137,000 small-scale sewage treatment facilities and 2,727,000 septic tanks had been installed in areas without a sewerage system.

Accordingly, the coverage rate of sewerage systems has been gradually increased from 61% in 1997 to 76% in 2002, and the rate of flushing toilets has also shown an increase, from 84% in 1997 to 92% in 2002. These positive figures show the proven improvement in sewage treatment system of Korea

The Jiktang Waterfalls located in Cheorwon County, Gangwon Province

Number of Septic tank-related Businesses

Total	4,066
Septic tank manufacturing	33
Sewage treatment facility manufacturing	49
Planning and Construction	1,629
Collection and Freight (Carrier)	773
Cleaning	1,062
Maintenance	520

in conjunction with the advancement in excreta disposal and treatment system.

Provided that the Sewerage Act and the Act on the Disposal of Sewage, Excreta, and Livestock Wastewater are integrated, MOE plans to prepare the measures to shift from a sewage-focused budgetary system to a balanced system that considers both sewage and excreta wastewater.

Understanding that the nation has been experiencing an increase in the rates of flushing toilets and sewerage system, MOE will work to coordinate new measures, organizational structure, and budgetary system to accommodate the projected changes.

The integration of the two Acts will have significant impact on the sewage management system in Korea by departing from a system that covered a few urban cities whereas residences or building owners in other areas were asked to install separate septic tanks or other sewage treatment facilities. Another important measure promoted in the sewage treatment district is that wastewater inflows - which were previously stored in septic tanks - will be treated in sewage treatment facilities. Also, the number of septic tanks (appoximately 27 million) will be gradually decreased nationwide. Furthermore, combined sewer systems with septic tanks will be replaced by separate sewer systems, and in areas previously without sewerage pipes, separate sewer systems will be installed.

Furthermore, Korea will encourage the integration of human expertise in both the septic tank and sewage treatment industries. Also, in order to prevent the production and circulation of unqualified goods and services, MOE will re-examine the septic tank installation & technical standards.

Extended Producer Responsibility (EPR) System

Background

To resolve the problem of waste, it is essential to first reduce waste generation at the source and then to recycle as much of the waste as possible. In recognition of these needs, the Ministry of Environment is concentrating efforts on waste minimization policies and firmly establishing a resource-circulating recycling system.

Following the Volume-based Waste Fee System and the Waste Deposit-Refund System, the amount of waste decreased while the rate of recycling steadily increased. However, a limit to raising the rate of recycling became evident due to the lack of systematic responsibilities placed upon producers who are in a highly convenient position to partake in waste reduction and recycling policies. As a result, the Extended Producer Responsibility (EPR) System emerged.

The EPR System holds producers accountable for the entire life cycle of their products in order to incite innovation in product design, materials use, and business management through economic incentives. By setting mandatory recycling targets and charging producers a penalty if the responsibility is not met, the EPR System forms an integral part of efforts for a "resource circulating socio-economic system" by promoting waste reduction, reuse, and recycling, as well as the production of environmentally sound products. For example, because the EPR system stimulates the production of easy-to-recycle goods, it helps to increase the proportion of recycling while decreasing the proportion of waste that is incinerated or landfilled.

To expedite waste recycling, Korea made comprehensive amendments to the Act on the Promotion of Saving and Recycling of Resources, which led to the termination of the Waste Deposit-Refund System that had been in effect since 1992 and the introduction of the EPR System, in effect since January 2003.

In addition to the EPR System, Korea is actively pursuing the securing of a separate collection system for the stable supply of recyclable resources, the expansion of recycling facilities that are appropriate for local conditions, and the promotion of relevant technology development and recycled goods.

Preparations for the EPR system

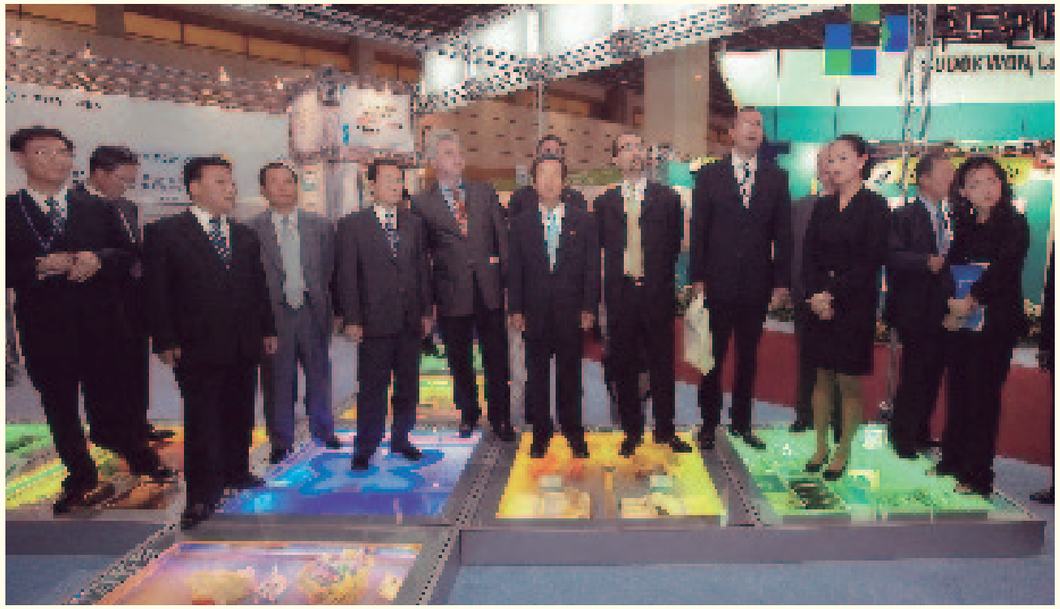
To build the necessary institutional framework to administer the EPR system, a specialized division of 67 staff members was newly created within the Korea Environment and Resources Corporation

Changes in Producer Responsibility after the EPR System

	Responsibility of producers										
Before	Production	➡	Sale	➡	Consumption						
After	Production	➡	Sale	➡	Consumption	➡	Disposal	➡	Recycling		

(name changed from KORECO: Korea Resources Recovery and Reutilization Corporation in July 2004) to specialize in the implementation of the policy. Also, 11 Mutual Aid Associations for Recycling were established to assist producers under the EPR system in meeting their recycling obligations.

Furthermore, the foundation was strengthened for recycling EPR items by expanding facilities such as the Seoul Metropolitan ("Sudokwon") Electronic Products Recycling Center, recycling facilities for used fluorescent light bulbs per administrative district, glass recycling centers, and plastics (including RPF and oil paints) recycling centers.



Booth on Recycling Technology at the Internatioal Exhibition on Environmental Technololgies (ENVEX 2004)

Items under the EPR system

Since January 2003, the EPR system has applied to a total of 15 items, among them, TVs, refrigerators, air conditioners, tires, lubricating oil, metal cans, glass bottles, paper packs, and plastic packaging materials (e.g. PET bottles). In January 2004, fluorescent light bulbs and packaging film were added onto the list of mandatory items under the EPR System, making the list a total of 17 items. Furthermore, audio products and cellular phones will be considered under the EPR system starting in January 2005.

There are plans to expand the list of items under the EPR system in phases, while taking into consideration the development of recycling technology and the treatment capacity of recycling facilities. First, upon making the necessary amendments to related legislation, it is expected that additional electronic products such as printers and copy machines will be added to the list of mandatory recycling items under the EPR system starting from 2006. In the long-term, there are plans to include automobiles and all electronic products in the EPR system. Importantly, the results and impacts of the EPR system during these first years of operation will be promptly compiled and reviewed in order to make further improvements.

Producers under the EPR system

Mandatory recycling is required for producers and importers of the abovementioned items and packaging materials. There is an exception for domestic producers whose yearly output is less than 1 billion won (870 thousand USD) and importers whose yearly imports amount to less than 300 million won (260 thousand USD).

EPR Implementation Method

Producers obligated under the EPR system can directly meet recycling obligations or contract a recycling business to do so. Also, they can join the Korea Waste Recycling Association and make financial contributions to meet their recycling obligations.

EPR Procedure

The implementation procedure can be divided into five steps, as below:

1. Each year before the end of September, the Ministry of Environment announces the total recycling obligations per EPR item that were set by taking into consideration the amount in the market, the amount of recycling collection, and the previous recycling records, as well as the given capacity for recycling, for each product or packaging material.

2. Producers under the EPR system each receives mandatory recycling obligations according to the proportion of each producer's share in the market and must submit their annual recycling plan by the end of November to the Minister of Environment for approval.

Separate Discharge Label

Type of Material	Label
Plastic	PET, HDPE, LDPE, PP, PS, PVC, OTHER
Metal	Steel, Aluminum
Paper	Paper cartons
Glass	Glass

3. Once their recycling plan is approved, producers must fulfill their recycling obligations during that particular year.

4. Producers must then submit their progress report with the outcomes by the end of March of the following year and receive confirmation that they met their recycling obligations from the Minister of Environment by the end of May.

5. The Minister of Environment imposes a charge of less than 130% of the actual recycling cost on producers that fail to meet their recycling obligations by June 15.

Supportive Measures

The **Separate Discharge Labeling System for packaging materials** has been in place since January 2003 in order to provide guidance to consumers in discharging items in separately marked recycling bins and to assist recycling and recovery industries to easily identify the waste product and/or packaging material.

Producers and importers of packaging materials under the EPR system like metal cans, glass bottles, paper cartons, and plastic packaging material must clearly mark the appropriate separate discharge label, as well as the content materials used such as PET, PP, PS, and paper.

In the **Cost-free Retailer Collection System for electronic products**, retailers of electronic products under the EPR system such as TVs, refrigerators, washing machines, air conditioners, and computers are encouraging the recycling of used household electronic products by collecting used household electronic products at no cost to the consumers, as well as collecting the packaging material of the new electronic products purchased by consumers.

In order to promote the collection and recycling of reusable glass containers, producers and importers of alcoholic beverages and soft drinks can include a deposit fee, separate from the retail price through the **Beverage Container Deposit System**. When consumers return the used beverage containers, producers and importers must refund the deposit amount to the consumers through retailers or wholesalers.

To **expand recycling facilities and enhance recycling capacity**, MOE is continuing financial and institutional support. Nationwide there are 227 public recycling centers, 74 built between 2000~2003. In 2004, 44 are in construction with a total of 17.1 billion Won (14.9 million USD) secured in national funds. Also, the Korea Environment and Resources Corporation (formerly known as KORECO), a subsidiary organization of MOE, conducts recycling of difficult-to-recycle, or otherwise untreated items, such as used plastic sheets from greenhouses.

Tripartite Environment Ministers Meeting among Korea, China & Japan (TEMM)

Background

First held in January 1999 and annually thereafter in rotation among the three countries, TEMM has been organized as the only ministerial environment meeting in Northeast Asia held on a regular basis, and identifies long-term visions for regional environmental cooperation and carries out concrete cooperative projects.

The initial focus of TEMM projects was on strengthening the sense of environmental community among the three countries through joint education of environmental officials, tripartite networking of environmental educational organization, and maintenance of the TEMM website (www.temm.org). In line with these activities, Korea, China and Japan organized environmental industry roundtables to boost environmental industry cooperation, launched a freshwater pollution prevention project, and executed the "Ecological Environment Restoration Project in Inner Mongolia" with emphasis on capacity-building.

Based on the experience of these activities, the three countries agreed to join hands in combating dust & samdstorms, which have surfaced as a major environmental problem in the region, at TEMM4 in Seoul, April 2002. Korea joined the collaborating efforts from China and Japan for the establishment of DSS Monitoring Network among three countries, as well as for promoting joint training/education programs on DSS. Furthermore, the Ministers requested UNEP (United Nations Environment Programme), UN ESCAP (Economic and Social Commission for Asia and the Pacific) and other international bodies to participate in the dust storm mitigation project. Fruitfully, a project on the "Prevention and Control of Dust and Sandstorms in Northeast Asia" was launched in January 2003 by Korea, China, Japan and Mongolia in conjunction with UNEP, ESCAP, ADB (Asian Development Bank), and the secretariat of UNCCD (UN Convention to Combat Desertification) with the assistance from ADB and GEF (Global Environment Fund), each contributing investments of 50,000 USD. This project will be completed in December 2004.

On the occasion of the 5th TEMM, which was convened in Beijing, China in December 2003, the Senior Officials' Meeting to Combat Dust and Sandstorms in Northeast Asia was organized with the participations from Korea, China, Japan, Mongolia, DPRK, ADB, and UNEP. This meeting in particular served instrumental in initiating DPRK's participation, which opened the door for a stronger cooperation among Northeast Asian countries. The meeting also adopted Korea's suggestion to develop a joint-environmental education program for children among Japan, Korea, and China.

TEMM Projects

1. Tripartite Env'l Education Network (TEEN)
TEEN is the only project led jointly by the 'private sectors' of Korea, Japan, and China for effective environmental education. It aims at establishing a network of environmental education to facilitate effective information sharing and understanding of the current state of environmental education in the

three countries. Since the first Workshop/ Symposium held in Lake Tanukiko in Japan's Shizuoka Prefecture in November 2000, the three countries have been organizing the workshop in annual rotation. In the Fourth Workshop/ Symposium, which was held in Shizuoka, Japan on 15-17 January 2004, participants discussed the elements and future roles of environmental education, considering 'Education for Sustainable Develop-ment,' the agenda adopted by the UN.

2. Environmental Industry Round Table

This project has also been organized annually, and it aims at further enhancing the environmental industry and strengthening regional cooperation by creating the most effective channel of sharing information and understanding. Since the First Roundtable Meeting held in Seoul in June 2001, the three countries were engaged in four Roundtable Meetings as of 2004. The Third Roundtable Meeting convened on December 2003 in Beijing, featuring discussions on the need to depart from control-based policies and instead focus on the policies that encourage information sharing and cooperation. At the Fourth Roundtable Meeting held in Seoul, Korea in June 2004, the participants shared experiences and deliberated the ways to cooperate in the areas of sharing environmental technologies, sustainable development strategies of the industrial sectors.

The 5th Tripartite Environment Ministers Meeting among Korea, China and Japan (TEMM) in China

3. Joint Environmental Training

This project provides national and local administrative officials of the three countries with an opportunity to participate in joint training program. The program aims to establish the basis for cooperation among the three countries by facilitating the exchange among environmental officials and developing their network. The three countries jointly develop the training course/focus areas and experts come to serve as the instructors. The fourth Joint Environmental Training will be held in Tokyo, Japan in August.

4. TEMM Website

The National Institute of Environmental Research (NIER) plays a central role in creating the official TEMM website (http://www.temm.org/) and publicizing TEMM results, with the help of Japanese and Chinese focal points. Since the Ministers agreed to develop the official TEMM site at the Second TEMM, the homepages has been providing wide scope of information such as environmental information of each country and status on environmental cooperation among Northeast Asia countries.

5. Ecological Conservation in Northwest China

At the second TEMM, the Ministers adopted the Ecological Conservation in Northwest China for environmental improvement in the region. A joint seminar on the ecological conservation of Inner Mongolia and a field visit to its grassland, as well as a study tour for Chinese Officials to Korea were organized. Currently, the program is conducting a research through the pilot village in Inner Mongolia.

6. Freshwater (Lakes) Pollution Prevention Project

This program was adopted at the Second TEMM, and includes the joint research on freshwater (lakes) pollution prevention in Lake Xihu in Hangzhou, China. This project has been carried out in strong partnerships among the three countries. China has taken the role of collecting and providing information on the Lake Xihu, Japan has provided 100,000 Yen of financial support and contributed to water quality improvement technology development, and Korea has developed to water quality management system. In 2004, international symposium is scheduled to be held in Korea to open discussions on the project outcomes, and long-term training programs on lake management will also take place.

Knowledge Partnership Project

Background

The strong pursuit of policies aimed at economic development in the Asian region has led to increasing environmental pressures, leading to calls for strategies to take up the new environmental challenges. Developing countries in Asia are in particular need for the kind of knowledge and policy experiences that can draw upon their unique environmental, economic, and social conditions for the achievement of sustainable environmental management.

In this backdrop, the Republic of Korea, together with World Bank, launched the Knowledge Partnership (KP) Project in February 2001 by signing the Memorandum of Understanding and affirming the commitment towards sharing environmental policy & management experiences with the developing countries of Asia through transferring Korea's technology and know-how in respective fields.

Implementation

Korea established the Consultant Trust Fund (CTF) to the World Bank for implementing the KP Projects. Contributions of 420,000 USD and 470,000 USD were made in November 2002 and December 2003, respectively. This year, the Ministry plans to contribute another 470,000 USD during the last quarter of 2004.

Knowledge Partnership (KP) Project Outcomes

Fiscal Yr.	Contribution	Project
2002 (1st term)	USD 420,000	1. Environmental management of small- and medium-sized enterprises (SMEs) and industrial zones (China) (200,000 USD) 2.Integrated watershed management for Laguna de bay (Philippines) (100,000 USD) 3.Regional environmental management for traditional villages (Vietnam) (99,000 USD)
2003 (2nd term)	USD 470,000	1. Markets for biodiversity in East Asia (East Asia) (105,000 USD) 2. Ecological design strategy for the road 353 new urban development area (Vietnam) (180,000 USD) 3. Rural development strategy (Lao) (37,000 USD) 4. Livestock waste management (China) (73,000 USD) 5. Implementing rules and regulations for clean water (Philippines) (49,000 USD)

5% of the total contribution is used for administrative costs of the World Bank.

The monetary contributions made by MOE serve the purpose of disseminating Korea's environmental experiences and technologies to developing countries in Asia, and contract agencies for project implementation are determined by relevant government agencies.

Furthermore, with the establishment of the MOE-World Bank MOU on the secondment of officials in August 2001, competent officials from the MOE have been seconded to the World Bank to play an advisory role as required for the structured implementation of KP Projects.

Focusing on major environmental fields including water, air, and waste management, KP Projects examine the environmental status in selected countries and propose guidelines for sound environmental management. Country selections are generally determined by the World Bank secretariat. However projects of over 100,000 USD in budget require prior consultation with MOE.

Concrete plans for the 3rd term projects (fiscal year 2004) will be developed upon agreement between MOE and World Bank. In addition, MOE will conduct a comprehensive review on the 1st year projects undertaken in Vietnam, Philippines, and China. Notably, through the occasion of the 3rd Korea-Vietnam Environment Ministers' Meeting to be convened in November 2004 in Hanoi, the ministers will review progress and outcomes, as well as engage in discussions on future plans for the KP project in Vietnam.

MOE Headquarters Functions

Office/Bureau	Division	Functions
Planning and Management Office (82) 2-2110-6604	Innovation & Personnel	· Comprehensive support in creating efficient working environment and administrative procedures · Coordination of subsidiary organizations and human resources allocation
	Planning & Budget	· Establishment of the annual task list; tasks relating to the National Assembly and political parties · Appropriation, transfer, reallocation of budget and funds; Estimation of expenditures and revenues
	Legal Affairs Office	· Supervision of law making & enforcement plans · Publications on environmental laws, regulations and judicial precedents
	Environmental Data & Information	· Establishment of the environmental information and data system · Publishes the Environmental Statistics Yearbook and operates the MOE official website (Korean)
Environmental Policy Office (82) 2-2110-6670	Policy Coordination	· Mid & long term plans for environmental preservation; operation of the Basic Environmental Law · Promotion of Local agenda 21; production of MOE Annual Report; cooperation with SOFA, USFK and DPRK
	Environmental Economy	· Environment improvement charge system, Green construction material approval system, and Environmentally friendly corporation designation system · Support for environmental industry; operation of pollution prevention facilities
	Environmental Education & Civil Relations	· Promotion of environmental education (i.e. model environmental conservation schools) · Support towards civil environmental preservation activities; organizes various environmental ceremonies
	Environmental Technology	· Management of environment technology centers, promotion of Eco-Technopia 21 · Comprehensive support towards the development and growth of environmental technology
	Environmental Health Policy	· Enforcement of the Toxic Chemicals Act; toxicity & risk assessment on new & existing chemicals · Measures to prevent environment-related diseases, management of Environmental Health Index
	Chemicals Safety	· Overall management of toxic & observation chemicals, production & import control · Setting standards, grouping and labeling of chemicals, toxic chemicals reduction measures
	Hazardous Chemicals Management	· Control measures on POPs; tasks relating to Stockholm and Basel Conventions · Research projects on endocrine disruptors, control over internationally restricted chemicals
Nature Conservation Bureau (82) 2-2110-6731	Nature Policy	· Establishment of framework policies on nature conservation; measures to raise ecological soundness · Deals with establishment of conservation/use facilities; conservation of wetlands and selected islands
	Natural Resources	· Endangered & protected wildlife protection, environmental status surveys, and data management · Designation of National Parks, establishment of National Park management plans
	National Environmental Conservation	· Master plan for national conservation, operation of Prior Environmental Performance Review System · Related negotiations on land use, urban, industrial park, and electricity/energy development plans
	Environmental Impact Assessment	· Deals with general EIA issues, management and develop improvement & review guidelines for EIA · Related EIA negotiations, matters dealing with changes in negotiation items & re-negotiation
Air Quality Management Bureau (82) 2-2110-6775	Air Quality Policy	· Establishment of Framework Plan for Air Quality Preservation; deals with relevant laws and statutes · Operation of the air quality monitoring network, fuel quality control, and DSS related measures
	Area-based Air Quality Management	· Enforcement of the Special Act on Metropolitan Air Quality Improvement; emission standards & trading, total air quality load management in the region · Task force operation; air pollution modeling; industry compliance supervision
	Air Pollution Control	· Industrial emission control, operation of emission standards and emission charge system · Operation of Stack Telemetry Monitoring System, odor prevention measures
Air Quality Management Bureau (82) 2-2110-6775	Environmental Transportation Policy	· Establishment of mid and long-term plans for vehicle exhaust emission; promotion of low & zero emission vehicles and On-board diagnosis (OBD) system · Deals with international conventions on environmental transportation; control over manufactured/imported vehicles
	Environmental Transportation Management	· Operation of vehicle inspection system; vehicle recall & warnings; prevention of vehicle idling · Control over vehicles in operation (emission/noise standards); supply of DPF & catalytic converter
	Noise, Vibration & Dust	· Enforcement of noise/vibration control measures, traffic noise control · Enforcement of the Indoor Air Quality Act; deals with relevant laws and statutes
Water Quality Management Bureau (82) 2-2110-6826	Water Quality Policy	· Operation of 4 major rivers comprehensive water quality improvement measures, setting of standards · Non-point source pollution and lacustrine management, livestock waste treatment & utilization
	Watershed Policy	· Total water pollution load management system, riparian buffer zones designation & management · Water use charge, operation of Watershed Management Fund, and support for source-area residents
	Industrial Wastewater Control	· Operation of industrial wastewater management system, setting of allowable emission standards · Water pollution accident prevention and response, monitoring and regulation of polluting facilities
Water Supply & Sewerage Bureau (82) 2-2110-6508	Water Supply & Sewerage Policy	· Management and expansion of the waterworks system; deals with relevant laws & statutes · Tap water quality improvement, water utilities statistics
	Sewerage	· Establishment of framework policies on sewage and excreta disposal · Installation and maintenance of sewage & excreta treatment facilities
	Soil & Groundwater Management	· Measures for soil & groundwater preservation; conducts soil contamination surveys · Fountain water quality standards, preservation & management of groundwater
Waste Management & Recycling Bureau (82) 2-2110-6910	Waste Management Policy	· Establishment of Framework Plan for Waste Management; deals with relevant laws and statutes · Development and promotion of waste reduction policies; operation of waste treatment charge system
	Municipal Waste Management	· Establishment of Framework Plan on Municipal Waste Treatment Facilities, site survey & management · Management & regulation of dioxin emissions at incinerators, food waste reduction and utilization
	Industrial Waste Management	· Deals with industrial waste collection, transport, storage, treatment standards & treatment facilities · Treatment and management of construction waste and infectious waste
	Resource Recycling	· Establishment of Framework Plan for Resource Recycling; deals with relevant laws and statutes · Recycling standards & methods; promotion of recycling industry and recycled products use
Public Information Office (82) 2-2110-6519	Public Information	· Comprehensive coordination of public relations through press & mass media; press releases and policy information · Public service advertising campaigns & comprehensive review on the Ministry's public relations activities
Audit & Inspection Office (82) 2-2110-6530	Audit & Inspection	· Audit & Inspection of MOE and subsidiary organizations · Investigation and settlement of petitions and illegal acts
	Central Environment Inspection Planning	· Comprehensive coordination of investigation and regulation activities on pollutant emission sources · Mandate the Quasi-Prosecutor authority to environmental officials
International Cooperation Office (82) 2-2110-6550	International Affairs	· Cooperation with international organizations; multilateral & bilateral environmental cooperation · Hosting of and participation at international conferences; international environmental affairs; production of publications and MOE website in English
	Global Environment	· Establishment of framework policies on global environment preservation; environmental trade · Tasks relating to UNCSD, WTO/DDA, UNFCCC, and other international conventions

Regional Offices & Subsidiary/Affiliated Orgs

Organization	Telephone / Website	
National Env'l Dispute Resolution Commission (NEDRC)	• (82) 2-2110-6980	http://edc.me.go.kr/
National Institute of Environmental Research (NIER)	• (81) 32-560-7114	http://nier.go.kr/
Han River Basin Environmental Office	• (81) 31-790-2420	http://hg.me.go.kr/
Nakdong River Basin Environmental Office	• (82) 55-211-1761	http://ndg.me.go.kr
Geum River Basin Environmental Office	• (82) 42-865-0800	http://gg.me.go.kr/
Yeongsan River Basin Environmental Office	• (82) 62-605-5114	http://yeongsan.me.go.kr
Gyeongin Regional Environmental Office	• (82) 31-481-1328	http://gime.go.kr
Wonju Regional Environmental Office	• (82) 33-764-0982	http://wonju.me.go.kr
Daegu Regional Environmental Office	• (82) 53-760-2502	http://daegu.me.go.kr
Jeonju Regional Environmental Office	• (82) 63-270-1810	http://jeonju.me.go.kr
Korea Environment & Resources Corporation	• (82) 32-560-1588	http://www.envico.or.kr
Environmental Management Corporation	• (82) 32-560-2151~3	http://www.emc.or.kr/
National Parks Authority	• (82) 2-3272-7931~3	http://www.npa.or.kr/
Sudokwon Landfill Site Management Corporation	• (82) 32-562-2549	http://www.slc.or.kr
Presidential Commission on Sustainable Development	• (82) 2-3156-7300	http://www.pcsd.go.kr
Korea Environment Institute	• (82) 2-380-7777	http://www.kei.re.kr

Relevant Central Governmental Bodies

Organization	Telephone / Website	
Ministry of Science & Technology	• (82) 2-503-7600	http://www.most.go.kr
Ministry of Culture and Tourism	• (82) 2-3704-9114	http://www.mct.go.kr
Ministry of Agriculture & Forestry	• (82) 2-2110-4000	http://www.maf.go.kr
Ministry of Commerce, Industry & Energy	• (82) 2-2110-5071	http://www.mocie.go.kr
Ministry of Labor	• (82) 2-2110-7062	http://www.molab.go.kr
Ministry of Construction& Transportation	• (82) 2-503-7314	http://www.moct.go.kr
Ministry of Maritime Affairs and Fisheries	• (82) 2-3148-6114	http://www.momaf.go.kr
Rural Development Administration	• (82) 31-299-2200	http://www.rda.go.kr
Korea Meteorological Administration	• (82) 2-836-2385	http://www.kma.go.kr
Korea Forest Service	• (82) 42-481-4080	http://www.foa.go.kr

2004 MOE Budget

(Unit : million KRW)

Total	1,449,215
Environmental Policy	109,984
Nature Conservation	107,472
Air Quality Management	104,203
Water Quality Management	89,801
Water Supply & Sewerage	377,256
Waste Management & Recycling	276,255
Environmental Dispute Resolution	1,272
Regional Offices (8)	32,725
NIER	32,593
Operational costs, etc.	133,654
Grants for Environmental Facilities	102,345
Subsidies for Environmental Programs	81,655

MOE Personnel (1,392)

MOE	Affiliated Organizations (963)									
	NEDRC	NIER	River Basin Environmental Office(413)				Regional Environmental Office(271)			
			Han	Nakdong	Geum	Yeongsan	Gyeongin	Wonju	Daegu	Jeonju
429	21	258	73	130	98	112	89	62	80	40

MOE Environmental Laws (Total of 38 laws in effect)

Period	Law Name	Enacted on
1960s (6 laws)	Waste Cleaning Act (Repealed on 12.31.1986)	12.30.1961
	Water Supply & Waterworks Installation Act (2003) '	12.31.1961
	Environmental Pollution Prevention Act (Repealed on 12.31.1977)	11.05.1963
	Act Relating to Toxic & Hazardous Substances (Repealed on 08.02.1999)	12.13.1963
	Sewerage Act (2002)	08.03.1966
	Act Relating to the Protection of Birds, Mammals & Hunting (To be Repealed on 02.10.2005)	03.30.1967
1970s-1980s (6 laws)	Environmental Conservation Act (Repealed on 12.30.2002)	12.31.1977
	Compound Waste Treatment Corporation Act (Repealed on 12.30.2003)	12.28.1979
	Natural Park Act (2002)	01.04.1980
	Environmental Management Corporation Act (2003)	05.21.1983
	Environmental Pollution Prevention Corporation Act (Repealed on 05.29.2003)	05.21.1983
	Waste Control Act (2003)	12.31.1986
1990s-Present (33 laws)	Clean Air Conservation Act (2004)	08.01.1990
	Environmental Dispute Adjustment Act (2002)	08.01.1990
	Framework Act on Environmental Policy (2002)	08.01.1990
	Noise & Vibration Control Act (2004)	08.01.1990
	Toxic Chemicals Control Act (2000)	08.01.1990
	Water Quality Conservation Act (2004)	08.01.1990
	Act on the Disposal of Sewage, Excreta & Livestock Wastewater (2004)	03.08.1991
	Act on Special Measures for the Control of Environmental Offenses (2004)	05.31.1991
	Environmental Improvement Expenses Liability Act (2002)	12.31.1991
	Natural Environment Conservation Act (2004)	12.31.1991
	Act on the Control of Transboundary Movement of Hazardous Waste & Their Disposal (2001)	12.08.1992
	Act on the Promotion of Saving and Recycling of Resources (2003)	12.08.1992
1990s-Present (33 laws)	Act Relating to the Special Accounting for Environmental Improvement (2004)	01.05.1994
	Development of & Support for Environmental Technology Act (2004)	12.22.1994
	Management of Drinking Water Act (2003)	01.05.1995
	Promotion of Waste Disposal Facilities & Assistance, etc. to Adjacent Areas Act (2004)	01.05.1995
	Soil Environment Conservation Act (2003)	01.05.1995
	Special Act on the Ecosystem Conservation of Small Islands such as Dokdo Island (2004)	12.31.1997
	Act Relating to Han River Water Quality Improvement & Community Support (2003)	02.08.1999
	Wetland Conservation Act (2004)	02.08.1999
	Act on the Assessment of Impacts of Works on Environment, Transportation, Disasters, etc (2004)	12.31.1999
	Sudokwon Landfill Site Management Corporation Act	01.21.2000
	Act on Geum River Watershed Management & Community Support (2003)	01.14.2002
	Act on Nakdong River Watershed Management & Community Support (2003)	01.14.2002
	Act on Yeongsan & Sumjin River Watershed Management & Community Support (2003)	01.14.2002
	Indoor Air Quality Management Act (Amended from Underground Air Quality Management Act enacted in 12.30.1996)	05.29.2003
	Korea Environment & Resources Corporation Act (Amended from Korea Resource Recovery & Reutilization Corporation Act 12.27.1993)	12.30.2003
	Act on the Promotion of Construction Waste Recycling	12.31.2003
	Act on the Protection of the Baekdu Daegan Mountain System	12.31.2003
	Special Act on Metropolitan Air Quality Improvement	12.31.2003
	Foul Odor Prevention Act	02.09.2004
	Wildlife Protection Act	02.09.2004
	Act on Antarctic Activities and Environmental Protection	03.22.2004

' Years in parentheses denote date of most recent amendment.

MOE Organizational Chart