

ECOREA

Environmental Review 2009, Korea

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MINISTRY OF ENVIRONMENT
REPUBLIC OF KOREA

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Ecorea is a compound of the prefix “Eco”,
 which suggests an ecologically sound
 and comfortable environment,
 and the name of the nation, “Korea”

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The Minister's Message

In the 21st century, our view of the environment should proceed to recognize that it is the basic platform for the sustainable future growth.

Based on this recognition, President Lee Myung-bak announced the national vision of Low Carbon, Green Growth for the next 60 years on the 60th anniversary of the founding of the Korean government on August 15, 2008. For a successful implementation of the national vision, the Korean government came up with strategies and frameworks for green growth and made great efforts to raise the awareness of Korean people. In 2010, the Basic Act on Low Carbon, Green Growth was enacted, identifying policy directions as well as solidifying the institutional foundation for green growth.

As the leading government office, the Ministry of Environment established the Green Growth Action Plan for the Environmental Sector in 2009, which entails green growth strategies and policy priorities. The Ministry has tried to restore the health of major streams through the Blue-Green Network, advance environmental regulations, and expand environmental services to rural areas and environmentally-vulnerable people. Furthermore, in accordance with the Action Plan, the Ministry has made its utmost efforts to implement the policies that create jobs in the environmental sector.

In 2010, the Ministry of Environment will contribute to the implementation of the vision of Low Carbon, Green Growth by focusing on such areas as the Four Major Rivers Restoration Project, Waste to Energy (W2E) project, development of five green growth model regions and the management of biological resources of the Korean peninsula. Moreover, in order to share Korea's accumulated experiences and know-how with developing countries, the Ministry will try to provide assistance for them to develop plans for environmental improvement and also expand joint partnerships for the development of environmental technologies.



This special edition of ECOREA 2009 introduces the country's main goals and ten policy priorities for a new national vision of Green Korea, which pursues the harmony of the environment, economy and society. ECOREA 2009 does also present some environmental policies in the following areas: the Four Major Rivers Restoration Project, Comprehensive Measures for Asbestos Management, Implementation of Mandatory Total Maximum Daily Loads (TMDL) for the Han River Water System and Waste Material Import and Export Declaration System.

Additionally, for a better understanding of the Ministry's organization and its roles, the appendices include such information on the Ministry's responsibilities by department and by bureau, organization chart, budget and contact information of subsidiary/affiliated organizations.

I believe with the publication of ECOREA 2009 Korea's environmental policies and efforts will be better known to our global partners and relevant organizations which try to pursue a strategy of green growth. I wish your continuous support for the Ministry of Environment's ECOREA 2009.

MAANEE LEE
Minister of Environment

A handwritten signature in black ink, appearing to read 'Maanee Lee'.

01 Green Growth Action Plans

The Ministry of Environment of the Republic of Korea recognizes the significance of the national vision of Low Carbon, Green Growth. The Low Carbon, Green Growth vision of the Lee administration was made based on a series of studies on a rapidly changing environment of policy-making home and abroad and is currently acting as a framework for future policy direction and national priorities. Since the declaration of the national vision, the Ministry has been reflecting it on sector-specific Green Growth policies concerning environmental issues.

Among government ministries, the Ministry of Environment was the first to establish and publicly announce the Green Growth Action Plans for the Environmental Sector on January 6, 2009. The Action Plans consisting of 49 tasks in 4 sectors encompass comprehensive green growth strategies and policy priorities. Since the announcement, the Ministry has periodically revised and supplemented the Action Plans and monitored the progress of implemented tasks to make proper responses to changes of the global policy-making environment.

Upon the official launch of the Green Growth National Strategy and 5-Year Plan on July 6, 2009, the Ministry of Environment completed the Green Growth Central Action Plans based on the Green Growth Action Plans for the Environmental Sector. In addition, the Ministry's Green Growth Central Action Plans have become legally enforceable since the enactment of the Framework Act on Low Carbon and Green Growth on January 13, 2010.

In February 2009, the Ministry of Environment introduced a new official position called a Green Environment Policy Chief. The Policy Chief is assigned for development of environmental policies for green growth and coordination and communication for green growth-related issues. In addition, the Ministry has initiated the Green Growth Forum, a public-private governance system, where both the central government and 16 city and provincial governments participate. Also, the Forum has been playing a critical role in expanding the low carbon green growth vision and promoting green lifestyle throughout the country. The Ministry also launched the Green Start Network, a public-private partnership program designed to lead a nationwide campaign for cutting GHG emissions in everyday life.

In cooperation with the Green Start Network, the Ministry of Environment has continuously increased its efforts to promote green lifestyle by sponsoring and hosting various contests and campaigns and making proper policies. Such activities include



Green Gas Reduction Contest (April 2009), Green Leadership Training (April 2009, 3,600 trainees), Climate Change Week (April 2009, 776,000 attendees), Greenhouse Gas Assessment Week (June 2006, 13,000 households participating), Light Off Campaign (June 2009, 390,000 households participating), Cool Clothing Campaign, Nationwide Implementation of Carbon Point System (June 2009, 138 local governments), Empty Dishes Point Bank (April 2009), and Green Living Wisdom for All Lifestyles (July 2009).

In 2009, the Ministry of Environment implemented various policies and plans for green growth which led to successful outcomes.

Firstly, on July 6 2009 the Ministry of Environment established and announced detailed action plans for the Waste to Energy and Biomass Energy Program, considering it as the most efficient measure for resources circulation, renewable energy use and GHG emissions reduction. The Program is expected to create an EVA (Economic Value Added) of 2.9 trillion Korean won and 9.16 million tons of CO₂ reduction by 2013.

Secondly, the Ministry of Environment substantially expanded investment in core green technologies. The 2009 budget was increased to 149.2 billion Korean won from 111.2 billion Korean won of 2008. The Ministry also selected best practices of LPI (Liquid Petroleum Injection) System for LPG operated vehicles, PM/NO_x reduction technology and device for diesel operated vehicles, advanced water treatment

technology and equipment, wastewater reclamation and reuse equipments for the electrical industry, Waste to Energy technology, and resource circulation technology for waste metals. Furthermore, these best practices of advanced technologies were promoted to businesses and Korean citizens.

Thirdly, as the first outcome of the plans to advance government agencies, the Korea Environmental Industry and Technology Institute (KEITI) was established on April 8, 2009. The KEITI has supported nurturing environmental industries and technologies and helped them enter overseas markets. Thanks to its efforts, a number of domestic technologies are currently being exported overseas.

Fourthly, the Ministry of Environment took a leading role in legislating CO2 emission standards for automobiles in order to reduce GHG emissions of the transportation sector, which accounts for 17% of the country's GHG emissions. By doing so, the Ministry aimed at improving global competitiveness of Korean automakers and advancing domestic environmental regulations to meet the global standard. The legislative effort, which shows the government's drive for Low Carbon, Green Growth, will encourage the corporate sector to further practice green management.

In addition, the Ministry of Environment signed an MOU with Korea Exchange for establishment of the Carbon Exchange in October 2008. Such effort was followed by Survey on GHG emissions by Local Governments in March 2009 and Emission Trading Pilot Project of EFCs (Environmentally Friendly Companies) and public organizations in December 2009.

Furthermore, the Ministry came up with a comprehensive plan to promote eco tourism of local communities, while, at the same time, preserving and making wise use of the ecosystem and natural and cultural resources.

In order to ensure efficient use and safe supply of water resources for green growth, the Ministry allocated a substantial amount of budget for the following projects; tube well construction project for securing public water in drought areas (2009, 47.7 billion Korean won), small sized water supply system improvement project (1,543 locations, 110.7 billion Korean won), supports for water pipe system check (April 2009, 10 billion Korean won), and waterworks pipe system management (improvement of over 28,000 km pipes by 2019, 2.8 trillion Korean won). The Ministry of Environment also presented a bill titled 'Act on Promotion of and Support for Water Reuse [June 8, 2008]' to the National Assembly. Furthermore, the Ministry carried out a project for waste water treatment and reclamation facilities (440 million tons per year by 2016, a publicly and privately funded program) and also integrated water works in the metropolitan and local areas.

Furthermore, the Ministry of Environment has been striving for improving water quality, restoring the aquatic ecosystem, and securing water-friendly spaces in the four major rivers and their basin areas. As for the most notable examples, the Ministry expanded investment to improve the water quality of the four major rivers by 3.9 trillion Korean won over 4 years and also established action plans for restoration of the four major rivers which included restoration of the aquatic ecosystem and management of aquatic animals and plants, establishment of integrated water pollution prevention center and management of environmental impact due to river constructions.

Lastly, in June 2009 the Ministry of Environment established and announced the Low Carbon Green Growth City Pilot Project in order to reduce GHG emissions and to improve the quality of life. On July 15, 2009, Gangneung city was selected as the first pilot green city and the Ministry will further promote the green technology-based city model throughout the country with necessary policy supports.

Last year, the national vision of Green Growth began in earnest and the Ministry laid the foundation for green growth by spreading the vision nationwide, raising awareness on green growth, preparing strategies and identifying priorities. By opening dialogues on its practicalities, the Ministry of Environment and the Korean government will put tremendous efforts on the national vision of Low Carbon, Green Growth in its third year.



02 Overview of Korea

General

Country Name Republic of Korea
Capital City Seoul (10 million)
National flag Taegeukgi
National flower Mugunghwa (Rose of Sharon)
Currency won
Language Korean (Written form: Hangeul)

Geography

Location Strategically located at the crossroads of Northeast Asia. Korea lies between Japan, the Russian Far East and China.
Territory 223,170km² (South Korea: 100,032km²)
Major cities Seoul (10 million), Busan (3.5 million), Incheon (2.6 million), Daegu (2.5 million), Daejeon (1.5 million), Gwangju (1.4 million), Ulsan (1.1 million)
Climate Temperate with four distinct seasons

People

Population 48.61 million (2008)
Foreign residents 1.1 million
Population growth 0.31% (2008)
Life Expectancy Males 76.1 years, females 82.7 years (2007)
Religion A 2005 census showed a half of the population actively practices religion. Among this group, Buddhism (43.0%), Protestantism (34.5%) and Catholicism (20.6%) comprise the three dominant religions.

Economy

Gross Domestic Product \$928.7 billion (2008)
Per Capita GNI \$19,231 (2008)
GDP Growth Rate 2.2 percent (2008)
Exports \$422.0 billion (2008)
Imports \$435.3 billion (2008)
Major Industrial Products Semiconductors, automobiles, ships, consumer electronics, mobile telecommunication equipment, steel and chemicals

(Source: <http://www.korea.net/>, The official website of the Republic of Korea)



03 Institutional Mechanisms for Environmental Policies

The Ministry of Environment, as the main ministry for environmental conservation, is working with multiple subsidiary organizations including the National Environmental Dispute Resolution Commission, the National Institute of Environmental Research (NIER), the National Institute of Biological Resources, the National Institute of Environmental Human Resources Development and eight local environmental offices.

3-1. Administrative Organizations

Environmental Administrative Structure

Based on Environmental Laws enacted by the National Assembly, environmental policies are approved by the final decision the President and implemented by the executive branch. The environmental policies regarding water resources management are examined and decided by the Prime Minister-led Water Management Policy Coordination Committee after examination and coordination of the Office of Environmental Commissioner under the Office for Government Policy Coordination. Also, the Presidential Commission on Sustainable Development is currently taking a role of coordinating and suggesting eco-friendly and sustainable policies by mediating conflicts between developers and environmental activities.

Currently, Korea's structure of environmental policy-making is rather complex. The Ministry of Environment and the other seven Ministries, sub-governmental offices, local environmental offices and localities are all involved in the process.

Ministry of Environment

The Ministry of Environment, as the main ministry for environmental conservation, is working with multiple subsidiary organizations including the National Environmental Dispute Resolution Commission, the National Institute of Environmental Research (NIER), the National Institute of Biological Resources, the National Institute of Environmental Human Resources Development and eight local environmental offices. The four public organizations under the Ministry of Environment are the Korea Environmental Corporation (KECO), Korea National Park Service, Sudokwon Landfill Site Management Corporation (SLC), and the Korea Environmental Industry and Technology Institute. In addition, the Korean Environment Institute was established under the Prime Minister's Office for in-depth research on environmental policies, policy development and review of environmental impact assessment reports.

Main Office

As of June 2009, the Ministry of Environment, in charge of developing comprehensive environmental policies, consists of two departments, three bureaus, seven offices, thirty two divisions, four teams, and one task force team with a total of 518 employees working for the organization. The major responsibilities of the Ministry of Environment and its subordinate organizations include: establishment of framework for environmental administration through enactment and amendment of

environmental acts and introduction of environmental systems; development and implementation of mid to long term comprehensive measures for environmental conservation; establishment of various regulatory standards; administrative and financial supports for local environmental offices and municipalities for management of the environment; and coordination of international collaboration for environmental protection.

National Environmental Dispute Resolution Commission (NEDRC)

Pursuant to Article 4 of the Environmental Dispute Adjustment Act, the National Environmental Dispute Resolution Commission (NEDRC) was established to settle disputes over damage caused by environmental pollution. The NEDRC was established under the Ministry of Environment and other Regional Environmental Dispute Resolution Commissions are working under metropolitan cities including Seoul and regional provinces. The Commission consists of the chairperson (first rank, standing) and eight non-standing members. The secretariat, consisting of 21 members as of June 2009, is currently providing administrative supports for activities related dispute resolution.

National Institute of Environmental Research (NIER)

In July 1978 the National Institute of Environmental Research (NIER) was launched as an independent environmental research institution, once an arm of the National Institute of Health. The Research is currently carrying out investigations, researches, evaluations and assessments related to environmental protection and prevention of environmental pollution.

With the inception of the Environment Agency in 1980, the NIER was transferred



from the Ministry of Health and Society to the Agency. In 2005 the Research started anew with the new name of 'NIER' and carried out restructuring to become a merit-based research body.

The NIER conducts researches, examinations and assessments to support policy-making of the Ministry of Environment. The research body consists of one office, four departments, 18 divisions, and six research centers with a total of 300 employees working for the organization as of June 2009.

National Institute of Biological Resources (NIBR)

The National Institute of Biological Resources (NIBR) was launched in February 2007 as a specialized research institute to conduct researches and studies for effective conservation and use of the national biological resources and to engage in promotion and exhibitions of biological resources. The Institute consists of two departments and eight divisions with a total of 102 employees working for the organization as of June 2009.

National Institute of Environmental Human Resources Development (NIEHRD)

The National Institute of Environmental Human Resources Development (NIEHRD) became an independent institute for environmental education from the NIER (the Environmental Education Department). The NIEHRD consists of two divisions with a total of 30 employees working for the organization as of June 2009.

River Basin (Local) Environmental Office

As a specialized local administrative agency for management of water systems and basin areas of the four major rivers, the Office has four River Basin Environmental Offices (Han River, Nakdong River, Geum River, and Yeongsan River) and three Regional Environmental Offices (Wonju, Daegu, and Jeonju) as its affiliated organizations. In addition, the Metropolitan Air Quality Management Office was also set up under the Office and is solely responsible for improving the air quality of metropolitan areas. The Office has a total of 785 employees currently working for the organization as of June 2009.

Local environmental offices are responsible for development and implementation of regional environmental management plans; consultations on the Prior Environmental Review System (PERS) and Environmental Impact Assessments (EIA); conservation of the natural environment and ecosystems; inspection of pollution sources and measurement and analysis of environmental pollution; fostering and

support for environment-related industries; control over businesses which produce designated waste as well as waste treatment companies; and guidance and supervision on operation of the environmental infrastructure.

In addition to the aforementioned tasks, the four River Basin Environmental Offices are in charge of operating the Watershed Management Committee; using/allocating Watershed Management Funds; review and approval of water quality improvement projects by region; approval and assessment of the Total Maximum Daily Load Management System (TMDL); and imposing water use charges on businesses according to a special law on watersheds. The Metropolitan Air Quality Management Office is responsible for preventive air quality management of metropolitan areas under the Special Act on Metropolitan Air Quality Improvement.

Relevant Central Administrative Organization

As environmental affairs are so diverse, complex and wide-ranging, the Ministry of Environment has cooperated with other governmental bodies including eight ministries. They include the Korea Forest Service in charge of forests, which account for a large share of the territory and are home to a diversity of plants, animals, and microorganisms; the Ministry of Land, Transport and Maritime Affairs, which is responsible for marine environment management and transportation policies, which are closely related to water flow management, river/stream management and air quality, as well as land use plans, which are directly linked with the environment; and the Ministry of Knowledge Economy, which is in charge of energy supply/demand policy, which is relevant to air pollution, and policies for control over businesses which emit pollutants.

Local (Municipal) Governments

The central and local governments share environmental affairs. The Ministry of Environment develops a framework for environmental policies including enactment of environmental laws and setting of regulatory standards while local environmental offices and municipalities also implement the environmental policies.

The major tasks of municipalities are divided into two categories. First, municipalities are to carry out their own environmental affairs — development and implementation of regional environmental conservation policies within their administrative jurisdiction; collection and treatment of municipal waste; treatment of sewage and livestock waste; regulation of noise, vibration and gas emissions of vehicles. Second, they are also in charge of controlling and managing pollutant-



emitting companies in and around industrial complexes and imposing environmental improvement charges, etc., commissioned by the Minister of Environment.

The environmental administrative agencies of the local governments vary; however, all of sixteen metropolitan cities have an environmental green area bureau or an environmental affairs bureau or a department for the environment, culture, tourism and marine affairs. Also, municipalities are working on environmental issues through an environmental protection division or an environmental management division or a department for maritime and urban functions.

3-2. Environmental Acts Structure

Under the provision of Article 35 of the Constitution, "All citizens shall have the right to a healthy and agreeable environment. The State and all citizens shall endeavor to protect the environment." The Environmental Acts specify environmental rights guaranteed by Article 35 of the Constitution. The concept of Environmental Acts can be interpreted in both a broad and a narrow sense. The Environmental Acts in a broad sense include all laws that stipulate the 'environment,' 'natural environment,' or 'living environment,' as regulated in Article 3.1 of the Framework Act on Environmental Policy. In a narrow sense, the Environmental Law signifies laws that are managed under the Ministry of Environment according to Article 40 of the Government Organization Act or laws related to preservation of the natural environment and living environment and prevention of environmental pollution.

Still, environmental problems cannot be solved solely by the laws under the Ministry of Environment, but are rather closely related to land policies, energy policies and industrial policies. Therefore, when discussing the problem of preserving and improving the environment in general, it is important to understand Environmental Acts in a broad sense.



History & Current Status of Environmental Acts

1960s (6 Acts)	1970s~1980s (9 Acts)	1990~2009 (46 Acts)		
		Current Status	Enacted Date	Revised Date
Environmental Pollution Prevention Act (NOV 5, 1963)	Environmental Conservation Act (DEC 31, 1977)	Framework Act on Environmental Policy	90. 8. 1	07. 5.17
		Clean Air Conservation Act	90. 8. 1	08. 5.21
		Framework Act on Sustainable Development	07. 8. 3	07.8. 3
		Environmental Education Promotion Act	08.3.21	08.3.21
		Environmental Health Act	08.3.21	08.3.21
		Indoor Air Quality Control in Public Use Facilities, etc. Act	96.12.30	06.12.30
		Noise and Vibration Control Act	90. 8. 1	07. 4.11
		Foul Odor Prevention Act	04. 2. 9	07. 1. 3
		Special Act on Metropolitan Air Quality Improvement	03.12.31	08. 3.28
		Water Quality and Ecosystem Conservation Act	90. 8. 1	09. 5.21
		Act Relating to the Han River Water Quality Improvement and Community Support	99. 2. 8	08. 12.31
		Act on the Nakdong River Watershed Management and Community Support	02. 1.14	08.12.31
		Act on the Geum river Watershed Management and Community Support	02. 1.14	08.12.31
		Act on the Yeongsan & Sumjin River Watershed Management and Community Support	02. 1.14	08.12.31
		Natural Environment Conservation Act	91.12.31	07. 5.17
		Act on Special Measures for the Control of Environmental Offenses	91. 5.31	99.12.31
		Environmental Dispute Adjustment Act	90. 8. 1	08. 3.21
		Act on Antarctic Activities and Environmental Protection (jointly enacted)	04. 3.22	04. 3.22
		Act on Promotion of the Purchase of Environment-Friendly Products	04.12.31	08. 3.21
		Act on Environmental Test and Examination	06.10. 4	06.10. 4
Environment Improvement Expenses Liability Act	91.12.31	07. 1. 3		
Act Relating to the Protection of Birds, Mammals and Hunting (MAR 30, 1967)	Natural Park Act (JAN 14, 1980)	Natural Park Act	80. 1. 4	08.12.31
		Special Act on the Ecosystem Conservation of Islands such as Dokdo Island	97.12.31	09. 5.21
		Wetland Conservation Act (jointly enacted)	99. 2. 8	08. 3.21
		Environmental Impact Assessment Act	99.12.31	08. 3.28
		Soil Environment Conservation Act	95. 1. 5	07. 5.17
		Act on the Protection of Baekdudaegan Mountain System (jointly enacted)	03.12.31	09. 3. 5
		National Trust Act on Cultural Heritage & Natural Environment Assets (jointly enacted)	06.3.24	06. 3.24
		Wildlife Protection Act	04.2.9	07.5.17

1960s (6 Acts)	1970s~1980s (9 Acts)	1990~2009 (46 Acts)		
		Current Status	Enacted Date	Revised Date
	Environmental Pollution Prevention Corporation Act (MAY 1, 1983)	Environment Management Corporation Act	83. 5.21	03. 5.29 (Annulled Date:09.12.31)
		Korea Environment Corporation Act	09. 2. 6	10. 1. 1 (Enacted Date)
		Act Relating to Special Accounting for Environmental Improvement	94. 1. 5	06.12.30
		Development of and Support for Environmental Technology Act	94.12.22	09. 1. 7
		Act Relating to Toxic & Hazardous Substances (DEC 13, 1963)	Toxic Chemicals Control Act	90. 8. 1
Waste Cleaning Act (DEC 30, 1961)	Waste Control Act (DEC 31, 1986)	Persistent Organic Pollutants (POPs) Control Act	07.1.26	07.1.26
		Waste Control Act	86.12.31	07. 8. 3
		Act on the Management and Use of Livestock Manure (jointly enacted)	06. 9.27	06. 9.27
		Act on the Promotion of Saving and Recycling of Resources	92.12. 8	08. 3.21
		Act on Resource Recycling of Electrical and Electronic Equipment and Vehicles (jointly enacted)	07.4.27	07. 4.27
		Act on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal	92.12. 8	07. 5.17
		Act on the Promotion of Construction Waste Recycling	03.12.31	06.12.28
		Promotion of Installation of Waste disposal Facilities and Assistance, etc. to Adjacent Areas Act	95. 1. 5	07. 12.27
Sewerage Act (AUG 3, 1966)	Compound Waste Treatment Corporation Act (DEC 28, 1979)	Sudokwon Landfill Site Management Corporation Act	00. 1.21	05. 12.29
		Korea Environment & Resources Corporation Act	93.12.27	08. 3.21 (Annulled Date: '09.12.31)
		Sewerage Act	66. 8. 3	09. 1. 7
Water Supply and Waterworks Installation Act (DEC 31, 1961)		Water Supply and Waterworks Installation Act	61.12.31	07. 12.27
		Management of Drinking Water Act	95. 1. 5	08. 3.21

The Enactment and Amendment of Environmental Acts in 2009

As of June, 2009, a total of 10 acts were enacted and/or revised including the Korea Environmental Corporation Act and the Noise and Vibration Control Revision Act and other major revision acts are as the followings.

A. Korea Environment Corporation Act (enacted)

The Korean Environment Corporation (KECO) was founded to integrate the functions of the Korea Environmental and Resources Corporation under the Korea Environment and Resources Corporation Act and the Environmental Management Corporation under the Environmental Management Corporation Act. By removing overlaps in the roles of prevention of environmental pollution, environmental improvement, and resource circulation projects, KECO will enhance managerial efficiency and eventually contribute to the improvement of Korea's economy. Furthermore, with a view to improving the quality of life, KECO has expanded its scope of activities to further cover GHG emissions reduction.

B. Noise and Vibration Control Act (revised)

By changing the name of the law from the Noise and Vibration Regulation Act to the Noise and Vibration Control Act, noise and vibration became the subjects of control. According to the Act, the Minister of Environment, city mayors, and provincial governors are allowed to make noise maps with noise distribution, if necessary, to remain fully informed about noise. The Act also stipulates that the governor of special self-governing province, city mayors, county governors, and district heads encourage developers to install noise meters at construction sites for noise reduction. Under the Act, the noise standards for manufactured railroad vehicles were established and applied to manufacturers or importers of railroad vehicles. Also the Ministry simplified the process so that pollutant-emitting operators can declare the start of facilities operation when seeking the approval of or declaring the establishment of the facilities.

Other Environment-Related Acts of Government Bodies

There are more than 60 environment-related acts, which the government bodies other than the Ministry of Environment enacted, and over 15 relevant government agencies as can be seen from the table below.

Since some environment-related regulations are overlapped in the Acts of different governmental bodies, legal loopholes may appear as a consequence. The differences of policy directions might cause contradiction and conflicts; hence close collaboration among the different parities is critical.



Environment-Related Acts of Other Governmental Bodies

Category	Acts
Air Pollution	Road Traffic Act, Automobile Management Act, Atomic Energy Act, Nuclear Liability Act Petroleum and Petroleum Substitute Fuel Business Act, Energy Use Rationalization Act, Construction Machinery Management Act Integrated Energy Supply Act, Alternative Energy Development Promotion Act Act on the Control, etc. of the Manufacture of specific Substances for the Protection of the Ozone Layer
Water Pollution	Marine Environment Management Act, Groundwater Act, River Act, Public Waters Reclamation Act, Public Waters Management Act, Aggregate Picking Act Hot Spring Act, Act on the Construction of Dams and Assistance, etc to their Environment, Small River Maintenance Act
Noise	Road Traffic Act, School Health Act, Assembly and Demonstration Act
General	Framework Act on National Territory, Act on Planning and Use of National Territory, Building Act, Acts on Urban Parks and Greenbelts, etc Act on Cluster Facilitation and Plant Establishment Act on Land Purchase and Compensation for Public Projects Urban Development Act, Industrial Sites and Development Act Housing Site Development Promotion Act Act on the Promotion of a New Airport for Seoul metropolitan Area Construction New Harbor Construction Promotion Act, Special Act on the Establishment of Jeju Special Self-Governing Province and the Development of Free International Cities Seoul Metropolitan Area Readjustment Planning Act International Conference Industry Promotion Act, Act on the Maintenance and Improvement of Urban Areas and Dwelling Conditions for Residents Special Act on Support for Areas Granted to the U.S. Forces Special Act on Support for Pyongtaek and ect. upon the Transfer of US Military Bases Mine Pollution Prevention and reclamation Act Special Act on the Development of the East, West and South Sea Areas
Agriculture	Agrochemicals Control Act, Special Act on Rural Development, Act on Maintenance and Improvement of Rural and Fishery Areas, Farmland Act, Plant Protection Act Act on Measures for Disaster Prevention in Rural and Fishery Areas
Livestock	Livestock Industry Act, Dairy Promotion Act, Meadow Land Act
Fisheries & Harbors	Fisheries Act, Fishery Harbor Act, Harbor Act
Forestry	Forestry Act, Erosion Control Act, Forest Management Act
Others	Act on Special Measures for the Deregulation of Corporate Activities Protection of Cultural Properties Act Act on the Promotion of the Conversion into Environment-Friendly Industrial Structure Mining Safety Act, Tourism Promotion Act, Scientific Technology Promotion Act Mining Industry Act, Inland-Water Fisheries Act, Countermeasures against Natural Disasters Act, Punishment of Minor Offenses Act, Foreign Trade Act

3-3. Budget & Finance

2009 Budget Framework

Since 2007 the Ministry of Environment's budget framework has become program-based. Previously, its budget used to be allocated to each department or bureau, but the Ministry now allocates its budget to the following five sections; waterworks/ water quality section, waste section, air section, the natural environment section and natural preservation section.

In 2009, the waterworks/water quality section and the waste section received a reduced amount of budget, because relatively higher budgets had been allocated to them compared to other sections and necessary infrastructure had been already established. Instead, new national agendas such as response to climate change and nurturing of the environmental industry, received more budget (7 projects, 42 sub-projects) Also, in order to improve the quality of the environment that Korean citizens experience in everyday life, a revised supplementary budget of 556.8 million Korean won was made available and contributed to revitalization of stagnant local economies.

Current Status of Expenditure by Sector (The Ministry of Environment)

(Unit : 100 Million KRW, %)

Classification	2005	2006	2007	2008	2009
Total	28,557 (100)	29,992 (100)	32,232 (100)	35,914 (100)	40,922 (100)
Waterworks Services	2,034 (7.1)	2,255 (7.5)	2,295 (7.1)	3,490 (9.7)	3,914 (9.6)
Water Quality Improvement	16,311 (57.1)	15,675 (52.3)	17,372 (53.9)	17,784 (49.5)	21,028 (51.4)
Waste Management	2,787 (9.8)	2,773 (9.2)	2,771 (8.6)	2,872 (8.0)	3,189 (7.8)
Air Quality Improvement	1,933 (6.8)	3,249 (10.8)	3,486 (10.8)	3,599 (10.0)	3,179 (7.8)
Nature Conservation	1,262 (4.4)	1,576 (5.3)	1,992 (6.2)	2,778 (7.7)	3,591 (8.8)
Environmental Protection in General ¹	2,243 (7.9)	2,167 (7.2)	3,131 (9.7)	3,757 (10.5)	4,121 (10.1)
Other	1,987 (6.9)	2,297 (7.7)	1,185 (3.7)	1,634 (4.5)	1,900 (4.6)

Footnote 1 Environmental Protection in General: used to be categorized into Environmental Technology Research until 2005.

* Environmental Technology Research : development of next-generation core environmental technology, funding for environmental improvement, research projects for environmental investigation and strengthening of international cooperation.

* The 2009 Budget does not include the supplementary budget in the amount of 556.8 100 Million KRW.



Major Investment Plan for 2009

A. Strengthen investment in the environmental health and improve the living environment in environmentally-vulnerable areas

The public health is increasingly threatened by people's exposure to environmental pollution and chemical substances. As the number of environment-related diseases increases, especially asthma and atopy among children, receptor-based environmental health policies are being implemented. In addition, the Ministry is making continuous efforts for the improvement of the living environment of environmentally-vulnerable areas such as farming and fishing villages, islands, neighborhoods near industrial complexes and abandoned mine sites.

Budget for Environmental Health and Improvement of the Living Environment in Vulnerable Areas

(Unit : 100 Million KRW)

Classification	2008(A)	2009(B)	Increase/ Decrease (B-A)	Rate of Increase/ Decrease (%)
Establishment of Environmental Health Basis	35	56	21	60.0
Comprehensive Control of Reist to Public Health	31	26	△5	△16.1
Small Sized Water Supply System Improvement Projects	400	640	240	60.0
Field Survey on Soil Pollution around Abandoned Mines	26	26	-	-
Soil Inspection in Industrial Complexes	24	24	-	-
Development of Drinking Water Sources in Island Areas	608	609	1	0.2
Control of Chemical Substances	95	116	21	22.1

B. Increase of investment in businesses that improve the environment including water and air quality

A lot of efforts are being put to improve the quality of the environment with investigative projects on the ecology of areas around industrial complexes and the health of public waters, the projects for clearing up rivers and the measure for improvement of the air quality of metropolitan areas where air pollution is highly serious.

Current Status of Major Budget Items

(Unit : 100 Million KRW)

Classification	2008(A)	2009(B)	Increase/Decrease (B-A)	Rate of Increase/Decrease (%)
Measures for the Improvement of Metropolitan Air Quality	2,380	1,449	△931	△39.1
Management of Areas Vulnerable to Odor and Relevant Facilities	17	20	3	17.6
Survey on Environmental Capacity of Rivers and Streams	10	9	1	10.0
Projects for Purifying River Water	811	950	139	17.1
Project to Increase Natural Gas Vehicles on the road	549	759	210	38.3
Advancement of Industrial Wastewater Management	40	33	△7	△17.5

C. Conservation and management of biological resources and building of a resource circulation system

To protect biological resources and nature reserves, the investment in the natural environment will be expanded. At the same time, the Ministry will build more resource circulation facilities including mechanical biological treatment.

Current Status of Budget for Biological Resources and the Resource Circulation System

(Unit : 100 Million KRW)

Classification	2008(A)	2009(B)	Increase/Decrease (B-A)	Rate of Increase/Decrease (%)
Comprehensive Measures for the Conservation of Biological Resources	33	69	36	109
Wetland Conservation and Management	98	86	△12	△12.2
Management of Ecology and Landscape Preservation Areas	123	97	△26	△21.1
Development of Biological Resources and Research on Classification, etc.	37	40	3	8.1
Facility for Mechanical Biological Treatment	32	359	327	1,022



D. New environmental demands reflected in budget

In order to deal with emerging environmental issues, 24 projects (e.g. establishment of the National Institute of Ecological Research and Conservation (NIERC) and Comprehensive Measures for Asbestos Management) are implemented with a budget of 111.9 billion Korean won.

Status of Newly Allocated Budget per Year

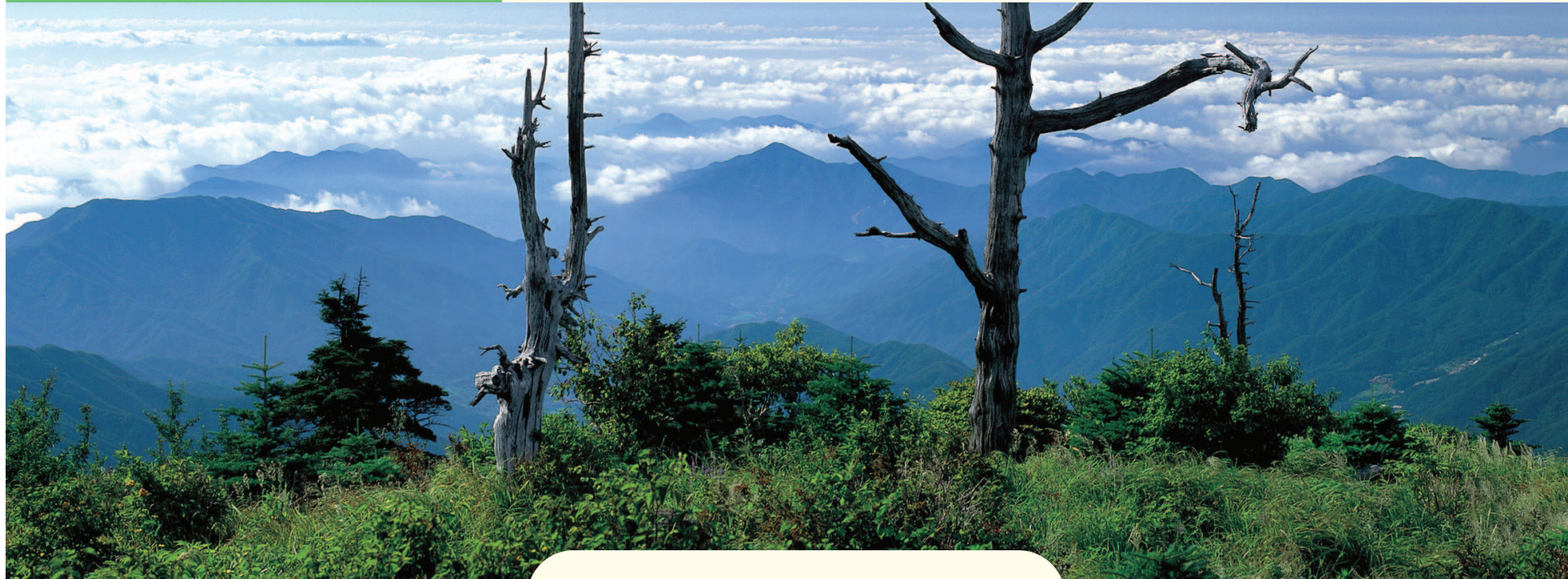
(Unit : 100 Million KRW)

Classification	2005	2006	2007	2008	2009
Total Budget	28,557	29,992	32,232	35,914	40,922
Scale of New Projects	224	718	103	1,119	663
Number of Projects	25	38	15	24	15
Projects	25 projects including Indoor Air Quality Improvement	38 projects including Establishment of Foundations for Environmental Health Research	15 projects including Establishment of RFID Based Infectious Wastes Management System	24 projects including Establishment of National Institute of Ecological Research and Conservation	15 projects including Supports for Improvement of Rural Waterworks Management

New Major Projects in 2009

(Unit : 100 Million KRW)

Classification	2009 Budget	Contents
Supports for Improvement of Rural Waterworks Management	60	Established framework plans for the rural waterworks management improvement projects
Supports for Improvement of Water Supply Pipes in Low Income	11	Replaced old plumbing pipes with galvanized steel pipes Households
Estuary Clean Up Project	89	Cleaned floating debris and wastes in estuaries
Supports for Air Quality Improvements in the Host City for World Track and Filed Championships	58	Installed roadside re-suspended dusts reduction equipments
Development of New Technology for Environmental Integration (R&D)	50	Developed new technologies by utilizing nano technologies and bio technologies
Financial Instrument for Promotion of Environmental Industry	100	Provided financial supports such as funds for environmental industrial facilities
Research on the Foundation of Green Growth (R&D)	15	Conducted various researches related to current issues in the environmental sector
Subway Station Air Quality Improvement Plan	149	Provided financial supports for installation of equipments necessary for improvement of air quality in subway stations
Korea Environmental Industry and Technology Institute	29	Compensated the differences in earnings and expenses related to projects outsourced to KEITI



04 Action Plans for 2010

For the purpose of achieving a low carbon society, the Korean government set a goal to reduce 30% of GHG emissions BAU in November 2009. Accordingly, with a 'Me first' campaign for green lifestyle, the country will make further efforts to cut GHG emissions. To this end, the households which reduce water and power consumption will receive incentives under the carbon point system and a pilot project of 'green home certification' will start this year.

4-1. Current Status of Environmental Policy in 2010

Circumstances surrounding the Implementation of Environmental Policies

In the run up to the 2010 G-20 Summit in Seoul in November, Korea should make its utmost efforts to improve the national profile on the global stage. Currently, the country's economic recovery is faster than other states; however, its effects are not being felt by all Korean citizens. Hence, while preparing for the post-crisis era, Korea should continuously focus on economic growth and also shall make successful green growth outcomes this year in accordance with the Low Carbon, Green Growth vision, announced in 2007.

The environment is acting as a foundation for socioeconomic sustainable development. Taking this into consideration, Korea's environmental policies will contribute to addressing the global economic and environmental crises, while, at the same time, leading green growth for the future.

Goals for Environmental Policy Promotion for 2010



4-2. Core Tasks Concerning Environmental Policies in 2010

4-2-1. Offer Satisfactory Environmental Services to Korean Citizens

Restore the Vitality of the Four Major Rivers

The Ministry of Environment will aggressively undertake various measures to ensure that the Four Major Rivers Restoration Project, a critical part of the Green New Deal, is successfully implemented in an eco-friendly manner. To this end, first, the Ministry of Environment will build ecological wetlands for improvement of water quality, restore the health of the aquatic ecosystem, implement the endangered fish recovery programs in rivers, and reinforce the phosphorus treatment equipments of waste water treatment plants. Second, the Ministry will establish a system for the constant monitoring of water pollution and the early prevention of pollution. To ensure safe drinking water is supplied to Korean citizens at all times, the Ministry will carry out repair and renovation works for water supply facilities in the four major rivers areas. Third, the Ministry will closely monitor whether the restoration projects are following the instructions of the Environmental Impact Assessment. In addition, the specialized weather forecast services will be provided for each project site in order to prevent weather-related disasters during the construction. Fourth, in conjunction with the Four Major Rivers Restoration Project, the Ministry will implement additional projects for water quality improvement and restoration of the aquatic ecosystem in tributaries to the four major rivers so that no pollutants flow into the four major rivers.



The Ministry will promote a series of projects to restore the ecological quality of streams and brooks and also encourage corporations and private organizations to actively engage in the Restoration Project. Also, the Ministry will make preparations for introducing an eco-toxicity management system, which is designed to manage unidentified toxic substances, and focus on controlling CODs (Chemical Oxygen Demand) of rivers and nonpoint source pollutants that flow into rivers. In addition, the Ministry will strengthen the TMDL (Total Maximum Daily Loads) system for Geum River, Yeongsan River and Nakdong River and expand the TMDL system to be applied to Han River through legal efforts.

Advancement of Waterworks Service

The Ministry of Environment will integrate 164 small-sized local waterworks to facilitate water flow among regions and improve managerial efficiency by realizing the economy of scale in waterworks services. Based on the diagnosis results of water leakages, the Ministry will optimize the management of waterworks pipe networks with GIS (Geographic Information System) techniques; prepare the legal grounds for promotion of reclamation of rainwater, gray water and wastewater; expand the treatment and reuse of wastewater as industrial and river maintenance water; and introduce the water footprint program for businesses for water conservation. Additionally, the Ministry will improve the quality of public water by investing a larger amount of resources in renovation of water treatment plants to increase the share of advanced water treatment facilities from 21.5% to 30% by 2007 and will continuously develop riverside filtration technologies for securing safe water sources.

Furthermore, the Ministry of Environment will expand investment in the waterworks infrastructure in fishing and farming areas. For the purpose of improving the quality of water and the welfare of residents in fishing and farming communities, the Ministry will replace old water service pipes for 3000 or more low-income households free of charge. Since the ocean dumping of wastewater sludge will be banned in accordance with the London Protocol from 2012, additional eight facilities for wastewater sludge processing will be established.

Conservation and Wise Use of Natural Resources

The Ministry of Environment is planning to expand the application of the Ecological Area Ratio Program to all development projects, construct over 1,000km-long green path and green roof by 2012 and increase comfortable urban spaces by constructing green buffer zones between residential areas and industrial areas.



In order to systematically manage and protect the environment, five or more nature reserves will be designated every year and the environmental conditions of 20 national parks will be thoroughly investigated to identify areas which require restoration and then restoration will begin in the mid- to long-term. On the other hand, for the well-being of Korean people, the Ministry of Environment will provide more opportunities to experience beautiful nature such as DMZ, the four major rivers areas and mud flats in the form of ecological tour programs and national park voucher programs for low income households.

In addition, the Ministry of Environment will legislate for the cleanup process of Brownfield sites such as military bases and industrial complexes with a high risk of soil pollution and will test a 'soil bank town' which provides clean water where needed after purification.

As the United Nations declared the year 2010 as the International Year of Biodiversity, the Ministry of Environment will establish a mid-to long-term master plan for the systematical management of biological resources in the Korean Peninsula, improve the list of species that require the state approval before being moved outside the country, and undertake the projects to build the regional institutes of biological resources to support the National Institute of Biological Resources founded in 2007.



Advanced Weather Forecasting

To offer high quality weather forecast by improving its accuracy, the Ministry of Environment will implement various measures as follows: building the capacity of weather forecasters, expanding the meteorological observation networks, additionally adopting the third supercomputer, launching an integrated numerical weather prediction system, and providing the customized mobile weather forecast service for small villages. In addition, the Ministry will enhance its capacity to predict dangerous weather conditions such as typhoon, yellow dust, snow storm, heavy rainfall and earthquake and issue early warnings against them.

In addition, the Ministry will standardize all meteorological observation data, currently in possession of different governmental bodies including the Ministry of Environment and Korea Meteorological Association, so that the database is shared by all government organizations. Also, by making use of meteorological, hydrological, and climate data, the Ministry will put more efforts in climate change- related research.

Resource Circulation

Until recently, the first priority of food waste policies used to be recycling to facilitate resources circulation. In 2010, however, the Ministry of Environment will start to encourage people to use a necessary amount of food in the first place, thereby minimizing food waste. Also, the Ministry has implemented the waste policies designed for source reduction, simultaneously encouraging Korean citizens to cut waste disposal through a nation-wide campaign. To meet these goals, the Ministry will transform the fixed-fee scheme for food waste disposal to a new food waste disposal scheme to impose the fees in proportion to the amount of food waste disposed to businesses and local communities. Additionally, the RFID system will be adopted to raise the accuracy of information on the amount of waste disposal and a list of disposers. Also, restaurants and businesses will have to reduce the amount of food waste that are produced during distribution of agricultural and fishery products. Moreover, a food waste point system will begin in which people can earn points for empty dishes and then donate the points to social organizations and the 'ero food waste' campaign can be further promoted with the point mechanism.

To facilitate waste resources circulation and increase resource efficiency, the EPR (Extended Producer Responsibility) program, first implemented 10 years ago, will be improved and Korean citizens will be encouraged to cut down plastic bags use at large-scale discount stores as well as groceries. Furthermore a mandatory measure for circulation aggregates use will be strengthened. Also, the Ministry will invest in

Waste to Energy (WtE) and Biomass facilities to properly implement the 2009 Waste to Energy and Biomass Energy Plan and provide a larger amount of financial supports to establish additional recycling facilities and to develop recycling technologies, which would allow for systematic recycling of waste metals.

With a view to restoring the quality of land and creating new jobs, the Ministry of Environment will try to clear suspended wastes in rivers and estuaries and collect scrap vinyl in agricultural areas through concerted efforts. The Ministry also plans to open 'the sharing marketplace' where people can exchange, buy and sell used electronic goods, furniture and household items. Additionally, appropriate projects will be implemented to collect and safely dispose discarded medical and pharmaceutical goods.

4-2-2. Contribute to Enhancing Korea's Profile through Advancement of Environmental Policies

Achieve Environmental Advancement through a Successful Holding of 2012 WCC

The 2012 WCC is scheduled to be held in Jeju Island, designated as Biosphere Reserve and World Natural Heritage by UNESCO. For the 2010 WCC in Jeju, the Ministry of Environment will start to take necessary steps to make it the most environmentally-friendly and successful conference. At the same time, by preserving the excellent natural environment of Jeju in a more systematic manner, the Ministry will help Jeju to be selected as a Global Geo Park Network of UNESCO.

Amongst all the recipients of the international aids after the World War II, Korea was the only country to accomplish both democratization and economic growth at the same time. Now, the country has become an aid provider for other developing countries and, together with rapid economic growth, Korea's capacity to manage environmental issues was also continuously enhanced. Unfortunately, however, such progress has not been reflected in the global environmental indicator, thus the Ministry of Environment will put tremendous efforts to rightly inform the global society of Korea's environmental capacity and conditions.

In addition, the Ministry of Environment is planning to intensify international cooperation for environmental issues such as climate change. In this regard, the Ministry will come up with specified action plans for the GHG NAMA Registry, which Korea had suggested to the global community, and will proactively engage in global environmental negotiations following the Climate Change COP15 in Copenhagen last



year. Additionally, the Ministry will do its best to successfully hold the 4th Business for Environment Global Summit (B4E) in Seoul on April 2010, Global Environment & Health Ministers' Meeting in Jeju on July 2010, and IPCC Assembly in Busan on Oct 2010. With these efforts, Korea intends to share Korea's policy experiences with developing countries, thereby further expanding the Seoul Initiative on Green Growth.

If the existing environmental regulation does not benefit rapidly-developing technologies and new socioeconomic conditions, the country will reform it so as to satisfy its original purpose of environmental protection and try to advance the regulatory framework to minimize pressure on businesses as well as Korean citizens. For instance, a reformed establishment-permit regulation is now based on the amount of pollutant emissions for water protection, and the Ministry increased the number of categories to 82 sectors for pollutants monitoring and emissions standards. Additionally, the Ministry will revamp institutions to ensure that the pre-examination of the environmental impact of development projects, once mandated by several laws, is taken care of by a single act.

Publicize Korea's Environmental Management Capability to the World

In cooperation with developing countries, Korea will jointly establish a comprehensive plan for environmental improvement and, at the same time, expand partnerships for development of environmental technologies that those countries need. Also as a part of the East Asia Climate Partnership, suggested by President Lee

Myung-bak, the Ministry will support capacity-building of developing countries in the areas of water quality improvement and waste treatment. Furthermore, local government officials from developing countries will be invited to Korea to receive professional training and visit environmental management field sites. At the national level as well, the ODA for the environmental sector will be raised to 15million dollars by 2012.

Advance Hazardous Substances Management for the Public Health

In 2010 the Ministry of Environment will significantly strengthen the measures to compensate the damage caused by asbestos, nano-materials, dust, and radon. First of all, the Asbestos Damage Relief Law and the Asbestos Safe Management Law will be enacted for preventing asbestos damage and compensating for the sufferers. Moreover, the Ministry will prepare the countermeasures for the safe removal of asbestos slate roofs in rural areas, establish an inventory of nano-materials circulated within the country and secure the toxicity information on five most-frequently-used nano-materials. In order to prevent the negative impact of fine dust on the public health, the Ministry will introduce a new PM2.5 air pollution standard and check the physical conditions of residents adjacent to cement factories, limestone mines, etc. and gradually strengthen the air pollutants emission standard of cement factories. In an attempt to examine radon emissions and control the facilities which generate a lot of radon gas, the Ministry will prepare a national radon map, a manual for radon shielding construction methods and a guideline to reduce indoor radon emission.



To better control the environmental safety for children, the Ministry will examine hazardous materials in baby/children's products and then, based on the results, encourage responsible companies to voluntarily reduce the use of hazardous materials and also improve the environmental safety of playgrounds, child care facilities, kindergartens, etc. By studying the impact of exposure to hazardous materials from newborns to school-age children, the Ministry will develop the environmental health index and build two atopy treatment facilities for children in 2010 where treatment and educational training are offered to atopic children and their parents in residence. In addition, consulting service will be provided to 1,200 households where consultants visit the houses to examine the causes of environmental diseases and provide appropriate solution. Also, a stricter management standard will be applied to hazardous substances such as formaldehyde generated from building materials and a new item of 'public health' will be added to the environmental impact assessment.

4-2-3. Create Low Carbon Society by Green Lifestyle Practice

Promote 'Carbon Diet 20-30' for Low-Carbon Society

For the purpose of achieving a low carbon society, the Korean government set a goal to reduce 30% of GHG emissions BAU in November 2009. Accordingly, with the 'Me first' campaign for green lifestyle, the country will make further efforts to cut GHG emissions. To this end, the households which reduce water and power consumption will receive incentives under the carbon point system and a pilot project of 'Green home certification' will start this year. As for the construction sector, it will be mandatory for 10 thousand m² or more public buildings to seek 'Green certification' from June 2010. The public buildings with the green certification will be imposed with less environmental improvement fees. Furthermore, the Korean government will double the insulation efficiency requirement for buildings by 2012; the local governments will be encouraged to enact ordinances for purchase of green products; more than 150 products will be required to feature the carbon emission label; and the 'Green Store' certification system will be introduced. As for the transportation sector, the mandatory share of green cars purchase by public organizations will be raised from 20% to 50% and the Ministry will expand the supply of anti-idling devices and establish an electronic car charging station as a pilot project.

In addition, the Ministry of Environment will strengthen the private/public



partnership to encourage green lifestyle among all Korean citizens and will nurture 10 thousand 'Green leaders' who visit houses and offices to check their GHG emissions and provide consulting services to cut GHG emission. In addition, the foundation for environmental education will be expanded with various efforts such as the customized green growth educational programs for youngsters, the environmental education certification system, and the green growth experience center.

With a view to leading the 'Me-first' campaign, the Ministry of Environment set a target to reduce energy consumption by 10% on year-on-year basis. To meet the goal, the Ministry will replace old lights with LED lights; make every Wednesday 'No Car No Overtime Work Day'; expand video conferencing; cut down on heating and air-conditioning; use scrap papers as well as duplex printing; encourage employees to use stairs instead of elevator and commute by bicycle; and reduce food waste in cafeterias.

Moreover, the Ministry of Environment will lay a stronger foundation for the response to climate change at the national level. First, by revising the Air Environment Conservation Act, GHGs will be controlled systematically as an air pollutant. Second, to improve the credibility and transparency of the national statistics of GHG emissions, the country will establish the MRV (measurement, report and verification) mechanism and then apply MRV to over 100 local governments. Third, a professional training program will be provided to 250 trainees in an attempt to nurture GHGs management experts. Fourth, a Low Carbon, Green Growth index will be developed to objectively assess achievement of Low Carbon, Green Growth policies. Lastly, the Ministry will expand the foundation for stable renewable energy supply by making the photovoltaic energy map at a 1km resolution.

In 2010, the Ministry of Environment will legislate the basic law on Tradable Pollution Permits for GHG emissions reduction in the mid to long term. Before its enactment, pilot work shall take place in public offices, large buildings and green enterprises. Also, the Ministry will sign an MOU with local governments for their oversight scheme for GHG emissions reduction. To regulate automobile GHG emissions, specified standards and proceeding ordinances will be legislated and also small and environmentally friendly cars will be promoted, in case of new car purchase, by imposing charges and giving incentive based on GHG emissions. In 2010, a strengthened Environment Influence Assessment System will be introduced containing GHG decrease measures in the case of large-scale development work and the administrative plans for it.

In a series of efforts to study climate change and strengthen the countermeasures, the Ministry of Environment plans to introduce the Korean Stern Report, which studies the climate change on the Korean peninsula, prospects for the future and forecasts of its the socio-economic influence. And the Ministry also plans to map the areas vulnerable to climate change at the national level and to support local governments' efforts to establish countermeasures to it.

In 2010, the Ministry will carry out projects that directly contribute to GHG emissions reduction. First, the Ministry will make a carbon sink with tulip trees along the watersides of the four major rivers as well as state-owned land and will improve the energy self-reliance ratio of water supply and sewage treatment facilities occupying large space and using much more power. In general, countermeasures for reducing air pollution have been shown to be effective on GHG emissions reduction.



Therefore, the Ministry will focus on reducing both air pollutants and GHGs simultaneously; adopting the Total Maximum Daily Loads of air pollutants in the metropolitan areas; applying a stricter standard of volatile organic compound in paint; remodeling diesel cars to CNG vehicles; and strengthening the pollutant emissions standard on construction and agricultural machinery. With these efforts, the Ministry aims at reducing 157,000 tons of CO₂ and 7,000 tons of N₂O in the metropolitan areas by 2010.

Build Five model Regions for Green Growth

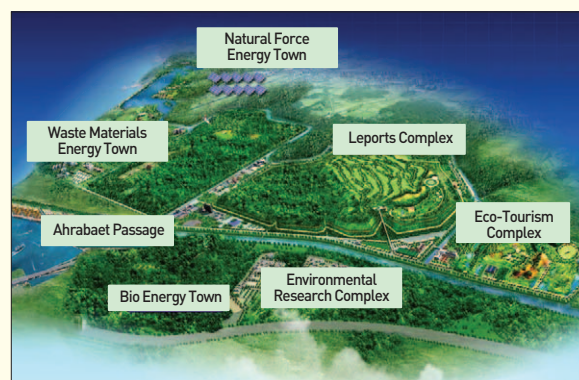
The Ministry of Environment plans to draw a pilot model region for promoting green growth and to expand it nationwide in the mid- to long-term.



The first model region is Saemangeum, the world's longest sea dike (33km). The Ministry will develop the sea dike as an economic hub of Northeast Asia, while making it an eco-friendly, carbon-free model where man and nature co-exist. Along with the mid-to

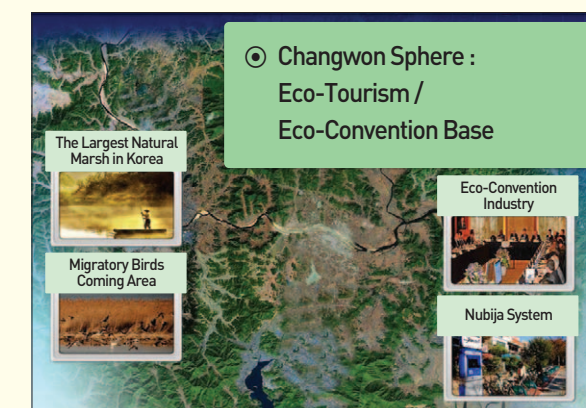
long-term plan for Saemangeum, the Ministry will come up with specific plans for each site as well as master plans for regional build-up, ecological restoration and ecological tourism. Also, environmental managing measures will be in place to improve the water quality inside of Saemangeum Lake and to secure the waterfront.

The second region is the landfill in the metropolitan area. The Ministry of Environment has planned to make this area the environmental Mecca of the world. The Ministry will construct a multi-environmental energy town with renewable energy power plants in both completed and free landfill sites by 2017. The Ministry will promote CDM (Clean

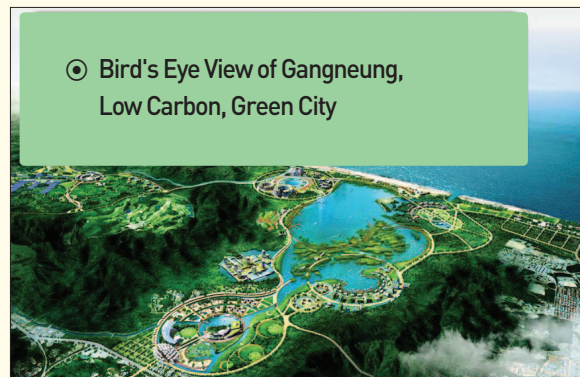


Development Mechanism) work on the world's biggest landfill gas (L.F.G) power station (50MW); establish a graduate school for environmental energy; and develop the area as the R&D base for CCS (Carbon Capture and Storage) technology using sludge and cinder. In addition, the Ministry also plans to construct an ecological tourism complex and a leisure center in the area. The landfill in the metropolitan area, with the help of transport and tourism infrastructure, will be a successful pilot model at the global level.

The third region is the Danyang area, where cement and limestone industries were developed. The Ministry will build up the region-specific waste recycling system network in connection with neighboring industries in order to reuse and recycle the waste generated in that area and systematically recollect and sort the regional domestic waste and industrial waste for reuse as sub-resource or sub-fuel for cement. On the other hand, the environmental management of cement manufacturing facilities shall be tightened. The government will support the analysis of regional recycling conditions and the expansion of infrastructure and make the database to manage waste recycling information.



The fourth region is the Changwon area, the host of the RASAR convention in 2008. The Ministry of Environment has planned to harmonize the preservation of the excellent natural environment and the development of environmental tourism. The Ministry will nurture the environmental industry and convention businesses and support various environmental programs for Changwon to meet its GHG emissions reduction target. Through these efforts, Changwon City and its neighboring area will be the leading region of the eco-tourism and eco-convention industry.



◎ Bird's Eye View of Gangneung, Low Carbon, Green City

The fifth region is Gangneung, a city of excellent seaside scenery. In 2010, the Ministry of Environment plans to re-create this region as a world famous green city in the mid- to long-term. For Low Carbon, Green Growth, it is important for local citizens to practice a green lifestyle and transform the city structure suitable to green growth. To this end, the Ministry will nationally promote the sectional programs for transportation, cityscape, waste and water recycling, GHG emissions reduction, eco-friendly construction, etc. and continuously try to facilitate this city model nationwide.

4-3. Achievements in 2009

Establishment of the Blue-Green Network

The Ministry of Environment implemented the projects to restore the health of rivers in the country, including the four major rivers. In January 2009, the Environmental Evaluation Team was launched and prepared the measures for revitalizing the four major rivers.

In July 2009, the Team established the master plan for revitalizing the four major rivers at the governmental level and promoted the ecological river restoration projects for additional 91 rivers. Also, the Ministry started 'Cheonggacheon +20', a restoration project for damaged city rivers and expanded 320 public sewage treatment plants, 1662 km- long drain pipes and 37 livestock treatment facilities to secure basic infrastructure to improve water quality,

To preserve Korea's natural environment and, at the same time, to promote it as a tourism resource, the Ministry made eco-tour programs and consultative groups for eco-tour in 74 national parks and 200 wetlands. Additionally, eco tour and farm tour programs were provided to foreign visitors in the DMZ, Upo wetland, etc.

To build 'Clean Korea', seven governmental offices including Ministry of Environment and Ministry of Land, Transport and Maritime Affairs jointly made plans and reviewed progress on a regular basis. Also, the waste accumulated in the main streams and estuaries was recollected on a large scale, and the waste managing measure was

extensively carried out on the mountains and beaches during the summer vacation period.

Expansion of Environmental Service for Environmentally-Vulnerable Areas and Farming & Fishing Areas

In 2009 The Ministry of Environment distributed 470 free pay-as-you-through bags to low-income people and replaced indoor water pipes with new ones for 784 households free of charge. Also, the Ministry supported the low income group by reducing the environmental improvement tax charged on small trucks and 'the sharing marketplace' co-operated by the government and private business was opened on a large scale, promoting the reuse of secondhand goods.

Moreover, the Ministry laid the institutional foundation to support the small livestock farming households by establishing animal waste treatment facilities. Also, to reduce the difficulties of obtaining water in rural and suburban areas, the Ministry provided the financial support of approximately 300billion Korean won to build emergency tube wells.

Early Implementation of Budget and Job Creation

To overcome the global economic crisis and to create jobs, the Ministry frontloaded 70 % of 2009 budget for the environment sector into the first half of 2009 by improving complex procedures needed in budget execution.





Also, the environmental improvement project, which had a great effect on job creation, was enlarged, and new projects were promoted to expand environmental jobs. To nurture environmental leaders for the post-crisis era, environmental education was provided to 1,530 persons.

Technological Development of Environmental SMEs and the Expansion of Support for their Operation

With the policy funding for environmental small and medium sized businesses (environmental SMEs), the Ministry of Environment promoted environmental SMEs' management stability, improvement of facilities, technological development and entry to foreign markets. In 2009, the Ministry offered over 130 billion Korean won loans with a low interest rate in the long term to environmental businesses. Also, environmental SMEs took priority in getting financial support in developing environmental technologies and commercializing their existing technologies. The Ministry of Environment enlarged the professional technology training for environmental enterprises with good technologies, but lacking adequate capital and accumulated results. In addition, the Ministry made institutional preparations to prevent possible disadvantages to environmental SMEs in constructing environmental facilities.

Establishment of Foundations for Green Growth

The Ministry of Environment established the following measures to combat climate change; establishing the Low Carbon, Green Growth Action Plan, introducing the



Tradable GHG Emission Permit System, building the GHG emissions database; preparing the guideline for assessment of GHG emissions impact on development projects, implementing the carbon point system, certifying carbon labeling in 69 products and constructing the Climate Change Adaptation Center. Also, by strengthening environmental cooperation in East Asia, the Ministry emphasized the significance of national and regional strategies for green growth.

The Ministry of Environment established the measures for W2E (Waste to Energy) and biomass energy in the mid- to long-term and launched the facility investment project to carry out the measures. At the same time, the Ministry integrated the public institutions concerning environmental issues thereby improving management efficiency as well as competitiveness. Also, the Ministry carried out feasibility tests for 'soil bank town', which supply clean soil where needed after purification, and also studied the mid-to long-term strategies for the soil bank town.

Pursue Everyday-Life Policies that Korean Citizens Appreciate

The Ministry completed the specific plan for the design and operation of Atopic Free Eco Edu Center, which provides treatment and accurate information on atopy and carried out a pilot project to improve the indoor air quality of buildings where infants and children stay. Also, the Green-Cordi project was instituted for low-income families with two more children (200 households) to assess the environmental character and to advice on improvement measures. Also the Ministry completed a comprehensive plan for establishing the Asbestos damage reporting center and mapping asbestos areas.

Advancement of Environmental Regulations

The Ministry of Environment reinforced its efforts to advance environmental regulations in line with its original objective of protecting nature and the people's health from environmental pollution, while rationally improving its methods and procedures. Also, the Ministry made them more appropriate to be applied to people's everyday life and also reformed the previous regulations more rationally, which used to block the establishment of pollutant-emitting facilities for water quality improvement. The Ministry of Environment also settled the issues among the neighboring regions related to the discordance of the border between a national park and a city's district. Through these efforts, the Ministry of Environment has been assessed as making its utmost efforts to promote and improve regulations among the other public branches.



05 Achievements in 2008 & Major Tasks for 2009

From now on, it is believed to have a great effect on the national capacity whether or not a country can strategically cope with climate change. Thus, it is necessary to prepare for the national burden of obligatory GHG emissions reductions and to transform the climate crisis into an opportunity to nurture the climate industry and green growth.

5-1. Achievements in 2008

In 2008, the Ministry of Environment went ahead with environmental measures to meet a national goal of becoming an advanced country, based upon the accumulated experiences regarding environmental policies, while reflecting policy conditions both inside and outside of the country. Firstly, the ministry focused on advancing effective measures to improve the quality of people's life; making the cities more pleasant, protecting the people's health from environmental pollution, such as corrupted water and environmental accidents, and from minimizing the biggest source of civil complaints, noise and odor. For the purpose of building up a healthy and sound "Green Korea", the Ministry of Environment has been strengthening environment-related measures.

Secondly, the Ministry of Environment concentrated on advancing environmental measures for the co-existence of environmental preservation and economic development. Utilizing environmental regulations as an opportunity to develop technology, improve a product' quality and make it more eco-friendly, the ministry tried to turn the global environmental crisis into a new opportunity to nurture the environmental industries.

1. Create an Ecologically Healthy and Sound Urban Environment

The Ministry of Environment concentrated on expanding urban eco space and focused on systematic management for environmental cities. Compared to quantitative urban growth, such as rapid urbanization and urban sprawl, 90 percent of the urban population reportedly feels inconvenient about their urban environmental conditions and urban services.

Firstly, the Ministry of Environment promoted the project to enlarge eco space; expanding green zones in subway stations, enhancing the ecological volume in existing green zones and establishing guidelines for creating urban ecological networks for restoring 'ecological axes' (September 2008).

Secondly, the ministry actively moved forward to enhance the air quality of metropolises. Meanwhile, according to assessment, the basic plan for enhancing metropolitan air conditions turned out to be ineffective due to unbalanced investment in transforming diesel cars to low-pollution vehicles and so the ministry came up with an improved plan. Also, the cleaning project to remove moving pollutants was promoted in 2008; 4,121 natural gas vehicles were equipped, and 93,000 vehicles were transformed to low-pollution vehicles. In September 2008, the Ministry introduced a

CO2 standard for low-pollution vehicles, which introduces a low-carbon concept into moving pollutants. And in September 2008, as a pilot project, anti-idling device-equipped vehicles were also introduced.

Thirdly, the Ministry of Environment prepared measures to monitor long-distance transboundary pollutants and to respond to them in a short time; a comprehensive plan for preventing the damage of yellow dust in May 2008, and a research project for Air-Brown-Cloud (ABC), one of the main pollutants in Asia, in December 2008.

2. Strengthen the Environmental Health Policies for Protecting Public Health

First of all, the Ministry of Environment moved forward to expand the infrastructure of environmental health policies and to construct a system to monitor and analyze environmental illnesses. The Environmental Health Act was enacted in March 2008 to protect the public health from environmental pollution as well as toxic materials. Also, the number of Environmental Health Centers was increased to nine, up from the three centers that existed in 2007.

Secondly, the ministry started to protect the sensitive and vulnerable classes more strongly. It carried out the assessment on the harmfulness of over 14 categories of children's products such as clay toys and established the environmental safety management standard for infants and children's spaces in December 2008. Also, the research into the regional influence on inhabitants' health was conducted in five industrial complexes and 10 abandoned mines.



Thirdly, the management of chemicals was strengthened in an effort to create a pleasant living environment. The information on the emissions of chemical substances from businesses was made public, and the status of asbestos contained in dairy products and buildings was assessed. Also, the Second Indoor Air Quality Management Plan (December 2008) and the five-year countermeasure for improving subway stations' air quality (September 2008) were implemented.

3. Preservation of Natural Resources and Preventive Management of the National Environment

First of all, the Ministry of Environment moved forward to preserve and restore the ecosystem to enhance the vitality of the Korean territory. In particular, the Ministry strengthened its preservation efforts for "the best ecological resource zones". Specifically, for the first time since the civil war, the Ministry conducted an ecosystem research in DMZ in November 2008; Ganghwado Maehwamarum and two other areas were additionally registered as Ramsar wetlands in October 2008; and Sipidongpado and Hasidong-Aninsagu were also newly registered as reserves. Moreover, the ministry implemented the countermeasures for restoring damaged ecosystems in national parks.

Secondly, the Ministry of Environment has advanced the foundation for a biological resources management system to the level of advanced countries. In particular, the ministry promoted the preservation project of indigenous biological resources such as discovering 700 new indigenous plants and researching the ecological conditions of the Korean peninsula that are being affected by climate change in the long-term. Also, the ministry launched projects for the expansion and restoration of endangered species such as the Moon bear, mountain goat, etc.

Thirdly, the Ministry of Environment improved the management policy for national parks and adopted an environment-friendly system; established a standard to register a national park area and to lift it off the list; and prepared guidelines for installing a lope way. The ministry also launched the foundation for ecotourism, such as the pilot project at Mt. Jiri National Park.

Fourthly, the Ministry of Environment established measures for improving the effectiveness of environmental assessments. The ministry tried to integrate two environment-related laws: "Basic Act on Environmental Policies" that preliminary environmental assessment is based on and "the Environmental Impact Assessment Act" that environmental impact assessment is based on. In addition, the ministry improved the procedures for industrial environmental assessments and shortened drastically the sanction or authorization period for an industrial complex to six months from 30 months with the help of the assessment support task force.

4. Management System for an Ecologically Sound and Sustainable Aquatic Environment

Firstly, the Ministry of Environment moved forward to create an ecologically sound aquatic environment and to construct an advanced management system for basins. For large scale R&D business in the aquatic environmental sector, the project group for aquatic ecological restoration technology development was established in January 2008 and the ecological stream restoration project was promoted. The ministry also drew up an agreement among stakeholders to make it mandatory to implement the Total Maximum Daily Loads on the Han River like the other three main rivers, in November 2008.

Secondly, the Ministry of Environment constructed a customized management system for water quality with a view to using water in a safe way, amending relevant guidelines to assess COD in the watercourse, and promoting the T-P pilot project in the upper stream of water sources. The ministry also built a TMS for facilities emitting high levels of water pollutants, enlarged the undercurrent buffering device and established a comprehensive plan for ecological toxic emissions.

Thirdly, the water supply system for clean and safe drinking water and its regional foundation was established. To produce a high quality water supply, the Ministry of Environment devised the installation standard for purification and membrane filtration in December 2008 and initiated the pilot project at the Yeongdeungpo purification plant. Also, the ministry promoted the pilot operation for local water supply over five cities and provinces in Gyeongsangbuk-do and seven cities and provinces in Jeollanam-do.

Fourthly, the ministry launched countermeasures against soil and underground water pollution; constructing the total information system for soil and underground water in December 2008, inspecting the environmental foundation using a two-step assessment around the area provided by the U.S military in Korea. The ministry also carried out precise observations and established countermeasures against mine damage around abandoned metal mines and 225 nearby farming areas.

5. Enhance Resource Saving and Recycling

First of all, management systems for water safety were launched. The Ministry of Environment advanced management systems such as mandatory measure for e-registration of industrial waste (Sep 08) and import/export report system of potentially hazardous waste (Aug 08). Also, the ministry established the environmental management improvement plan for cement kilns and advanced the pilot collection/treatment project for household medical waste.

Secondly, the Ministry of Environment worked to reduce waste and to recycle it;



opening the Green Mileage corner in shops with a view to reducing promotional packages; preparing guidelines for reducing industrial waste, especially among five industries such as the organic compound producing industry. Also, the obligatory use rate of recycling aggregate was raised from 10 percent to 15 percent, and a campaign was carried out on collecting cell phones that were no longer wanted.

Thirdly, the ministry prepared the foundation for waste-to-energy (W2E); establishing the energy measures for waste resources and biomass in October 2008; installing preprocessor facilities for flammable waste and launching the energy business for recycling reclaimed gas.

6. Build an Integrated Development System for an Environmental Economic Society & Prepare the Promotion Base for Green Growth Policy

Firstly, the Ministry of Environment pursued co-existence of economic growth and environmental protection by developing environmental technology and nurturing the environmental industry. In this regard, the ministry strengthened the foundation for developing and commercializing environmental technology, implemented the 2nd Comprehensive Development Plan for Environmental Technology in May 2008, and constructed the online support system for environmental technology in April 2008. Also, it constructed the foundation for nurturing the environmental industry and moved forward to support its overseas expansion; to prepare a plan to improve the order systems on constructing environmental facilities, to establish the environmental improvement master plan for developing countries, and to send a delegation a total of 7 times for the development of an environmental market overseas.



Secondly, the Ministry of Environment promoted a Low Carbon, Green Growth policy in the environmental sectors. In this regard, the ministry made an effort to reach a consensus on it by organizing Green Growth forums in the capital and 16 cities and provinces. Also, the ministry has shown the strong leadership necessary to respond to climate change by strengthening countermeasures nationwide in December 2012 and by establishing the national network for the Green Start Movement in October 2008.

6-2. Major Tasks for 2009

1. Transition into a Low Carbon Society Coping with Climate Change

The national capacity to cope with climate change will increasingly wield a great influence on the national strength. Thus, it is significant to prepare for meeting an obligatory target of GHG emissions reduction and to transform the climatic crisis into an opportunity to nurture the climate-related industry and green growth.

First, the Ministry of Environment is planning to construct infrastructure for GHG emissions reduction. The management and registration system for GHG emissions will be built and the pilot project for GHG Emissions Trading will be launched in September 2010. Also, the Korea Environment Corporation plans to seek the UN's official approval as the CDM Approval Certification Organization and to introduce a license for GHG emissions management.



Secondly, the Ministry of Environment will make efforts to become the fourth strongest nation in green cars. The ministry will support the export of natural gas vehicles through international events such as the Technology Cooperation Forum on Korea-Asia Natural Gas Vehicle (NGV) and the ANGVA 2009 East Sea Expo. Also, it plans to strengthen the development of green car-technology and to launch the "green diesel engine" at the level of EURO-6 in August 2009.

Thirdly, the Ministry of Environment plans to actively launch a low carbon lifestyle revolution movement. With the climate change week from April 17 to 26 2009, the GHG examination event on June 9, 2009, and the carbon point scheme, the ministry plans to officially launch the Green Start Movement. In addition, the foundation for low-carbon, green production & consumption shall be prepared. And the ministry will expand the measures for low-carbon, green lifestyle practice in non-industrial sectors such as household, commerce, traffic, etc. And the carbon grade-labeled items have been increased to 50 in 2009 from 10 in 2008, and the standard model of the low-carbon lifestyle is soon to be presented for a family of four.

Fourthly, the Ministry of Environment plans to enhance its ability to respond to climate change. In developing an integrated model for forecasting climate and atmospheric conditions, and organizing the Earth Environment Satellite Union, the capacity to observe and predict climate change shall be strengthened. Also, the ministry will promote a comprehensive analysis on the impact of climate change by publishing a white paper about climate change on the Korean Peninsula and the Korean version of the Stern Report. The National Climate Change Adaptation Center, established in July 2008, will serve an incubator for strategic research and administrative policies for climate change adaptation.

2. Create an Ecologically Healthy and Pleasant Urban Environment

The air quality level of Korea's metropolises, such as Seoul, is at the bottom among OECD countries, and the green ecology zones are highly insufficient. Thus, the Ministry of Environment is working to create an ecologically-healthy and pleasant urban environment for the citizens' quality of life.

Firstly, the ministry plans to improve the air quality of the metropolitan areas and satellite cities. In accordance with the Metropolitan Air Environmental Management Master Plan, established in November 2005, re-examined from the viewpoint of green growth, the ministry plans to launch the "Green Metropolitan Air Environment Improvement Countermeasure." Also, to improve the atmospheric quality of Daegu, where the World Championships in Athletics will be held in 2011, the ministry plans to

install water spray devices along roadsides. In addition, the ministry plans to strengthen the management of bad odors in the dyeing and paint industries and, for livestock farmers, install vapor recovery devices at gas stations and strengthen the regulation of cement kiln emissions.

Secondly, the Ministry of Environment tries to improve the environmentally-friendly character of city traffic. To expand the environmentally-friendly driving culture, the ministry plans to actively carry out government-to-citizen campaigns, such as the 1 Million Signature Campaign to pledge to engage in environmentally-friendly driving and the environmentally-friendly driver competition, etc. Also, the ministry plans to propel the Low Emission Zone pilot project in Seoul, which limits the use of vehicles emitting a great deal of pollution, like old diesel cars. The ministry also plans to promote bicycle use, issuing 30 recommendations for bicycle eco-tours.

Thirdly, the ministry plans to create an ecological zone in urban areas and enhance its linkage to other places and to prepare the model and guidelines for ecological zones in subway stations. Meanwhile, the ministry will prepare guidelines for standardizing biotope type and to push ahead with plans for a city ecological network (December 2009).

3. Strengthen the Environmental Sanitation Policy to Protect Public Health

These days, the chemical materials' influence on public health and environmentally related diseases such as atopy, asthma, etc., have become a social problem. Therefore, the Ministry of Environment has decided to protect the public health and create a society safe from environmental danger through preventive and precautionary actions against environmental pollution and chemical exposure.

For the time being, the Ministry of Environment plans to strengthen the institutional framework of environmental health policy and construct a prevention management system. Firstly, the ministry plans to arrange and expand the infrastructure of the environmental health policy, such as enacting the Environmental Health Law in March 2009, revising the Ten-Year Comprehensive Plan for Environmental Health in December 2009, and expanding the Environmental Health Centers, etc. Also, the ministry plans to make further efforts to improve the health of the vulnerable. In detail, it will examine environmental safety of playgrounds, providing 'green health helper' visit service, and carrying out the health impact assessment in abandoned mines and industrial areas. The ministry plans to supplement comprehensive measures, to advance safety management and damage prevention against asbestos, and to strengthen the environmental disease prevention and management system.



Secondly, the Ministry of Environment plans to advance the air environment management against environmental risk; to prepare the environmental standard for highly hazardous fine-dust (PM-2.5) and operate a 24/7 measurement network of harmful air pollutants like benzene, mercury, etc. Also, the ministry plans to standardize the forecasting precision assessment system of each local government by providing assessment guidelines for fine dust and ozone prediction. (July 2009).

Thirdly, the Ministry of Environment plans to advance their chemical material management programs. The ministry has promoted the open information sharing of chemical emissions quantities of 2007, and based on the assessment of the open measurement system of chemical emission it will map out a strategic development plan. Also, the ministry plans to execute a pilot Web service for chemical accident emergency measures and to prepare the foundation for operating a call center. The Web service informs of toxicity, treatment guidelines and emergency measures of hazardous chemicals likely to be exposed and involved in accidents.

4. Nature Protection and Preventive Management for the National Environment

Recently, the Korean society is witnessing a continuously increasing demand of natural ecosystems, while, contrary to this trend, development need is also rising, for example, for revitalizing local economies. In this regard, the Ministry of Environment has sought to effectively preserve the national eco-system by protecting excellent ecological zones and finding ways to use its national territory in a sustainable way, thereby enhancing the people's quality of life.

Firstly, the Ministry of Environment plans to promote the ecological space network with a view to bringing its environmental vitality back to life. It will enlarge the protection zone based on a precise examination of the designated ecological zones of best value such as uninhabited islands and coastal sand dunes, and construct an ecology research & education center. Also, the ministry plans to continuously observe and assess the ecosystem in the DMZ, and at the same time, establish a basic plan to designate parts of DMZ as a reserve and turn them into an ecological peace park (December 2009).

Secondly, the Ministry of Environment plans to build an advanced foundation for bio-resources management. The ministry will continue to designate additional species which require a state-approval in case of export and the ones with deranging impact on our ecosystems and also establish a national strategy and implementation plan for biodiversity (June 2009). In addition, it will build the Nation Ecology Garden, a temple of ecology research, exhibition and education, as well as the East Asia-Oceania Passage Bird Route Partnership Secretariat, thereby enhancing international cooperation for bio resources management.

Thirdly, the Ministry of Environment plans to nurture ecological tourism into a new growth engine for local economies. For the purpose of strengthening its foundation for eco tourism, the ministry will sign a memorandum of agreement for the promotion of eco-tourism with the Ministry of Culture, Sports and Tourism and the Business Committee for Sustainable Development and make an Eco Tourism Charter and Eco Tourism Rules. Furthermore, the ministry will designate and further develop 100 best eco-tourism programs and ten model programs for high-end eco-tourism.



Fourthly, the Ministry of Environment plans to improve the national park policies and advance the national environmental management system. For the purpose of getting rid of inconveniences for people residing near the national parks, the ministry will revise the "National Park Law". In addition, it will prepare a district re-adjustment plan for eight national parks including Mt. Wolchul and Mt. Seorak, and strengthen its protective measures by expanding specially protected districts and restricting purchase of private property in key regions within national parks. Furthermore, the ministry will continue to promote the integration of the legal basis of preliminary environmental assessment and environmental impact assessments, which has started since last year.

Finally, to advance international nature conservation policy, the Ministry of Environment is planning to hold the 5th World Nature Conservation Congress, the world's largest environment conference, in 2012.

5. Ecologically-Sound and Sustainable Water Environmental Management

The Ministry of Environment will strive to switch the primary direction of water environmental management from mainstream, point source and BOD to tributaries, sub-stream, non-point source, COD and hazardous substances. And through a clean and safe drinking water supply, sewerage service expansion, strengthened management of groundwater contamination, the Ministry of Environment will make efforts to establish sustainable water utilization systems.

Above all, the Ministry of Environment will make an ecologically-sound water environment and advance the streams management system. Firstly, the master plan to restore the four major rivers will be carried out, faithfully reflecting the water quality improvement plan and the preservation-restoration plan for aquatic ecosystems which comprises investment in the environmental infrastructure. In addition, the ministry will carry out the "Cheonggyecheon+20" project, a covered urban stream restoration project, develop health evaluation indicators for aquatic ecosystems and implement other restoration measures for recovering the aquatic ecosystems of damaged rivers, ditches and brooks. The ministry will make the Total Maximum Daily Load for water system mandatory and prepare water quality improvement measures and ecological environmental land utilization guidelines for creating 'luxury Saemangeum'.

Secondly, the Ministry of Environment plans to optimize the water pollution control system. Concerning the Four Major Rivers Restoration Project, the ministry will establish a four rivers water pollution accident control center and water pollution accident management measures during the periods of water shortage. In addition, by expanding

the buffer storage facilities and water quality auto-monitoring network, the ministry will strengthen the countermeasure system for the Nakdong river water pollution incident. It also plans to construct an efficient collection and treatment plan for floating trash in the estuary through a cost-sharing agreement. By designating the Hantan watershed areas as industrial parks, the ministry will eliminate unauthorized wastewater discharge and solve local issues.

Thirdly, the ministry plans to do its best to supply safe drinking water. Through the membrane filtration pilot project at the Yeongdeungpo filtration plant, which has been continuously operating since last year, and the investigation of a riverbank filtration project in the hydrosphere of the Nakdong River, the ministry plans to diversify water sources and strengthen the water quality management of drinking water. In addition, the Ministry of Environment plans to actively pursue high quality water supply service for low-income residents by improving water supply pipes of economically vulnerable households, providing support for linkage to water supply manifolds and raising the water supply rate in rural areas.

Fourthly, the Ministry of Environment plans to strengthen the pollution management of soil and groundwater. Last year, all livestock infected with avian influenza (AI) were slaughtered, so the environmental management and safety measures for drinking water of these areas will be advanced. In addition, the ministry will strengthen the management for the safety of groundwater by establishing an analysis system for noro-viruses. Moreover, the Ministry of Environment plans to establish comprehensive measures for preventing soil contamination around the Janghang smelter area and promote the technology development project for anti-contamination of soil and groundwater (GAIA Project).

6. Increase Productivity Based on a Resource Recycling Society

The Ministry of Environment plans to promote the advancement of national resource management by reducing waste volume, promoting its safe treatment and raising value of waste as a resource.

Firstly, the ministry plans to enlarge the foundation of the 3R (reduction, reuse and recycling) system. Also, the comprehensive measure for the promotion of scrap metal recycling was established in September 2009 to select target recycling items and to construct the collection system and promote technology development. In addition, in preparation for the transition to digital broadcasting in 2012, the Ministry of Environment is planning to develop recycling measures for analog TVs, hold a nationwide campaign to



collect used cell phones and waste batteries and open fairs for sharing. In addition, the active measures are designed to create an environmentally-friendly food culture and reduce use of disposable items.

Secondly, the Ministry of Environment plans to move forward with its waste-to-energy (W2E) measures. Through the execution plan of W2E and biomass energy (July 2009), the ministry has expanded the treatment system for combustible waste to solid fuel and organic waste to bio-gas and RDF-only boilers. Through these actions, the metropolitan environment and energy towns will be implemented to create a low-carbon green village.

Thirdly, the ministry plans to enforce hazardous waste management. Based on a pilot project in Seoul, the domestic collection and treatment business of household medical waste will be expanded nationwide. Additionally, the ministry plans to prepare a recycling standard for waste organic solvents, animal waste residues, waste foundry sand and sewage sludge and to strengthen the export-import management of hazardous wastes.

Fourthly, the Ministry of Environment will launch the Clean Korea campaign. It will implement land clean-up and waste management measures which are tailored to specific seasons such as holiday seasons, spring breaks, vacation seasons, agricultural off-seasons and so on. Also, floating debris and old trash in rivers and estuaries will be picked up in connection with social work projects.



7. Construct an Integrated Development System of Environment, Economy and Society and a Positive Response to International Environmental Problems

Environmental issues such as climate change have emerged as global environmental threats. Against this backdrop, it is gaining more significance to implement various international treaties and initiate new international environmental cooperation. Accordingly, through the 'New value revolution' of the environment, the Ministry of Environment sees this global environmental crisis as an opportunity to make Korea an environmentally-wealthy country.

Firstly, the Ministry of Environment plans to strengthen the foundation of environmental policies to enhance the national sustainability. Above all, the Environmental Action Plan for Green Growth and a comprehensive plan for environmental education will be put in place. Also, to ensure a green growth urban model spreads throughout the world, the ministry will implement the green city pilot project and promote green purchasing and green financial products through a low-carbon Green Living Expo, green financial products and index development. In addition, the Ministry of Environment plans to create a synergy effect through the fusion of green environmental policies among relevant ministries, for example, by operating the Green Campus Council in cooperation with the Ministry of Gender Equality, Green Living Cultural Action Policy Association and Chemical Technology Education.



Second, the ministry will strengthen market-oriented green technology development and the global competitiveness of the environmental industry. The ministry plans to establish the post-next generation projects to secure core environmental technologies needed for leading the global environmental markets and to facilitate the overseas expansion of the domestic environmental industry by providing support for the establishment of environmental improvement master plans in Azerbaijan and Cambodia.

Thirdly, the ministry plans to strengthen international environmental cooperation. By expanding international green growth forums and introducing Korea's green growth policies at major international conferences, the Ministry of Environment plans to lead the global debate on green growth. In addition, by signing a memorandum of understanding on environmental cooperation with major international organizations such as the UNEP and countries such as Cambodia and Tanzania, the ministry plans to lead environmental conservation efforts and link the domestic environmental industry to overseas expansion. Additionally, the ministry plans to introduce the environmental standards provisions in the free trade agreements with Australia, New Zealand and Peru, and to strengthen environmental cooperation among those countries.



06

The Status of the Environment in Korea

“National park special protection zones” are designated in national parks to protect important animals and plants, especially endangered species. A species restoration project for the Manchurian black bear has been implemented in the Jirisan Natural Park to propagate the existing population of wild Manchurian black bears to the level of Minimum Viable Population through immigration and Individual Management.

6-1. Nature

Nature & Geographical Features

The Korean territory is composed of a long peninsula which stretches out in the western and southern directions from the northeast part of the Asian continent and about 3,200 islands. The total area of the territory is around 221,000km² (South Korea takes up 99,700km², 48 % of the entire Korean peninsula), and the eastern part of the country is high land and the western part is low.

Area	Total area of around 221,000 km ² (South Korea: 99,700 km ² , 48% of the peninsula)
Geographical Feature	High east, low west
No. of Islands	More than 3,200
Length of Coastline	11,352 km (including islands)
Annual Average Precipitation	Annual Average: 500mm~1,500mm(Around 1,274mm in South Korea, less than 1,000mm in North Korea) Per person: 3,000 tons/year, 9% of world average (34,000 tons)

Flora and Fauna

As for natural vegetation, the deciduous broadleaf forest, which represents the vegetation of the natural forests in Korea, is distributed over the central region; non-deciduous broadleaf forest is distributed over the southern region and the east and west coastal regions; carpinus laxiflora forest is distributed over the valleys or the slopes of mountains where granite gneiss is exposed; and warm-temperate zone non-deciduous forest is distributed over the southernmost region and the islands off the southern coast.

Currently, around 100,000 species exist in Korea, and 33,253 species have been identified through survey of documents, including 21,168 species of fauna, 4,130 species of flora, 2,078 species of fungus · Inchen, 4,658 species of protist and 1,219 species of prokaryote.

33,253 species in total (21,48 Animals, 6,208 Plants, 5,877 Others)

(As of Dec. 31, 2006)

Broad Classification	Narrow Classification	Species (No.)		Broad Classification	Narrow Classification	Species (No.)		
Animals 21,168	Vertebrates 1,799	Mammals		Fungi / Lichens 2,078	Fungi	1,580		
		Birds			Lichens	498		
		Reptiles/Amphibians						
	Invertebrates 19,369	Echinoderms	128	Mollusks	1560	Plants 4,130	Monocotyledons	856
		Chaetognaths	39	Annelids	435		Dicotyledons	2,247
		Sponges	283	Tardigradans	61		Gymnosperms	52
		Cnidaria	301	Nematoda	312		Pteridophytes	284
		Platyhelminthes	124	Gastrotrichans	6	Bryophytes	691	
		Rotiferans	165	Nematomorpha	5	Protozoan	Diatoms	1,573
		Acanthocephala	1	Nemartinea	1		Flagellates	413
		Entoprocta	1	Echiurans	2		Stoneworts	31
		Bryozoans	161	Kinorhyncha	1		Green Algae	1,193
		Brachiopodans	9	Phoronida	1		Brown Algae	161
		Sipunculidans	9	Urochordatans	99		Rhodophytae	445
		Arthropoda	Arachnids/Acarids	1,374	Prokaryotes		Myxozoa	1
			Insects	12,982			Apicomplexas	68
			Others	1,374			Sarcodinas	8
				Cibites			166	
				Other protozoans		599		
		Cyanobacterias	52					
		Bacterias	1,167					
33,253 species in total								

* Source : Biological Resources Statistics Glossary (National Institute of Biological Resource, 2008)

Protection of Wild Animals and Plants

The government has designated endangered species of wild animals and plants, and in the case of illegal poaching and collection of these animals and plants, a fine (no more than 3 million KRW) and/or imprisonment of five years at the maximum are imposed. Thirteen organizations (as of the end of Dec. 2009) have been designated as ex-situ conservation institutes, including the Seoul Grand Park and Halla Arboretum of Jeju Island, to artificially propagate endangered animals to return them to the nature as well as systematically protect endangered wild animals and plants. Since 2003, the government has provided financial support for the better protection and restoration of endangered species.



Designated Endangered Species of Wild Fauna and Flora

(as of June 30, 2008)

Classification	Total	Category I	Category II
Total	221	50	171
Mammals	22	12	10
Birds	61	13	48
Amphibians/Reptiles	6	1	5
Fish	18	6	12
Insects	20	5	15
Invertebrates	29	5	24
Plants	64	8	56
Sea Algae	1	-	1

* Category I : a species facing imminent extinction because of a decrease in the population caused by a variety of human and natural factors

* Category II : a species likely to become endangered because its population is decreasing due to a variety of human and natural factors

Endangered Species Category I (50)

Classification	Species
Mammals (12)	Myotis formosus chofukusei, Canis lupus coreanus, Vulpes vulpus peculiosa, Panthera pardus orientalis, Panthera tigris altaica, Lynx lynx, Lutra lutra, Zalophus californianus japonica, Ursus thibetanus ussuricus, Moschus moschiferus parvipipes, Cervus nippon hortulorum, Naemorhedus caudatus
Birds (13)	Egretta europheotes, Ciconia boyciana, Platalea leucorodia, Platalea minor, Cygnus olor, Haliaeetus albicilla, Haliaeetus pelagicus, Aquila chrysaetos, Falco peregrinus, Grus japonensis, Eurynorhynchus pygmeus, Tringa guttifer, Dryocopus javensis
Amphibians & Reptiles (1)	Elaphe schrenckii
Fishes (6)	Pseudopungtungia nigra, Gobiobotia naktongensis, Koreocobitis naktongensis, Iksookimia choii, Pseudobagrus brevicorpus, Liobagrus obesus
Insects (5)	Callipogon relictus, Metopodontus blanchardi, Polyphylla laticollis manchurica, Aporia crataegi, Eumenis autonoe
Invertebrates (5)	Charonia sauliae, Cristaria plicata, Lamprotula coreana, Helice leachi, Gammarus zeongogensis
Plants (8)	Cotoneaster wilsonii, Cymbidium lancifolium, Cymbidium kanran, Aerides japonicum, Neofinetia falcata, Cyrtopodium japonicum, Diapensia lapponica var. obovata, Euchresta japonica

Endangered Species Category II (171)

Classification	Species
Mammals (10)	Prionailurus bengalensis, Martes flavigula, Callorhinus ursinus, Eumetopias jubatus, Phoca largha, Phoca spp., Pteromys volans aluco, Plecotus auritus, Murina ussuriensis, Mustela nivalis
Birds (48)	Ixobrychus eurhythmus, Gorsachius goisagi, Ciconia nigra, Branta bernicla, Anser fabalis, Anser erythropus, Anser cygnoides, Cygnus cygnus, Cygnus columbianus, Anas formosa, Aythya baeri, Mergus squamatus, Pandion haliaetus, Pernis ptilorhynchus, Milvus lineatus, Accipiter gentilis, Accipiter gularis, Buteo lagopus, Buteo hemilasius, Buteo buteo, Aquila clanga, Aquila heliaca, Aegypius monachus, Circus cyaneus, Circus melanoleucus, Circus aeruginosus, Falco subbuteo, Falco columbarius, Falco amurensis, Grus grus, Grus leucogeranus, Grus monacha, Grus vipio, Gallinago tenuirostris, Otis tarda, Haematopus ostralegus, Charadrius placidus, Numenius madagascariensis, Larus saundersi, Larus relictus, Synthliboramphus wumizusume, Bubo bubo, Strix uralensis, Strix aluco, Dryocopus martius, Pitta nympha, Galerida cristata, Terpsiphone atrocaudata
Amphibians & Reptiles (5)	Kaloula borealis, Rana plancyi, Chinemys reevesii, Eremias argus, Sibynophis collaris
Fishes (12)	Lampetra japonica, Lampetra reissneri, Acheilognathus signifer, Acheilognathus somjinensis, Pseudopungtungia tenuicarpa, Gobiobotia macrocephala, Gobiobotia brevibarba, Microphysogobio koreensis, Pungitius sinensis, Cottus poecilopus, Cottus hangiongensis, Pungitius kaibarae
Insects (15)	Nannophya pygmaea, Challa fletcheri, Lethocerus deyrollei, Cicindela hybrida nitida, Cicindela anchoralis punctatissima, Damaster mirabilissimus mirabilissimus, Gymnopleurus mopsus, Copris tripartitus, Osmoderma opicum, Chrysochroa fulgidissima, Psacotha hilaris, Parnassius bremeri, Protantigius superans, Spindasis takanonis, Fabriciana nerippe
Invertebrates (24)	Verrucella stellata, Plexauroidea complexa, Plexauroidea reticulata, Euplexaura crassa, Plumarella adhaerans, Plumarella spinosa, Dendronephthya alba, Dendronephthya castanea, Dendronephthya mollis, Dendronephthya putteri, Dendronephthya suenoni, Dendrophyllia cribrata, Dendrophyllia micranthus, Tubastraea coccinea, Antipathes japonica, Scelidotoma vadososinuata hoonsooi, Ellobium chinense, Clithon retropictus, Koreanohadra koreana, Triops longicaudatus, Chasmagnathus convexus, Ophiacantha linea, Pseudomaretia alta, Sesarma intermedium
Plants (57)	Psilotum nudum, Isoetes japonica, Mankyua chejuense, Asplenium antiquum, Saururus chinensis, Sarcandra glabra, Quercus gilva, Brasenia schreberi, Euryale ferox, Thalictrum coreanum, Aconitum austrokoreense, Aconitum koreanum, Paeonia obovata, Ranunculus kazusensis, Jeffersonia dubia, Leontice microrrhyncha, Drosera peltata var. nipponica, Hylotelephium ussuriense, Astilboides tabularis, Kirengeshoma koreana, Corylopsis gotoana var. coreana, Echinosophora koreensis, Milletia japonica, Astragalus membranaceus, Paliurus ramosissimus, Berchemia berchemiaefolia, Hibiscus hamabo, Viola websteri, Viola raddeana, Eleutherococcus senticosus, Cicutia virosa, Bupleurum latissimum, Rhododendron aureum, Arctous ruber, Trientalis europaea var. arctica, Osmanthus insularis, Abeliophyllum distichum, Menyanthes trifoliata, Scrophularia takesimensis, Utricularia yakusimensis, Lasianthus japonicus, Leontopodium coreanum, Aster altaicus var. uchiyamae, Trillium tschonoskii, Smilacina bicolor, Polygonatum stenophyllum, Lilium cernuum, Lycoris chinensis var. sinuolata, Iris odaesanensis, Iris koreana, Iris dichotoma, Cypripedium guttatum, Galeola septentrionalis, Vexillabium yakushimensis, Cymbidium macrorrhizum, Sarcanthus scolopendrifolius, Coccophora langsdorfii (sea algae)



The Control of Poaching/Illegal Trade of Wildlife

To fully eliminate poaching, the government has installed a poaching prevention task force team in the Ministry of Environment and organized private poaching monitoring groups. The government has also placed poaching rangers in local environmental offices, cities and provinces to reinforce anti-poaching operations. As a result, 819 cases of illegal poaching were detected and punished in 2008, and the government has continuously placed poaching rangers in 2009.

Crackdown on Wildlife Poaching / Illegal Trade

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of cases	834	1401	1033	808	762	603	678	804	819

Additionally, the government collected poaching equipment jointly with civic groups, totaling 11,348 traps and snares in hills and mountains nationwide.

Number of collecting Illegal Poaching Equipment

Total	Snare	Trap	Net	Hungting Rifles & Others
9,843	8,227	744	87	785

Natural Park Management

As of the end of 2009, Korea has a total of 78 natural parks (total area of 7,809km², covering 7.9% of the total territory, 20 of which are national parks, 31 are provincial parks and 27 are county parks.

Korea's Natural Parks

(km², as of Dec. 31, 2009)

	Total	National Parks	Provincial Parks	County Parks
Number of parks	78	20	31	27
Area (km ²)	7,809	6,580	1,050	239

"National park special protection zones" are designated in national parks to protect important animals and plants, especially endangered species. A species restoration project for the Manchurian black bear has been implemented in the Jirisan Natural Park to raise the existing population of wild Manchurian black bears to the level of Minimum Viable Population through immigration and population management.

"National park special protection zones"(previously called the rest-year program) also include the habitats of rare species and eco-expedition paths severely damaged by too many visitors that have rich bio-diversity and protection values. The designation of the protection zones has proven to be effective in restoring vegetation and habitats in damaged areas. The number of special protection zones is 59 in 217km² as the end of 2009.

Classification	Effective Date	Period (Year)	Custom Content
1st	1, Jan.1991	3	Trail oriented (30 sites in 15 National Parks : 136.6km)
2nd	1, Jan.1994	3, 5, Permanent	Trails, Tree communities, Damaged Mountain Summits (36 sites in 12 National Parks : 143.7km, 125,737m ²)
3rd	1, Jan.1997	2, 3, Permanent	Trails, Plant Communities, Damaged Places, Valleys (38 sites in 13 National Parks : 122.1km, 376,997m ²)
	1, Jul.1998	1.5 (Valley)	
	1, Jan.1999	1.5 (Valley)	Trails, Plant Communities, Damaged Places, Valleys, Wet Lands (44 sites in 12 National Parks : 126.1km,476,997m ²)
4th	1, Jan.2000	3	Trails, Plant Communities, Damaged Places, Valleys, Wet Lands (48 sites in 12 National Parks : 133.2km, 2,276,997m ²)
5th	1, Jan.2003	3,6	Trails, Plant Communities, Damaged Places, c, Wet Lands (51 sites in 14 National Parks : 134.7km, 4,721,997m ²)
6th	1, Jan. 2006	5,10	Plant Communities, Animal Habits, Alpine Wetland, Damaged Places and paths (28 sites in 9 National Parks : 23.3km, 10,168,197m ²)
Enforcement of Special Protection Zone	1, Jan. 2007	20	Plant Communities, Animal Habits, Alpine Wetland, Damaged Places, Nature Sabbatical Zones (59 sites in 16 National Parks : 217km ²)



6-2. Air

Sulfur Dioxide (SO₂)

The Annual Average Concentration of Sulfur Dioxide 0.017 in Major Cities

(Unit: ppm)

City Year	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan
1991	0.043	0.038	0.041	0.041	0.017	0.028	0.035
1992	0.035	0.033	0.040	0.036	0.017	0.022	0.033
1993	0.023	0.028	0.035	0.021	0.014	0.020	0.032
1994	0.019	0.023	0.038	0.022	0.013	0.021	0.031
1995	0.017	0.023	0.031	0.023	0.010	0.017	0.028
1996	0.013	0.022	0.023	0.012	0.008	0.015	0.022
1997	0.011	0.018	0.016	0.013	0.009	0.011	0.019
1998	0.008	0.015	0.014	0.009	0.008	0.009	0.015
1999	0.007	0.014	0.011	0.008	0.007	0.009	0.017
2000	0.006	0.010	0.009	0.008	0.006	0.007	0.013
2001	0.005	0.008	0.008	0.007	0.004	0.006	0.012
2002	0.005	0.007	0.006	0.006	0.004	0.004	0.010
2003	0.005	0.006	0.006	0.007	0.004	0.004	0.011
2004	0.005	0.007	0.006	0.007	0.004	0.005	0.010
2005	0.005	0.006	0.006	0.007	0.004	0.005	0.008
2006	0.005	0.006	0.006	0.007	0.004	0.004	0.007
2007	0.006	0.006	0.006	0.008	0.004	0.005	0.008
2008	0.006	0.006	0.005	0.007	0.004	0.004	0.008

The table shows that SO₂ levels in major 7 cities have gradually declined for 10 years and the annual average concentration of Sulfur Dioxide (SO₂) was in the range of 0.004–0.008ppm. Although the number of registration of vans and trucks and the amount of fuel uses, except anthracite, are continuously increasing, the concentration of Sulfur Dioxide(SO₂) has gradually declined due to the continuous fuel regulations of the government, which expanded the provision of clean fuels such as low sulfur gasoline and LNG, and enforced the emission regulations.

Nitrogen Dioxide (NO₂)

The Annual Average Concentration of NO₂ in Major Cities

(Unit: ppm)

Year	City	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan
1991		0.033	0.023	0.021	0.030	0.013	0.018	0.024
1992		0.031	0.023	0.030	0.034	0.012	0.014	0.026
1993		0.032	0.025	0.024	0.030	0.017	0.014	0.026
1994		0.032	0.024	0.023	0.029	0.022	0.019	0.026
1995		0.032	0.027	0.028	0.024	0.020	0.021	0.023
1996		0.033	0.021	0.027	0.028	0.021	0.023	0.023
1997		0.032	0.028	0.024	0.026	0.021	0.022	0.023
1998		0.030	0.024	0.027	0.026	0.016	0.018	0.019
1999		0.032	0.029	0.027	0.028	0.021	0.025	0.021
2000		0.035	0.024	0.029	0.024	0.020	0.023	0.020
2001		0.037	0.028	0.020	0.027	0.026	0.025	0.022
2002		0.036	0.020	0.023	0.027	0.021	0.020	0.019
2003		0.038	0.029	0.026	0.030	0.019	0.018	0.016
2004		0.037	0.026	0.026	0.028	0.019	0.022	0.022
2005		0.034	0.024	0.023	0.025	0.021	0.020	0.024
2006		0.036	0.023	0.023	0.029	0.024	0.020	0.022
2007		0.038	0.022	0.024	0.031	0.023	0.019	0.023
2008		0.038	0.022	0.024	0.030	0.022	0.020	0.024

The concentration of NO₂ has slightly increased in Incheon, Busan, Daegu, etc. since 1990, but the annual concentration values have remained stable. Seoul's figure has been on the rise since 2000. Again in 2008, Seoul where the number of vehicle registration and traffic volume are the biggest, is showing the highest level of the average concentrations (0.038ppm) among seven major cities. Daejeon and Gwangju where the automobile ownership and traffic volume are relatively low have shown 0.020ppm and 0.022ppm respectively.



Particulate Matter (PM-10)

The Annual Average Concentration of PM-10 in Major Cities

(Unit: μg/m³)

Year	City	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan
1995		78	73	81	76	49	63	69
1996		72	76	87	67	51	63	51
1997		68	68	72	70	49	69	43
1998		59	67	72	57	49	58	29
1999		66	65	66	53	56	55	29
2000		65	62	63	53	58	51	52
2001		71	60	67	52	57	48	55
2002		76	69	71	57	52	53	54
2003		69	55	59	61	36	43	40
2004		61	60	58	62	46	49	50
2005		58	58	55	61	49	48	50
2006		60	59	54	68	55	49	52
2007		61	57	53	64	52	49	53
2008		55	51	57	57	50	45	54

The measurements of PM-10 have been taken since 1995, showing small differences in the measured year by year. In order to know the overall tendency of concentration changes, the continuous accumulation of data is needed on a long measurement period. The average measurement of PM-10 in major metropolitans in 2008 was 57μg/m³ the highest in Incheon and Daegu, followed by 55μg/m³ (Seoul) and 54μg/m³ (Ulsan), and 45μg/m³ the lowest in Daejeon. Compared to 2007, the average of measured value by year was greatly reduced in Seoul, Busan, Incheon, Gwangju, and Daejeon.



Lead (pb)

The Annual Average Concentration of pb in Major Cities

(Unit: $\mu\text{g}/\text{m}^3$)

Year	City	Seoul	Busan	Daegu	Incheon	Gwangju	Daejeon	Ulsan
1991		0.3408	0.2471	0.1379	0.4270	0.1183	0.1573	0.1043
1992		0.2860	0.1408	0.1078	0.3947	0.0870	0.1433	0.0905
1993		0.2090	0.1759	0.0476	0.2588	0.0536	0.2573	0.0866
1994		0.1907	0.1438	0.0439	0.2455	0.0470	0.2761	0.0826
1995		0.1844	0.0705	0.0138	0.2427	0.0487	0.3666	0.0457
1996		0.1495	0.1023	0.0315	0.2160	0.0442	0.1405	0.0662
1997		0.1088	0.0829	0.0302	0.1704	0.0331	0.1806	0.0688
1998		0.0936	0.1096	0.0358	0.1256	0.0089	0.0885	0.0703
1999		0.0984	0.1030	0.0367	0.1263	0.0086	0.0990	0.0663
2000		0.0825	0.1004	0.0269	0.1203	0.0435	0.0806	0.0673
2001		0.0743	0.0698	0.0515	0.1290	0.0347	0.0595	0.0565
2002		0.0832	0.0751	0.0698	0.1059	0.0331	0.0482	0.0678
2003		0.0584	0.0512	0.0576	0.1213	0.0310	0.0457	0.0565
2004		0.0787	0.0517	0.0687	0.1411	0.0417	0.0732	0.0690
2005		0.0442	0.0464	0.0454	0.0895	0.0300	0.0696	0.0547
2006		0.0421	0.0598	0.0663	0.0829	0.0483	0.0569	0.0431
2007		0.0542	0.0550	0.0578	0.0926	0.0573	0.0655	0.0695
2008		0.0453	0.0600	0.0487	0.0813	0.0510	0.0646	0.0691

The concentration of lead has been declining. In recent years, it maintained stable level, not exceeding environmental standards ($0.5\mu\text{g}/\text{m}^3$). In 2008, it was recorded as $0.0453 \sim 0.0813\mu\text{g}/\text{m}^3$, decreased compared to the previous year in all major cities except for Busan. Again in this year, Incheon shows the highest level $0.0813\mu\text{g}/\text{m}^3$, and Seoul the lowest $0.0453\mu\text{g}/\text{m}^3$.



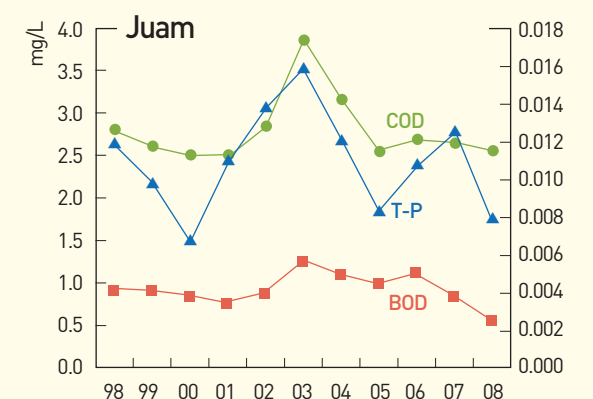
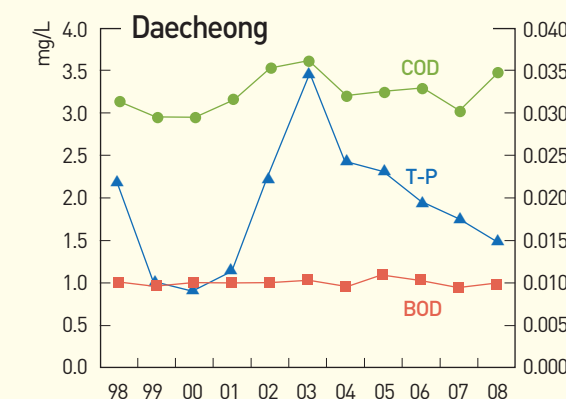
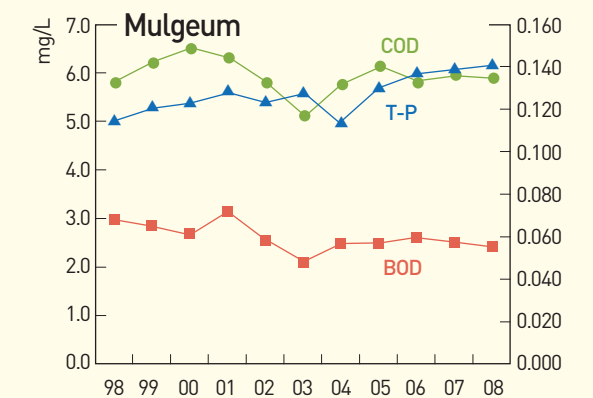
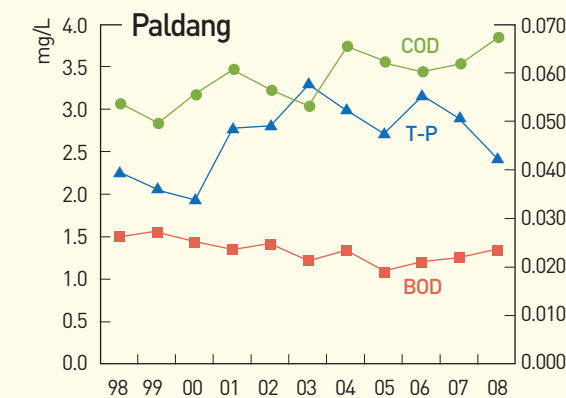
6-3. Water

6-3-1. Public Waters

- Water Quality Management of Public Waters

Water Quality in Four Major Rivers

The water quality of main places of Korea's four major rivers has improved through the comprehensive water management measures in 1996, and the comprehensive water management measures of 4 major rivers (1998 ~ 2005). Main water supply sources of 4 major rivers are well managed to $1\sim 2\text{mg}/\text{L}$ BOD concentrations are effectively reduced, but COD concentrations are increased because of increased chemical uses and refractory pollutants influx such as non-point source pollutions, etc. or decreased less compared to BOD concentrations. The pollution of total Phosphorus is also increased, which is the limiting factor of algae and organic matter production.



Rate of Meeting Aquatic Environmental Standard

All streams nationwide are classified into 194 sections. Based on the classification, target standard was set and progress was assessed in particular focusing on BOD levels. The rate of said streams which meet the standard was 35.6 %, which is an increase compared to the 27.6 % in 2000.

Watershed	'00	'01	'02	'03	'04	'05	'06
Nation	27.8 (54/194)	29.4 (57/194)	37.6 (73/194)	49.0 (95/194)	36.6 (71/194)	42.3 (82/194)	35.6 (69/194)
Han	38.5	42.3	53.8	57.7	53.8	53.8	42.3
Nakdong	20.0	22.5	32.5	55.0	32.5	45.0	32.5
Geum	34.2	26.3	31.6	44.7	34.2	44.7	36.8
Yeongsan	8.3	25.0	25.0	41.7	16.7	16.7	25.0
Sumjin	16.7	16.7	33.3	33.3	16.7	16.7	50.0
Others	23.9	26.1	32.6	41.3	30.4	34.8	30.4

These new target standards were set and applied from 2007 to 114 regions of "water system management zones" designated and noticed (Oct. 2006) in accordance with Common Watershed Maps by relevant ministries of water management such as Ministry of Land, Transport and Maritime Affairs. The individual rate of water quality standard achieved of four major rivers in 2007 is as follows: the Han River (82.1 %), the Nakdong River (78.8 %), the Geum River (59.1 %), and the Yeongsan/Sumjin and other rivers (64.5 %).

Classification	Total (114)		Han (28)		Nakdong (33)		Geum (22)		Yeongsan - Sumjin (31)	
	Number of Achieved Sections	Rate (%)	Number of Achieved Sections	Rate (%)	Number of Achieved Sections	Rate (%)	Number of Achieved Sections	Rate (%)	Number of Achieved Sections	Rate (%)
'07	82	71.9	23	82.1	26	78.8	13	59.1	20	64.5
'08	75	65.8	18	64.3	26	78.8	13	59.1	18	58.1



6-3-2. Water Supply and Sewerage

Current Status of Waterworks Supply

As of December 2007, 46,057,000 people (92.1% of the total population) benefited from waterworks provided by 164 regional waterworks suppliers (7 in metropolitan cities, 1 special self-governing province, 75 cities and 81 counties) and the capacity of waterworks facilities is 31.265 million m³/day.

The daily water supply per capita is 340ℓ, which has been declining since 1996.

This is assumed that since the amount of water used is decreasing due to the installation of water-saving devices and reuse of gray-water and thanks to the continuous promotion to raise the volume of flowing water, the amount of leakage of water is decreasing

Status of Waterworks Supply by Year

Classification	2001	2002	2003	2004	2005	2006	2007
Total population (1,000 persons)	48,289	48,518	48,824	49,053	49,268	49,599	50,034
Population Benefiting from Waterworks (1,000 persons)	42,402	43,021	43,633	44,187	44,671	45,270	46,057
Water Supply Rate(%)	87.8	88.7	89.4	90.1	90.7	91.3	92.1
Capacity of Facility (1,000m ³ /day)	27,751	28,561	28,462	23,156	30,950	31,138	31,265
Water Supply Amount (ℓ/day · person)	374	362	358	365	363	346	340

※ In case of the capacity of facility in 2004, metropolitan waterworks excluded

In comparison with the level of supplied waterworks by regional size, the supply rate for seven special metropolitan/metropolitan area cities is 99.1%, 97.6% for city areas, 86.2% for towns and 45.2% for small rural areas.

Supply Ratio to Size of Regions (2007)

Classification	Total Population (1,000 persons)	Population Benefiting from Waterworks (1,000 persons)	Water Supply Rate (%)	Water Supply (1,000m ³ /day)	Water Supply Amount (ℓ/day · person)
Nation	50,034	46,625	93.2	15,657	340
Special Metropolitan/ Metropolitan Area Cities	23,284	23,121	99.3	7,443	322
City areas	17,672	17,276	97.8	7,002	406
Towns	3,938	3,457	87.8	1,212	212
Myeons	5,140	2,772	53.9		

Regions where water is not supplied receive water from small facilities such as a village waterworks. The population of inhabitants who use village waterworks is 1,572,000 (3.1 %), those who use small water supply facilities number 601,000 (1.2%), those who use exclusive waterworks number 273,000 (0.5%) and those who use other facilities such as wells number 1,527,000 (3.1 %).

Current Status of Sewerage Service

As of the end of 2007, the sewerage-to-population ratio(registered population divided by the population in sewerage service region) is 87.1%.

The capacity of 357 sewage service facilities across the nation is 23.946 million tons per day (including trial runs and partial operations).

Trend of Sewerage Service

Classification	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07
Total population (1,000 persons)	47,174	47,543	47,977	48,289	48,518	48,824	49,052	49,268	49,624	50,034
Population Served by Sewers (1,000 persons)	31,099	32,539	33,843	35,369	36,760	38,449	39,924	41,157	42,450	43,568
Facilities(No.)	114	150	172	184	207	242	268	294	344	357
Sewerage-to-Population Ratio (%)	65.9	68.4	70.5	73.2	75.8	78.8	81.4	83.5	85.5	87.1
Daily Capacity (1,000 tons/day)	16,616	17,712	18,400	19,230	20,233	20,954	21,617	22,568	23,273	23,946

Current Status of Sewer Pipelines Facilities

The total length of sewer pipelines was 96,280km, as of the end of 2007, which is 73.6% of the total planned length of 130,774km of the master plan for sewerage maintenance. Of those, 49,636km (51.6%) consists of the combined sewer system pipelines, which simultaneously remove rain and sewage water, and 46,643km (48.4%) were separate sewer system pipelines that remove rain and sewage water separately.

Current Status of Sewer Pipelines Facilities

(Unit: km)

Classification	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07
Expanded Plan	96,728	103,280	107,623	112,567	116,141	119,521	120,814	125,709	127,980	130,774
Facility Extension	Total	62,330	64,741	68,195	71,839	75,859	78,605	82,214	85,755	91,098
	Combined	40,160	41,437	42,878	44,534	45,680	46,167	47,255	48,257	48,966
	Separate	22,170	23,304	25,317	27,305	30,179	32,438	34,959	37,498	42,132
Supply Rate (%)	64.4	62.7	63.4	63.8	65.3	65.8	68.1	68.2	71.2	73.6



6-3-3. Soil and Groundwater

Soil

Currently, 16 substances including cadmium, copper, arsenic, mercury, oil and solvents that cause soil contamination have been labeled as soil contaminants and are subject to regulation. For each of these substances, a "soil contamination precautionary level" for contamination has been set, which indicates reasons for concern about possible damage to human health or assets, or adverse effects on the viability of animal and plant life. And a "soil contamination regulatory level" for situations in which measures are needed beyond the precautionary level has been established.

The soil contamination precautionary level divides land into two categories, according to land use and the Cadastral Act: a "Ga" zone has a relatively low potential for soil contamination such as rice paddies, fields and forests; and a "Na" zone has a relatively high potential including plant lots, roads and railroad land.

Soil Contamination Precautionary Levels and Regulatory Standards

(Unit: mg/kg)

Classification	Category	Cd	Cu	As	Hg	Pb	Cr6+	Zn	Ni	F	OP	PCB	CN	Phenol	BTEX	TPH	TCE	PCE
Precautionary Level	"Ga" zone	1.5	50	6	4	100	4	300	40	400	10	-	2	4	-	500	8	4
	"Na" zone	12	200	20	16	400	12	800	160	800	30	12	120	20	80	2,000	40	24
Regulatory Level	"Ga" zone	4	125	15	10	300	10	700	100	800	-	-	5	10	-	1,200	20	10
	"Na" zone	30	500	50	40	1,000	30	2,000	400	2,000	-	30	300	50	200	5,000	100	60

The Ministry established 250 stations nationwide in 1987 constituting the national soil monitoring network and began routine measurements. Starting in 1997, it expanded these regional networks and operated 4,500 stations as of 2001. In 2008, it carried out a soil contamination investigation at 2,516 sites with 1,521 stations.

Soil Monitoring Network & Investigation Sites

(Unit: km/L)

Classification	2001	2002	2003	2004	2005	2006	2007	2008
Total	4,500	3,545	3,605	3,683	3,902	3,794	3,882	4,037
Stations Tested (No.)	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,521
Sites Tested (No.)	3,000	2,045	2,105	2,183	2,402	2,294	2,382	2,516

As a result of operating the national soil monitoring network, it was found that the level of contamination of the end of 2008 was similar to that of 2007, but Cr⁶⁺ and F slightly rose compared to 2007. The concentration of heavy metal was similar to concentration of Korean soil (natural content), but Cu, As, Pb, Zn were slightly high. Organic phosphorous, PCB, phenol, BTEX, TCE and PCE were less than marginal detection. The pH ranged from 3.8~9.1, and the pH average was 6.5 (natural soil: 5.7).

Average Level of Soil Contamination: Results From the National Soil Monitoring Network (Unit: mg/kg)

Classification	Cd	Cu	As	Hg	Pb	Cr ⁶⁺	Zn	Ni	F	OP	PCB	CN	Phenol	Oil		TCE	PCE
														BTEX	TPH		
Average Level in 2008	0.049	3.521	0.241	0.037	4.042	0.013	82.662	9.150	215.473	0.000	0.000	0.001	0.000	0.000	16.447	0.000	0.000
Average Level in 2007	0.063	3.799	1.064	0.053	5.068	0.000	83.324	11.052	209.941	0.000	0.000	0.003	0.000	0.009	21.557	0.000	0.000
Average Level in 2006	0.076	3.587	0.481	0.025	5.395	0.000	82.318	10.222	280.109	0.000	0.000	0.010	0.000	0.000	16.207	0.000	0.000
A Level of concern (Ga zone)	1.5	50	6	4	100	4	300	40	400	10	-	2	4	-	-	8	4
Natural Content	0.040	0.48	0.089	0.085	3.06	0.09	54.27	17.28	-	-	-	-	-	-	-	-	-

※ Natural content is the result of analyzing forest soil in Korea via the "Soil Contamination Process Test Method" (National Institute of Environmental Research, Study of Assessment and Establishment of Soil Contamination Standards (1), 2004)

The national average of soil contamination levels did not exceed soil contamination precautionary levels (based on a "Ga" zone). In addition, organic phosphorus, PCB, Phenol, BTEX, TCE and PCE were below detectable levels.



Ground water

The supply of water was thus far reliant mostly on inland water. But surface water pollution, limitations on water supply due to the construction of dams and the rise in water consumption have led to more underground water being used. As of the end of 2006, there were 1.304 million (1,304,000) facilities that develop and use underground water.

As of the end of 2007, the total use of ground water was still only at 32% (3.7bil m³/year ground water (11.7bil m³/year), which signifies that the value of ground water as an alternative water source is very high. Ground water pollution proceeds without detection, and once ground water is polluted, it is difficult to restore to its original status. Thus, the development and use of the underground water supply should be appropriately operated without polluting the existing ground water.

A ground water monitoring network has also been put in place to provide regular updates on the status of ground water quality and to monitor trends so that basic data for policy formulation can be assured. As a result of the 2008 ground water quality study of 4,827 test samples (monitored 2,499 sites once or twice a year), 335 (6.9 %) did not meet water quality standards.

In terms of which criteria were not met, they were general bacteria-33 %, NO₃-N 26 %, Cl-12 %, TCE-10% and pH-9 %. The cause for NO₃-N not meeting the standard was insufficient management of ground water wells due to infiltration of excreta and agricultural compost and as for TCE, the standard was not met in industrial complexes and residential regions of urban areas due to fiber and metal washing. After 2004, when the category for ground water quality standard became what it is today, the rate of excess was around 5 % with small fluctuations, which show slight increase in 2008.

Yearly Status of Exceeding Groundwater Quality Standards

Classification	2001	2002	2003	2004	2005	2006	2007	2008
Total Sites Tested (A)	3,861	3,882	3,934	3,865	4,760	4,740	4,828	4,827
Sites Not Meeting Standards (B)	189	143	142	212	230	299	260	335
Ratio (B/A, %)	4.9	3.7	3.6	5.4	4.8	6.3	5.4	6.9

6-4. Wastes and Recycling

Status of Waste Generation

Total waste generation has shown an average annual increase of 4.5 % over the past five years (2002-2006). But total waste generation in 2006 was 328,954 tons per day, increased by about 8.1 % compared to the previous year (304,357 tons/day). Waste generated is composed of municipal waste (14.8 %), industrial waste (30.7 %) and construction waste (51.4 %), which accounts for the largest portion of waste produced. This ratio indicates that a dramatic increase in construction waste arose from an increase in construction and reconstruction and from the implementation of a waste reporting system.

Municipal waste was expected to steadily rise due to a rapid increase in population and economic growth. But policies for controlling waste generation (e.g., regulations on disposable goods and a Volume-Based Waste Disposal Fee System) have led to a gradual reduction in the amount of waste.

Industrial waste has recorded an annual average increase of 5.4 % over the past five years (2002-2006) because of an increase in industrial activities, the expansion of economic activities and energy-intensive industrial/economic structures. And industrial waste in 2006 recorded 280,110 tons per day, an increase of 9.4 % from the previous year.

Trends in Waste Generation

(Unit: ton/day)

Classification	2001	2002	2003	2004	2005	2006	2007
Total	261,032	277,533	303,029	311,666	304,357	328,954	346,669
Municipal Waste	48,499 (1.01kg/person)	49,902 (1.04kg/person)	50,736 (1.05kg/person)	50,007 (1.03kg/person)	48,398 (0.99kg/person)	48,844 (0.99kg/person)	50,346 (1.02kg/person)
Industrial Waste							
Subtotal	212,533	227,631	252,293	261,659	255,959	280,110	296,323
Generation Facilities	95,908	99,505	98,891	105,018	112,419	101,099	114,807
Construction Waste	108,520	120,141	145,420	148,489	134,906	168,985	172,005
Designated Waste	8,105	7,985	7,982	8,152	8,634	10,026	9,511



Status of Waste Treatment and Disposal

In the case of municipal waste, the implementation of the "Volume-based Waste Disposal Fee System" has promoted waste separation and rapidly increased recycling, but on the other hand, the rate of incineration has gradually been on the rise. The recycling rate has shown a steady increase to 57.2 % in 2006. The rate of incineration has also increased to 17 % in 2006 from 11.7 % in 2000, whereas landfilling has continued to decline to 25.8 % in 2006.

Status of Municipal Waste Treatment

(Unit: ton/day, %)

Classification	2001	2002	2003	2004	2005	2006	2007
Generation	48,499	49,902	50,736	50,007	48,398	48,844	50,346
Landfilling	21,000 (43.3)	20,724 (41.5)	20,450 (40.3)	18,195 (36.4)	13,402 (27.7)	12,601 (25.8)	11,882 (23.6)
Incineration	6,577 (13.6)	7,229 (14.5)	7,348 (14.5)	7,224 (14.4)	7,753 (16.0)	8,321 (17.0)	9,348 (18.6)
Recycling	20,922 (43.1)	21,949 (44.0)	22,938 (45.2)	24,588 (49.2)	27,243 (56.3)	27,922 (57.2)	29,116 (57.8)

The separation of food waste from other waste has been in place since direct landfilling was banned in January 2005. For this reason, while food waste generation has been on the rise, the rate of recycling food wastes livestock feed and compost was at 94 % as of 2006.

Status of Food Waste Generation and Treatment

(Unit: ton/day, %)

Year	Generation	Recycling	Landfilling	Incineration
2001	11,237	6,378(57)	3,856(34)	1,003(9)
2002	11,397	7,130(63)	3,345(29)	922(8)
2003	11,398	7,718(68)	2,836(25)	844(7)
2004	11,464	9,316(81)	1,607(14)	541(5)
2005	12,977	12,105(93)	356(3)	516(4)
2006	13,372	12,603(94)	261(2)	508(4)
2007	14,452	13,326	452(3)	674(5)

The rate of recycling industrial waste has been on the rise. As of 2007, among industrial wastes, 84.2 were recycled, 9.4 % went to landfills, 3.4 % were incinerated and 3.0 % were dumped at sea, etc.

In the case of industrial waste and construction waste, their recycling rates are very high at 66.9 % and 97.5 %, respectively, because they are mostly single material items that can be recycled with ease. And they show low incineration rates of 6.5 % and 0.7 %, respectively.

Status of Industrial Waste Treatment

[Unit: ton/day, %]

Classification	2001	2002	2003	2004	2005	2006	2007
Total	212,533	227,631	252,293	261,659	255,959	280,110	296,323
Landfilling	32,677 (15.4)	34,303 (15.1)	29,377 (11.6)	26,043 (10.0)	21,632 (8.5)	14,646 (5.2)	27,794 (9.4)
Incineration	12,106 (5.7)	10,893 (4.8)	11,338 (4.5)	11,341 (4.3)	9,669 (3.8)	10,693 (3.8)	10,211 (3.4)
Recycling	158,841 (74.7)	172,323 (75.7)	200,830 (79.6)	212,728 (81.3)	212,681 (83.1)	244,131 (87.2)	249,576 (84.2)
Others (Dumping at sea, etc.)	8,909 (4.2)	10,112 (4.4)	10,748 (4.3)	11,547 (4.4)	11,977 (4.6)	10,640 (3.8)	8,742 (3.0)

※ The generation amount of industrial waste consist of the generation amount of industrial waste, construction waste and designated waste.

Status of Waste Recycling

Waste paper, which takes up a large portion of waste separation/collection is continuously increasing since a waste separation/collection system was put in place through the implementation of the Volume-Based Waste Disposal Fee System. The domestic use of waste paper is 83.3 % in 2008, up 2.5 % from 2007.

Waste Paper Recycling

[Unit: 1,000 tons]

Classification	2002	2003	2004	2005	2006	2007	2008
Paper Production	10,660	10,999	11,182	11,279	11,244	11,602	11,253
Paper Consumption (A)	9,339	9,965	9,909	9,868	9,889	9,893	9,486
Use of Materials	Total	10,540	10,897	11,479	11,436	11,599	12,275
	Pulp	2,943	2,955	3,082	2,935	2,932	3,129
	Subtotal	7,597	7,942	8,397	8,501	8,667	9,146
	Waste Paper						
	Domestic (B)	5,999	6,611	6,875	7,086	7,455	7,998
	Import	1,598	1,331	1,522	1,415	1,212	1,148
Use of Domestic Waste Paper (B/A, %)	64.2	66.3	69.4	71.8	75.4	80.8	83.3

The use of scrap totaled about 24.833 million tons in 2008, 72.5 % of which(18.022 million tons) was generated in Korea and 27.4 % (6.811 million tons) was imported. The scrap use rate in Korea in 2008 was at 36.0 % and, compared to steel consumption, recorded a slight decrease from 2007.

Yearly Scrap Metal Recycling

[Unit: 1,000 tons]

Classification	2002	2003	2004	2005	2006	2007	2008
Iron Material Consumption (A)	43,720	45,370	47,218	47,124	48,299	55,108	49,969
Use of Scrap Metal	Total	23,773	23,394	25,923	25,640	24,268	29,600
	Domestic (B)	16,550	17,160	18,375	18,825	18,490	22,716
	Import	7,223	6,234	7,548	6,816	5,778	6,884
	Use of Domestic Scrap Metal (B/A,%)	37.9	37.8	38.9	39.9	38.3	41.2



In case of metal cans, 64.3 % (205,000 tons) of the 319,000 tons generated in 2008 were collected and recycled.

Yearly Metal Can Recycling

[Unit: 1,000 tons]

Classification	2002	2003	2004	2005	2006	2007	2008
Generation	366	384	360	331	330	321	319
Recycling	168	195	159	146	159	195	205
Recycling Rate (%)	45.9	50.8	44.2	44.1	48.2	60.7	64.3

Separation of waste glass from other solid wastes has been expanded and technologies for recycling waste glass have continuously been developed. While the consumption of glass bottles has declined from 2005, the use of waste glass in 2008 was 513,000 tons, a slight increase from 533,000 tons in 2007.

Yearly Recycling of Waste Glass

[Unit: 1,000 tons]

Classification	2002	2003	2004	2005	2006	2007	2008
Glass Bottle Consumption	794	756	760	776	749	731	703
Use of Waste Glass	587	530	544	567	531	533	513
Recycling Rate (%)	73.9	70.1	71.6	73.0	70.1	72.9	73

The Korean Tire Manufacturers Association has collected waste tires and provided them to recycling companies with 30 collectors nationwide. 20,155 million (71.4 %) out of the 28,200 million waste tires generated in 2008 were collected and recycled.

Yearly Recycling of Waste Tires

[Unit: 1,000 (No.)]

Classification	2002	2003	2004	2005	2006	2007	2008
Generation	24,023	23,233	22,446	24,202	23,689	29,420	28,200
Recycling	17,167	18,561	18,015	19,176	19,500	23,852	20,155
Recycling Rate (%)	71.5	79.9	80.3	79.2	82.3	81.1	71.4

231,550 tons of waste lubricant oil was generated in 2008, among which 155,841 tons (67.3 %) was collected and recycled.

Yearly Waste Lubricant Oil Recycling

[Unit: tons]

Classification	2002	2003	2004	2005	2006	2007	2008
Generation (A)	Drums	1,144,850	1,170,110	1,198,720	1,198,720	1,120,970	1,188,940
	Tons	228,970	234,022	239,744	239,744	224,194	237,788
Recycling (B)	Drums	731,843	758,390	769,474	746,296	732,495	819,508
	Tons	146,369	151,678	153,895	149,259	146,499	163,902
Recycling Rate (B/A)	64.7	64.6	64.2	62.3	65.3	68.9	67.3

6-5. Toxics & Chemicals

According to the Toxic Chemicals Control Act, chemicals are divided into two groups: existing chemicals and new chemicals. The former includes 37,021 chemicals, designated and informed by the Minister of Environment after consultation with the Minister of Labor, which had been commercially used in Korea before Feb. 2, 1991 and 3,710 other chemicals were designated and informed by the Minister of Environment through the hazard assessment process after Feb. 2, 1991. New chemicals refer to those other than existing chemicals.

Management of Existing Chemicals

Hazardous substances among the existing chemicals refer to toxic chemicals, observational chemicals, use-restricted/banned chemicals and accident precaution chemicals.

- **Toxic Chemicals** : 557 hazardous substances including benzene and toluene
- **Observational Chemicals** : 21 substances with a potential hazard such as 4,4-bisphenol A
- **Restricted Chemicals** : 8 substances including CC14, malachite green and nonylphenol
- **Banned Chemicals** : 59 substances including DDT, PCBs, benzidine, asbestos (except white asbestos) and penta-/octa- BDEs
- **Accident Precaution Chemicals** : 56 substances such as phosgene, benzene and benzoyl chloride (including 36 substances also designated as toxic chemicals) with a high accident risk or the huge potential for damage if an accident occurs

Management of New Chemicals

The handling and manufacturing of new chemicals must go through the process of hazard assessment by the National Institute of Environmental Research before being manufactured and imported. If the hazard assessment meets the standard set by Article 2 of the enforcement decree of the Toxic Chemicals Control Act, the President of National Institute of Environmental Research will classify the substance as toxic or observational.

Management of Hazardous Substances

Anyone who intends to handle toxic chemicals (including manufacturing, transportation, sale, use and storage of toxic substances) must register (registration and

business licenses: authorized to city/province). The import of toxic chemicals must go through the process of declaration (declaration submitted to the Korea Chemicals Management Association). Handling observational chemicals is not subject to regulation. These chemicals can be manufactured and imported with only a declaration to the Association. Businesses wishing to import or sell restricted chemicals need permission and export of them requires approval of the authority (approval from River Basin or Regional Environmental Offices). The distribution of banned chemicals is not allowed in Korea. Anyone who handles chemicals considered highly likely to cause accidents in more than certain quantities must set up an emergency preparedness plan and submit it to the Mayor or the Director General of the Regional Environmental Office. If relevant facilities exist within the zones (e.g., a national industrial complex) designated by presidential decrees, local residents should be notified of their existence.

The Status of Yearly Distribution of Toxic Chemicals

Distribution of toxic chemicals has been continuously increasing annually : 35,064 tons in 2007, up 70.6 % from 20,554 tons in 2000.

Distribution of Toxic Chemicals by Year

(Unit: 1,000tons)

Classification	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total (a+b)	19,611	19,985	20,554	21,159	24,446	25,833	31,058	31,788	32,294	35,064	34,250
Production (a)	15,269	16,409	16,566	17,616	20,806	21,791	26,688	26,103	27,017	29,019	29,095
Imports (b)	4,342	3,576	3,988	3,543	3,640	4,042	4,370	5,685	5,277	6,045	5,155



Promotion of Investigation on Chemicals Release and Reduction of Release

Toxics Release Inventory (TRI) is a system in which the concerned parties calculate the chemicals released into the environment (air, water, or soil) or transferred out of business sites to be recycled or treated in the process of manufacturing and report the calculated figures to the government. The government then adds them to a database so that the government, business and nongovernmental groups can share data. Businesses are facilitated to make efforts for reduction of chemicals release by being informed of the data through TRI.

Korea arranged a legal foundation for the implementation of chemicals management systems (Dec. 1996), such as enacting the Toxic Chemicals Control Act, reporting emission of chemicals, and protection for the confidential business of corporations, with the joining of the OECD in 1996. Since the first investigation on release of 1999, the result of which was released in 2001, the result of investigations on chemicals release has been announced each year. In 2009, the result of the investigation of 2007 chemicals release was announced, and the investigation for 2008 was carried out.

Result of Investigation on Chemicals Release

Year	Generation (tons/year)				Transfer (tons/year)		
	Total	Air	Water	Soil	Total	Wastewater	Wastes
1999	16,380	14,860	1,316	204	30,867	1,333	29,534
2000	30,143	23,747	965	5,432	95,173	2,609	92,564
2001	36,587	34,518	433	1,636	254,324	62,922	191,402
2002	34,272	34,121	150	2	282,622	62,325	220,297
2003	38,041	37,919	115	7	323,674	46,849	276,825
2004	51,021	50,841	179	0.3	323,986	55,656	268,330
2005	47,299	47,048	250	0.3	331,125	53,806	277,319
2006	47,796	47,598	198	37	328,097	50,917	277,180
2007	47,688	47,430	258	0.02	368,678	63,522	305,156

Note) With the extension of the items of investigation criteria in 2004 (240 items → 388 items) and the new subjects of investigation expanded (1,477 places), the amount of handled chemicals and chemicals release has increased.



Environmental Quality Standards

I. Specification Standard of Toxic and Observational Substances

A. Toxic

1. The chemicals whose lethal dose (LD50) is less than 200 mg/kg that can kill half of the tested rodents in acute oral toxicity tests.
2. The chemicals whose lethal dose (LD50) is less than 1,000 mg/kg that can kill half of the tested rodents in acute dermal toxicity tests.
3. The chemicals whose lethal dose (LD50, 4hr) is less than 2,500 ppm that can kill half of the tested rodents exposed to gas or vapor in acute inhalation toxicity tests.
4. The chemicals whose lethal dose (LD50, 4hr) is less than 2.0 mg/L that can kill half of the tested rodents exposed to dusts or particles in acute inhalation toxicity tests.
5. The chemicals whose skin or mucous membrane irritation is equivalent to 10% aqueous solution of hydrochloric acid and sulfuric acid, or equivalent to 5% aqueous solution of phenol, sodium hydroxide and calcium hydroxide.
6. The chemicals whose lethal dose (LD50, 96hr) is less than 1.0 mg/L that can kill half of the tested fish in fish toxicity tests.
7. The chemicals whose bio-concentration factor for fish is more than 500; repeated dose toxicity tests' results of random maximum capacity in 28 days are identified as less than 10 mg/kg/day, or unusual affections are shown on liver, kidney, etc. in long-term tests.
8. The chemicals identified as positive in animal tests (in vivo) and gene mutation tests using bacteria or any equivalent in vitro tests (in vitro) among cytogenetic tests which did not go through carcinogenicity test shall not be done.
9. The 1 grade chemicals proven to cause cancer in human throughout more than 2 carcinogens tests and international professional organizations such as the international cancer research center, or the 2A grade chemicals proven to have the concern of causing cancer in humans
10. The chemicals known to cause bad influences to human fertility through body-related evidences, or believed to cause bad influences to human fertility based upon the sufficient evidences in animal experiments and mechanistic study

11. The compound or mixture containing more than 1% of toxic specified above 1~8 provisions
12. The compound or mixture containing more than 0.1% of toxic specified above 9~10 provisions

B. Observational Chemicals

1. The chemicals as refractory decomposable substance presenting 4~7 level of Octanol/Water Partition Coefficient (logPow)
2. The chemicals showing more than 500 biological concentration factor of fishes
3. The chemicals showing all positive reactions in a gene mutation test using bacteria and a chromosomal aberration test using cultured mammalian cells or in the upper level of the above tests, or showing strong positive reaction in any of the above tests
4. The chemicals giving genetic damage to the animals used in tests
5. The 2B grade chemicals proven to cause cancer in human throughout more than 1 animal tests or determined to the concern of causing cancer in humans by international professional organizations such as the international cancer research center
6. The chemicals suspected to give adverse effect on human's fertility & growth based on data through the human or animal tests (in vivo or in vitro), and hardly proven not to give such an adverse effect on human
7. The compound & mixture containing more than 1% of harmful and observational chemical substances specified above 1~4 provisions
8. The compound & mixture containing more than 0.1% of harmful and observational chemical substances specified above 5~6 provisions



Reference

1. The unit of inhalation toxic is presented ppm in gases or vapors exposure, mg/L into dust or particulate exposure as a rule, but according to the following formula, ppm or mg/L can be convertible.

$$\text{mg/LL} = (\text{ppm} \times \text{molecular weight}/24.45) \times 1/1,000$$
 (room temperature and atmospheric pressure)
2. In evaluating fish toxicity, target material can be specified as toxic based on the test results made by considering special circumstances, for example, if it is easily degradable or adsorbed in water boundary. In this case, 2 grade factor can be potentially available based on the test data for 48 hour standard, not 96 hour one. If the data contains several species of fishes, the domestic fish data take priority.
3. In evaluating logPow or biological concentration, target material cannot be specified as observation chemicals by only the high logPow in spite of low biological concentration. Also it must not be designated as observational substance despite showing high logPow, in case it is neither dissolve in nor pass through biological membranes by its own nature.
4. The data for evaluating fish toxicity, biological concentration, geno-toxicity, refractory decomposability, logPow, etc. can be acquired by the prediction program of Structure Activity Relationship (SAR), generally used in OECD countries.
5. The evaluation of refractory decomposable substances follows the Degradability Guidelines (301) in OECD countries. Non-biodegradable case with highly speedy decomposition such as photolysis or hydrolysis, can take priority over microbial decomposition.
6. If the decomposition products of target chemical substance meet the above specified standards, the target substance can be considered as meeting corresponding standards.

II . Although the chemical substance meets the above standard, it cannot be designated as toxic or observation chemicals, considering its physical and chemical characteristics, toxicity levels, usage, global regulatory trends, expected exposure and frequency of use.

6-6. International Environmental Cooperation

Countermeasures of Climate Change System

Proposing the direction of Post-2012 negotiations, Bali roadmap offered the framework that all countries can contribute to reducing greenhouse gas emissions. Before Bali conference, only developed countries who ratified Kyoto Protocol took the reduction obligation of greenhouse gas. Thus Bali roadmap has opened the way that developed countries who did not ratify Kyoto Protocol like United States and developing countries under Kyoto Protocol could share the obligation to reduce greenhouse gas emissions under Climate Change Convention.

'Nationally Appropriate Mitigation Action (NAMA)' can be pursued under the convention. However, there exists differentiation at the obligation levels between developed and developing countries. In other words, as for the developed countries' NAMA obligation has to be fixed at the level of Kyoto Protocol (pledges, quantified goals, etc). On the other hand, developing countries can set the obligation level of NAMA, enjoying the financial and technical support from the developed countries. South Korea can set the nationally appropriate mitigation action under the Bali roadmap.

As a part of NAMA, our government announced voluntarily mid-term goal (Nov. 2009), reducing greenhouse gas emissions 30% on a BAU (Business As Usual) basis by 2010. It's the peak level recommended by the IPCC to developing countries (15-30% BAU). Moreover, our government has performed unilateral mitigation action without the support of developed countries, thus received big welcome of the international community.

The Copenhagen Accord included the list of non-Annex 1 countries which should report the mitigation actions, apart from Annex 1 countries' cut duties. Therefore our country could acquire the status of non-Annex 1 country and could make our reduction target recognized globally at the same time.



Meanwhile, our government has proposed mitigation actions in developing countries (NAMA Registry), and carbon credits (NAMA crediting) to solve the deadlock between developed countries and developing countries because of the different positions.

In terms of developing countries' mitigation, post-2012 climate regime should be a reduction system, promoting developing countries to take voluntarily mitigation action such as providing incentives. Mitigation action registry (NAMA Registry) makes the mitigation actions of developing countries internationally recognized, and at the same time, NAMA Registry is the efficient mechanism able to connect the support of developed countries with developing countries. In addition, it brings NAMA crediting as a commercial incentive available for international carbon trade, granted by the voluntary reduction performance of developing countries. Thus this crediting system is expected to accelerate financial stability and technology transfer. NAMA Registry, proposed by the Korean government, had obtained a wide-range of supports of developed and developing countries and was included in the Copenhagen Accord.

Keeping this position even after the final negotiations, our government should function as the bridge role between developed and developing countries, and contribute to establishing the successful Post-2012 system.

Korea has ambitiously set "Low Carbon, Green Growth" as a new development paradigm (Aug. 2009), 'Comprehensive Plan for Climate Change', and 'Green New Deal' for green business and job creation. Korea became an advanced country in Low Carbon, Green Growth on the international stage expansion of renewable energy such as solar and wind power, improvement of energy efficiency, green building expansion, and introduction of various policies such as carbon labeling, carbon point system, etc. Based on these efforts, the Korean government will respond pro-actively the climate change negotiations in the future.

Status of International Environmental Treaties

As global environmental problems have become a prominent issue in the international society, various environmental treaties, which have a direct impact on each country's environmental policies and economic activities, have increased in number. There are about 220 international environmental treaties in the fields of air, water quality, waste and natural environment. As of Feb. 2009, Korea has signed 56 treaties including the United Nations Framework Convention on Climate Change; the Vienna Convention for the Protection of the Ozone Layer; the Montreal Protocol on Substances that Deplete the Ozone Layer; the Convention on International Trade in Endangered Species of Wild Fauna

and Flora; the Convention on Biological Diversity; the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal; and the United Nations Convention to Combat Desertification.

Status of International Environmental Treaties & Treaties Signed by Korea

Classification	Total	Air & Climate	Freshwater Protection	Marine & Fishery	Nature & Biological Resources Protection	Nuclear Safety	Hazardous Substances & Waste	Others
Adoption	221	14	15	86	50	13	13	30
Ratification	164	10	9	66	40	12	8	19
Signing	56	8	-	23	8	7	2	7

Trade restriction measures are increasing to secure the effectiveness of these conventions. With different subjects of regulation for different conventions, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Montreal Protocol, and the Convention on Biological Diversity - the effect on domestic industries also differ.

The government is faithfully adhering to these international conventions and is participating actively in related meetings such as COP(conference of the parties) and negotiations for enacting and amending attached protocols of existing conventions. By these activities, the government could contribute to international environmental discussion and could minimize negative effects toward Korea.

Regional Environmental Cooperation

Environmental Cooperation in Northeast Asia

The countries of Northeast Asia - Korea, China and Japan - share a common environment due to geographical proximity. In addition, this region has shown rapid changes toward continuous economic growth and improvement in living standards. Therefore joint efforts for environmental conservation among states are urgently called for.

According to this need, the active promotion of multilateral environmental cooperation and the bilateral agreement have been taking place in Northeast Asia since the 1992 UN Commission on Sustainable Development. Initiatives include the Northeast Asian Conference on Environmental Cooperation (NEAC), the Northeast Asia Sub-regional Program on Environmental Cooperation (NEASPEC). In particular, since the Tripartite Environment Ministerial Meeting among Korea, China and Japan (TEMM) was formed in 1999, it has played a pivotal role in promoting environmental cooperation in the region.



The Tripartite Environment Ministers' Meeting between South Korea, China and Japan

Korea suggested the 「Tripartite Environment Ministerial Meeting (TEMM)」to promote cooperative measures for environmental problems in the North East Asian region including dust and sandstorms, acid rain, pollution in the yellow sea and management of hazardous waste, and to promote the recognition of Korea, China and Japan, three important countries in the Northeast Asian region, as an environmental community. Since 1999, a regular 「Tripartite Environment Ministerial Meeting among Korea, China and Japan」 has been held each year (once a year, by the three countries in rotation). The meeting is the sole ministerial meeting in the Northeast Asian region, and has been functioning as the highest ranking organization on environmental cooperation, holding eleven meetings so far.

The 10th TEMM was held in Jeju in Dec. 2008. In this meeting, three countries introduced their main environmental policies and discussed environmental issues; green growth (South Korea), Climate Change (Japan), energy efficiency and reducing pollutant emissions (China). And they agreed to work together to cope with these major environmental problems.

Also, they decided to establish tripartite cooperation, evaluated TEMM cooperation performance and development plan through the presentations and discussions on district and regional environmental issues; trans-boundary pollutants (photochemical oxidants, acid rain, marine litter), 3R, chemical materials management, environmental health policy



for the protection of children.

Especially, three countries' ministers agreed that building a low carbon society was the world's largest environmental policy. They decided to prepare the cooperation plan to build a low carbon society, to strengthen the measurements for climate change, to share the vision for the construction of low-carbon society, and to develop and transfer the technologies.

In the 11th Meeting (Jun. 2009, Beijing), they evaluated TEMM's 10 year performances and focused on the qualitative and quantitative changes in environmental agenda for 10 years. They agreed to draw the prior cooperative agendas from 2010 to 2014.

Particularly, 3 countries' environmental policies to overcome the global financial crisis were introduced in this meeting, and the three ministers agreed that the economic growth and environmental protection can be harmonious. The draft of Tripartite Ministerial Declaration of Environmental Cooperation was chosen, which was for tripartite summit conference (Aug. 2009).

The 10 prior cooperative agendas for the future were agreed; climate change, environmental education & environmental awareness and participation by the public, biodiversity conservation, dust pollution control (air, water, marine environment, etc.), eco-friendly societies/3R/ sustainable resource recycling society, cross-border movement of electronic waste, sound chemical management, environmental governance in Northeast Asia, and environmental industries and technologies.



TEMM Project

Projects	Contents and Status of Promotion
1. Lake Quality Improvement Project	<ul style="list-style-type: none"> • Build integrated water quality management system of Lake Xihu by utilizing water quality management experience to prevent lake pollution - create uniform guidelines for water quality management of eutrophic lakes, develop database, etc.
2. Roundtable Meeting on Environmental Industry Cooperation	<ul style="list-style-type: none"> • Hosted by the three countries in rotation, linked with environmental technology seminars and international exhibitions to promote information exchange and understanding
3. Joint Environmental Training Project	<ul style="list-style-type: none"> • Yearly rotating basis among the three countries for environmental officials to promote the recognition of the three countries as an environmental community, and to promote mutual understanding on environmental problems and policies
4. TEMM Website	<ul style="list-style-type: none"> • As part of the project for promoting the recognition of the three countries as an environmental community, disseminate the results of the Tripartite Environment Ministerial Meeting, TEMM Joint Communiques and other documents on the progress of TEMM Projects, link environmental documents of each country, and the result of environmental cooperation in Northeast Asia (run by the National Institute of Environmental Research (www.temm.org))
5. Tripartite Environmental Education Network (TEEN)	<ul style="list-style-type: none"> • As the sole cooperation project by the private sector, investigate environmental education programs and develop a database to share information through networks
6. Joint Research Project on Long-Range Trans-boundary Air Pollutants (LTP)	<ul style="list-style-type: none"> • Joint study on measuring and modeling the concentration of the emission of long-range trans-boundary air pollutants in the Northeast Asian region
7. Acid Deposition Monitoring Network in East Asia (EANET)	<ul style="list-style-type: none"> • Promote the sharing of information and cooperation among 13 countries of East Asia on acid deposition (domestic monitoring network: Jeju, Imsil, Ganghwa, Naejang Mountain) - Payment of international share of acid rain (\$30,000 per year from 2005)
8. Northeast Asia Center for Environmental Data and Training (NEACEDT)	<ul style="list-style-type: none"> • Train technicians and professionals in environmental pollution and promote collection, comparison and analysis of documents on the current status of environmental pollution of each country - publish report on comparison from 2001~2003 - present the results of the Northeast Asia Environment Data Center (June, '04, Beijing)

Environmental Cooperation with Southeast Asia

The Southeast Asia has progressed rapid industrialization & urbanization, therefore its importance in terms of environment, industry and diplomacy gets more and more enlarged. Accordingly, the Ministry of Environment has planned to further strengthen the cooperation with these countries. This environmental cooperation has three basic directions; first, contribution to environmental preservation of partner countries in Southeast Asia, second, strong supports and promotion for Korean environmental industry to expand in Southeast Asia, third, acquisition of global supports on the international stage through the pursuit of pragmatic diplomacy.

Accordingly, ASEAN +3 Environmental Ministerial meeting and Korea-Vietnam Environmental Ministerial Meeting have been held annually since 2000. And the Environment Ministerial Meeting under the 1st East Asian Summit was held in 2008 to strengthen the cooperation in East Asia in the future.

In addition, exchange program of the environmental experts has been carried out since 2008; 12 environmental officials and experts from 4 countries were invited or delegated, and had worked for 1 month. Through this exchange program, the environmental cooperation measures are expected to strengthen mutual exchanges over regional environmental issues.

ASEAN+3 Environment Ministers' Meeting

After the establishment of ASEAN+3 (Korea, China and Japan) in 1997, Ministerial meetings of ASEAN countries and the three countries in Northeast Asia expanded into various fields including economy, labor and the environment. With the expansion, the meeting became a regular one with the holding of the first ASEAN+3 Environment Ministerial Meeting in 2002. The eighth meeting was held in Singapore in Oct. 2009.

The research on 'the Restoration of Degraded Forest Ecosystem in Southeast Asian Tropical Region' is a representative of the ongoing ASEAN-Korea environmental cooperation projects. The first stage of the project was completed from 2000 to 2005, and \$1.05 million of the Special Cooperation Fund was invested in the second stage, which was completed in June 2008. The project for the third stage has been underway. Among the cooperation projects, there are field studies, regional research programs, training programs for ASEAN countries, and international workshops and scientific meetings.

Moreover, an educational training program for public officials of the 10 ASEAN countries is organized each year. At the training courses on resource recycling and waste management of Korea for public officials of ASEAN member states during 2~17, Jul. 2009,



Korea's waste management system, and technologies for RDF, incineration, pyrolysis and waste management were introduced. The Sudokwon Landfill Site Management Corporation in the national capital region and the food waste composting facility in Yangju were the sites for field trip.

Environmental Cooperation with Vietnam

Vietnam is showing continuous rapid economic growth, approximately 10%, since 2000. Despite the recent global financial crisis, developed countries keep and expand investment to Vietnam. This indicates huge growth potentiality of Vietnam.

Among Southeast Asian countries, Korea signed the first MOU on environmental cooperation with Vietnam in 2000, and agreed to regularly hold the high level meeting. The 1st Korea-Vietnam Environmental Ministers' Conference was held in 2000, and the Conference has been held every year since 2004. In March 2009, the 7th Conference was held in Hanoi, Vietnam.

Meanwhile, our government and private companies in Vietnam have escalated environmental cooperation. By the results of that, various environmental cooperative projects could be unfolded; supports for "Korea-Vietnam Environmental Training Center" (\$ 1.4 million), "Long-term Comprehensive Plan for Vietnam Environment Protection" (600 million won) and EDCF loan business (2008) that breed 7 cases worth \$ 260,000,000.

To create the bilateral cooperative foundation for green growth, Korea Environment Corporation and Hanoi city signed MOUs; "Ttorig River (river of Hanoi) Development and Maintenance Plan Establishment Project" (13, Mar. 2009), and "Landfill Construction and Industrial Wastewater Treatment Project"(13, Mar. 2009) in Bungttawoo castle, located southern Vietnam, the center of Vietnam industry. Recently the Vietnamese government increased environmental interest and investment, so it has become the good chance for our environmental industries to enter this rapidly expanding market.

Environmental Cooperation with Cambodia

Recent Cambodia's annual economical growth has continuously recorded 10 %. But it also causes various environmental issues (waste, sewage, etc.) which are easily occurred in the early stages of economic development. Thus Cambodia is emerging as the major market in international environmental industry.

Cambodia also wanted Korean governmental cooperation to solve its environmental problems and so two countries signed on "MOU of Environmental Cooperation" (15, Jan. 2009). That has functioned as the foundation for an active environmental cooperation between two countries.

Currently two countries' Ministries of Environment have jointly carried out "Master Plan for Cambodia Environmental Improvement Projects" (target city: Phnom Penh, Siem Reap, Sihanukville) and "Joint Research Projects of Cambodia Biota".

In addition, to facilitate private bilateral exchanges and cooperation, "Korean & Cambodian Environmental Industry Seminar" was held (16, Mar. 2009). And the Ministry of Environment of Korea has planned to strengthen the foundation of cooperation and support for Cambodian environment improvement.

Strengthening Environmental Cooperation with Other Regions

Environmental Pragmatic Diplomacy with Middle Eastern and Central Asian Countries

Recently, in the face of rising oil prices, the necessity of resource diplomacy is continuously raised, especially with Middle East and Central Asian countries which produce oil, natural gas, coal, etc. In this regard the Ministry of Environment has propelled the environmental pragmatic diplomacy which actively supports and promotes Korean environmental industries to enter those countries.

The Ministry of Environment completed the first MOU for environmental cooperation with Iran in March 2005, and recently, it completed MOU with Azerbaijan in May 2008. In 2008, MOUs on environmental cooperation were contracted with Kuwait (Jul.), Israel (Dec.), and United Arab Emirates in May 2009. Through these completions, Korea obtained the foundation for entering those oil producing countries. The Korean government has made great efforts for environmental diplomacy to ensure that Korean environmental companies enter neighboring countries such as Saudi Arabia, Turkmenistan, Kazakhstan, etc.

Environmental Cooperation with Africa

Africa accounts for 9.7% of the world's oil reserves (1172 billion barrels), 12.1% of the world oil production (approximately 1,000 million barrels/day), and plenty of other mineral resources. Therefore there is huge potentiality for the future resource development. However, the environmental management of this area is at the beginning level; the investment on the environmental field is very limited, thus large-scale investment for environmental infrastructure is requested. Fortunately, the transition of the awareness is expanded. Still, the environmental damage in Africa is an important factor constraining the economic development, so handling this problem is essential to eradication of poverty.

Accordingly, the basic direction of environmental cooperation in Africa is as follows first, to preserve the environment of African partner countries, second, to solve the



problem of poverty through the environmental preservation. This is associated with Millennium Development Goals (MDG). Africa's basic infrastructure for water management and waste management should be invested in large scale. After that, the environmental cooperation in Africa can achieve MDG.

1) Korean - Egyptian Environmental Cooperation

In March 2006, during the Korean President's visit to Egypt, the bilateral environmental cooperation agreement was signed and the Environment Ministerial Conference was held. In November 2006, the first Korean-Egyptian Environment Ministerial meeting was held in Cairo, and the topics of discussions ranged from the transfer of CNG bus-related technology, improvement in the water quality of the Nile, hazardous waste management to the exchanges of environmental industry. Two countries completed an MOU (Memorandum of Understanding) on environmental cooperation. Also, for the follow-up to the conference, the Egyptian Hazardous Waste Integrated Management Project (Dec. 2007~Jul. 2010) and Official Development Assistance (ODA) projects in Egypt were carried out. The Ministry of Environment has planned to promote our environmental industry to advance to Egypt by installing the mercury waste treatment facilities with our technology. Environmental cooperation projects including CNG bus cooperation are to be carried out.

2) Korean - Tunisian Environmental Cooperation

In May 2007, the first Korean-Tunisian Environment Ministerial meeting was held in Tunis, Tunisia, where discussions on technology for air pollution measuring and monitoring, recycling of electronic components and the exchanges of environmental industry were brought up, and the agreement on environmental cooperation was signed. Also for the follow-up to this agreement, Monitoring Capacity Strengthening Project for

Tunisian Atmosphere (2008-2011) is carrying out under the Official Development Assistance (ODA). It is expected to improve the air quality of Tunisia.

3) Korean - Mozambican Environmental Cooperation

In September 2008, the first Korean-Mozambican Environment Ministerial meeting was held in Gwacheon, and Memorandum of Understanding (MOU) was signed on bilateral cooperation on environmental protection. Korea and Mozambique agreed to share "Green Growth" vision, and cooperation to rear environmental experts for environmental management and climate change adaptation. Now two countries propel the exchange program of environmental experts.

4) Korean - Tanzanian Environmental Cooperation

In February 2009, Korean-Tanzanian Environment Ministerial Meeting was held in Daresalrem Tanzania and Memorandum of Understanding (MOU) on bilateral cooperation for environmental protection was signed. Both of them declared the intention to cooperate over water management, water and sewage, waste treatment & energy recycling, etc.

Environmental Cooperation with European and American Countries

Korea is continuously promoting environmental cooperation with the developed countries of North America and Europe to improve the domestic environment by introducing advanced environmental policies, systems and technology. Korea has completed environmental cooperation MOUs with the United States, Canada, England, France, Denmark, the Netherlands, Germany and Norway and is implementing a joint cooperation project by holding joint seminars and exchanging professionals.

After completing the MOU with the United States in March 1987, various forms of cooperation have taken place, including nine joint research projects on environmental technology cooperation such as studying the causes of hindrance to the administration of metropolitan cities with US-AEP environmental partnership. Recently, as a part of a follow-up project for the ROK-US FTA, the ROK-US Environmental Cooperation Agreement has been signed and 20 projects will be jointly promoted, including a cooperative project on the management of foreign species.

Most cooperation efforts with environmentally developed countries are focused mainly on sharing environmental information, sending research teams, exchanging human resources and holding seminars. The ROK-France joint commission was organized (Oct. 2004), and issues of environmental problems of both countries have been discussed. Also, visits to Europe are being made to observe developed facilities and policies in various fields, such as basin management (France, Switzerland, and Germany in Jun. 2004),



drainage facility establishment project (England, France, Austria, Germany in Sept. 2004), international soil management (Germany in Oct. 2004), and environmental policy training (EU in Nov. 2004). Personnel from Europe visited the Ministry of Environment, such as the Swedish Ambassador to Korea (Feb. 2004) and the Danish Ambassador to Korea (Mar. 2004), to discuss environmental cooperation between the countries. Recently, the Korea-England Environment Ministerial meeting (May 27, 2008) and the Korea-Norway Environment Ministerial meeting (Jul. 4, 2008) were held, and an environmental cooperation MOU was completed with each country.

In terms of Korea's relationship with the EU, after signing the Korea-EU Framework Agreement (Apr. 1, 2001), Korea sent environmental expatriates to EU headquarters (Apr. 2002) and has been monitoring the trend of the EU's environmental policy, including new environmental policies such as End of Life Vehicles directive (ELV), Restriction of Hazardous Substances directive (ROHS), Waste Electrical and Electronic Equipment directive (WEEE), and Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), and reflecting them in Korean environmental policy. In addition, as subsequent projects of the Korea-EU FTA, the revision of the Korea-EU Framework Agreement and the 7th Korea-EU Joint Commission of Korea-EU cooperation were held in Seoul in 2009.

In addition, Ministry of Environment will be completing an MOU with Central and South American countries such as Brazil, Ecuador and Chile to promote environmental cooperation focusing on biodiversity, water quality and waste.

In the meantime, South Korea & Russia joint Environmental Committee had been operated based on South Korean & Russian environmental cooperation agreement, but it had been more or less inactive. However, in June 2009, the Russian chief director of natural resources, Kirillov visited Korea, and two countries signed the Agreed Minutes of bilateral meeting. And also Kirillov declared the donation of Russian Amur tigers. In this mood, the Korean & Russian environmental cooperation is expected to be boosted.



07 Best Environmental Policies



The Four Major Rivers Restoration Project will not only provide fundamental resolution to the problems related to water scarcity and flood damages, but will also make significant contributions toward forming healthy aquatic ecosystems through the improvement of water quality and the restoration of rivers. The project will also create 340,000 new jobs, thereby boosting the local and national economies, bringing with it a 40 trillion KRW worth of production inducement as part of Green New Deal.

7-1. Four Major Rivers Restoration Project: Environmentally Friendly Approaches

Background

As the average temperature throughout the world has constantly risen during the last century and climate patterns are changing accordingly, the difference in rainfall by region is widening and the frequency and range of floods and droughts is increasing. According to the 6th IPCC Technical Report, the regions affected by floods and extreme droughts and the resulting damages will keep expanding through the first half of the 21st century. The circumstances are not much different in Korea. The average annual temperature in Korea is expected to rise to as high as 6.4°C, which is approximately twice the global average, and serious shortages of water resources are forecasted due to more frequent concentrated rainfall, the differences in the amount of rainfall and topographical characteristics. Experts foresee the amount of water shortage to be as high as 1 billion tons in 2016, making already difficult water management circumstances even more vulnerable.

Therefore, along with water resource development policies, the implementation of countermeasures to identify and control the sources of pollution and the prevention of the deterioration of water quality and aquatic ecosystems due to water shortage in the dry season around the four major rivers has become an urgent call. At this, the Korean government has undertaken the Four Major Rivers Restoration Project in an effort to respond to climate change by promptly establishing a sustainable water management system.

Four Major Rivers Restoration Project : Environmentally Friendly Approaches

Water Resource Management and Flood Control

The Four Major Rivers Restoration Project involves dredging of riverbeds and the construction of 16 new small-sized multipurpose dams along the 4 major rivers in preparation for future water shortages and droughts. With this, an additional 800 million m³ of water resources are expected to be secured. Special focus will be placed on expanding the capacity for water supplies in the Nakdong River basin areas, where the water scarcity problem is most serious, by 250 million m³ through the construction of the Songriwon Dam (Youngju, North Gyeongsang Province) and the Bohyeon Dam

(Youngcheon, North Gyeongsang Province), and the connection of the Andong Dam and the Imha Dam (Andong, North Gyeongsang Province).

● Buyeo Weir on the Geum River (Example)



● Seungchon Weir on the Yeongsan River (Example)



The dredging of 570 million m³ of sedimentary soils will significantly lower the flood levels throughout the four major rivers. At the same time, the construction of additional flood control reservoirs and retention basins, the reinforcement of old levees and the installation of additional sluice gates in estuary barrages on the Nakdong and Yeongsan Rivers are planned to fight the effects of future climate change and increase the nation's flood control capacity to be ready for 200-year floods.

● Flood Control Area



● Riverside Detention Area



Environmental Protection During Construction

River improvement projects, which involve the construction of dams and reservoirs and the dredging of sedimentary soils, are directly related to the water quality and the integrity of aquatic ecosystems. Therefore, it is extremely important to prepare a comprehensive, low-impact plan for projects of such kind. Accordingly, the Ministry of

Environment conducted a prior environmental impact assessment in order to minimize the environmental impacts of the project. The Ministry also has established a management system designed to prepare the framework for the improvement of water quality and the restoration of aquatic ecosystems in the four major rivers after the completion of the project.

Firstly, the Four Major Rivers Integrated Water Pollution Control Center has been established to constantly monitor the water quality using a tele-monitoring system (TMS). The center is also equipped with sufficient disaster management equipment and systems to effectively and quickly handle any pollution that might occur. Dredging works are to be conducted by using vacuum-assisted dredging boats in order to prevent excessive muddy water from being generated, which can have adverse effects on both the aquatic ecosystem and drinking water sources. Other efforts to minimize the impacts on water quality caused by the project include installations of silt fences, bypass channels and settling basins.

As for the sections of rivers where changes to the depth and other river environment are expected, alternate habitats and moving paths are planned in the waterside areas. In addition, measures will be actively implemented to increase the population of 54 endangered species in the water systems of the four major rivers.

Water Quality Improvements in the Four Major Rivers

One of the primary objectives of the Four Major Rivers Restoration Project is to improve the water quality so as to ensure that 83% ~ 86% of the water can qualify as 'Fairly Good Water (Grade II Water, BOD 3mg/L)' by 2012. Now, only 76% of the water in those rivers is qualified as Grade II.



In order to increase the efficiency of the project, both in terms of time and costs, the water quality of 66 mid-scale watersheds in the water systems of the four major rivers were analyzed and 34 among them were selected as 'High Priority Areas' where substantial improvements are required and by 2012 intensive investment will be made. These high priority areas are further divided into three categories depending on the degree of pollution and urgency so that the expansion and the modernization of environmental facilities based on the Basic Plan for Water Environment Management can be accomplished as planned without any setbacks. By 2012 sewage and wastewater treatment plants will be newly established or expanded in the high priority areas and advanced facilities that use chemical treatment will be introduced. In addition, an additional 20 public livestock waste treatment plants are planned to address the issues of high concentration wastewater discharged from nearby livestock farms.

Additionally, standards for COD and T-P have been newly introduced in the River Water Quality Standards in order to strengthen monitoring capabilities for the two items, which have shown consistent rise in the past few years. Also, Effluent Standards will be improved to accommodate tiered and more specific regulations by taking such factors as degree of water pollution and presence of nearby water source protection areas into account. In particular, the effluent standards for sewage and waste watertreatment facilities are to be strengthened by four to 10 times and advanced facilities capable of treating phosphorus are to be additionally established in order to reduce the amount of phosphorus discharge, the primary cause of eutrophication. A 'Total Phosphorus (TP)' item will also be introduced in the existing Total Maximum Daily Loads (TMDL) Management System and specialized water quality improvement action plans will be implemented in the areas where the TP level is exceeded and target water quality is not met.



As for the management of non-point source pollutions, which account for 56% of pollutants being discharged into the water systems of the four major rivers, stronger efforts to prevent pollutants from flowing into rivers will be made by installing various environmentally friendly facilities, such as wetlands and sedimentation basins and channels, which are specially designed to accommodate the characteristics of land uses of each particular area. When rainwater pumping stations in urban areas are used as non-point source pollution control facilities, they are expected to not only effectively reduce pollutants and improve water quality, but also control the amount of rainfall runoff during flood season and provide habitats for various animals and plants.

● Rain Water Pumping Station – Before Restoration



● Rain Water Pumping Station – After Restoration



Restoration of Ecological Integrity of the Four Major Rivers

About 929 km of national rivers are slated for restoration as ecologically sound rivers. Currently, 91 projects for the ecological restoration of local rivers are already underway and 132 new projects are planned. These are all scheduled for completion in 2010. Furthermore, 500 streams and creeks that flow into the four major rivers will be ecologically restored and there will be extensive support provided for local residents and organizations to promote citizens participation in the cleaning and ecological monitoring activities in their neighborhoods. Recently, awareness of the importance of the conservation of wetland ecology has been increasing and 35 ecologically sound wetlands, designated as Wetland Protection Areas, are planned for development.

Example of Restoration of an Ecologically Sound River (Yangjae Stream)

● Before Restoration



● After Restoration



Expected Benefits

The Four Major Rivers Restoration Project will not only provide fundamental resolution to the problems related to water scarcity and flood damages, but will also make significant contributions toward forming healthy aquatic ecosystems through the improvement of water quality and the restoration of rivers. The project will also create 340,000 new jobs, thereby boosting the local and national economies, bringing with it a 40 trillion KRW worth of production inducement as part of Green New Deal. Local residents may enjoy improved quality of cultural and leisure activities through the redeveloped waterfronts where spaces for various cultural, leisure and sports activities will be provided. Ultimately, the experiences and technology accumulated through the Four Rivers Restoration Project could be utilized to position South Korea as one of the leading countries in the water management sector, helping South Korean companies enter relevant overseas markets and contribute to the national economy.



7-2. Comprehensive Countermeasures for Asbestos Management

7-2-1. The Status of the Environment in Korea

Status of Asbestos Production, Import and Consumption

From 1930, when the nationwide asbestos mine exploitation began, until 1990, a total of 145,533 tons of asbestos were produced in Korea, more than 90% of which was white asbestos. For the manufacturing of asbestos containing products, an annual average of 63,000 tons of additional asbestos raw materials were imported from Canada, China, Zimbabwe and others. The aggregate amount of raw asbestos imported between 1976 and 2006 was 1,227,729 tons. But the amount has sharply decreased due to a gradual phase-out policy enforced since 1997.

Most of the asbestos produced or imported was used in various construction materials like slates, heat insulators and ceilings (82%). And 8.5% was used in friction materials like brake linings, 5.5% in asbestos textile items like asbestos clothing or asbestos threads and 1.5% in gaskets and other insulating products.

Amount of Asbestos Raw Materials Imported and Exported (Korea Customs Service, 2006)

Year	Import (ton)	Export (ton)	Year	Import (ton)	Export (ton)
1976	74,206	16	1992	95,476	23
1977	70,225	75	1993	82,854	18
1978	48,898	10	1994	83,276	0
1979	58,610	8	1995	88,722	0
1980	36,787	30	1996	77,145	14.8
1981	53,787	40	1997	44,985	0.4
1982	44,038	12	1998	29,619	0.8
1983	60,896	0	1999	32,519	3.4
1984	59,693	0	2000	28,972	11.5
1985	57,143	17	2001	26,307	5.1
1986	68,017	0	2002	21,503	9.4
1987	77,598	41	2003	22,094	62.1
1988	87,470	0	2004	14,636	55.8
1989	77,475	0	2005	6,476	0
1990	74,549	0	2006	4,748	38
1991	88,753	157			
Total				1,227,729	485

Status of Asbestos Usage in Construction

When the Ministry of Environment investigated the usage of asbestos containing materials (ACM) in 224 public buildings and 112 commercial buildings, it turned out that 217 building (65%) were built using ACM in ceilings, walls, gaskets, etc. But the usage of ACM has been reduced since 2000.

※ Asbestos Found in Public Buildings: 84.6%~92.1% (from before 1970s through 1990s) → 44.1% (2000s)

In the examination of asbestos concentration in the indoor air of those buildings, the results were all below the limit allowed, implying a low possibility of airborne contamination.

Trend of Asbestos Victims in Korea (Forecast)

When assuming the total domestic asbestos usage is 2 million tons and the incidence of mesothelioma is 1 person/170t, it is predicted that 11,764 persons will be diagnosed with Malignant Mesothelioma afterward (approx. 400 persons/year for 30 years) and the incidence will increase after 2010 and peak in 2045.

※ 1 Malignant mesothelioma patient per 170t of asbestos used reported (Antti Tossavainen, 2005)

Forecast on Asbestos-related Disease Incidence

Section	Malignant Mesothelioma	Lung Cancer	Asbestosis	Pleural Disease
No. of Patients (Persons/Yr)	400	200	320	4,000
Calculation Formula	1 person/170t	Mesotheliomax 0.5	Mesotheliomax 0.8	Mesotheliomax 10

※ As the incidence of lung cancer in France was twice that of Mesotheliomax and 30% in Japan, a rate of 50% for the long term was applied in the forecast above.



7-2-2. Comprehensive Countermeasure for Asbestos Management

Background

In order to protect the public health from the danger of asbestos, which is a class one carcinogen that used to be widely used in construction materials, the Ministry of Environment established and implemented Comprehensive Countermeasures for Asbestos Management in July 2007. It was initiated jointly with concerned ministries and offices including the Ministry of Labor and the Ministry of Land, Transport and Maritime Affairs.

But in early 2009, new issues emerged including health problems of residents near asbestos mines and the detection of asbestos in talc-containing cosmetics, heightening the necessity to devise a more fundamental management system. Therefore, for its initial efforts the Ministry organized an expert forum for three areas of building management, the management of naturally occurring asbestos, health impacts and relief for asbestos victims. It then held Asbestos Policy Committee meetings with ministries and offices concerned and asbestos experts to collect extensive opinions from all walks of life. And finally, on July 10, 2009, the Ministry revised and supplemented the Comprehensive Countermeasure for Asbestos Management through a policy coordination meeting.

The Status of Asbestos Management in Korea

The government gradually phased out the production, import and usage of asbestos and ACMs and drastically expanded the prohibited items in January 2009 (crocidolite & amosite in May 1997, tremolite, anthophyllite & actinolite in Jun. 2003, and chrysotile asbestos Jan. 2009). And through the revision of the Waste Management Act (Dec. 2007), it designated more items including waste that contains 1% or more of asbestos and work clothes used for asbestos removal works, as specified waste to be separately managed.

In an effort to prepare basic data for the implementation of asbestos management in buildings and provide support to health management, the government began conducting research on the status of ACM usage in schools (by the Ministry of Education, Science and Technology), public facilities and buildings, structures in agricultural buildings (the Ministry of Labor), military facilities (the Ministry of Defense) and health effect examinations for residents near asbestos mines and factories in

2008. As a result of this research, the possibility of contracting diseases due to the exposure to asbestos in the environment was identified among residents near asbestos mines, etc.

In early 2009, four bills regarding relief for asbestos victims were brought before the National Assembly on motions by assemblymen, but the enactment had been delayed due to the difficulties in securing budget. However, in December 2009, the government reached an agreement on the establishment of a relief fund for asbestos victims and cost-sharing measures between the government and industry, brightening the outlook on the enactment of the Act on Relief of Asbestos Victims, anticipated for early 2010.

Main Contents

The Comprehensive Countermeasure for Asbestos Management commenced in 2009 contains mid-long term measures that are composed of 18 major tasks and 55 sub-tasks over five areas of the eradication of asbestos, lifecycle asbestos management of buildings, management of asbestos mines & naturally occurring asbestos, management & relief of damages on health and the communication of the danger and harms of asbestos, which will be implemented for five years by 2013.

The main countermeasures include the systemization of asbestos management, which is currently scattered among several ministries and offices, the management of asbestos for buildings in use and the control of naturally occurring asbestos. Unlike past asbestos management efforts focused on the removal and dismantling of asbestos in structures, the government is now trying to eradicate any possibility of





exposure to asbestos through legal & institutional supplementation to deal with hidden risks in blind spots and preparation for the management of substances that can unintentionally contain asbestos like talc.

For the second area, the establishment of lifecycle management of buildings for safety against asbestos, an asbestos report should be submitted when demolishing or declaring the loss of any building and the dismantling or removal of asbestos before demolition should be performed by an institute or company specializing in asbestos removal.

It has become an obligation for major construction projects like public buildings, commercial facilities, schools, etc., and structures of and above a certain size to prepare an asbestos map and submit to regular inspections in an attempt to protect citizens using those structures from any possible exposure to asbestos. Emission standards for reconstruction or redevelopment sites, which are the possible generators of scattered asbestos, are being prepared. As for poor farming and fishing communities, joint measures between relevant ministries and offices are expected to be established in 2010 in order to draw up a cost-sharing scheme for the support of the removal & disposal of slates in rural areas containing asbestos.

For the third area, the management of asbestos mines & naturally occurring asbestos, field surveys and researches are being conducted (2009~2010) in order to prepare management methods for mines of minerals which might contain asbestos and those soils containing naturally occurring asbestos because of its geological &

topographical features, which are therefore dangerous to those who live or work nearby.

In 2010, the drawing of a geologic map of naturally occurring asbestos in Korea will be started. Additionally, the environmental impact assessments of asbestos mines are continuously underway.

Fourthly, for the management & relief of the victims of environmental asbestos, there will be health impact investigations in phases for residents near asbestos mines & plants and those who had moved from these areas after a long period of habitation. Since the enactment of the Act on Relief of Asbestos Victims is supposed to take place in early 2010, the establishment of its subordinate laws is being promoted.

There has been an increase of social expenses and mounting fear among people due to the difference of opinions on the harmfulness of asbestos between the government, experts and citizens. The last area deals with the development & distribution of promotional materials for people of various walks of life for awareness about relevant governmental policies and the enactment of new laws and regulations. It also includes a plan to hold an international asbestos forum that aims at providing momentum for governmental cooperation with neighboring and developed countries and strengthening exchanges of personnel or technology.

In order to ensure the effectiveness of and to secure executive feasibility for the implementation of this Comprehensive Countermeasure for Asbestos Management, the Ministry is regularly holding asbestos policy committee meetings and is promoting the enactment of two relevant laws, 「Act on Relief of Asbestos Victims」 and 「Act on Safety Management of Asbestos」.

The 「Act on Relief of Asbestos Victims」 is expected to go through the National Assembly around February 2010, so the Ministry is preparing the enactment of its subordinate laws. As for the 「Act on Safety Management of Asbestos」, the bill was prepared through two sessions of expert forums in 2009 and the public notice of lawmaking will take place around February to March 2010.

Expected Benefits

Since the implementation of the Comprehensive Countermeasure for Asbestos Management will range from the enactment of the Act on Relief of Asbestos Victims, a remedy for environmental asbestos victims, strengthening of asbestos controls in construction, the introduction of the Act on Safety Management of Asbestos, which includes the management of naturally occurring asbestos, and supporting measures

for the disposal of asbestos-containing slates in poor farming and fishing communities, it is expected to contribute to the protection of and aid to the vulnerable classes and the elimination of blind spots within the legal system, thereby relieving the fear of exposure to asbestos and improving the governments' reliability as well.



7-3. Conversion to Mandatory Total Maximum Daily Load Management System for the Han River Watershed

Status of the Implementation of Total Maximum Daily Load Management System in Korea

The Total Maximum Daily Load (TMDL) Management System is designed for the accomplishment of administrative goals (water quality targets) within the intended timeframe by enhancing the efficiency of water quality management based on a scientific foundation and strengthening the sense of responsibility of respective economic players concerned. It is an advanced river basin management system that aims at not only the preservation of water quality in the public water area, but also harmonious co-existence with the economic & environmental needs of the communities around the basins, by allocating the total amount of pollutant discharge within the allowed limit of targeted water quality and by securing the sustainability of



water quality management under the consideration of both the 'environment' and 'development.'

Since there are fundamental limitations in meeting water quality targets due to the characteristics of our water systems, this system was introduced for the first time in the Special Comprehensive Measures on the Han River Watershed including Paldang Lake, which was established in 1998 to control the increase in pollution load, and is reflected in comprehensive measures on three rivers including the Nakdong River, and was further institutionally supported by the Special Act on Four Rivers.

Regarding the Han River watershed, the first phase of the voluntary TMDL Management System has already terminated in Gwangju, Gyeonggi-do, and the second phase is in place in Yongin City, Yangpyeong County, Namyangju City (Yongam Stream, North Han River Basin) as well as Gwangju. Plans on water pollutant total amounts management system for the remaining three county and city areas upstream of Paldang Lake – Icheon City, Yeosu County and Gapyeong County – are to be approved.

If three watersheds – Nakdong, Geum and Youngsan/Seomjin Rivers – fail to meet their respective water quality goals, they are required to introduce the mandatory TMDL Management System. Starting with Busan and Daegu metropolitan cities in the Nakdong watershed in August 2004, the TMDL system was in force in 63 local governments as of the end of 2008.

Timeline of the mMandatory TMDL Management System Implementation

Nakdong watershed	metropolitan cities	August 2004
	cities	August 2005
	counties	August 2006
Geum, Yeongsan Rivers watershed	metropolitan cities	August 2005
	counties in the Daecheong Lake / Juam Lake basin	August 2006
	other counties	August 2008

Local governments, which have the mandatory TMDL Management System in place, are required to strengthen their review system and step up the efficiency of their plans by conducting an annual implementation evaluation survey into the achievements of the TMDL Management plan, including approved development and

reduction plans. An initial-stage evaluation survey of 68 cities and counties – 23 along the Nakdong River, 23 along the Geum River and 17 along the Yeongsan/Seomjin rivers – conducted as of the end of 2008, showed that the mandatory total water pollution amount management system was stabilized as water quality targets and yearly allocated loads were met despite the fact that the system is in its initial stage, and as local governments showed active concern, this system is considered to have been generally accepted.

Conversion to Mandatory Total Maximum Daily Load Management System for the Han River Watershed

Background

In February 1999, when the 'Act Relating to Han River Water Quality Improvement & Community Support' was enacted, the government tried to adopt the mandatory Total Maximum Daily Load (TMDL) Management System for the Han River watershed. However, since the residents near the Han River strongly opposed the adoption of a mandatory TMDL Management System on account of several subsequent land use restrictions such as the Special Measure Zone and Natural Preservation Region, the government decided to have the Han River watershed placed under a voluntary TMDL Management.

But the current voluntary TMDL Management System is revealing its limitations in managing the water quality of the overall basin from the source to the river mouth and there is no compulsory regulation against workplaces discharging excessive wastes, not to mention the lack of assigned roles to competent local governments (city, province), which makes it difficult for those provincial and regional municipal authorities to control the water quality in their administrative areas.

With only the Han River Watershed under a voluntary TMDL Management System, the authorities of the three major rivers (Nakdong, Geum and Yeongsan/Seomjin) under mandatory TMDL management are complaining about the unfairness of this practice, demanding a suspension of such a beneficiary exception made to the Han River. Thus, the government has gone through consultations with the local communities and has decided to convert the current voluntary TMDL Management System to a mandatory one.



Result of Promotion

In 2003, the Han River Comprehensive Measure confronted its fifth year in enforcement and a mid-term evaluation of its operation showed that an overall volume responsibility system was needed to improve the quality of water in the Han River. In September 2005, various consultations with related organizations (held since June 2004) concluded the change to the overall volume water quality control system and the Paldang Lake Water Quality Policy Consultation Meeting would change the system into a responsible one by August 2006. But the plan was not realized as the local authorities of the upper areas of the Han River wanted to link the move to the Capital Area Deregulation Plan.

In December 2007, the matter was taken up again at the Paldang Lake Water Quality Policy Consultation Meeting, but failed to reach an agreement as part of the local authority opposed the plan. The matter was revived when the National Competitive Power Strengthening Committee pursued the measure to strengthen the national competitive power through effective land use.

In November 2008, the Paldang Lake Water Quality Policy Consultation Committee agreed to turn the Han River Overall Volume System to a responsible system and held a meeting for residents of the upper areas of the Han River to explain the need to change the system. A proposal plan was drafted for the Act Relating to Han River

Water Quality Improvement & Community Support and a pre-legislative public announcement was posted in February 2009. But opposition to the draft plan developed as it was regarded that it would prevent the development of upper areas of the Han River in Gangwon Province and the Paldang Lake areas in North Chungcheong Province.

Accordingly, the Ministry of Environment decided to hold more than 20 discussion meetings, broadcast live in Gangwon and North Chungcheong provinces, expert consultations, media briefings and consultations by visiting councils of provinces, cities and counties in the upper areas of the Han River and the Paldang Lake areas.

The ministry concluded that the decision on the implementation of the first stage for the areas below the Han River will be made based on the evaluation results and detailed measures, and the timing will be noted in the implementation decree as agreed and the Ministry of Government Legislation was asked to reexamine the matter. When the Ministry of Government Legislation was reviewing the matter, it was agreed that the implementation of the overall system will not exceed 10 years from the date of the public announcement of the system.

The State Affairs Meeting on May 6, 2009, approved the draft of the Act Relating to Han River Water Quality Improvement & Community Support and submitted it to the National Assembly for approval on May 13, 2009, and now it is going through the process of the parliamentary approval.

Implementation Procedure of the Mandatory Total Maximum Daily Load System

The implementation procedure of the mandatory TMDL Management System in the Han River watershed conforms to that of the existing one for the three river watersheds. First, the environment minister shall set water quality goals according to watersheds, taking into account the status of watershed utilization and water conditions in consultation with city mayors and provincial governors and inform said officials of basic policies on total pollution load in order to meet and maintain water quality targets. Secondly, city mayors and provincial governors shall get approval from the environment minister on the mandatory TMDL Management System they establish to meet water quality targets. Thirdly, unlike the voluntary system, the mandatory TMDL Management System calls for allocating or setting pollutant loads



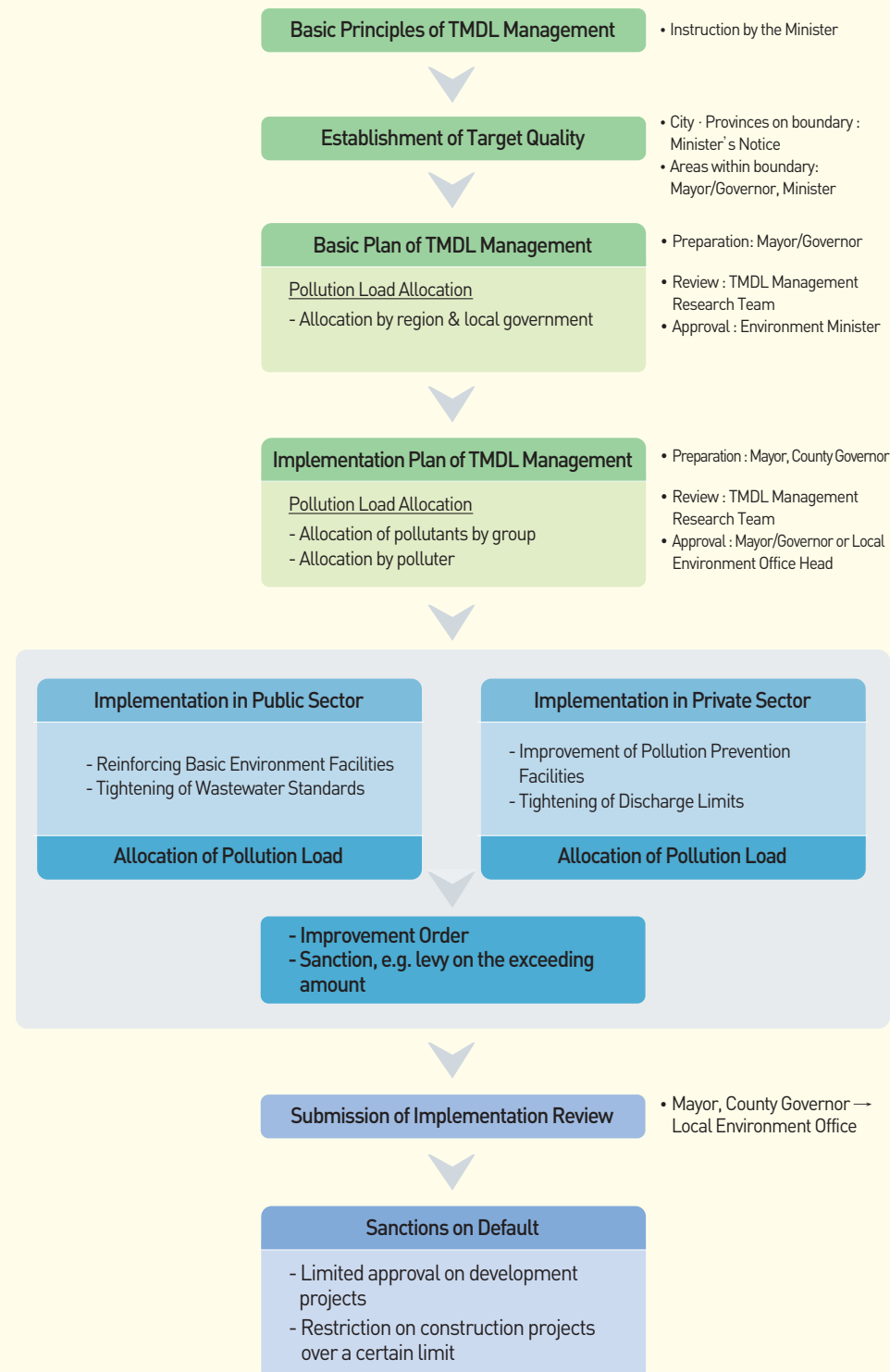
for businesses in order to meet and maintain water quality targets and taking such necessary actions as imposing surcharges on businesses found to surpass targets and the improving of pollution prevention facilities. Local governments surpassing water quality targets can also be regulated in approving and licensing development projects.

Future Promotion Plans

If the bill on water quality improvement and the provision of support to residents along the Han River watershed, stipulating a shift to a mandatory TMDL Management System, is approved by the parliament, implementation ordinance and enforcement regulations, stipulating the procedure of determining 2010 water quality targets and standards for approving master plans, are to be arranged, and water quality targets at bordering areas of each city and province are to be set and announced via public notice. In 2011, city mayors and provincial governors in downstream areas of the Han River watershed, except Gangwon and Chungcheongbuk-do districts, would establish their total water pollution amount management plans and have them approved by the environment minister. In 2012, city and county chiefs would draft their TMDL Management System and have them approved by city mayors, provincial governors or the local environment agency chief. And in 2013, the TMDL Management System would be fully enforced at the downstream areas of the Han River watershed.



TMDL Implementation Procedure



7-4. Report on Waste Import or Export

Background

Recently, the unlawful disposal of hazardous wastes and subsequent environmental pollution is emerging as an international problem. Due to strict regulations of waste disposal in developed countries, hazardous wastes from these countries are being sold to underdeveloped countries in Africa and Central & South America, raising the need for international cooperation for the protection of the environment of underdeveloped countries and the global environment. At this, an international treaty to control the inter-country transfer of hazardous waste was adopted in Basel, Switzerland in 1989 and came in force on May 5, 1992.

In order to keep abreast of such an international drive, Korea also joined the Basel convention in February 1994 and enacted the Act on the Control of Transboundary Movement of Hazardous Wastes & Their Disposal in Korea. Total 86 waste items that were identified as hazardous waste by the Basel convention and the OECD are classified as banned wastes for import or export (MoE Notice No. 2007-188).

Since 2002, however, the export and import of waste has sharply increased for the purpose of the collection of valuable metals and the recycling of raw materials, due to



the soaring prices of raw materials in the international market. So, the tracking of waste items that are prohibited from export and import became difficult. Moreover, as there are no clear regulations on the domestic transportation, storing and disposal of imported waste, the environmentally friendly disposal and management of waste has become difficult. But, because those wastes that are not subject to the government's approval can be freely imported and exported from and to Korea, there was a risk that Korea may be used as a hub for illegal waste trade, which requires improvements in the management of the trade of general waste.

Main Contents

In order to tighten the control of general wastes other than non-exportable & non-importable wastes, the Ministry established the Waste Management Act on August 3, 2007 and enforced a Reporting System for Waste Import & Export from August 2008. Anyone who intends to export or import 25 subject items including steel slag or coal ash (under the MoE Notice No. 2008-105) should prepare documents including a disposal plan and report to the local environment office in advance. And anyone who intends to transport, store or dispose of imported waste should abide by stipulated standards for industry wastes. Additionally, nobody can re-export those imported wastes in the same condition as imported. And, when importing, transporting, disposing of or reporting, details of the takeover or transfer should be entered in the waste disposal legalization system (Allbaro).



Meanwhile, in order to the strengthen customs clearance management of imported and exported waste, the Ministry announced the HSK (Harmonized System Korea; Integrated Item Classification for Customs Statistics) that are given to waste according to kind (August 2009). And as wastes that are subject to the export and import declaration were identified through the notice of 'Items subject to Customs Director's Confirmation' (September 2010), the import and export of those wastes are possible only after the confirmation of the local environment office's certificate from January 2010.

From October 1, 2010, when the export and import waste management system is linked with the Uni-Pass system (electronic customs clearance system) of the Customs Service, the real time monitoring of the export and import of waste and its transportation and disposal can be possible.

Future Promotion Plans

The Ministry is expecting this waste export and import reporting system will contribute to the reduction of the reckless export and import of waste, ensuring the appropriate disposal of imported wastes by clarifying the transportation, storing and disposal standard. In the future, as a part of the strengthening of the prior and follow-up management of imported wastes, for those wastes that are not subject to the entrance check or approval in the bounded area but only to the declaration, if the declared details are not correct or those imported wastes cause unexpected environmental pollution, in can be subjected to an eviction order.

Amount of Exported and Imported Waste Items

[Unit: Tons/Year, \$1,000]

Items	Export		Import	
	Qty	Amount	Qty	Amount
Total	20,900	40,644	400,629	7,336
Waste Synthetic Polymer	4,574	4,464	1,453	2,461
Waste Catalyst	167	4,144	1,897	4,497
Used Cooking Oil	-	-	183	99
Waste Tires	-	-	3,621	279
Combustion Products (Coal Ash)	-	-	393,475	-
Slag	4,110	476	-	-
Dust	11,800	1,572	-	-
Waste Glass	77	4	-	-
Printed Circuit Board Scrap	172	29,984	-	-

* Source: Ministry of Environment, Resource Recirculation Policy Division



08 Major Events

CEH 2009 has successfully highlighted children's environmental health as a global issue and prepared practical action plans. Serving as a momentum to strengthen international cooperation for children's environmental health, the conference introduced excellent environmental preservation policies to the international community.

The children and youngsters also adopted a statement which will make their voices heard for the 15th UNFCCC Conference of the Parties. For young participants engaged in various environmental projects, this conference was an important chance to share information about their environmental projects and to look into diverse environmental problems in the world.

8-1. The Third WHO International Conference on Children's Health and the Environment

The 3rd WHO International Conference on Children's Health and the Environment (CEH 2009) was held in Busan, Korea from June 8 to 10 under the theme of 'Healthy Environment, Healthy Children'. A total of 640 persons from 223 international organizations including WHO and UNEP from 54 countries attended the 3-day conference.

The opening ceremony on June 8 was joined by Maa-nee Lee Minister of Environment, Young-hak Yoo Deputy Minister of Health, Welfare and Family, Nam-sik Hur Busan Mayor, Mi-ae Choo Chairperson of the National Assembly Environment and Labor Committee, Maria Neira WHO's Director for the Department of Public Health and Environment, Linda L. Milan WHO Director of Healthy Communities and Populations, Peter C. Grevatt, Senior Advisor for Children's Environmental Health, William A. Suk, Director of National Institute of Environmental Health Sciences, Yong-woo Park, Regional Director of UNEP and Chulabhorn Mahidol, President of the Chulabhorn Research Institute. Along with the main meeting, various events such as Korea's environmental policies promotion and children's contest took place.

During the general assembly and other small sessions from June 8 through 10, the participants joined in-depth discussions on children's environmental health issues and various events were held to attract children's attention on the environment.

To set a benchmark as an eco-friendly global conference, CEH 2009 launched the Carbon Offset Fund in an attempt to spread carbon reduction efforts throughout the world as envisaged in Korea's national vision of Low Carbon, Green Growth. The fund was delivered to WHO and will be used for the projects for children's environmental health.

In this conference, the Busan Statement was adopted to facilitate the global society's action for children's environmental health. According to the Busan statement, practical methods are implemented ranging from strengthening the environmental impact assessment to making policies for children's environmental health to establishing various networks and to developing various communication channels.

CEH 2009 has successfully highlighted children's environmental health as a global issue and prepared practical action plans. Serving as a momentum to strengthen international cooperation for children's environmental health, the conference introduced excellent environmental preservation policies to the international community. The contents discussed in CEH 2009 will be reflected in the main agendas of the 2nd Asian Environment Health Forum Ministers' Meeting held in Korea in 2010.

● Opening Ceremony



● Plenary Session



● Closing Ceremony



● Events and Activities



8-2. 2009 UNEP TUNZA International Children and Youth Conference on the Environment

Under the theme of "Climate Change; Our Challenge," 2009 UNEP TUNZA International Children and Youth Conference on the Environment was held in Daejeon Korea from August 17 to 23, 2009 with 800 children and young students selected from 110 nations around the world.

From August 17 to 20 was 'International Children Conference' for children aged 10 to 14, and from August 20 to 23 was 'Youth Conference' for youngsters aged 15 to 24. On August 20, a total of 800 children and youngsters gathered for a discussion.

At the opening ceremony on August 17, Jae-bum Kim Secretary General of the UNEP Korean Committee and Sung-hyo Park Daejeon Mayor gave opening congratulatory remarks, followed by a plenary session on 'Climate Change and Children', where participants gave presentations on their environmental projects including soap making with waste cooking oil. During the workshop session in the afternoon, various programs like wood car making and Korean traditional games were provided to children.

On August 17, children made presentations on water-related environmental projects in the plenary session on water and programs like 'Listen to the Sound of Water' and 'Environmentally-Friendly Toy Making' took place during the afternoon workshop sessions. As an evening session, a 'Recycling Concert' was held where 'Noridan' performance group played music with recycled instruments. Following the concert, contestants presented their unique culture during a talent show.

On August 19, David de Rothschild, a renowned environmental activist, delivered a keynote speech. Mr. Rothschild also joined the 'How Can I Become an Environmental Reporter?' session and answered various questions from young reporters. In the afternoon session, children joined 'Bare Foot Walking on Mt. Gyejok' program and spent time with Korean kids at local schools. In the evening session, participants learned Korean Tae Kwon Do in the Mini Olympics.

On August 20th, in the morning session, Korean Environment Minister Maa-nee Lee and UNEP Secretary General Achim Steiner delivered the awards of International Children's Painting Contest to the winners. In the afternoon session, participants had the Global Debate with former Prime Minister Seung-soo Han. After the Debate, 800 children had a Q&A session with policy makers on current environmental issues and roles of children and youngsters. Also, the Global Debate was aired to 15 cities including Kenya and Bangkok real time. At the Seal-the-Deal, a campaign for a successful holding of UN Framework Convention on Climate Change, Mr. Han joined the global signing campaign to settle the global climate change issue. The Seal-the-Deal was followed by Global Town Hall where 'Listen to Our Voice' a statement of Global Town Hall was announced, reflecting opinions of children throughout the world.

The Youth session started from August 21, where young boys and girls from different continents gathered and discussed regional environmental issues and shared

their experiences on environmental projects. During the plenary meeting, participants made presentations on their environment projects and, through a Q&A session, learned about different environmental projects. Following the event, young candidates for UNEP Youth Advisor delivered speeches.

On the last day of the 2009 UNEP TUNZA Conference, August 22, regional action plans were announced and two advisors from each continent were elected from the UNEP Youth Advisory Committee election. As the last event of the day, the best environmental project awards were delivered to the recipients.

On August 22, the action plans on the promotion of environmental issues via social networking, eco-campus building, green party, etc. were made based on the regional meetings held on the previous day.

The 2009 UNEP TUNZA International Children and Youth Conference on the Environment provided an opportunity for children and youngsters from all over the world to share various climate change experiences of foreign countries and learn new information through various lectures.

The children and youngsters also adopted a statement which will make their voices heard for the 15th UNFCCC Conference of the Parties. For young participants engaged in various environmental projects, this conference was an important chance to share information about their environmental projects and to look into diverse environmental problems in the world. The young participants will continuously contribute to addressing environmental issues, in particular climate change by carrying out their own actions plans.

● Global Debate



● Seal-the-Deal Campaign



● Global Town Hall Meeting



● General Assembly



● Environmental Project Presentation



● Environment Project Exhibition



● Bare Foot Walking on Mt. Gyejok



● Workshop



● UNEP Youth Advisor Election



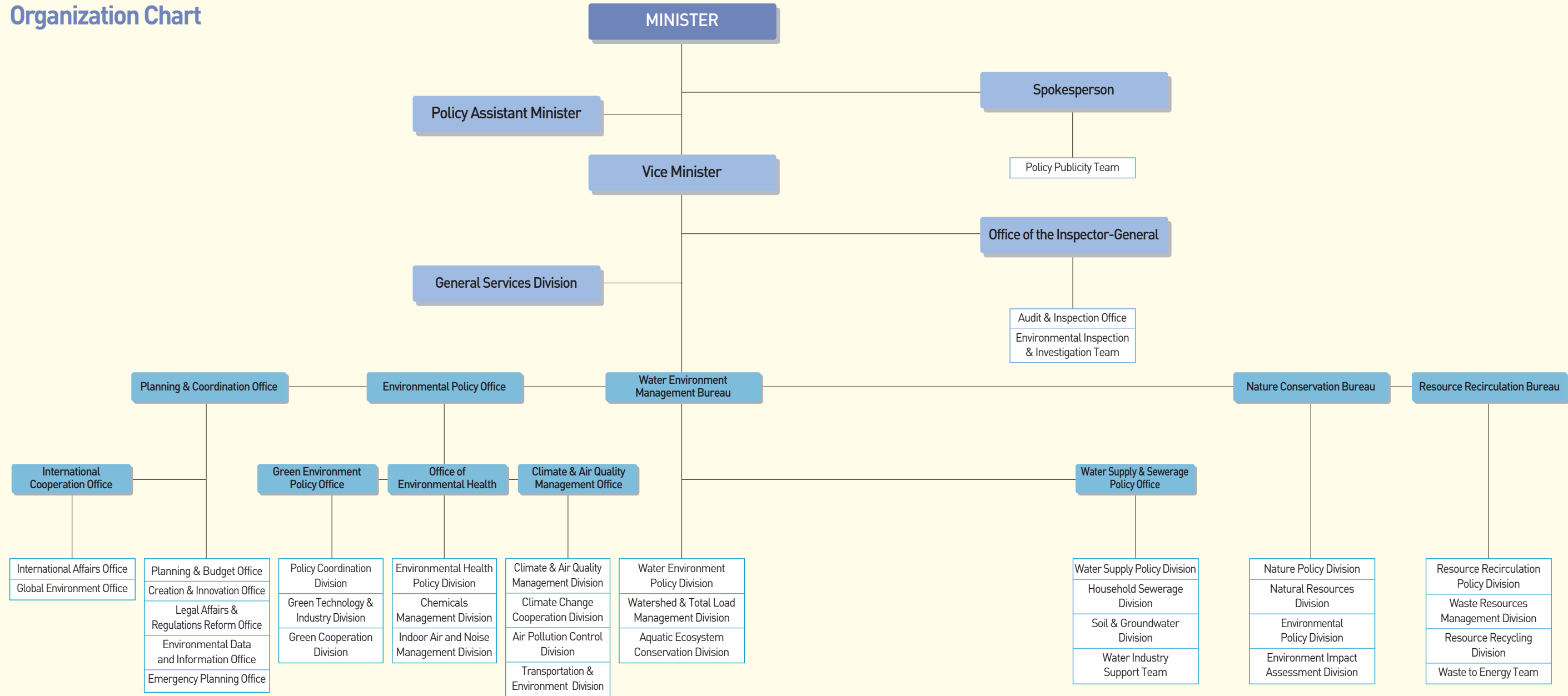
● Regional Meeting



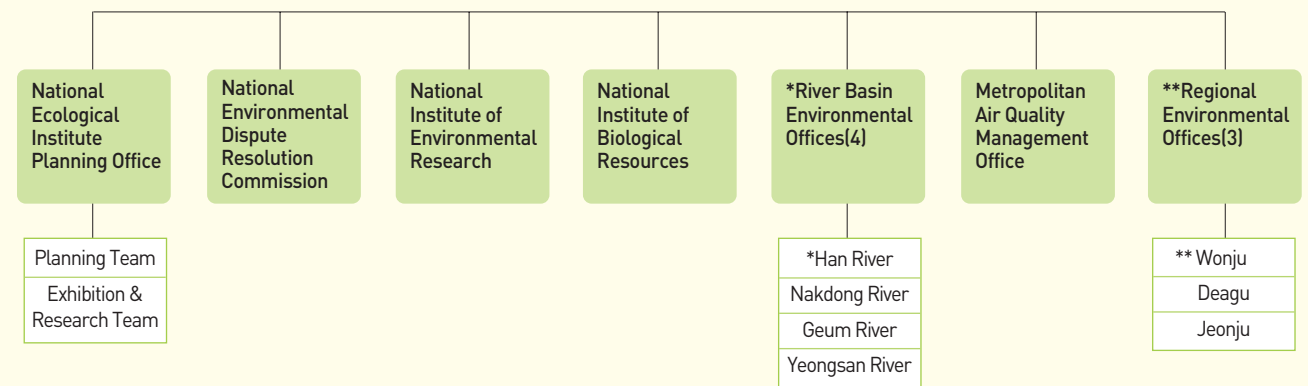


09
Appendix

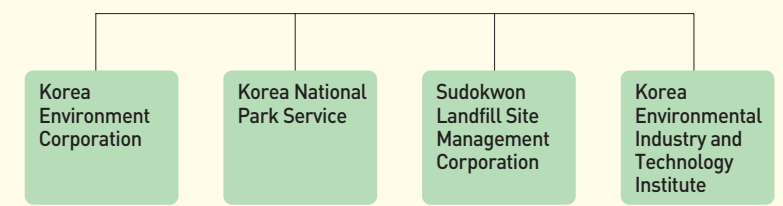
Organization Chart



Subsidiary Organization



Affiliates



Personnel (1,756)

MOE	Subsidiary Organization(1,238)											
	NEDRC	NIER	NIBR	NIEHRD	River Basin Environmental Office(503)				Metropolitan Air Management Office	Regional Environmental Office (225)		
					Han	Nakdong	Geum	Yeongsan		Wonju	Daegu	Jeonju
518	21	300	102	30	144	138	108	113	57	76	92	57

2010 Budget

(Unit : KRW100 Million)

Category	2009 Budget(A)	2010 Budget(B)	Increase/Decrease(B - A)	%
Total	40,282	44,832	4,550	11.3
Business Expenses	39,022	43,589	4,567	11.7
• Water Supply/Sewage Services & Water Quality	24,942	28,579	3,637	14.6
- Water Supply/Sewage Services	20,581	23,520	2,939	14.3
- Water Quality	4,361	5,059	698	16.0
• Waste Management	3,189	3,275	86	2.7
• Air Quality Improvement	3,180	2,851	△329	△10.3
• Nature Conservation	3,591	4,176	585	16.3
• General Environmental Protection	4,121	4,707	586	14.2
- Environmental Policy	2,124	2,727	603	28.4
- International Cooperation	72	67	△5	△6.9
- Environmental Research /Education	422	451	29	6.9
- Environmental Management, etc	1,503	1,462	△41	△2.7
Labor Expenses/Basic Expenses	1,260	1,244	△16	△1.2

* Budget of 2009 & 2010 : sequential aggregation standard and full-budget standard

* By the standard of supplementary budget of 2009 (4,585 billion won), decreased 101.8 billion won (2.2 %)

Contact Information and Websites of Subsidiary / Affiliated organization

Organization	Telephone	Website
National Env' l Dispute Resolution Commission (NEDRC)	(82) 2-504-9303	http://edc.me.go.kr/
National Institute of Environmental Research (NIER)	(82)32-560-7027	http://nier.go.kr/
National Institute of Biological Resources	(82) 32-590-7000	http://nibr.go.kr/
National Institute of Environmental Human Resources Development (EHRD)	(82)32-560-7774	http://ehrd.me.kr/
Han River Basin Environmental office	(82)31-790-2420	http://www.me.go.kr/hg/
Nakdong River Basin Environmental Office	(82)55-211-1790	http://www.me.go.kr/ndg/
Geum River Basin Environmental Office	(82)42-865-0800	http://www.me.go.kr/gg/
Yeongsan River Basin Environmental Office	(82)62-605-5114	http://www.me.go.kr/ysg/
Metropolitan Air Quality Management Office	(82)31-481-1312	http://www.me.go.kr/mamo
Wonju Regional Environmental Office	(82)33-764-0982	http://www.me.go.kr/wonju
Daegu Regional Environmental Office	(82)53-760-2502	http://www.me.go.kr/daegu
Jeonju Regional Environmental Office	(82)63-270-1810	http://www.me.go.kr/jeonju
Korea Environment Corporation	(82)32-590-4000	http://www.keco.or.kr
Korea National Park Service	(82)2-3279-2700	http://www.knps.or.kr
Sudokwon Landfill Site Management Corporation	(82)32-560-9300	http://www.slc.or.kr
Korea Environmental Industry and Technology Institute	(82)2-380-0500	http://www.keiti.re.kr

Head Office and Roles

Office/Bureau	Functions
Office of Spokesperson	<ul style="list-style-type: none"> Establishment and Cooperation of Public Relations Plans and Strategies on major policies Management of public relations activities within a division and support for press conferences
Office of the Inspector General	<ul style="list-style-type: none"> Audit & inspection issues and the inspection by MOE and its subsidiary organizations Comprehensive coordination of investigation and regulation activities on pollutant emitting facilities
General Services Division	<ul style="list-style-type: none"> Management of personnel, security, documents and employee welfare Purchase, procurement, management of goods, capital management, accounting, and settlement
Planning & Coordination Department	<ul style="list-style-type: none"> Administrative innovation, the establishment of major task plans, budget allocation and management of organizations and employees Public service centers, the establishment and amendment of statutes, emergency plans and environmental informatization
Environmental Policy Office	<ul style="list-style-type: none"> Mid&long term plans for environmental preservation; preparation of the Basic Environmental Law Promotion of Local Agenda 21; production of MOE Annual Report; USFK and DPRK In charge of environment improvement charge system, green construction material approval system, and environmentally friendly corporation designation system Support for environmental industry; operation of pollution prevention facilities Promotion of environmental education(i.e. model environmental conservation schools) Support for civil environmental preservation activities; organizes various environmental ceremonies Management of environment technology centers, promotion of Eco-Technopia 21 Comprehensive support towards the development and growth of environmental technology
Climate & Air Quality Management Office	<ul style="list-style-type: none"> 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 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 Industrial emission control, operation of emission standards and emission charge system Operation of Stack Telemetry Monitoring System, odor prevention measures 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 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 Drafts climate change impact assessment report, countermeasures, and GHG emission statistics Provides support to local government in establishing climate change measures, and develops/distributes training and promotion programs on climate change
International Cooperation Officer	<ul style="list-style-type: none"> Cooperation with environment related international organizations Environmental cooperation related works with major countries and neighboring countries Holding various international conferences and supporting participation International conventions on global environmental conversation Understanding international trends and establishing countermeasures for global environmental conversation Providing support and cooperation to establishing a domestic system in accordance with international conventions on global environmental conversation Participating in international negotiations for climate change and establishing relevant measures

Office/Bureau	Functions
Water Environment Management Bureau	<ul style="list-style-type: none"> Establishment of water quality management plans for watershed and related area Non-point source pollution and lacustrine management, livestock waste treatment & utilization 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 Operation of industrial wastewater management system, setting of allowable emission standards Investigation of water ecosystem, restoring the polluted and streams ecologically
Water Supply & Sewerage Policy Office	<ul style="list-style-type: none"> Management and expansion of the waterworks system; deals with relevant laws & statutes Tap water quality improvement, water utilities statistics Development of alternative water resources & Promotion of water Industries Establishment of framework policies on sewage and excreta disposal Installation and maintenance of sewage & excreta treatment facilities
Nature Conservation Bureau	<ul style="list-style-type: none"> 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 Endangered & Protected wildlife protection, environmental status surveys, and data management Designation of National Parks, establishment of National Park management plans 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 Deals with general EIA(Environmental Impact Assessment) issues, management and develop improvement & review guidelines for EIA Related EIA negotiations, matters dealing with changes in negotiation items & re-negotiation
Resources & Recirculation Bureau	<ul style="list-style-type: none"> Establishment of Framework Plan for Waste Management; in charge of relevant laws and statutes Development and promotion of waste reduction policies; operation of waste treatment charge system Establishment of Framework Plan on Municipal Waste Treatment Facilities, site survey & management Management & regulation of dioxin emissions at incinerators, food waste reduction and utilization Deals with industrial waste collection, transport, storage, treatment standards & treatment facilities Treatment and management of construction waste and infectious waste Establishment of Framework Plan for Resource Recycling; deals with relevant laws and statutes Recycling standards & methods; promotion of recycling industry and recycled products use Establishment of waste-to-energy policies, construction and management of waste-to-energy facilities
National Ecological Institute Planning Office	<ul style="list-style-type: none"> Establishment of the Comprehensive Plan for the NEI Compilation, execution and control of a budget Establishment and operation a committee of construction for the NEI Management and supervision of construction of NEI Support and supervision of construction of the Ecorium Development and control of exhibition, research and educational programs for the NEI Item and content development for the Ecorium and gardening the outside Selection and collection plan of the wild fauna and flora species for the NEI

Environmental Quality Standards

Air

Air Pollutants	Standard	Measurement Method
Sulfur Dioxide (SO ₂)	≤0.02ppm (an annual average) ≤0.05ppm (24-hr average) ≤0.15ppm (1-hr average)	PulseUV,Fluorescence Method
Carbon Monoxide (CO)	≤9ppm (8-hr average) ≤25ppm (1-hr average)	Non-Dispersive Infrared Method
Nitrogen Dioxide (NO ₂)	≤0.03ppm (an annual average) ≤0.06ppm (24-hr average) ≤0.1ppm (1-hr average)	Chemiluminescent Method
Particulate Matters (PM10)	≤50μg/m ³ (an annual average) ≤100μg/m ³ (24-hr average)	β-Ray Absorption Method
Ozone (O ₃)	≤0.06ppm (8-hr average) ≤0.1ppm (1-hr average)	U.V. Photmetric Method
Lead (Pb)	≤0.5μg/m ³ (an annual average)	Atomic Absorption spectrophotometry
Benzene	≤5μg/m ³ (an annual average; to be applied from 2010)	Gas Chromatography

Note : 1. 1-hr average: the 99th percentile value less than the standard
8-hr and 24-hr average: the 99th percentile value less than the standard
2. PM10 stands for Particular Matter of less than 10 millionths of a metre (10 micrometers or 10μm) in diameter.

Noise

(Leq dB(A))

Region	Subjected Area	Standard	
		Day (06:00~22:00)	Night (22:00~06:00)
General Area	Exclusively Residential Zone	50	40
	General Residential Zone	55	45
	Commercial Zone	65	55
	Industrial Zone	70	65
Roadside Area	Residential Zone	65	55
	Commercial Zone	70	60
	Industrial Zone	75	70








Water & Aquatic Ecosystem

Rivers and Streams

- Standard for Human Health Protection (River, Streams and Lakes)

Pollutants	Standard Value (mg/L)
Cadmium (Cd)	≤0.005
Arsenic (As)	≤0.05
Cyanide (CN)	Not Detected (Limit of Detection 0.01)
Mercury (Hg)	ND (LOD 0.001)
Organic Phosphorus	ND (LOD 0.0005)
Polychlorinated Biphenyls (PCB)	ND (LOD 0.0005)
Lead (Pb)	≤0.05
Hexachromium (Cr6+)	≤0.05
Alkyl Benzene Sulfate (ABS)	≤0.5
Carbon Tetrachloride (CCl ₄)	≤0.004
1,2-Dichloroethylene	≤0.03
Tetrachloroethylene (PCE)	≤0.04
Dichloromethane	≤0.02
Benzene	≤0.01
Chloroform	≤0.08
Di-Ethylhexyl Phthalate (DEHP)	≤0.008
Antimony (Sb)	≤0.02

- Standard for the Living Environment

Grade	State(Character)	Standard						
		pH	BOD(mg/L)	SS(mg/L)	DO(mg/L)	Coliforms (No./100m ²)		
						Total Coliforms	Fecal Coliforms	
Very Good	Ia		6.5~8.5	≤1	≤25	≥7.5	≤50	≤10
Good	Ib		6.5~8.5	≤2	≤25	≥5.0	≤500	≤100
Fairly Good	II		6.5~8.5	≤3	≤25	≥5.0	≤1,000	≤200
Fair	III		6.5~8.5	≤5	≤25	≥5.0	≤5,000	≤1,000
Fairly Poor	IV		6.0~8.5	≤8	≤100	≥2.0	-	-
Poor	V		6.0~8.5	≤10	No floating matters such as garbage	≥2.0	-	-
Very Poor	VI		-	>10	-	<2.0	-	-

Reference

1. Water Quality by Grade & State of Aquatic Ecosystems

- Very Good : Higher concentrations of DO (Dissolved Oxygen), no pollutant, excellent condition of ecosystems, and residential use after a simple purification process (e.g., filtration and sterilization)
- Good : High DO levels, few pollutants, good condition of ecosystems, and residential use after a general purification process (e.g., sedimentation, filtration, and sterilization)
- Fairly Good : Good DO levels, a few pollutants, good and moderate condition of ecosystems, and residential/ swimming pool use after a general purification process (e.g., sedimentation, filtration, and sterilization)
- Fair : Moderate concentrations of DO, general pollutants, moderate condition of ecosystems, residential use after an advanced purification process (e.g., sedimentation, filtration, carbon block filtration, and sterilization) and industrial use after a general purification process
- Fairly Poor : Low concentrations of DO, many pollutants, an agricultural use, and an industrial purpose after an advanced purification process
- Poor : Lower concentrations of DO, a significant amount of pollutants, an industrial use after an advanced purification process (e.g., sedimentation, filtration, carbon block filtration, sterilization, and reverse osmosis), and no effect of bad or unpleasant odor on daily life
- Very Poor : Little DO, polluted water, and few fish to survive
- A certain grade of water can be used for lower-grade water purpose.
- An appropriate water treatment in line with the status of pollution by item (e.g., pH) and the method of water treatment, allows lower-grade water to be used for higher-grade water purpose.

- Water Quality by Grade & Biological Features of Aquatic Ecosystem

Grade	Biological Indicator Species		Habitats & Features
	Benthos	Fish	
Very Good~Good	Gammarus, Korean Fresh Water Crayfish, Drunella Aculea, Cincticostella, Levanidovae, Plecoptera, Rhyacophila, Glossosoma KUa, Hydatophylax, Nigrovittatus McLachlan, Psilotreta Kisoensi	Trout, Moroco SP, Fresh Water Salmon, Chinese Minnow, etc.	- Crystal clear water, and high flow velocity - Rocks and pebbles at the bottom - Very little attached algae
Good~Fair	Melanian snail, Glossiphonia, Rhoenanthus (Potamanthindus), Ephemera Orientalis, Uracanthella Rufa, Caenis Rishinoae, Psephenoides sp. 1, Macronema Radiatum McLachlan	Shiri, Dark C Sweetfish, Mandarin Fish, etc.	- Clear water, and normally high or moderate flow velocity - Rock and gravel at the bottom - A bit attached algae
Fair~Fairly Poor	Lymnaeidae, Arhynchobdellidae, Water boatman, Orthetrum Albistylum Specisum,	Dace fish, Korean Piscivorous Chub, False [Goby] Minnow, Stone Moroko, etc.	- Low water turbidity, and normally low flow velocity - Small gravel and sand at the bottom - Much attached green algae
Fairly Poor~Very Poor	Physa Acuta, Tubifex, Red Sea Bass, Mothfly, Hover fly	Crucian [Prussian] Carp, Carp, Loach, Catfish, etc.	- High water turbidity and low flow velocity - Sand and silt at the bottom; and the color of water is black. - Much attached brown/gray algae

Lakes

- Standard for Human Health Protection

This standard is the same as that of rivers and streams for human health protection

- Standard for the Living Environment

Grade	State (Character)	pH	Standard							
			COD (mg/L)	SS (mg/L)	DO (mg/L)	T-P (mg/L)	T-N (mg/L)	Chl-a (mg/m ³)	E-Coliforms (No./100mL)	
									Total Coliforms	Fecal Coliforms
Very Good	Ia	6.5~8.5	≤2	≤1	≥7.5	≤0.01	≤0.2	≤5	≤50	≤10
Good	Ib	6.5~8.5	≤3	≤5	≥5.0	≤0.02	≤0.3	≤9	≤500	≤100
Fairly Good	II	6.5~8.5	≤4	≤5	≥5.0	≤0.03	≤0.4	≤14	≤1,000	≤200
Fair	III	6.5~8.5	≤5	≤15	≥5.0	≤0.05	≤0.6	≤20	≤5,000	≤1,000
Fairly Poor	IV	6.0~8.5	≤8	≤15	≥2.0	≤0.10	≤1.0	≤35	-	-
Poor	V	6.0~8.5	≤10	No floating garbage	≥2.0	≤0.15	≤1.5	≤70	-	-
Very Poor	VI	-	>10	-	<2.0	>0.15	>1.5	>70	-	-

Reference

- When the ration of total nitrogen to total phosphorate is less than 7, the criteria of total phosphorate shall not be applied, and on the other hand, the ratio is more than 16, the criteria of total nitrogen shall not be applied.
- Water quality by grade and the status of aquatic ecosystems is the same as the first column of A. Rivers and Streams, (2) the Standard for the Living Environment.
- Design of characters is the same as the first column of A. Rivers and Streams, (2) the Standard for the Living Environment.

Groundwater

1. Ground water used for drinking shall be subject to the standard of drinking water in accordance with the Article 5 of the Drinking Water Management Act.

2. In the case of groundwater for residential/agricultural/fishing/industrial uses

(Unit: mg/L)

Category	Water Use	Living Water	Agricultural Water · Fishery Water	Industrial Water
		General Pollutants (5 in total)	pH	5.8~8.5
Specific Hazardous Substances (15 in total)	No. of E-Coliforms	≤5,000 (MPN/100mL)	-	-
	Nitrate Nitrogen(NO ₃ -N)	≤20	≤20	≤40
	Chloride (Cl ⁻)	≤250	≤250	≤500
	Total Colony Count	≤100CFU/1mL	-	-
	Cadmium (Cd)	≤0.01	≤0.01	≤0.02
	Arsenic (As)	≤0.05	≤0.05	≤0.1
	Cyanide (CN)	ND	ND	≤0.2
	Mercury (Hg)	ND	ND	ND
	Organic Phosphorus	ND	ND	ND
	Phenol	≤0.005	≤0.005	≤0.01
	Lead (Pb)	≤0.1	≤0.1	≤0.2
	Hexachromium (Cr ⁺⁶)	≤0.05	≤0.05	≤0.1
	TCE (Trichloroethylene)	≤0.03	≤0.03	≤0.06
	PCE (Tetrachloroethane)	≤0.01	≤0.01	≤0.02
	1.1.1-Trichloroethane	≤0.15	≤0.3	≤0.5
Benzene	≤0.015	-	-	
Toluene	≤1	-	-	
Ethyl Benzene	≤0.45	-	-	
Xylene	≤0.75	-	-	

Reference

- Residential Water : used for domestic purposes including laundry, dishes, and toilets, except for drinking, agriculture, fishery, and the industry.
 - Agricultural / Fishery Water : used for agriculture in accordance with article 2 of enforcement regulations of the Framework Act on Agriculture and Rural Community, and for fishery in conformity with article 2(3) of the Special Act on Rural Development
 - Industrial Water : used for industrial businesses equipped with waste discharge facilities in accordance with article 2(5) of the Water Quality Conservation Act
 - Fishery water and groundwater shall not be subject to the chloride standard, when the concentration of chloride ions does not pose a threat to the public health and groundwater is used for the intended purpose designated by the Minister of Environment.
- ※ Common criteria : agriculture/fishery/industry water also used for domestic purposes (e.g., laundry, dishes, etc) shall be subject to the standard for residential water.

Drinking Water

Classification	Water Quality Inspection Item		Tap Water	Spring Water	Deep Ocean Drinking Water	Drinking water from Community facility(mountain pond, well,etc.)	Remarks
	Total Colony Counts	Low Temp. Colony(21℃) Medium Temp. Colony(35℃)					
Microorganism	Total Colony Counts	Low Temp. Colony(21℃) Medium Temp. Colony(35℃)	-	100CFU/mL	100CFU/mL	-	
	Total Coliforms		ND/100mL	ND/250mL	ND/250mL	ND/100mL	
	Fecal Streptococci		-	ND/250mL	ND/250mL	-	
	Pseudomonas aeruginosa		-	ND/250mL	ND/250mL	-	
	Spore-forming Sulfite-reducing anaerobes		-	ND/50mL	ND/50mL	-	
	Salmonella		-	ND/250mL	ND/250mL	-	
	Shigella		-	ND/250mL	ND/250mL	-	
	Fecal Coliforms		ND/100mL	-	-	ND/100mL	
	Escherichia Coli		ND/100mL	-	-	ND/100mL	
	Yersinia		-	-	-	ND/2L	
	Hazardous Inorganic Substances	Pb; Lead		0.05mg/L	0.05mg/L	0.05mg/L	0.05mg/L
F; Fluoride			1.5mg/L	2.0mg/L	2.0mg/L	1.5mg/L	
As; Arsenic			0.05mg/L	0.05mg/L	0.05mg/L	0.05mg/L	2011: 0.01mg/L (except spring water)
Se; Selenium			0.01mg/L	0.01mg/L	0.01mg/L	0.01mg/L	
Hg; Mercury			0.001mg/L	0.001mg/L	0.001mg/L	0.001mg/L	
CN; Cyanide			0.01mg/L	0.01mg/L	0.01mg/L	0.01mg/L	
Cr ⁶⁺ ; Hexachromium			0.05mg/L	0.05mg/L	0.05mg/L	0.05mg/L	2011: for all types of Chrome
NH ₃ -N; Ammonium Nitrogen			0.5mg/L	0.5mg/L	0.5mg/L	0.5mg/L	
NO ₃ -N; Nitrate Nitrogen			10mg/L	10mg/L	10mg/L	10mg/L	
Cd; Cadmium			0.005mg/L	0.005mg/L	0.005mg/L	0.005mg/L	
B; Boron			1.0mg/L	1.0mg/L	1.0mg/L	1.0mg/L	
Hazardous Organic Substances	Volatile Organic Material	Phenol	0.005mg/L	0.005mg/L	0.005mg/L	0.005mg/L	
		1,1,1-Trichloroethane	0.1mg/L	0.1mg/L	0.1mg/L	0.1mg/L	
		PCE; Tetrachloroethylene	0.01mg/L	0.01mg/L	0.01mg/L	0.01mg/L	
		TCE; Trichloroethylene	0.03mg/L	0.03mg/L	0.03mg/L	0.03mg/L	
		Dichloromethane	0.02mg/L	0.02mg/L	0.02mg/L	0.02mg/L	
		Benzene	0.01mg/L	0.01mg/L	0.01mg/L	0.01mg/L	
		Toluene	0.7mg/L	0.7mg/L	0.7mg/L	0.7mg/L	
		Ethylbenzene	0.3mg/L	0.3mg/L	0.3mg/L	0.3mg/L	
		Xylene	0.5mg/L	0.5mg/L	0.5mg/L	0.5mg/L	
		1,1 Dichloroethylene	0.03mg/L	0.03mg/L	0.03mg/L	0.03mg/L	
		Carbontetrachloride	0.002mg/L	0.002mg/L	0.002mg/L	0.002mg/L	
		1,4-dioxane	0.05mg/L	0.05mg/L	0.05mg/L	0.05mg/L	Applied starting from 2011

Classification	Water Quality Inspection Item		Tap Water	Spring Water	Deep Ocean Drinking Water	Drinking water from Community facility(mountain pond, well, etc.)	Remarks
Hazardous Organic Substances	Pesticide	Diazinon	0.02mg/L	0.02mg/L	0.02mg/L	0.02mg/L	
		Parathion	0.06mg/L	0.06mg/L	0.06mg/L	0.06mg/L	
		Fenitrothion	0.04mg/L	0.04mg/L	0.04mg/L	0.04mg/L	
		Carbaryl	0.07mg/L	0.07mg/L	0.07mg/L	0.07mg/L	
		1,2-Dibromo-3-Chloropropan	0.003mg/L	0.003mg/L	0.003mg/L	0.003mg/L	
		Free Residual Chlorine	4.0mg/L	-	-	-	
	Disinfection Residues	THMs; Trihalomethanes	0.1mg/L	-	-	-	
		Bromodichloromethane	0.03mg/L	-	-	-	Applied starting from 2009
		Dibromochloromethane	0.1mg/L	-	-	-	Applied starting from 2009
		Chloroform	0.08mg/L	-	-	-	
		Chloralhydrate	0.03mg/L	-	-	-	
		Dibromoacetonitrile	0.1mg/L	-	-	-	
		Dichloroacetonitrile	0.09mg/L	-	-	-	
		Trichloroacetonitrile	0.004mg/L	-	-	-	
HAA; Haloacetic acid	0.1mg/L	-	-	-			
Materials that are Offensive to Human Sensory System	Hardness		300mg/L	500mg/L	1,200mg/L	300mg/L	
	Consumption of KMnO ₄		10mg/L	10mg/L	10mg/L	10mg/L	
	Odor (except disinfection)		ND	ND	ND	ND	
	Taste (except disinfection)		ND	ND	ND	ND	
	Cu; Copper		1mg/L	1mg/L	1mg/L	1mg/L	
	Color		5 PCU	5 PCU	5 PCU	5 PCU	
	ABS; Alkyl Benzene Sulfate		0.5mg/L	ND	ND	0.5mg/L	
	pH		5.8~8.5	5.8~8.5	5.8~8.5	5.8~8.5	
	Zn; Zinc		3mg/L	3mg/L	3mg/L	3mg/L	
	Cl ⁻ ; Chloride		250mg/L	250mg/L	250mg/L	250mg/L	
	Total Solids		500mg/L	500mg/L	500mg/L	500mg/L	
	Fe; Iron		0.3mg/L	0.3mg/L	0.3mg/L	0.3mg/L	
	Mn; Manganese		0.3→0.5mg/L	0.3mg/L	0.3mg/L	0.3mg/L	2011: 0.05mg/L (only for tap water)
	Turbidity		0.5 NTU	1 NTU	1 NTU	1 NTU	
	SO ₄ ²⁻ ; Sulfate		200mg/L	200mg/L	200mg/L	200mg/L	
	Al; Aluminum		0.2mg/L	0.2mg/L	0.2mg/L	0.2mg/L	
Water Purification Standard	Viruses		99.99% removed	-	-	-	
	Giardia lamblia		99.9% removed	-	-	-	

Discharge Water Quality Standard

Final Sewage Treatment Facility

Classification	Category	BOD (mg/L)	COD (mg/L)	SS (mg/L)	T-N (mg/L)	T-P (mg/L)	Total Coliform (n/ml)
Sewage treatment capacity more than 50M ³ /day		≤10	≤40	≤10	≤20	≤2	≤3,000
Sewage treatment capacity less than 50M ³ /day		≤10	≤40	≤10	≤20	≤4	

Reference

- The Minister of the Environment is to determine and publish the discharge water quality standards of pollutants such as phenols that can be handled at public sewage treatment plants. The discharge water quality standards are requested by the installation contractors of wastewater treatment facilities and are fixed within the scope of emission standards applied to special areas in accordance with B of Section 2 of Attached Table 13 of phenols of [Conservation Law Enforcement Regulations for Water Quality and Aquatic Ecosystems] that is one of Water Pollutant Tables.
- The discharge water quality standards for total nitrogen and total phosphorus in winter (1-3 to 31, December) are applied to each 60mg/L or less, and 8mg/L or less.
- The discharge quality standards for total coliform in public sewage treatment plants are applied to 1,000 / mL or less to each of following areas.
 - Clean area according to Attached Table 13 of [Conservation Law Enforcement Regulations for Water Quality and Aquatic Ecosystems]
 - The area within 10km stream away from the water protection zones and the boundary areas according to Article 7 of [Water Work Law]
 - The area within 15km stream away from intake facilities according to Section 17 of Article 3 of [Water Work Law]
- The discharge water quality standards for public sewage treatment plant installed in the waterfront are applied to 50m³/day or more according to Section 3 of Article 4 of the ordinance.

Final Wastewater Treatment Facility

Period	Category	BOD (mg/L)	COD (mg/L)	SS (mg/L)	T-N (mg/L)	T-P (mg/L)	Total Coliform (n/ml)
1, Jan. 2008-31, Dec. 2010		≤20(30)	≤40(40)	≤20(30)	≤40(60)	≤4(8)	≤3,000
1, Jan. 2011-31, Dec. 2012		≤20(30)	≤40(40)	≤20(30)	≤40(60)	≤4(8)	≤3,000

Reference

- The Minister of the Environment is to determine and publish the discharge water quality standards of pollutants such as phenols that can be handled at the local waste water treatment plants in industrial and agricultural complex. The discharge water quality standards are requested by the regional installers of wastewater treatment facilities, and are fixed within the scope of emission standards applied to special areas in accordance with Section 2 of Attached Table 5 of phenols of Pollutants Table.
- The number in () at the table means the discharged water quality standards of waste water treatment facilities.

Public Wastewater Treatment Facility for Animal & Human Waste

Classification	Category	BOD (mg/L)	COD (mg/L)	SS (mg/L)	T-N (mg/L)	T-P (mg/L)	Total Coliform (n/ml)
Excretion Treatment Facility		≤30	≤50	≤30	≤60	≤8	≤3,000
Public Manure Treatment Facility		≤30	≤50	≤30	≤60	≤8	

Soil Contamination Standard

Soil Contamination Pollutants (21)	Soil Contamination Concern Standard			Soil Contamination Measure Standard		
	Area 1	Area 2	Area 3	Area 1	Area 2	Area 3
Cadmium	4	10	60	12	30	180
Copper	150	200	2000	450	1500	6000
Arsenic	25	50	200	75	150	600
Mercury	4	10	20	12	30	60
Lead	200	400	700	600	1200	2100
6 chrome	5	15	40	15	45	120
Zinc	300	600	2000	900	1800	5000
Nickel	100	200	500	300	600	1500
Fluoride	400	400	800	800	800	2000
Organic phosphorus compounds	10	10	30	-	-	-
Polychlorinatedbiphenyl	1	4	12	3	12	36
Cyanogen	2	2	120	5	5	300
Phenol	4	4	20	10	10	50
Benzene	1	1	3	3	3	9
Toluene	20	20	60	60	60	180
Ethyl-benzene	50	50	340	150	150	1020
Xylene	15	15	45	45	45	135
Total petroleum hydrocarbons (TPH)	500	800	2000	2000	2400	6000
Trichloroethylene (TCE)	8	8	40	24	24	120
Tetra-chloro ethylene (PCE)	4	4	25	12	12	75
Benzo[a]pyrene	0.7	2	7	2	6	21

Reference

1. Area 1: According to [Cadastral Law], land classification corresponds to the following; paddy, field, spa land, observatory (only for the purpose of housing in accordance with A of Section 8 of Article 5 of [Cadastral Act]), school zone, ditch, aquaculture, park, historic site, cemetery and children's play facility (outdoor installation only applied) according to Section 2 of Article 2 of [Children's Play Facility Safety Laws]
2. Area 2: According to [Cadastral Law], land classification corresponds to the following; forest, torsion, observatory (all the other kinds except for that of area 1), warehouse, river, tributary, water supply area, physical exercise zone, amusement land, religious land, and others (only equivalent to A or C of Section 28 of Article 5 of [Cadastral Act])
3. Area 3: According to [Cadastral Law], land classification corresponds to the following; factory, parking zone, oil station, road area, railway zone, embarkment, and others (all the other kinds except for that of area 2), and defense & military facility area (according to Item 1~5 of Section 1 of Article 2 of [Defense & Military Facilities Construction Act])
4. In case of returning the acquired land according to Article 48 of [Land Acquisition and Compensation Law for Public Service], and removing contaminated soil of the returning land in accordance with Article 12 of [Special Support Act the Regions nearby the Districts Granted by the U.S. Force], the land shall be governed according to local standards proper to its use after the return is completed.
5. Benzo[a]pyrene entry should be only applied to the places where toxic chemicals are manufactured and stored and waste support woods are used (ex. railway zone, parks, factories and rivers).

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